Evaluating the impact of embedding the Collaborative Assessment and Management of Suicidality (CAMS) intervention into the NHS, including service user and clinician outcomes for its utility

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Dedication

To my grandparents, Ken, Shirley, Thelma and Tom.

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Abstract

This thesis encapsulates the methodological evaluation of a bespoke clinical risk service improvement initiative within a National Health Service (NHS) mental health organisation. The specific operational components of this initiative were informed by preceding review chapters of pertinent literature for life-threatening behaviours, self-harm and suicidality, including the efficacy of existing interventions. The rationale for the final model, which embedded both triage and treatment components, is provided. The model allowed clinicians to undertake objectively informed and individualised treatment decisions (triage process) for all presenting service users (n=2176), including access to the evidence-based Collaborative Assessment and Management of Suicidality (CAMS) intervention, in instances of life-threatening behaviour (n=52). The hypotheses were supported in that the triage process resulted, at six-month follow-up, in a lower number of Crisis and Liaison Psychiatry contacts, reduced psychiatric admissions and length of hospital stay, whilst increasing mental health appointment attendance. A comparison of the CAMS cohort with a propensity-score matched historical control group supported the hypotheses that the CAMS intervention reduced future Crisis presentations, although was no different for other mental health service inputs besides the need for increased Home Treatment Team contacts. Acceptability of the CAMS intervention was explored using an approach informed by Interpretative Phenomenological Analysis (IPA) of individual semi-structured interviews with services users (n=8) and clinicians (n=10), with key themes indicating sensitivity to service user needs and improved clinician confidence. The implications of the findings are discussed and recommendations made for future research within the field. Finally, the proposal of a series of considerations for researchers and stakeholders working within the NHS and suicide prevention are postulated.

Contents

Dedication i

Acknowledgements ii

Abstract iii

Contents iv

List of Figures viii

List of Tables ix

List of Abbreviations x

Chapter 1: Review of the theoretical and epidemiological literature 1

1.1 Context of the problem 2

1.2 Theories of suicide 5

1.3 Risk factors for suicidal behaviour 23

1.4 Terminology and definitions 41

1.5 Summary of chapter 65

Chapter 2: Understanding of suicide in the NHS 67

2.1 National policy relating to suicide prevention 68

2.2 Trend analysis: the link between self-harm and suicide 80

2.3 Understanding how mental health difficulties relate to suicidality 84

2.4 Key themes from national guidance 92

2.5 Public health perspective 103

2.6 Summary of chapter 108

Chapter 3: Literature review of interventions 111

3.1 Conducting intervention research for suicidality and self-harm 112

3.2 CAMS trial data 132

3.3 Telephone interventions. 135

3.4 Digital interventions. 139

3.5 Interventions for older adults 144

3.6 Pharmacological interventions 146

3.7 Summary of chapter 148

3.8 Research questions 150

Chapter 4: Methodology 152

4.1 Outline of the project 153

4.2 Study design 160

4.3 Quantitative methodology 164

4.4 Qualitative methodology 172

4.5 Ethical and methodological considerations 179

4.6 Quantitative data analysis 182

4.7 Qualitative data analysis 185

4.8 Impact of Covid-19 187

4.9 Summary of chapter 190

Chapter 5: Quantitative results 191

5.1 Research Question One. What is the effect of an open-access systems-level suicide-risk triage model on future service utilisation? 192

5.2 Research Question Two: What is the impact of implementation of the CAMS intervention for service users at high risk of suicide, in comparison with TAU for a historical matched control group, at six months post index Crisis assessment? 199

5.3 Regression analyses for the significant risk subsample 207

5.4 Comparing the CAMS experimental and matched control groups 211

5.5 Outcomes at six months post CAMS/index Crisis assessment 215

5.6 Research Question Three. Do CAMS SSF core assessment ratings reduce over the course of the CAMS intervention? 225

Chapter 6: Research Question Four. Qualitative analysis of service user interviews 229

6.1 Sample characteristics 230

6.2 Themes from service user interviews 230
6.3 Summary of chapter 247
Chapter 7: Research Question Five. Qualitative analysis of clinician interviews 248
7.1 Sample characteristics 249
7.2 Themes from clinician interviews 249
7.3 Summary of chapter 266
Chapter 8: Discussion 268
8.1 Summary of findings 269
8.2 Comparisons with previous studies 273
8.3 How does the suicide risk triage data (Research Question One) inform theories of suicide? 281
8.4 How do findings from the CAMS experimental cohort inform theories of suicide? ... 284
8.5 Limitations of the research 285
8.6 Recommendations for future research 287
8.7 Ethical considerations versus future research direction 297
8.8 Have the research objectives/methodology been validated? 298
8.9 Clinical implications: Proposing a spectrum model of self-harm and suicidality 301
8.10 Conclusions 306
Bibliography 311
Appendix A: Literature search strategy for suicide, self-harm and suicidality interventions 405
Appendix B: Life-threatening behaviours as a primary outcome 406
Appendix C: Self-harm interventions tables 409
Trials of brief psychological interventions 409
Trials of cognitive therapies 412
Trials of DBT 418
Trials of group therapies 423
Trials of psychodynamic interventions 425

Trials of outpatient interventions designed to improve compliance with treatment..........428

Trials of case management interventions..........429

Trials of GP interventions..........430

Trials of postcard interventions..........431

Appendix D: Suicidality interventions..........434

Trials of cognitive therapies..........434

Trials of DBT..........443

Trials of brief psychological interventions..........445

Trials of PST..........446

Other trials..........447

Appendix E: Literature search strategy for telephone interventions...........449

Appendix F: Telephone contact interventions...........450

Appendix G: Participant Information Sheet for the research..........455

Appendix H: Participant Information Sheet for interviews..........457

List of Figures

Figure 1 Shneidman's Cubic Model of Suicide (1987) 8
Figure 2 The cognitive model of suicidal behaviour by Wenzel et al. (2009).....................144
Figure 3 Assumptions of the IPTS (Joiner, 2005) 15
Figure 4 O'Connor's IMV model (2011)..188
Figure 5 Updated IMV model (O'Connor & Kirtley, 2018) 199
Figure 6 Illustration of the 3ST (Klonsky & May, 2015) 222
Figure 7 Acceptability of suicide-related terminology according to an online survey (Padmanathan et al., 2019)...422
Figure 8 Age standardised suicide rates per 100,000 people in England and Wales (ONS, 2019a) 688
Figure 9 Flow chart of trial selection 1155
Figure 10 Flow chart of trial selection for telephone interventions 1366
Figure 11 Comparing average number of suicide risk triages per week for the three time periods during the Covid-19 pandemic 1999
Figure 12 Process for identifying potential matched controls for CAMS participants.........201
Figure 13 Distribution of key risk factors for suicide across the four groups 204
Figure 14 Distribution of ages across the four groups 2055
Figure 15 Service contact with each CRHT team at six-month follow-up for the CAMS and control groups 2199
Figure 16 Mean CPA input by month for the CAMS and control groups (n=44) 22121
Figure 17 Scores for each SSF core assessment construct at initial and final session........2266
Figure 18 Links between subordinate themes identified through service user interviews23131
Figure 19 Links between subordinate themes identified through clinician interviews.....25050
Figure 20 A proposed spectrum model of self-harm and suicidality..................................302

List of Tables

Table 1 Summary of quantitative and qualitative data collected 16363
Table 2 Correlations between SSF core constructs and established measures (Jobes et al., 1997) 1688
Table 3 Correlations between SSF core constructs and established measures (Conrad et al., 2009) 17070
Table 4 Demographic data for all service users with a suicide risk triage (n= 2,176)......19292
Table 5 Breakdown of primary diagnosis where recorded (n= 240)................................19393
Table 6 Breakdown of answers to "Primary reason for expressed suicidality" question ..1955
Table 7 Suicide data for the locality obtained from fingertips.phe.org.uk.........................1966
Table 8 Service utilisation data for six-month pre and post suicide risk triage (n= 2,176) 1977
Table 9 Descriptive statistics for each sample 203
Table 10 Comparison of clinical data 12 months prior to the index Crisis assessment......2066
Table 11 Comparison of clinical data six months post index Crisis assessment 2077
Table 12 Regression statistics for predictor variables of Liaison Psychiatry contact.........2099
Table 13 Regression statistics for predictor variables of Crisis contact 21010
Table 14 Tests of association for sample characteristics comparing the CAMS and control groups...21414
Table 15 Outcome measures at six-month follow-up for CAMS and control participants .... **Error! Bookmark not defined.**6
Table 16 Tests of association for outcome variables comparing the CAMS and control groups...2167
Table 17 Comparison of average CPA hours by month for the CAMS and control groups 21721
Table 18 Descriptive statistics for the older adult CAMS and control groups 22123
Table 19 Outcome measures for six-month follow-up for older adult participants..........22325
Table 20 Tests of association comparing initial and final SSF core assessment scores 2245
Table 21 Regression analyses for outcome measures using SSF core constructs as predictor variables 2272
Table 22 Regression statistics for variables predicting change in CPA hours....................2288
Table 23 Summary of themes from service user interviews 22532
Table 24 Summary of themes from clinicians interviews...23251

List of Abbreviations

3ST	Three-Step Theory
A&E	Accident and Emergency
AAS	American Association of Suicidology
ACT	Acceptance and Commitment Therapy
AMSR	Assessing and Managing Suicide Risk
AOT	Assertive Outreach Team
AP	Abandonment Psychotherapy
APA	American Psychological Association
APT	Association for Psychological Therapies
ASIQ	Adult Suicidal Ideation Questionnaire
ASIST	Applied Suicide Intervention Skills Training
ASQ	Ask Suicide-Screening Questions
ASSIP	Attempted Suicide Short Intervention Program
BIC	Brief Intervention and Contact
BHS	Beck Hopelessness Scale
BPD	Borderline Personality Disorder
BSS	Beck Scale for Suicide Ideation
CAMS	Collaborative Assessment and Management of Suicidality
CBSP	Cognitive Behavioural Suicide Prevention therapy
CBSPp	Cognitive Behavioural Prevention of Suicide in psychosis
CBT	Cognitive Behavioural Therapy
CBTp	Cognitive Behavioural Therapy for psychosis
CDC	Centers for Disease Control and Prevention
C-MAP	Culturally Adapted Manual-Assisted Problem-Solving Training
CPA	Care Programme Approach
CQC	Care Quality Commission
CRHT	Crisis Resolution Home Treatment
CRS.3	CAMS Rating Scale 3

CT-SP	Cognitive Therapy for Suicide Prevention
DBT	Dialectical Behaviour Therapy
DBT-PE	Dialectical Behaviour Therapy with Prolonged Exposure
DDP	Dynamic Deconstructive Psychotherapy
DHP	Day Hospital Psychotherapy
DHSC	Department of Health and Social Care
DICES	Describe Identify Choose Explain Share
DICES-S	DICES (suicide)
DoH	Department of Health
DSM-V	Diagnostic and Statistical Manual of Mental Disorders, 5th Edition
E-CAU	Enhanced Care as Usual
ED	Emergency Department
EIT	Early Intervention Team
ERGT	Emotion Regulation Group Therapy
E-SF	Entrapment Scale – Short Form
FASM	Functional Assessment of Self-Mutilation
FOGT	Future Oriented Group Therapy
FVT	Fluid Vulnerability Theory
FYFV	Five Year Forward View
GP	General Practitioner
GRiST	Galatean Risk and Safety Tool
IASP	International Association for Suicide Prevention
ICD-10	International Classification of Diseases – 10th Revision
ICS	Integrated Care System
IMV	Integrated Motivational Volitional (IMV) model
IPT	Interpersonal therapy
IPTS	Interpersonal-Psychological Theory of Suicide
ISAS	Inventory of Statements about Self-Injury
LSARS	Lethality of Suicide Attempt Rating Scale
M	Mean

MACT	Manual Assisted Cognitive-behaviour Therapy
MBCT	Mindfulness-Based Cognitive Therapy
MBT	Mentalisation-Based Therapy
MDD	Major Depressive Disorder
MeSH	Medical Subject Headings
MSHR	Manchester Self-Harm Rule
MSPS	Modified SADPERSONS Scale
NCISH	National Confidential Inquiry into Suicide and Safety in Mental Health
NHS	National Health Service
NICE	National Institute for Health and Care Excellence
NIMH	National Institute of Mental Health
NSSI	Non-Suicidal Self-Injury
NSSI-BQ	Non-Suicidal Self-Injury Behaviour Questionnaire
OCB	Opportunistic Cognitive Behavioural Intervention Package
OIP	Outpatient Individual Psychotherapy
ONS	Office for National Statistics
OPAC	Outreach, Problem-solving, Adherence and Continuity
PACT	Post-Admission Cognitive Therapy
PHE	Public Health England
PHI	Parasuicide History Interview
PHQ-9	Patient Health Questionnaire 9
PPV	Positive Predictive Value
PSM	Propensity Score Matching
PST	Problem-Solving Therapy
PTSD	Posttraumatic Stress Disorder
QPR	Question Persuade Refer
RCPsych	Royal College of Psychiatrists
RCT	Randomised Controlled Trial
RRRS	Risk-Rescue Rating Scale
RTS	Real-Time Surveillance

SARS	Severe Acute Respiratory Syndrome
SARS-CoV-2	Severe Acute Respiratory Syndrome Coronavirus 2
SASII	Suicide Attempt Self-Injury Interview
SD	Standard Deviation
SES	Socioeconomic Status
SFT	Schema-Focused Therapy
SIS	Beck Suicidal Intent Scale
SPS	SADPERSONS Scale
SSF	Suicide Status Form
TAU	Treatment-As-Usual
TEC	Therapeutic Evaluative Conditioning
TFP	Transference-Focused Psychotherapy
UK	United Kingdom
USA	United States of America
VHS	Volitional Helpsheet
WHO	World Health Organisation

Chapter 1: Review of the theoretical and epidemiological literature

** Sections of this chapter have previously been submitted to the University of Hull as part of the rationale and proposal in relation to this thesis.*

This chapter reviews the challenges for suicide prevention research including the prevalence of suicidal behaviours internationally and some of the obstacles within the field, as well as describing the impact of self-harm paradigms. Significant developments in the theoretical literature are outlined with a focus on the shift towards an "ideation-to-action" framework, which theorises why, of the vast number of individuals that have suicidal thoughts, only some will act on these and even fewer will die by suicide. The aetiology of suicide is thus proposed to be multifaceted and involving a complex array of biopsychosocial vulnerabilities. The evidence for potential demographic, clinical and environmental risk factors is presented including gender, psychiatric diagnoses, socioeconomic stressors and psychological variables. Finally, the terms to be used throughout the thesis, namely suicidality, self-harm and life-threatening behaviours are operationally defined and a rationale provided for why these have been chosen, rather than other commonly used terminology.

1.1 Context of the problem

Suicide, as defined by the World Health Organisation (WHO, 2014a, p.12) as “the act of deliberately killing oneself,” is a significant societal and public health concern globally. On average, someone dies by suicide every 40 seconds somewhere in the world (WHO, 2014a). Both suicide itself and suicidal behaviours, including suicidal thoughts, plans and attempts, remain a significant public health issue for the National Health Service (NHS) in the United Kingdom (UK) (Department of Health and Social Care; DHSC, 2019). Since the 1990s, the literature on suicide has incorporated research focussing on the thoughts and behaviours that relate to intentionally taking one’s own life (O’Connor & Nock, 2014). Despite targeted research (Mackley et al., 2019), suicide rates have remained almost constant over the previous decade (Office for National Statistics; ONS, 2020). Figures from the National Confidential Inquiry into Suicide and Safety in Mental Health (NCISH), the body that has collated suicide data for the UK since 1996, indicate that approximately 4,575 suicides were registered annually in England between 2007 and 2017, with hanging/strangulation being reported as the most common method of suicide (NCISH, 2019).

NCISH data indicates that men are three times as likely to die by suicide than women, a trend that is observed worldwide although with some cultural variations (Nock, Borges, Bromet, Cha, et al., 2008) whereas suicidal ideation is more common amongst females (Gunnell et al., 2004; Nock, Borges, Bromot, Alonso, et al., 2008). In terms of the economic impact, the estimated cost in the UK of the death by suicide of a working age adult is £1.7 million (Knapp et al., 2011). Comparatively, and as an exemplar, many more people die by suicide each year than in road traffic accidents yet the funding for suicide prevention is extremely sparse in comparison to the latter (Aleman & Denys, 2014).

The extent of the challenge ahead is clearer when even a brief appraisal of the literature on suicidal ideation is undertaken. National survey data from the 2014 Adult Psychiatric

Morbidity Survey, a face-to-face survey of mental health and wellbeing among adults living in private households in England (n=7,546), indicated a lifetime prevalence rate of 20.6% for suicidal ideation and 6.7% for attempts (McManus et al., 2016). 5.4% had had thoughts of suicide in the past year compared with 3.8% in 2000, with increases more likely for people aged 55-64. A meta-analysis of 36 datasets comparing over 634,000 college students (median age 21.4 years) revealed estimates of as high as 22.3% for suicidal ideation, 6.1% for plans and 3.2% for attempts (Mortier et al., 2017). As such, it is argued that tackling the problem of suicidal ideation is a key component of suicide prevention (Jobes & Joiner, 2019).

In order to give a wider perspective, it is important to acknowledge the prevalence of suicidal ideation in comparison to deaths by suicide and attempts internationally. In the United States of America (USA), it is estimated that 10.6 million adults have thoughts of suicide each year (Substance Abuse and Mental Health Service Administration, 2018). Comparably, 1.4 million adults attempted suicide and 47,000 died by suicide in the same year (Drapeau & McIntosh, 2018). A seminal paper accessing data for over 84,000 individuals across 17 countries delineated suicidal behaviour into three subcategories: suicidal ideation, relating to thoughts about suicide; suicide plans, which refers to an individual considering the method and practical implications to carry out their suicide; and suicide attempts, which is the execution of harmful behaviours with at least some intent to die (Nock, Borges, Bromet, Cha et al., 2008). Lifetime prevalence rates for the three subcategories varied, with community surveys obtaining values of 9.2%, 3.1% and 2.7% for ideation, plans and attempts respectively. These estimates differed greatly across populations with rates tending to be higher in low-income countries (WHO, 2019). For some, such as China and Japan, respondents were primarily from urban areas and may not be representative of the general population.

The National Institute for Health and Care Excellence (NICE; 2011) define self-harm as any act of intentional self-poisoning or self-injury that has a nonfatal outcome, irrespective of suicidal intent. Self-harm is arguably distinct from suicidal behaviour although should not be ignored when discussing risk factors, particularly given the substantial emotional distress that such behaviours can cause and the potential for future suicide (Townsend et al., 2016). Self-harm can arguably include other self-inflicted behaviours such as body piercing, tattooing and unhealthy eating behaviours, but these are considered distinct from self-harm by the NICE (2013). A further delineation suggests that self-harm includes non-suicidal self-injury (NSSI) which is defined as intentional physical harm to one's own body without suicidal intent, for example, cutting, burning, hitting and scratching skin (American Psychiatric Association, 2013). Self-harm is argued to be associated with a hundred-fold increase in likelihood of death by suicide (Owens et al., 2002), although this is largely based on trend analyses (see Section 2.2) and estimates of suicide rates rather than accurate values.

Despite considerable prevalence data for suicidal behaviour, discrepancies remain in the literature regarding the reliable collation of "intent to die" data. This can cause inconsistencies in prevalence estimates for suicide attempts (Nock & Kessler, 2006). The authors argued that considerable variations in evaluating intent to die across cohorts and studies would need to be addressed, with clear guidance of what constitutes suicidal behaviour in order to make progress with suicide prevention research. They further postulate that clear definitions are provided so that factors linked to suicide are not confused with more generic risk factors for self-harm where no suicidal intent is evident.

1.2 Theories of suicide

1.2.1 Early conceptualisations

The first major theoretical venture relating to suicide was a sociological perspective of suicide presented by Durkheim (1897). Durkheim suggested that those with high levels of social integration are less likely to die by suicide, but as social integration decreases and people feel disconnected from society, the likelihood of suicide increases. He proposed a typology of suicide with four categories:

1. Anomic suicide: resulting from a strong sense of disconnection and lack of belonging to society during periods of extreme or sudden change to societal circumstances e.g. political and economic change
2. Altruistic suicide: to benefit wider society or as part of a collective cause e.g. for religious or political reasons
3. Egoistic suicide: resulting from feeling detached from society, particularly in elderly people that are less connected with society due to retirement, bereavement and reduced integration within the community
4. Fatalistic suicide: attributed to oppressive regulation or rules, for instance, suicide by a slave or prisoner

Durkheim derived his theoretical perspective on suicide from observations of lower suicide rates by Catholics than Protestants, attributing this to greater levels of social integration and social control amongst Catholics, although the emphasis on the causal role of religion has been criticised (van Poppel & Day, 1996).

Psychoanalytic appraisals by theorists such as Freud (1920) describe suicidal desire as the result of an individual's innate drive for self-destruction. Later psychoanalytic approaches focus on the death instinct (Klein, 1935; Menninger, 1938) conceptualised as the guilt arising from internal aggressive fantasies that lead the individual to suicide as a method of preventing destruction towards others. Little empirical evidence exists for these; a review conducted by Baumeister and Scher (1988) was unable to identify empirical evidence of intentional self-destructive behaviours in the general population. This highlights one of the criticisms of psychoanalytic theories in that many fundamental concepts lack a sound evidence-base (Eysenck, 1985). Despite this, some traditional elements of psychoanalytic theory such as object relations developed by Klein (1935), emphasising how early interpersonal relationships shapes how an individual relates to others in adulthood, remain influential in modern explorations of suicide.

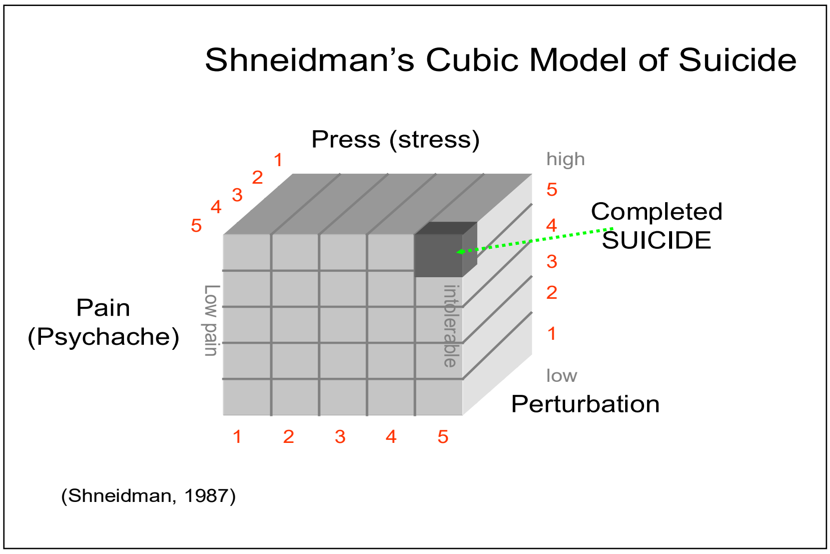
1.2.2 Suicide as escape

Over the past 35 years, several empirical theories have evolved in an attempt to understand the complex aetiology of suicide. Prominent in earlier theories was the notion that suicide is a method of escape from an adverse state. Baechler (1979) proposed four broad categories of suicide: 1) escapist (accounting for the majority of suicides); 2) aggressive (interpersonal in nature, motivated by anger and/or revenge); 3) oblative (self-sacrifice); and 4) ludic (as a results of risky activities, possibly to “prove oneself”). The author further differentiated escapist suicides depending on whether the individual wishes to end intolerable emotional pain, as a reaction to loss and grief (distinct from the former), or as a method of self-punishment for a wrongdoing (including feelings of shame). These three subcategories of escapist suicides were defined as flight, grief and punishment, based on the individual’s motivation.

Reynolds and Berman (1995) categorised 86% of 404 suicides in the USA into the most prominent typologies proposed in the literature, including the subtypes suggested by Baechler (1979). Three subtypes from the literature were most representative of these suicides, with Baechler’s escapist category accounting for the highest proportion (64%). However a large amount of overlap existed between the types proposed by different theorists, suggesting that broad rather than narrow definitions may be more useful for suicide categorisation. Reynolds and Berman (1995) proposed five distinct categories of suicide: escape, confusion, aggression, alienation and depressive/low self-esteem. Further types have since been suggested, such as suicide pacts and “gambling” with one’s own life without intent to die, however the five original typologies cover a broad range of suicide cases and are supported by statistical clustering (Gunn & Lester, 2014). There appears to be evidence for Baechler’s suicide typologies yet such findings have not improved theoretical understanding of the different types, nor useful implications for targeted treatment (Rogers & Lester, 2010). A well-cited escape theory of suicide is Shneidman’s cubic model (1987), which conceptualised suicide as an interaction between three psychological factors: press (stress), pain (“psychache”) and perturbation. In Shneidman’s terms, “presses” can be defined as unrelenting psychological pressures, whilst “perturbation” refers to a state of being emotionally upset or disturbed, most notable for the individual being inclined to take action (Jobes & Drozd, 2004). The construct of psychache relates to intolerable “psychological pain” caused by rejection, loss and failures, which in Shneidman’s view is a necessary condition for suicide to occur. Shneidman (2001) suggested that psychache supersedes all other psychological factors as a predictor of suicide, where this unbearable sense of hurt and anguish causes mental suffering that is worse than physical pain (Gunn & Lester, 2014). Shneidman (1987) proposed that all individuals who go on to attempt suicide are experiencing maximum levels of each of these three constructs (see Figure 1):

Figure 1

Shneidman's Cubic Model of Suicide (1987)



Besides the Cubic Model, Shneidman (1985) defined 10 factors, which are common to all suicides:

1. The stimulus is unendurable psychological pain i.e. psychache
2. The stressor is unmet psychological needs
3. The purpose is for the individual to find a solution for their suffering
4. The goal is to end consciousness as a way of also ending suffering
5. The emotion of hopelessness/helplessness is present
6. The cognitive state is one of ambivalence about living or dying, whereby the individual wishes to live but also to be rescued
7. There is constricted thinking such that the individual only perceives two available options, life or death
8. The key action is to escape
9. The interpersonal act is communication of intent to others which may include signs of distress and overt pleas for help
10. There is a lifelong pattern of maladaptive coping mechanisms.

Validation of psychometric tools, such as the Psychache Scale, provides empirical support for psychache as a central component to suicidal behaviour and is able to distinguish attempters from non-attempters (Holden et al., 2001; Troister et al., 2015). Troister and Holden (2012) reported a longitudinal follow-up of 41 undergraduates with high levels of suicidal ideation to assess the importance of psychache in predicting suicidality. They found that psychache was a unique predictor of suicidal ideation over a 2-year period, even when accounting for levels of depression and hopelessness. However, the authors acknowledged that the strong correlations between psychache, depression and hopelessness made it difficult to demonstrate the distinct causal impact of psychache on suicide (Troister & Holden, 2012).

Shneidman's work was influential to many contemporary theories of suicide (Jobes & Drozd, 2004). Shneidman's notion of suicide as an attempt to end pain is prominent in later work, such as Baumeister's escape theory. Baumeister (1990) highlighted that there is evidence of irrationality and disinhibition in people who die by suicide. He argued that this is inconsistent with the notion proposed by Baechler (1979) who conceptualised suicide as a method of problem-solving and therefore implying an element of rational decision-making. Baumeister (1990) described suicide as a means of escape from painful self-awareness of perceived internal failures. He described how suicide allows the individual to end psychological pain by suggesting six stages to suicide:

1. Incongruity between expectations and reality, as a result of either unrealistically high standards set by the individual, negative circumstances, or both
2. Attributions to the self that this incongruity is a result of personal failure, leading to self-blame
3. Acute self-awareness of incongruity between actual and ideal self, compounding feelings of self-blame and inadequacy
4. Such awareness results in the individual experiencing high levels of negative affect

5. The individual responds to negative emotions by entering a state of cognitive rigidity, where thinking is restricted to immediate goals and tasks to reduce painful self-awareness

6. Consequence of cognitive rigidity is behavioural disinhibition, which may facilitate suicide as the individual is more prone to suicidal urges.

Baumeister (1990) postulated that all stages have specific provisos if they are to increase probability of suicide. For instance, if incongruity between expectations and reality is attributed to external rather than internal factors then suicide will not occur. Baumeister (1990) used this as an explanation of why suicide is rare i.e. if the pathway to the next step is interrupted then the individual will not attempt suicide.

The escape theories of suicide have been crucial in aiding understanding and prompting further research to examine the processes underlying suicidal behaviour. Both Shneidman and Baumeister's theories emphasise escape from psychological pain as the driving force behind suicidal behaviour. Critiques of these approaches have highlighted that there is limited empirical support for the assumption that the primary motivation of suicide is to escape (Gunn & Lester, 2014). Additionally, there is no universally accepted definition of what constitutes psychological pain. Despite Shneidman's original definition, others suggest this may encompass a broad range of emotions including shame, guilt, anger and sadness (Van Orden et al., 2010). Moreover, recent theories have differentiated between the emergence of suicidal thoughts versus the pathway to a suicide attempt, which the escape theories fail to clearly explain (Klonsky & May, 2015).

1.2.3 Cognitive models of suicide

One of the founding cognitive theorists, Beck (1967), developed his model of suicidality based on the central role of hopelessness. He emphasised that feelings of hopelessness lead the individual to interpret their problems as uncontrollable and without resolution will eventually leave suicide as the only viable option to end their distress. A prospective of 1,958 psychiatric outpatients demonstrated that cases resulting in eventual suicide had significantly higher levels of hopelessness than those that did not die by suicide (Beck et al., 1990). The high-risk group, identified as having clinically significant levels of hopelessness based on a score of nine or above on the Beck Hopelessness Scale (BHS; Beck et al., 1974), were 11 times more likely to die by suicide than the low-risk group. Although an impactful study, it is noteworthy that a large number of false positives (59%) were identified using hopelessness as a predictor of suicide. Beck et al. (1990) suggested that hopelessness should be considered a factor indicating potential risk rather than certainty of a suicide attempt and the intensity of hopelessness should be monitored in clinical practice to help identify high-risk cases. Moreover, more recent studies have continued to validate the role of hopelessness as a predictor for suicidal behaviour (Klonsky et al., 2012; Fazakas-DeHoog et al., 2017).

The concept of "modes" proposed by Beck (1996) was also an important contribution to understanding suicide from a cognitive perspective. Beck (1996) described modes as the interconnected networks between several systems including cognitive, affective, behavioural, physiological and motivational processes that are designed to manage specific demands or difficulties. According to Beck, a suicidal mode can be activated by biopsychosocial vulnerability factors, defined as the biological (e.g. genetics), psychological (e.g. personality traits) and sociocultural factors (e.g. stressful life events) that interact to increase suicide risk (Turecki et al., 2019), co-occurring with suicidal thoughts and/or behaviours. When the suicidal mode is activated, the individual may encounter a range of experiences including suicide-related cognitions, negative affect, physiological arousal and possibly the motivation to engage in suicidal behaviours (Berk et al., 2004).

Elaborating on Beck's concept of the suicidal mode, Rudd (2000) clarified the role of intent in terms of the suicidal mode i.e. intent to die, compared with self-injurious behaviours where intent differs e.g. emotional regulation, interpersonal motivations. Further, in the context of chronic suicidal thoughts/behaviours, the threshold for activation of the suicide mode is lower over time if the individual experiences similar triggers or circumstances. Cognitive Therapy for Suicide Prevention (CT-SP) was developed to deactivate the suicidal mode by directly targeting suicidal thoughts and behaviours (Berk et al., 2004; Henriques et al., 2003; Rudd, 2004). The focus of CT-SP is to identify stressors, such as relationship issues and work-related difficulties, and provide the individual with specific techniques (e.g. emotion regulation, distress tolerance) in response to such stressors that they can utilise during times of "suicidal crisis" (Stanley et al., 2009).

Expanding on the concept of the suicidal mode, Rudd (2006) introduced an approach examining the dynamic and fluctuating nature of suicide risk, namely Fluid Vulnerability Theory (FVT). Rudd proposed that the severity and duration of acute "suicidal crises" are determined by the interplay between cognitive, behavioural, affective and physiological factors understood as structural framework i.e. the suicidal mode, activated by life stressors, with Rudd emphasising the time-limited nature of such crises. It is argued that the temporal interaction between various risk factors, rather than the severity of individual risk factors, can influence the transition from ideation to suicidal behaviours (Bryan & Rudd, 2016). Rudd further postulated that the assessment of both chronic and dynamic risk factors in conjunction is key to determining when a suicidal crisis will occur, as well as when a crisis has been resolved (indicating that acute risk has reduced).

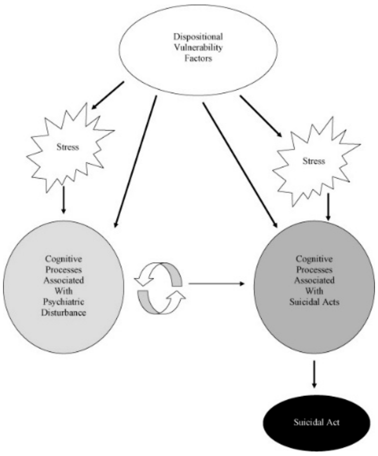
There is some empirical support for FVT. A case-control study of 123 suicides by members of the USA armed forces identified that a recent intimate relationship breakdown within the previous 30 days occurred more frequently for army suicide cases, compared with a living control cohort of soldiers (Alexander et al., 2014). Notably, history of a relationship breakdown at any point in the past was not identified as a potential risk factor. The authors highlighted the importance of the temporal proximity between the relationship failure and suicidal behaviours, although this was reported in light of methodological issues with the recruitment process for control participants resulting in a small sample (n=27). A further study investigating the relationship between life stressors and suicidal behaviours with 54 army soldiers indicated that chronic, persistent stressors were more strongly associated with the total duration of a suicidal crisis than with acute stressors, i.e. those with recent onset over the previous week (Bryan et al., 2015). Despite these findings providing some support for FVT, further evidence of the theory's core components is needed for understanding which factors are most pertinent to the development of suicidal behaviours (Wolfe-Clark & Bryan, 2017). Bryan and Rudd (2016) argued that more research is required to elucidate the temporal relationship between risk factors, including a greater understanding of the mechanisms of change resulting in the transition from suicidal ideation to behaviours.

Cognitive theories of suicide have developed further, for instance, Wenzel and Beck (2008) promoted the need for a theory of suicidal behaviour incorporating cognitive, emotional and behavioural elements. They believed this explanation would help people bereaved by suicide understand how these behaviours develop and provide a clinical focus when working with people that have attempted suicide. The cognitive model of suicidal behaviour postulated by Wenzel, Brown and Beck (2009) outlines the contribution of three sets of factors: 1) dispositional vulnerabilities (trait-like variables), 2) maladaptive cognitive processes associated with psychopathology and 3) cognitions related specifically to suicidal acts (see Figure 2). Each combination of factors is argued to be unique to the individual, but trait-like variables may include impulsivity, problem-solving deficits, dysfunctional cognitive styles and certain personality characteristics (e.g. neuroticism, perfectionism and introversion), which have well-established links with suicidal behaviour (Wenzel et al., 2009).

The theory is based on the activation, through life “stress,” of maladaptive schemas associated with both general psychiatric disturbance and suicide-specific cognitive processes. Wenzel and Beck (2008) describe how these underlying cognitive processes eventually cause such overwhelming distress that the individual can no longer tolerate their emotions, resulting in suicide. It would therefore follow that an individual with few dispositional vulnerability factors and little psychiatric disturbance would need to experience major life stress before suicide-specific schemas are triggered.

Figure 2

The cognitive model of suicidal behaviour by Wenzel et al. (2009)



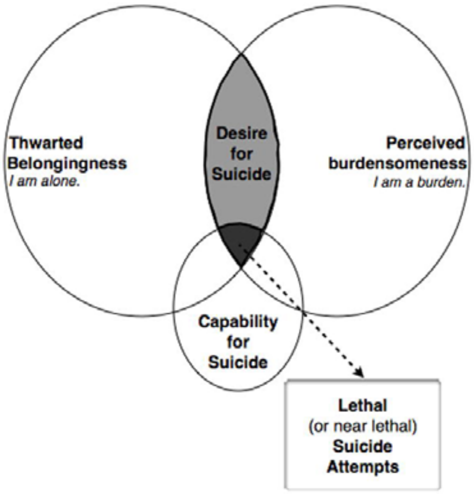
Beck and colleagues have been influential in shaping understanding of suicide. Many of the cognitive processes described have an empirical basis, and measures of specific attentional bias towards suicide-related stimuli i.e. suicide-related words rather than neutral words, has been demonstrated as a good predictor of future suicide attempts (Cha et al., 2010). Various validated measures of suicidal behaviour have been developed as a result of Beck’s work including the Suicidal Intent Scale (SIS; Beck et al., 1974) and the Scale for Suicide Ideation (BSS; Beck et al., 1979). Cognitive therapy for suicidal patients based on Beck’s model, with the aim of specifically targeting the suicidal mode through developing cognitive, behavioural and affective coping strategies, can lead to treatment gains that are maintained over time (Wenzel & Jager-Hyman, 2012). However, the models share similar limitations with other theories in that fail to differentiate between individuals with ideation, who do or do not attempt suicide (Klonsky & May, 2015).

1.2.4 The Interpersonal-Psychological Theory of Suicide (IPTS)

Joiner (2005) was the first to utilise an ideation-to-action framework by emphasising distinct pathways for suicidal ideation and acting on suicidal ideation. Using a desire-capability framework, Joiner stipulates that both suicidal ideation and the "acquired capability" to die by suicide, must be present for an attempt to occur. The IPTS comprises three central constructs: 1) thwarted belongingness, or lack of social connectedness; 2) perceived burdensomeness and 3) acquired capability for suicide (see Figure 3). An individual's desire to die by suicide is not sufficient for suicidal behaviour to occur. Rather, capability for suicide is achieved by repeated exposure to physically painful or fear-inducing experiences, which result in an increased tolerance to pain and a reduced fear of death.

Figure 3

Assumptions of the IPTS (Joiner, 2005)



Van Orden et al. (2010) further developed the IPTS by stipulating that a comprehensive theory must also incorporate a diverse set of vulnerabilities implicated in suicide. These would include psychiatric diagnosis, previous suicide attempts, social isolation, family conflict, unemployment and physical illness. Van Orden et al. (2010) added that thwarted belongingness and perceived burdensomeness should not be viewed as distinct constructs, given that both are influenced by the aforementioned vulnerability factors. They further hypothesised that a greater number of these vulnerabilities will result in death by suicide, whereas a few co-occurring will lead to suicidal ideation. The authors also suggest that the gender disparity in suicides may be due to males having a higher pain tolerance than females, and thus a greater habituation to pain resulting in an increased capability for suicide.

The IPTS was one of the first theories clarifying the pathway from suicidal ideation to attempt. It allowed for a clearer understanding of the high risk that a history of self-harm poses for suicidal behaviours, as reported by Prinstein et al. (2008) in their longitudinal study of 143 adolescent psychiatric inpatients. Individuals with a higher frequency of self-harm (without suicidal intent) at baseline took longer to reduce suicidal ideation after hospital admission. The authors proposed that this may be consistent with the habituation to pain component of the IPTS, although the components of the IPTS were not specifically tested in this study. A systematic review of the IPTS conducted by Ma et al. (2016) of 66 studies demonstrated a robust relationship between perceived burdensomeness and suicidal ideation. Comparatively, thwarted belongingness was found to have been tested infrequently and also accounted for less variance in suicidal ideation than perceived burdensomeness. This was further confounded by the reliance on student populations, limiting generalisability of findings.

There is also limited evidence for the influence of acquired capability in suicidal behaviour (Ma et al., 2016; May & Klonsky, 2016). Although a review of 17 studies by

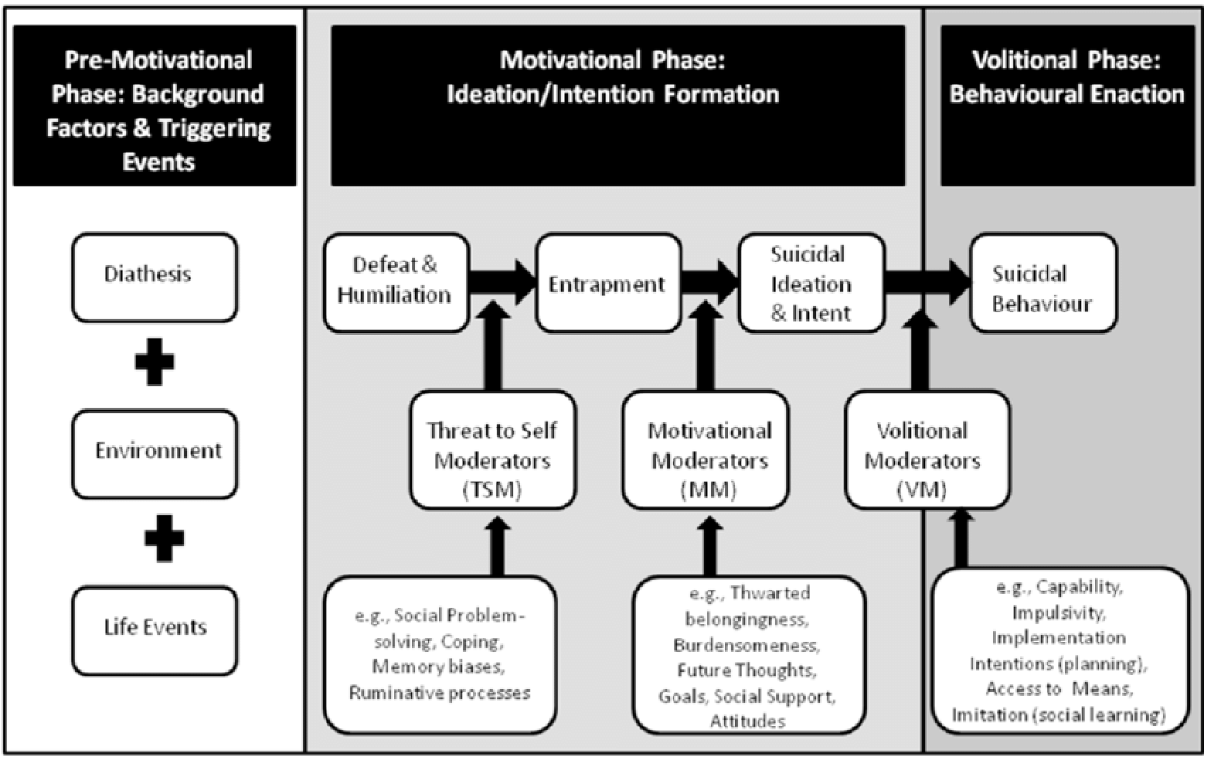
Stewart et al. (2017) did demonstrate a strong association between acquired capability and suicide, these studies were based on proxy measures rather than objective assessment. Klonsky et al. (2017) concluded that overall, further empirical support is required to explain the mechanism that translates suicidal thoughts into behaviour. Overall, the ideation-to-action framework utilised in the IPTS has been influential on future theories of suicidal behaviour.

1.2.5 The Integrated Motivational-Volitional (IMV) model of suicidal behaviour

More recent theories of suicide are, in the main, based on the stress-diathesis model and are cognitive in focus (O’Connor & Nock, 2014). The IMV model proposed by O’Connor (2011) aimed to provide a testable system to explain the transition from suicidal ideation to attempt using an ideation-to-action framework. In this three-phase model, suicidal ideation emerges in the context of background vulnerabilities during the pre-motivational phase (see Figure 4). These would include life stressors that may shape the environment for suicide. The motivational phase further enables the development of suicidal ideation. Drawing on the “cry of pain” model (Williams, 1997), painful situations in the motivational phase trigger cognitive appraisals of defeat and humiliation. O’Connor (2011) described how such appraisals lead to feelings of entrapment as the individual is unable to find a viable alternative to escape their psychological pain. The likelihood of a suicide attempt is increased by volitional moderators such as exposure to the suicidal behaviour of others, access to lethal means and impulsivity (O’Connor & Nock, 2014). The IMV posits that the variable most predictive of suicide is the individual’s intent to engage with suicidal behaviour.

Figure 4

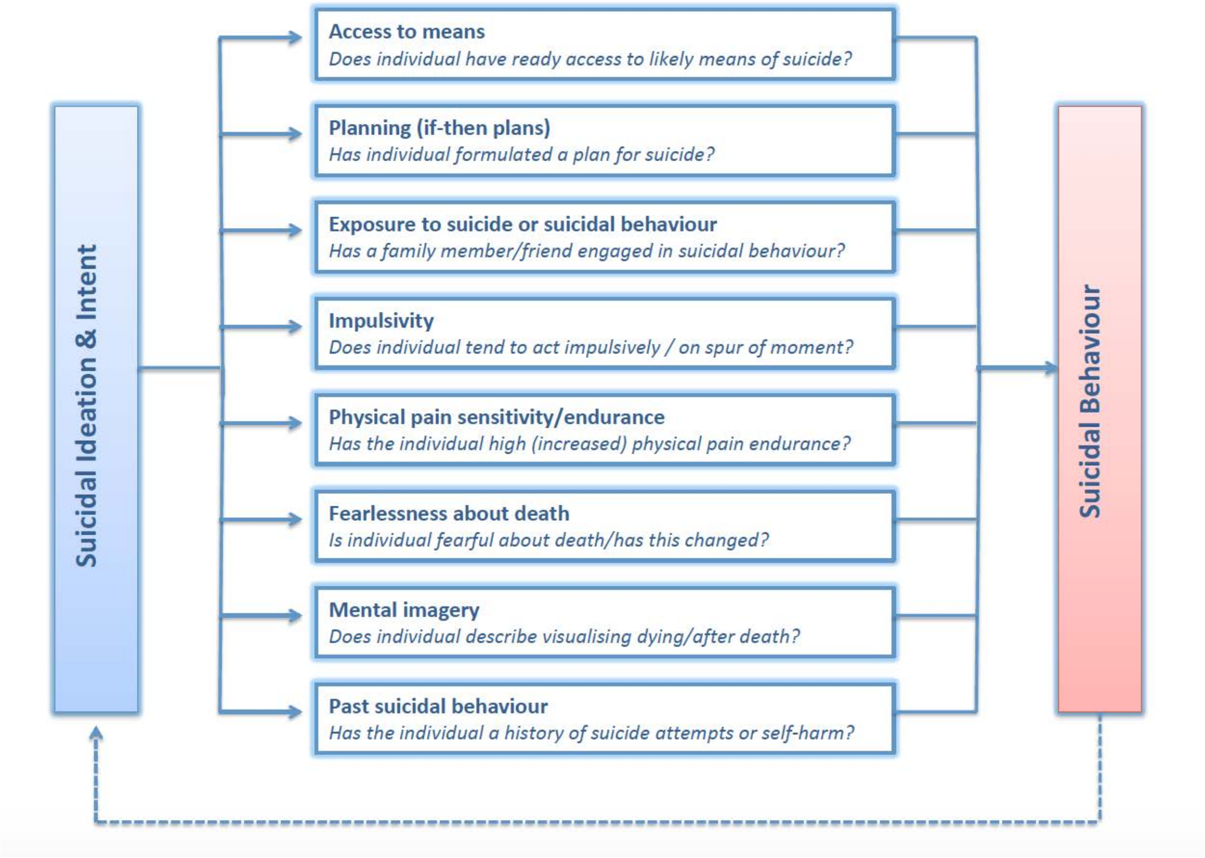
O'Connor's IMV model (2011)



Further empirical research resulted in O'Connor and Kirtley (2018) updating the IMV model. A new cyclical link between suicidal ideation/intent (motivational phase) and suicidal behaviour (volitional phase) was proposed. The authors argued that it is unlikely that people who have already made a suicide attempt go through the initial pathway stages as during their first instance of suicidal behaviour. Additionally, the volitional phase has been refined into eight key moderators that are key to the transition from suicidal ideation to suicidal behaviour (see Figure 5).

Figure 5

Updated IMV model (O'Connor & Kirtley, 2018)



Several studies have directly tested the validity of the IMV and overall, demonstrated good support for the model. A study of 5,604 secondary school pupils aged 15-16 years old using self-report survey data differentiated between adolescents who engaged in self-harm (n=628) compared with those with self-harm ideation (n=675) on the basis of volitional factors (O’Connor et al., 2012). In a large-scale evaluation of 1,288 adults using self-report questionnaires, volitional factors successfully distinguished individuals with suicidal ideation from those that attempted suicide (Dhingra et al., 2015). In particular, individuals who attempted suicide had significantly higher levels of impulsivity, fearlessness about death and environmental exposure to suicidal behaviour than those with ideation alone. A cross-sectional study of 3,508 young adults aged 18-34 participating in the Scottish Wellbeing

Study found that measures of volitional phase variables differentiated the suicide attempt group from the suicidal ideation group (Wetherall et al., 2018). Replication of this important finding with a prospective, clinically assessed sample is needed. Further, a population-based birth cohort study of 4,772 adolescents indicated that those engaging in suicidal behaviour were more likely to report exposure to self-harm in others than those that did not act on suicidal ideation (Mars et al., 2019).

With regard to the motivational phase, a four-year prospective study with patients hospitalised after a suicide attempt aged 16 and over (n=70) indicated that entrapment, as measured using the 16-item self-report Entrapment Scale (Gilbert & Allan, 1998), was a unique predictor of future suicidal behaviour (O'Connor et al., 2013). Further, the Entrapment Scale – Short Form (E-SF, De Beurs et al., 2020) has been tested for its reliability and validity with patients presenting to hospital with self-harm (n=497) and a population-based sample (n=3,457). The scale demonstrated high internal consistency (α=0.87) and was highly correlated with the full scale (r=0.94). A cross-sectional study in Germany measured defeat and entrapment using German versions of the Defeat Scale and the Entrapment Scale (Gilbert & Allan, 1998) in a sample of psychiatric patients (n= 308) admitted following a suicide attempt or suicidal crisis (Lucht et al., 2020). Analyses indicated that entrapment mediated the relationship between defeat and suicidal ideation. Only the interaction between thwarted belongingness and perceived burdensomeness, rather than these constructs independently, moderated the entrapment-suicidal ideation relationship as predicted by the IMV model. The authors acknowledged that the cross-sectional research design precludes direct causal inferences.

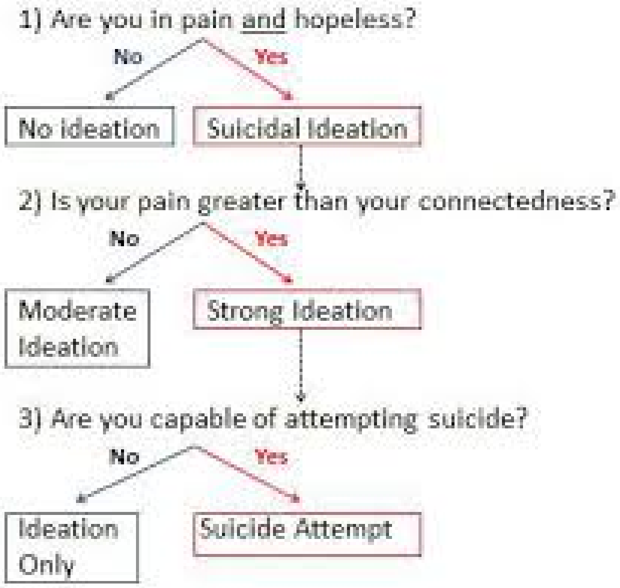
In summary, the results highlight the importance of other mechanisms independent of those observed or hypothesised to be fundamental as components of psychiatric disorders (O'Connor & Nock, 2014). The IMV also identifies treatment goals by focusing on specific non-phenomenological aspects of the model, such as feelings of entrapment, to temper the likelihood of suicidal behaviour. The model has been used as a framework within “James’ Place,” a centre offering support to men in a suicidal crisis due to psychological and social stressors with a focus on reducing distress and developing resilience (Saini et al., 2020), thus demonstrating its ecological validity.

1.2.6 The Three-Step Theory (3ST)

Klonsky and May (2014) also utilised the ideation-to-action framework in proposing the 3ST (see Figure 6), which outlined the factors implicated in behavioural enactment (Klonsky & May, 2015). A combination of psychological pain and hopelessness is the first stage in the 3ST and leads to the development of suicidal ideation. The second stage, connectedness to life, can determine the severity of suicidal ideation. Connectedness in this context can refer to a number of interpersonal factors including attachments to people, to job roles, to one’s interests or a general feeling of purposefulness (Klonsky & May, 2015). The third stage determines whether the individual progresses from ideation to attempt and is determined by capability for suicide.

Figure 6

Illustration of the 3ST (Klonsky & May, 2015)



The 3ST shares some common attributes with earlier theories. Connectedness is somewhat related to the constructs of thwarted belongingness and perceived burdensomeness in Joiner's IPTS (2005) and the role of acquired capability for a suicide attempt to occur is acknowledged. However, the 3ST differs as low connectedness and perceived burdensomeness are not necessary factors for suicidal ideation to develop, although they may contribute to an individual's sense of hopelessness (Klonsky & May, 2015). Furthermore, capability for suicide is also present in the IPTS and the IMV model though the 3ST has an additional emphasis on genetic vulnerabilities, consistent with post-mortem studies that highlight a biological trait-like predisposition for suicide (van Heeringen & Mann, 2014).

A USA study of 910 adults completing online self-report questionnaires found strong support for psychological pain and hopelessness as robust predictors of suicidal ideation, whilst level of connectedness additionally predicted the severity of ideation (Klonsky & May, 2015). Furthermore, access to lethal means and knowledge of suicide methods, alongside a “comfortableness” with risk, was greater in those with a history of suicidal behaviour rather than suicidal ideation. These findings were replicated in a UK study of 665 university students (Dhingra et al., 2018).

Despite some conceptual differences, ideation-to-action frameworks for suicide represent development for a theoretical understanding and, regardless of the theoretical standpoint, it is clear that suicidal behaviour occurs as the result of a complex multi-faceted interaction of variables. Although Pompili et al. (2014) suggest additional work is required to understand which factors are specific to ideation, attempts and all forms of suicidal behaviour, the need for generalisability and prospective empiricism to be demonstrated is also key.

1.3 Risk factors for suicidal behaviour

1.3.1 Demographic factors

A gender disparity regarding suicide rates exists, with the NCISH reporting that males are approximately three times more likely to die by suicide than females (NCISH, 2019). Globally, most countries report a higher rate of suicide in males than females with exceptions in Bangladesh, China, Lesotho, Morocco and Myanmar (WHO, 2019). Robust empirical evidence indicates that males tend to use more lethal methods of suicide than women, such as hanging and use of firearms, compared with females (Ajdacic-Gross et al., 2008; Mergl et al., 2015; Tsirigotis et al., 2011).

In contrast, rates of self-harm in England tend to be higher in females (Carr et al., 2016; Geulayov et al., 2016; Hawton, 2000; Schmidtke et al., 1996). It is postulated that the function of self-harm for females is more often related to communication of distress and interpersonal factors (see Section 1.4.5), whereas males tend to have higher levels of suicidal intent (Freeman et al., 2017; Harriss et al., 2005; Hawton, 2000). However, some studies have reported no gender differences in terms of intent (Denning et al., 2000; Strosahl et al., 1992).

Certain age groups have been identified as higher risk of suicide, with elevated rates in the middle-aged groups across England, Scotland and Wales (NCISH, 2019). At the time of writing, data suggested an elevated risk for males aged 45-59 years and females aged 50-54 years (ONS, 2019a). Age-specific suicide rates changes indicate that there has been an increase for females aged 10-24 years from 1.6 to 3.1 per 100,000 people between 2012 and 2019 (ONS, 2019a), with NCISH (2019) data reporting that around one third of suicides by females under 25 had been under the care of mental health services in the year prior to their death. For males, significant increases in suicide rates have been reported for the 10-24, 25-44 and 45-64 year age categories compared with 2017 (ONS, 2019a). There has also been a rise in suicide rates for over 75s in the UK over the last decade totalling around 425 deaths per year, with a particularly increased risk for older males (NCISH, 2019). Specific risk factors for suicide by older adults have been identified, including neurocognitive disorders, the impact of social isolation, physical health conditions/disabilities and substance misuse (Royal College of Psychiatrists; RCPsych, 2020a).

Risk factors for suicidal behaviours (thoughts, plans and attempts) have been widely documented in the literature and, despite some variations, survey data from 17 countries indicated a trend towards common cross-national risk factors including age (younger than 25 years), being female, fewer years of education, unmarried status and psychiatric comorbidities, although specific mental health disorders and traumatic life events were not assessed (Nock, Borges, Bromet, Alonso, et al., 2008). A meta-analysis collating 50 years of research conducted by Franklin et al. (2017) combining 3,428 effect sizes identified five main categories of risk factors for suicide: prior psychiatric hospitalisation, prior suicide attempt, prior suicidal ideation, lower socioeconomic status and stressful live events. Risk factors for suicide had remained relatively consistent over time, yet none of the categories were particularly stronger than others for predicting suicide.

Chan et al. (2016) conducted a systematic review of 12 prospective cohort studies and reported four risk factors for suicide following self-harm: previous self-harm, suicidal intent, physical health problems and male gender. However, the varied methodologies used to determine these risk factors and lack of consistent adjustment of potential confounders across studies (e.g. psychiatric diagnosis accounted for as a covariate in some studies but not others), make the validity of the findings problematic. Moreover, the four risk factors cited are typical of most clinical populations and may only be of limited practical benefit in determining suicide risk.

1.3.2 Psychiatric comorbidities

Powerful arguments exist for the link between psychiatric disorders and suicidal behaviour (Harris & Barraclough, 1997; Pokorny, 1983; Nordentoft et al., 2011). Psychological autopsy studies indicate high rates of comorbid psychiatric disorders in cases of suicide compared with non-suicide deaths, as indicated by a review of 76 psychological autopsy studies suggesting that those who die by suicide are at least three times more likely to have a mental illness than the general population (Cavanagh et al., 2003). However, several issues with the psychological autopsy method have been raised including potential bias when using informants to determine presence of mental health diagnoses (see Section 2.3.2). A recent comprehensive review identified a range of sociodemographic and clinical predictors for psychiatric inpatient suicides including male sex, low educational level, unemployment, living alone, comorbid personality/depressive disorders and substance abuse (Madsen et al., 2017). However, such data tends to be based on small numbers of inpatient suicides with low statistical power. Furthermore, comorbidities of two or more psychiatric disorders can confound the evaluative robustness when determining which specific pathologies are implicated for suicidal behaviour (Nock, Hwang, et al., 2010).

Greater understanding of specific disorders has assisted the clinician somewhat, when determining risk. From a nationally representative sample of households in the USA completing the National Comorbidity Survey, a questionnaire to examine an array of mental health difficulties, suicidal ideation was best predicted by depression whereas individuals that attempted suicide exhibited disorders characterised by severe agitation, anxiety and poor impulse control such as Posttraumatic Stress Disorder and conduct disorders (Nock, Hwang, et al., 2010). In a study conducted by Holmstrand, Bogren, Mattisson and Brådvik (2015), a cohort of 3,563 individuals were monitored over a 50-year period to gather data about mental health characteristics within the population of a rural area of Sweden, including those that died by suicide (n=68). Of these individuals, six had no psychiatric diagnosis, 39 had one diagnosis and 23 had at least two diagnoses with depression, alcohol use disorders and psychosis as the most common diagnoses. Variation in intensity of suicidal behaviour is thought to be linked to severity of depression (Brown et al., 2000; Mattisson et al., 2007), although a causal link between depression and suicidal behaviours is yet to be ascertained.

There is also evidence of a tendency to conceptualise suicidal behaviour for individuals that struggle to control intense emotions, such as those with antisocial and borderline personality disorder (BPD; Duberstein & Conwell, 1997; Lieb et al., 2004; Pompili et al., 2005). Prospective studies from the USA indicate a suicide rate of 3-6% for individuals diagnosed with BPD (Gunderson et al., 2011; Temes et al., 2019; Zanarini et al., 2012). A case-control study of 2,384 suicides from primary care records in the UK suggested that a diagnosis of personality disorder is associated with a 20-fold increase in suicide risk compared to those with no psychiatric diagnosis (Doyle et al., 2016).

In relation to specific disorders, lifetime suicide risk for depression and schizophrenia have previously been estimated at 15% and 10% respectively (Miles, 1977). More recent estimates for schizophrenia based on a review of 51 studies indicated a risk of approximately 5% (Hor & Taylor, 2010), with a particularly strong association between schizophrenia and suicide for individuals who also suffered with affective symptoms such as depressed mood, agitation, hopelessness and negative perceptions of illness (Fialko et al., 2006; Hawton et al., 2005). Positive symptoms per se did not increase the likelihood of suicidal ideation, however, distress relating to these symptoms increased risk (Fialko et al., 2006). A systematic review of 29 studies relating to negative symptoms of schizophrenia found no link with increased risk of suicide (Hawton et al., 2005). Chesney et al. (2014) identified 20 systematic reviews of suicide risk for 1.7 million patients with various mental health difficulties. Suicide mortality rates were much higher for individuals with mental health difficulties compared with the general population, particularly for diagnoses of BPD, depression, bipolar disorder and schizophrenia. However, it is important to acknowledge that the samples for the highest risk disorders came primarily from inpatient data which is likely to represent the most severe cases within that population. Although the quality of the reviews within the study varied, with only one being given a high quality rating score, the association between BPD and risk of suicide is well documented (Black et al., 2004; Kullgren, 1988; Paris et al., 1987; Schneider et al., 2008).

A complex relationship exists between psychiatric disorders and suicide, where severity and duration of the disorder does not necessarily increase suicide risk. In a study of suicide in 86 individuals with schizophrenia and schizoaffective disorder, approximately half of participants suffering with comorbid depression had not made a suicide attempt (Harkavy-Friedman et al., 2004). Clinical severity has been implicated as a potential catalyst in the transition from suicidal ideation through to attempt (Nock et al., 2009). Additionally, the level of mental health care and engagement with services may act as a protective factor resulting in low risk (Cavanagh et al., 1999). Madsen et al. (2017) emphasised the need to focus on modifiable risk factors such as hopelessness, family circumstances and social stressors, rather than static risk factors such as gender and diagnosis, particularly given the former are modifiable and may lead to a reduction of suicide risk. However, Franklin et al. (2017) addressed the weak predictive validity of risk factors for suicide, including suicidal thoughts and behaviours, despite 50 years of research. Further, a meta-analysis of 70 studies by Carter et al. (2017) emphasised the limited clinical utility of suicide risk assessment tools that are used to identify modifiable risk factors, for predicting suicidal behaviours. Utilising such factors to quantify risk of suicide forms the basis of many actuarial assessment measures, albeit problematic, given that this only addresses part of the complex aetiology of suicide (see Section 2.1).

1.3.3 Substance misuse

It is estimated that approximately one in five suicides worldwide is caused by substance misuse (WHO, 2014b). NCISH (2019) data reported that self-poisoning, most commonly using opiates/opioids, was the second most frequent method of suicide for patients under the care of mental health services (23% of suicides). Evidence from meta-analyses suggest that substance use disorders increase the likelihood of suicidal behaviours and death by suicide (Conner et al., 2019; Darvishi et al., 2015; Franklin et al., 2017; Poorolajal et al., 2016).

A case-control study of young people aged 15-24 presenting to Accident and Emergency (A&E) after self-poisoning or self-injury (n=62), conducted between 1968 and 1985, indicated that substance misuse (identified from information at the last admission) was associated with future death by suicide (Hawton et al., 1993). Data was not available for suicides by individuals that no longer resided in the study area therefore controls would have been erroneously categorised as living if they had moved out of area and died by suicide. A review of psychological autopsy studies (combined n= 3,583 suicides) highlighted that 19-63% of individuals had a substance use disorder at the time of death (Schneider, 2009). Methodological limitations of autopsy studies, such as use of informants to determine presence of a psychiatric disorder, require consideration when interpreting the results of such studies (see Section 2.3.2).

Relating to suicidal behaviours, a case-control study in New Zealand of 302 individuals aged 13-88 who made a “serious suicide attempt,” defined by the authors as requiring hospital admission for over 24 hours and specialist medical treatment (n=1,028), were more likely to have substance use disorders than an age and gender-stratified control sample (Beautrais et al., 1996). Further analysis of the same data indicated that 16.2% of those making serious suicide attempts met the criteria for cannabis abuse/dependence within the previous month, compared with 1.9% of controls. Diagnosis was based on retrospective data from semi-structured interviews rather than clinical assessment prior to suicide. A general population study of 15 to 54-year-olds (n=5,877) undertaken in the USA gathered face-to-face survey data of lifetime suicidal behaviours. Substance use disorders were associated with an increased likelihood of a suicide attempt, although this association was stronger for mood disorders (Kessler et al., 1999). This was based on retrospective self-report data with no measures of reliability or validity for the data on suicidal behaviours. A replication study (n=9,282) of adults aged 18 and over demonstrated a link between substance use disorders and suicide plans/attempts (Nock, Hwang, et al., 2010).

Regarding alcohol use, a cross-sectional study by Bernal et al. (2007) using survey data of 8,796 adults from six European countries highlighted that self-reported alcohol abuse was associated with an increased likelihood of both lifetime suicidal ideation and attempts. A meta-analysis of seven studies with a combined n of 1,240 explored the effect of acute alcohol use on suicidal behaviours, (Borges et al., 2017). Acute alcohol use was defined primarily by self-reported alcohol consumption in the 24 hours before a suicide attempt and by positive blood alcohol level in one study. The results indicated that higher levels of alcohol consumption greatly increased the likelihood of a suicide attempt, although the authors acknowledge that cross-cultural variations may exist that could not be identified due to the low number of studies included. A prospective cohort study in Denmark of 18,146 individuals followed up over a 26-year period, including 209 suicides, found that those with alcohol use disorders were much more likely to die by suicide than those without such a diagnosis, even when adjusting for other psychiatric disorders (Flensborg-Madsen et al., 2009). This was based only on individuals that had been registered on hospital admission databases or attended an outpatient clinic for treatment of alcoholism, therefore further replication with a cohort with less severe alcohol dependence is warranted for generalisability.

It has been suggested that alcohol use may impact on suicidal behaviours through disinhibition and increased impulsivity (Pompili et al., 2010). Suicide risk in older adults over 65 may be exacerbated by alcohol use, which can interact with other risk factors such as depressive symptoms, social isolation and physical illness (Blow et al., 2004). Conner and Duberstein (2004) proposed a model of suicide for those with alcohol dependence, hypothesising that suicide occurs in the context of predisposing factors, such as aggression, impulsivity and hopelessness, and is precipitated by stressful life events. This model does not address the use of alcohol at the time of a suicide and does not account for suicidal behaviours.

Harris and Barraclough (1997) acknowledged that psychoactive substance are often used concurrently, therefore suicide risk may be associated with use of multiple substances rather than one in isolation. In their meta-analysis of 249 studies exploring links between various psychiatric disorders and suicide, they found that abuse of alcohol, opioids, prescription drugs and cannabis were associated with increased risk of suicide. Clinical severity of substance misuse, gender differences and cross-cultural variations were evident, as well as an increased risk for misuse of multiple substances. An updated review with 42 additional studies added a new category highlighting the increased suicide risk associated with intravenous drug use (Wilcox et al., 2004), although this was based primarily on data from clinical cohorts and it is unclear whether this is generalisable to other populations.

1.3.4 Access to lethal means

It is reported that restricting access to lethal means is an important prevention strategy for suicide (John et al., 2018; NICE, 2018). Two broad categories of methods to reduce access to lethal means have been implemented (Florentine & Crane, 2010):

1. Placing physical restrictions on the availability of certain methods e.g. installing bridge barriers at high-risk locations to prevent jumping (Lin & Lu, 2006), limits on paracetamol pack sizes (Hawton, Townsend, et al., 2001);
2. Reducing the cognitive availability of certain methods that can increase access to suicide e.g. inaccurate portrayals of "painless" methods (Gunnell et al., 2000), sensationalising methods through the media (Crane et al., 2005) and widespread availability of technical information about particular methods (Lee et al., 2002).

There is also evidence to suggest that reducing the lethality of particular methods, such as the toxicity of vehicle motor exhausts, is associated with lower suicides utilising such methods (Studdert et al., 2010), although the impact on the overall suicide rate will be low if this is not a frequently used method (Barber & Miller, 2014). In the USA, case-control studies have suggested that access to firearms may increase risk of suicide (Brent et al., 1991, 1999), with an increased likelihood of suicide for individuals living in states with higher firearm ownership (Miller et al., 2007), although this is based on correlational data. Florentine and Crane (2010) highlighted the implementation of several suicide prevention strategies concurrently, as well as broader contextual factors such as fluctuations in population-level suicide rates, can make it difficult to determine if efforts to reduce access to lethal means can effectively reduce the number of suicides.

1.3.5 Socioeconomic factors

National mortality statistics and autopsy studies suggest that there is a link between certain occupational groups and suicide (Roberts et al., 2013). Latest data provided by the ONS (2017) for 2011-2015 analysed the occupational groups of 13,232 suicides by adults aged 20 to 64 in England. The data indicated an increased risk of suicide for males working in low-skilled jobs (particularly construction and agricultural), which may relate to lower rates of pay, less job security and the socioeconomic characteristics of individuals employed in these roles (Agerbo et al., 2007; Milner, Spittal, et al., 2013). Males working in culture, media and sport occupations, females in artistic, literary and media occupations, female nurses and carers across both genders also showed an increased risk. Male healthcare professionals, particularly medical practitioners, appeared to have a lower risk of suicide than other occupations, a finding that has been reported in previous research (Hawton, Clements, et al., 2001).

A study of how suicide risk by occupation in Britain has changed over time in compared data from three time points: 1979-1980, 1982-1983 and 2001-2005 (Roberts et al., 2013). The highest risk suicide groups from the first two time points including veterinarians, pharmacists, dentists, doctors and farmers were no longer in the top 30 highest risk occupational groups by 2001-2005. Of 55 high-risk occupational groups, measured by a suicide rate of >20 per 100,000, 14 showed significant reductions over time. These 14 groups were primarily professional and non-manual roles, whereas the 5 groups that showed a significant increase in suicide risk over time were exclusively manual occupations. The authors hypothesised that socioeconomic group plays a key role in explaining variations in suicide risk by occupation in Britain, although it is unclear how the wider economic context (i.e. economic downturn in the first two time periods compared with economic growth during the final time period) may have impacted on these findings.

Easy access to lethal means may be associated with increased risk of suicide in some occupational groups. There appears to be a greater proportion of suicides using a firearm for individuals working in agricultural roles, with 12.6% of individuals using this method compared with 1.7% of all suicides in England (ONS, 2017). Previous research has suggested that farmers in England and Wales have an elevated risk of suicide (Kelly & Bunting, 1998; Meltzer et al., 2008), however this finding was not evident in the most recent ONS data. It is postulated that suicides amongst high-risk healthcare professionals may be linked to knowledge and access to methods i.e. medication, however a case-control study evaluating suicide amongst female nurses (n=106) indicated that management of psychiatric disorders was a more important marker for suicide than access to lethal means (Hawton et al., 2002). Analysis of 204 suicides by female nurses between 2011 and 2016 indicated that 40% had been in contact with mental health services in the year before death and self-poisoning was the most common method (42%) of suicide (NCISH, 2020a). Research suggests an elevated risk of self-poisoning in occupational groups with access to lethal means, such as pharmacists and veterinarians (Bartram & Baldwin, 2010; Skegg et al., 2010; Tomasi et al., 2018). Further research is needed to establish whether reducing the availability of potentially lethal means within these occupational settings would help prevent suicides (NCISH, 2020a).

Unemployment has been identified as a risk factor for suicide and suicidal behaviours (Platt & Hawton, 2000). A cross-national study of mortality rates across 26 European countries between 1970 and 2007 identified that rapid increases in unemployment during periods of recession was associated with a short-term rise in suicides (Stuckler et al., 2009). This trend varied across countries and was less prevalent in countries with greater investment in active labour market programmes. Analysis of retrospective data from 63 countries between 2000 and 2011 indicated a rise of 4,983 suicides from pre to post-economic crisis in 2008, with 41,148 suicides in 2007 and 46,131 in 2009 (Nordt et al., 2015). The authors reported that an estimated 20% of suicides during the study period were associated with unemployment, with higher effects in countries with lower baseline unemployment, although a causal relationship cannot be ascertained due to the study design. Further, a case-control study of 302 individuals presenting to hospital following a medically serious suicide attempt, requiring hospital admission and medical treatment, compared unemployment rates with 1,028 community controls stratified by age and gender (Beautrais et al., 1998). The results indicated that unemployment was not a major risk factor when controlling for other confounding factors such as psychiatric diagnosis, however it is not clear if this is generalisable to individuals that die by suicide.

Sociodemographic factors may affect the relationship between unemployment and suicide. A time-series analysis using mortality and unemployment data from 1921 to 1995 indicated significant effects of unemployment for younger groups (aged 15-24) across both genders (Gunnell et al., 1999). However, the authors acknowledge that they did not report on wider economic influences other than unemployment, such as income, poverty, bankruptcy and job insecurity. Coope et al. (2014) aimed to identify groups that are most at risk of suicide during periods of economic downturn using data from England and Wales pre, post and during the 2008 recession. Key differences were noted between male suicides for younger males aged 16-34 years compared with males aged 35-44, with the latter more strongly associated with redundancies and long-term unemployment. No clear patterns of suicide indicators of economic recession, such as income, employment and social/housing issues, were evident for females, although a time series analysis was not possible due to the high correlation between the indicator variables.

1.3.6 Self-harm and previous suicidal behaviours

Self-harm is a common reason for presentation to mental health services and is linked (almost exclusively through correlational evidence) to suicide in the context of psychiatric disorders, especially depression (Haw et al., 2001; Hawton et al., 2012; Nock et al., 2006). Using a case-control methodology, Appleby et al. (1999) compared a cohort of 84 individuals that had died by suicide aged under 35 with 64 living controls matched on age and gender. The cohort that had died by suicide were 31.7 times more likely to have a history of self-harm as reported by their General Practitioner (GP) and/or mental health staff, although concerns around the reliability of such data provided by informants have been raised (Hjelmeland et al., 2012).

Cavanagh et al. (1999) matched 45 cases of suicide/undetermined deaths where the individual had had a psychiatric diagnosis to 40 living controls (recruited from primary and secondary care inpatient/outpatient services) and gathered historical information from an informant. Those that had died by suicide were more likely to have a significant history of self-harm and physical heath illness than matched controls even when controlling for covariates such as gender, age and psychopathology, although contact with a psychiatrist/GP for psychological problems was significantly more common for living controls. The authors concluded that, for individuals with a mental health condition, level of care received and engagement with mental health services may help differentiate between higher and lesser levels of suicide risk, although post-mortem data (such as presented in this study) will have poor predictive validity or causal evidence (Hjelmeland et al., 2012).

Perhaps more important than self-harm is a history of suicide attempts, which has repeatedly been evidenced as the best predictor of future suicidal behaviour (Brown et al., 2002; Cavanagh et al., 1999; Joiner et al., 2005). As with all risk factors for suicidal behaviour, it is problematic to use single variables in isolation to make predictions about future behaviour as there is a likelihood that high numbers of false positives for suicide will emerge, as has been the primary weakness of epidemiological studies (Fowler, 2012). Conversely, the findings from a 10-year prospective study reported that previous suicide attempts and not ideation correlated with a future attempt (Borges et al., 2008). Through four studies (n=532), Joiner et al. (2005) identified a relationship between past and current suicidal behaviour whilst controlling for suicide-specific covariates such as depressive symptoms, hopelessness and gender. The authors hypothesised that repeated exposure to suicidal behaviour and increased "familiarity" through practice are the mechanisms by which past suicide attempts increase the likelihood of future attempts.

A meta-analysis of 172 longitudinal studies indicated that a history of suicidal behaviours only weakly predicted future ideation, attempts and death by suicide, and even less so when adjusting for publication bias (Ribeiro et al., 2016). Predictive accuracy was only slightly better than chance alone, although the effect of prior suicidal behaviour as a predictor of future suicidal behaviour was greater in the context of psychiatric disorders. The authors highlighted that this weak association may be explained by inconsistent methods of assessment and few cases within each category (i.e. subsequent suicide attempts and suicides). In addition, the mean length of follow-up for studies was 52 months whereas clinicians are typically required to assess risk within the coming days or weeks. Future studies may benefit from more frequent and longer term follow-up of suicidal individuals in order to be useful for risk assessments in clinical practice (Glenn & Nock, 2014). A prospective study in Sweden of 1,044 individuals that had been hospitalised following a suicide attempt with a 20-30 year follow-up indicated that previous suicide attempts, particularly using a violent method, was a risk factor for future death by suicide (n=75; 7.2% of the sample) (Probert-Lindström et al., 2020). However, these findings apply to a clinical population that are admitted due to medical severity of their suicide attempt and may not be relevant to suicides by the general population.

1.3.7 Psychological factors

Psychological risk factors for suicide would appear to be a broadly useful component for suicide interventions (Troister & Holden, 2010). Noteworthy studies by Beck and colleagues (Beck et al., 1989; Beck et al., 1985; Brown et al., 2000) emphasise the significant role of hopelessness as underpinning suicidal behaviour. A meta-analysis by Franklin et al. (2017) of an array of risk factors for suicide identified hopelessness as one of the strongest predictors of suicide (combined n=4,962). Brown et al. (2000) conducted a prospective study of 6,891 patients, 66% of whom had a primary, secondary or tertiary diagnosis of an Axis I mood disorder, attending an outpatient therapy centre with follow-up of up to 20 years (median follow-up= 10 years). Individuals with clinically high levels of hopelessness (scores of nine or above) were four times more likely to die by suicide. Of individuals that died by suicide (n=49), 67% had a history of psychiatric admission and 55% had previous suicide attempts which were also significantly associated with future suicide. Klonsky et al. (2012) conducted a study of 414 individuals (aged 15-60 years) following their first psychosis inpatient admission at one of 12 inpatient facilities, 29% of whom reported a history of suicide attempts. They measured hopelessness at baseline, 6-, 24- and 48-months as well as suicide attempts prior to study entry, at 0-6 months, 6-24 months, 24-48 months and 48 months to 10 years. The results indicated that hopelessness (as measured at baseline) was a better predictor of future suicide attempts than a history of suicide attempts, although statistical analysis could not determine whether hopelessness predicted death by suicide due to the low numbers that died by suicide (n=6). The literature implicates a broad individually determined set of variables that have not been accounted for (Iqbal & Birchwood, 2006).

Further investigation of the literature highlights that hopelessness may distinguish those with suicidal ideation from non-suicidal controls, but is not able to separate individuals with suicidal ideation from those that make an attempt (Klonsky & May, 2014). A study by Acosta et al. (2012) of a psychiatric population of 102 outpatients did not find any significant differences on measures of hopelessness between the groups with suicidal ideation and suicide attempts. The authors suggested that hopelessness may act as a vulnerability factor, which facilitates suicidal behaviour in certain individuals when interacting with environmental stressors. Further, Hawton and van Heeringen (2009) argue that the complex interplay between psychiatric disorders, psychological factors and previous suicidal behaviour, in the context of sociodemographic characteristics, increase the risk of suicide.

Impulsivity has been implicated in suicide risk (Baumeister, 1990; Brent et al., 1994; Maser et al., 2002), primarily as a factor determining the shift from suicidal ideation to attempt (Bryan & Rudd, 2006). It is noteworthy that studies have not found significantly different levels of impulsivity in those that make a suicide attempt compared to those with ideation. For instance, Klonsky and May (2010) observed similar levels of impulsivity across those experiencing suicidal ideation alone, as well as those attempting suicide, in a large nonclinical sample of 3,706 individuals. Certain impulsivity-related factors such as poor premeditation (difficulties thinking through the consequences of one's actions) were associated with attempt but not ideation, however the effect size was small (Cohen's d= 0.27). These psychological factors are prevalent in certain clinical populations and should therefore be considered alongside other factors when assessing suicide risk (Chan et al., 2016).

1.3.8 Physical illness

Evidence indicates an increased risk of suicidal behaviours, including death by suicide, for individuals with certain physical illnesses (Pompili et al., 2016). A retrospective study utilising English Hospital Episode Statistics and mortality data from 1999-2011 identified an increased risk of suicide for individuals with chronic physical health conditions such as cancer, epilepsy, asthma and eczema (Singhal et al., 2014), although suicide data was obtained from death certificates rather than coroner's judgements which may have led to underreporting of suicides. A systematic review and meta-analysis of 22 studies indicated a link between cancer diagnosis and suicide for both males and females (Amiri & Behnezhad, 2019), although the authors acknowledged that there was a moderate risk of publication bias due to dropout rates in all 22 studies. A census-based study in Northern Ireland collating data from over one million individuals indicated that health conditions that restricted physical activity were linked to a greater risk of suicide, particularly for people aged 18-24 years (Onyeka et al., 2020). Information regarding physical health conditions was based on self-report data and was therefore subject to bias.

Pompili et al. (2016) proposed that several factors may influence the relationship between medical conditions and suicide risk including extent of physical pain, activity limitations, poor prognosis, stigma and comorbid mental health difficulties such as anxiety, depression and substance misuse. A systematic review of 16 qualitative studies and 94 surveys conducted by Hendry et al. (2013) highlighted the importance of psychological symptoms on increased suicidal ideation, where these were comorbid to physical health conditions, highlighting that hopelessness and perceived burdensomeness were motivating factors for suicide. In a qualitative study of 31 patients who had requested assisted dying in the Netherlands, hopelessness was considered to be a core element of patients' perceptions that their suffering was unresolvable (Dees et al., 2011). Of these individuals, 23 had a physical health illness whereas four had a psychiatric diagnosis. Although a distinct and potentially unrepresentative cohort, consideration of the impact of non-mental health factors upon suicide is warranted.

1.3.9 “Warning signs”

Warning signs for suicide potentially have more utility in clinical practice than risk factors. Warning signs are near-team factors, whereas risk factors are generally static and may only be distally related to a suicide attempt (Rudd, 2008). In an internet-based study, Mandrusiak et al. (2006) identified over 3,000 warning signs for suicide, many of which are common in clinical populations and not specific to suicide (Large et al., 2011). This is in stark contrast to warning signs for physical health complications which are usually presented as a succinct, brief set of factors. Rudd (2008) advocated the development of a concise set of warning signs similar to those available for physical illnesses, to improve the early recognition of suicidal behaviours by members of the general public.

An empirical study testing the “IS PATH WARM” acronym of 10 warning signs for suicide (Ideation, Substance abuse, Purposelessness, Anxiety, feeling Trapped, Hopelessness, Withdrawal, Anger/aggression, Recklessness, Mood changes) devised by the American Association of Suicidology (AAS) and intended for the general public, found that only the anger/aggression warning sign differentiated between individuals with suicidal ideation who attempted suicide and those that did not (Gunn et al., 2011). This highlights the dangers of “golden bullet” predictive variables that influence clinical decisions, basing them on isolated risk factors and/or associated warning signs that are also observed in individuals that are not suicidal (Tucker et al., 2015). It is recommended that warning signs are considered in combination with individualised risk factors and motivations (Rudd, 2008; Tucker et al., 2015).

1.3.10 Utility of risk factors

Despite widespread evidence for variables implicated in suicide, questions have been raised regarding the usefulness of such knowledge when assessing suicidal risk (Tucker et al., 2015). Arensman et al. (2019) report that a cohort study would be the optimal research design for identifying causal risk factors for suicide yet the authors acknowledge that, given the low occurrence of suicide, over 900,000 participants would be needed to observe approximately 100 suicides over a one-year follow-up. Klonsky and May (2014) argue that current knowledge of risk factors is more relevant for suicidal ideation, yet the progression from suicidal ideation to an attempt is a distinct mechanism with its own individual-specific predictors. The authors further contended that simply evaluating risk factors for suicide is not reliable when predicting who will make an attempt. A large population-based study by ten Have et al. (2009) supports such an argument, which identified that only 7.4% of adults experiencing suicidal ideation had made a suicide attempt at 2-year follow-up. Consequently, phenomenological approaches to suicide have had little impact on suicide rates given that the focus has been on suicide prediction using risk factors rather than risk reduction. This method of suicide risk assessment has been recognised as lacking clinical utility (see Section 2.1) or longitudinal predictive validity (Franklin et al., 2017).

Although a wealth of knowledge exists in the theoretical literature, therapeutic models of suicide have not been successful in decreasing suicide rates or reducing the prevalence of suicidal thoughts and behaviours. The issue of suicide prevention has been the target of focussed research since the 1980s yet no single intervention has strong empirical support at either an individual or population level (Zalsman et al., 2016).

1.4 Terminology and definitions

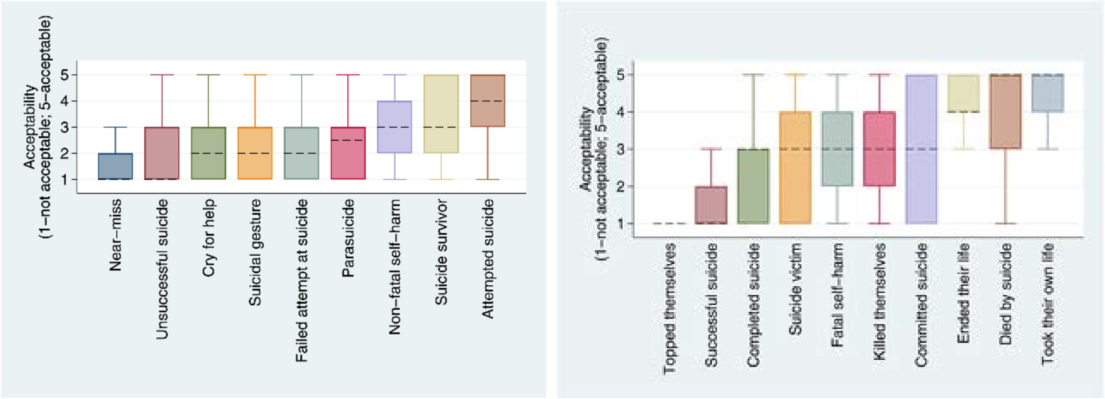
1.4.1 Issues to consider

The lack of a consensus with the definitions and terminology employed for suicidal behaviours in the literature appears to confuse the primary goal of suicide prevention (O’Carroll et al., 1996, Silverman et al., 2007a). Given there is ample heterogeneity within the literature (Silverman, 2011), it was essential to define the terminology to be applied throughout the thesis prior to conducting reviews of interventions. Terms employed for suicidal behaviours require clear definitions to ensure that subtypes are appropriately compared across studies, for example, when using data from different clinical populations or countries (Silverman, 2006). However, several terms for suicidal behaviours exist that make such comparisons difficult (Nock, 2010). A task force launched by the Centers for Disease Control and Prevention (CDC) highlighted concerns around accurate reporting of suicidal behaviours due to inconsistent definitions (Crosby et al., 2011). According to Silverman et al. (2007a) in their development of a classification system, revised through ongoing input and feedback from experts, definitions of suicidal ideation, self-harm, suicide attempts and suicide itself must be mutually exclusive so that they can be measured separately and accurately. The significant task of adopting or defining an acceptable set of definitions is a challenge given a consensus is yet to emerge, such that the International Association for Suicide Prevention (IASP) have a special interest group dedicated to developing internationally-standardised terminology (IASP, 2018).

Any terminology used for suicidal behaviours must be sensitive to those directly affected by suicide and aim to reflect their experiences (Nielsen et al., 2016). An online survey conducted by Padmanathan et al., (2019) of 1,679 participants' subjective appraisal that they have been affected by suicide, aimed to explore the most acceptable terms for fatal and non-fatal suicidal behaviours. The results indicated that "attempted suicide," "died by suicide" and "took their own life" were the most acceptable terms (see Figure 7).

Figure 7

Acceptability of suicide-related terminology according to an online survey (Padmanathan et al., 2019)



It is also important to consider the issue of "death by misadventure" which describes instances where "death arises from some deliberate human act which unexpectedly and unintentionally goes wrong" (Chief Coroner, 2016, p.13). In 2019, death by misadventure accounted for 25% of coroner inquest conclusions, compared with 15% that were suicide conclusions (Ministry of Justice, 2020). Death by misadventure is important to consider, given the increased risk of death through accidents (including self-poisoning) for individuals that have previously self-harmed (Bergen et al., 2012; Hawton et al., 2006). Historically, it is possible that using the criminal standard of proof has resulted in suicides that have been inaccurately classified as "death by misadventure" following a coroner inquest, where there is limited evidence of suicidal intent (O'Donnell & Farmer, 1995).

Given the emotive nature of the topic of suicide, it is an important consideration in research design to reduce the negative effects of language use which include increased stigma and reduced help-seeking for those affected by suicide (Beaton et al., 2013; Maple et al., 2010). The following sections provide the rationale for the terminology that will be employed throughout the thesis. The subheadings themselves have been chosen as the most suitable given the extent of the literature.

1.4.2 "Suicidality"

In its broadest sense, suicidality refers to the state of being suicidal and includes a wide range of suicidal cognitions (or ideations), emotions and behaviours (Silverman, 2006).

However, the difficulty with such an all-encompassing definition of suicidality is the inability to compare outcomes for individuals experiencing thoughts or behaviours along what is essentially a spectrum of severity (Geulayov et al., 2018; Hawton et al., 2002). The lifetime prevalence of any degree of suicidality would include a broad population, with only a minority engaging in high-risk behaviours (Nock, Borges, Bromet, Cha, et al., 2008; McManus et al., 2016; Silverman, 2011). Clearly a definition of suicidality needs to be more succinct if it is to lead to causal data and the development of efficacious interventions.

It is important to recognise that, although suicidality is the term adopted throughout this thesis, there are difficulties with using terms that lack a precise definition across research studies (Silverman & De Leo, 2016). A systematic literature review of definitions since the 1960s highlighted a lack of international consensus as to what constitutes suicidal ideation and behaviours, although classifications appeared to become more precise over time (Goodfellow et al., 2019). Thus, terms such as suicidal ideation may have greater utility for describing specific aspects of the individual's experiences (Silverman, 2016), whereas suicidality has a broader definition and includes ideation, intent and lethality (Klonsky et al., 2016).

The definition of suicidality here on in is consistent with the American Psychological Association (APA; n.d.) referring to the risk of suicide, as expressed by suicidal thoughts or cognitions, which can extend to suicidal planning and/or intent as components of suicidal behaviour. Other terms incorporated under suicidality are communicative behaviours such as suicide threats, defined as a verbal or non-verbal communication that suicidal behaviour may occur in the future (Silverman et al., 2007b), which are considered key parts of the trajectory towards suicide. However, these terms also lack homogeneity in how they are defined and applied across studies (Silverman & De Leo, 2016) and may be considered as judgemental or misleading (Crosby et al., 2011; Heilbron et al., 2010; Klonsky et al., 2016). An emerging consensus of the importance in separating suicidality from attempts would, it is argued, lead to a better understanding of prevalence rates, functions for the individual and clinical outcomes (Kessler et al., 1999; Mortier et al., 2017; Nock, Borges, Bromet, Alonso, et al., 2008).

The argument for adopting the above position is clear given the diverse findings in the literature, when attempting to develop theoretical and clinical models to mitigate suicidal behaviours. A multitude of variables have been postulated as valuable in clarifying the problem of suicide, yet the low prevalence of suicide itself can cause confusion between correlates of suicidality and death by suicide, respectively (Qiu et al., 2017). Correlational data may assume that risk factors for suicidality and suicide are synonymous and has led to the argument that both groups are epidemiologically similar (Gvion & Levi-Belz, 2018; Mościcki, 2001), however assuming that suicidality increases risk of suicide may be problematic for understanding the trajectory towards suicide (Klonsky et al., 2016).

Evidence suggests that differences exist between those that attempt suicide and those that die by suicide, for example, a case-control study by Beautrais (2001) of individuals who had died by suicide (n=202) compared with those that attempted suicide (n=275) demonstrated that although there may be overlap between these populations, those that died by suicide were more likely to be male, older and have a diagnosis of non-affective psychosis. Longitudinal rather than cross-sectional data for the attempted suicide cohort may have helped delineate the risk factors that were implicated in those that later died by suicide. In a study in South Korea, Joo et al. (2016) used retrospective medical records of individuals that attempted suicide (n=222) compared with individuals that died by suicide (n=98). They found that being female and a diagnosis of depressive disorders were significantly more prevalent for the suicide attempt group, although detailed historical information about the cohort that died by suicide was limited due to the reliance on informants.

A case-control study in the USA of 153 individuals aged 13-34 years that had made a serious suicide attempt i.e. that was likely to result in death by suicide without medical intervention, were compared with a random sample of 513 control subjects from the same catchment area to examine help-seeking behaviours (Barnes et al., 2002). Participants were asked whether they had sought help for health/emotional problems in the 30 days prior to suicide attempt (or 30 days prior to interview for controls). Those that had had a suicide attempt were significantly less likely to seek help from a professional consultant (e.g. doctor, psychiatrist, counsellor), although nearly half had sought help from family or friends. The authors acknowledged that, although the study was useful for understanding suicidal behaviour and targets for treatment, the generalisability of the pattern of results around help-seeking behaviour to individuals that die by suicide is questionable. Hawton (2002) concluded that research must have clear operational criteria for inclusion in the experimental cohort, including a consensus definition of what constitutes a serious suicide attempt, which will influence how similar (or dissimilar) this group is to those that die by suicide.

Psychological risk factors appear to vary in prevalence for different subtypes of suicidal behaviour. A meta-analysis of 27 studies from both community and clinical populations found that variables most strongly associated with suicidality, including depression and hopelessness, did not differentiate between those with ideation only and suicide attempts (May & Klonsky, 2016). For example, a prospective study of the predictive value of hopelessness and future suicidal behaviours for individuals diagnosed with depression (n=142) followed up over 10 years indicated an association with suicidal ideation but not attempts (Qiu et al., 2017). These commonly cited risk factors do not contribute to understanding of which variables are implicated in suicide attempts over and above those for suicidality more generally (Klonsky et al., 2016).

The distinction between risk factors for individuals that attempt suicide compared with the much larger population that experience suicidal ideation only, is reflected in several key theories (IPTS; Joiner, 2005; IMV; O'Connor, 2011; 3ST; Klonsky & May, 2015). As highlighted by Franklin et al. (2017), even risk factors that triple the one-year likelihood of death by suicide only have a near-zero chance of accurate prediction due to the low base rate of suicide. It is unsurprising that suicide risk prediction is common, given that no cogent model exists that accurately explains suicide risk as opposed to suicidality. Using evidence-based clinical assessment to understand the individual's motivation(s) and explore alternative solutions to reduce the likelihood of future attempts may be more useful than focusing on risk prediction (Klonsky et al., 2016).

Evidence suggests that a spectrum of suicidality severity exists, with individuals experiencing the highest levels of suicidal intent at the top end of the scale where death by suicide is most likely to occur (Brausch & Gutierrez, 2010; Joiner et al., 2005; Scocco & De Leo, 2002). In their guidance for assessing suicidal patients, Sommers-Flanagan and Sommers-Flanagan (1995) describe suicidality on a continuum ranging from "non-existent" (no ideation) to "extreme" (high ideation and intent), with "mild" (ideation but no suicide plan), "moderate" (ideation, possibly a plan but no intent) and "severe" (high ideation but no intent) in between, although it is unclear whether individuals progress through these individual stages (Heinsch et al., 2020; Sveticic & De Leo, 2012). Bryan and Rudd (2006) suggested possible treatment responses at each level, for example, increasing outpatient visits and crisis response planning for moderate risk, and inpatient hospitalisation for the severe and extreme categories.

To summarise, risk factors for suicidality are often used interchangeably with those for suicide, despite evidence suggesting that differences exist between these two cohorts. Prospective longitudinal studies, rather than correlational data, are needed to elucidate causal risk factors for suicide compared with suicidality. Suicidality in this thesis refers to any individual expressing suicidal ideation, plans or intent. In its severest form, it will include suicide attempts.

1.4.3 Self-harm

Self-harm is defined in the NICE guidelines as any act of self-poisoning or self-injury regardless of intent (NICE, 2011). Self-harm often occurs in the context of multiple life problems, particularly relationship issues, mental health difficulties and alcohol misuse (Townsend et al., 2016). Interestingly, some assert that self-harm has a non-fatal outcome (Hawton et al., 2002) and death as a result of self-harm would most likely be classified as accidental (De Leo et al., 2006). In terms of intent, individuals that self-harm may have intent to die, no intent to die, or intent may be unclear (De Leo et al., 2004; 2006). Suicidal intent may be unclear in a variety of scenarios such as when the individual is disinhibited due to alcohol/drugs, experiencing a psychosis, has a cognitive impairment or is ambivalent about death (Silverman et al., 2007b).

The term "self-harm" will be used forthwith research rather than "self-injury" as the latter is often used to describe stereotypical behaviours such as head-banging and skin picking more commonly associated with individuals with intellectual or pervasive disabilities (NICE, 2015). Certain types of behaviour that cause physical and psychological damage to the individual are not included in the NICE definition of self-harm, such as excessive alcohol or recreational drug use, smoking, overeating/dieting and body piercing (NICE, 2011). Nock (2010) clarified this distinction further and asserted that the intention of self-harm is direct injury to the body, as opposed to harmful or risky behaviours where injury to the body is an indirect/unintended result.

There are several similar terms/phrases used to describe self-harm. Indeed, NICE (2004) provided a list of the commonly used words/phrases that are used interchangeably with self-harm: “deliberate self-harm”; “intentional self-harm”; “parasuicide”; “suicide attempt”; “non-fatal suicidal behaviour” and “self-inflicted violence”. Prefixes such as “deliberate” and “intentional” are less preferred, given that the individual’s intent to harm themselves may be unclear (NICE, 2004). Until the 1970s, terms such as parasuicide and more unhelpfully, “attempted suicide” were frequently used to describe self-harm behaviours with a non-fatal outcome (Kapur, Cooper, et al., 2013), or ingestion of substances above the recommended, acceptable or recognised dose (Kreitman, 1977). Despite changes in accepted terminology, the term parasuicide was widely used in the literature and has led to psychometric tools and scales such as the Suicide Attempt Self-Injury Interview (SASII; Linehan, Comtois, Brown, et al., 2006), previously known as the Parasuicide History Interview (PHI; Linehan et al., 1989) that is used to assess past self-harm behaviours. Details around the time, circumstances, triggers and any treatment received are collected for all past instances of self-harm.

There is some ambiguity as to whether parasuicide and suicide attempts are describing the same types of behaviour. In some contexts, the two terms are independent of one another representing low intent (parasuicide) compared with high intent (suicide attempts) to die (Schmidtke et al., 2004). In other research, parasuicide is used interchangeably with suicide attempts, and includes behaviours with both suicidal and non-suicidal intent (Linehan, Comtois, Murray, et al., 2006). Due to unclear and inconsistent definitions, neither of these terms will be used in this research. However, it is important to have an awareness of how these terms conceptualised in the literature to gain an understanding of evidence-based interventions targeting these behaviours, which may have used these terms.

It is proposed that it is the function of self-harm rather than the type of behaviour that is more important, for instance, Solís-Bravo et al. (2019) explored the reasons for self-harm in a community sample of 438 adolescents aged 11-17 and found a significant correlation between individuals that self-reported using tattooing “to feel pain” as psychological variables relating to negative emotional and cognitive states. It is possible that self-harm in this context is used as a form of emotional regulation, which would apply to all of the excluded behaviours and therefore this thesis will adopt a definition of self-harm that focuses on the function of the behaviour, rather than the type.

Self-harm will include instances where the individual does not have mental capacity, defined in the legal framework as being unable to make decisions due to lack of ability to understand, retain, process or communicate information regarding that decision (Mental Capacity Act, 2005). Capacity to make a decision can fluctuate depending on various factors and in the context of self-harm, may include temporary loss of capacity due to acute emotional distress, intoxication and level of consciousness (NICE, 2004). If an individual is deemed not to have mental capacity, the function of self-harm needs to be appraised in this context. For instance, a stated intent to die by suicide may be a result of intense emotional distress that has impaired decision-making (NICE, 2004). Alternatively, an individual may have mental capacity and refuse treatment, in which case such refusal may result in long-term injury (or even death) for the individual as such risk is minimised in their conceptualisation. These instances would be considered in the context of mental health pathology, which can be assessed under the Mental Health Act (1983), and in certain circumstances can allow for medical treatment of self-harm where an individual lacks recognition of the potential risks to self as the consequence of a mental health condition, due to “duty of care” principles.

1.4.4 The relationship between NSSI and self-harm

The relationship between NSSI and self-harm, and whether they should be defined as distinct categories, has been explored in previous research (Grandclerc et al., 2016; Hauber et al., 2019; Lloyd-Richardson et al., 2009). Similar to self-harm, NSSI refers to the intentional destruction of one’s own body tissue, although the extent of physical harm done to the individual may vary (Nock & Favazza, 2009). Research suggests that NSSI is approximately three times more prevalent in adolescence than adulthood (Klonsky, 2011; Westers et al., 2016), hence much of the empirical research around NSSI involves adolescent populations (Asarnow et al., 2011; Brausch & Gutierrez, 2010; Brausch & Woods, 2019; Castellví et al., 2017; Guan et al., 2012; Klonsky et al., 2013; Wilkinson et al., 2011). NSSI has previously been reported only as a component of BPD, relating to self-injurious behaviours (American Psychiatric Association, 1994), however the Diagnostic and Statistical Manual of Mental Disorders, 5th Edition (DSM-V; American Psychiatric Association, 2013) recognises NSSI disorder (NSSI-D) as a separate diagnosable mental health condition. Muehlenkamp et al. (2012) highlighted that the term NSSI is more common in Canada and the USA, whereas the term self-harm is more widely used in European countries and Australia. Due to the differing definitions, prevalence estimates across countries can be problematic.

Some researchers have proposed that NSSI and suicide attempts are distinct categories due to the function (presence of suicidal intent in suicide attempts versus absence of intent for NSSI), level of damage to the individual (with NSSI less likely to require medical intervention), type of behaviours (typically NSSI involves cutting/burning whereas suicide attempts are usually more severe) and the higher prevalence of NSSI compared with suicide attempts (Favazza, 1998; Klonsky, 2007; Klonsky et al., 2013; Klonsky & Muehlenkamp, 2007; Muehlenkamp, 2005). Despite these differences, there appears to be an overlap in terms of individuals engaging with both NSSI and suicide attempts. Nock et al. (2006) conducted clinical interviews with 89 adolescents admitted to an inpatient psychiatric unit that reported NSSI in the previous 12 months. 70% reported at least one past suicide attempt, although this was based on retrospective self-report data. In an internet-based survey of undergraduate and graduate students, Whitlock et al. (2006) identified 490 of 2,875 individuals that reported a history of NSSI. 75% of the cohort also reported suicidality or a previous suicide attempt, providing support for the hypothesis that there is an association between NSSI and suicidality. Low rates of help-seeking were observed amongst this cohort (nearly 40% stated that they had not informed anyone about their NSSI). Again, this study is subject to the limitations of self-reporting and potential biases when using retrospective data. Further research indicates that 36% of adults in a community sample (n=439) experienced suicidal thoughts whilst engaging in NSSI (Klonsky, 2011). A larger sample using a more representative method of participant recruitment would improve the generalisability of these results, as only 28.2% of eligible participants agreed to participate.

Further research indicates that NSSI is a predictor of suicidality and future suicidal behaviours (Andover et al., 2012; Klonsky, 2011) and may even occur concurrently with suicidality (Whitlock et al., 2013). Hence, the term NSSI is ambiguous and "non-suicidal" does not seem to be an appropriate prefix (Kapur, Cooper, et al., 2013; Zetterqvist, 2015). Kapur, Cooper, et al. (2013) argued that a distinct NSSI category is not useful in clinical practice as individuals presenting with NSSI may be of lower priority for treatment given the non-suicidal terminology and assumption, despite evidence to the contrary.

Concerns have been raised that recognising NSSI as a category distinct from self-harm may hinder research efforts as motivations and level of suicidal intent may change between and within episodes of self-harm, or individuals may be ambivalent about whether they wish to live (Cooper et al., 2011; Hawton et al., 1982; Scoliers et al., 2009). Further, a diagnostic label of NSSI potentially causes unnecessary stigma for many young people (Moran et al., 2012).

1.4.5 What is the function of NSSI/self-harm?

It is argued that NSSI is useful as a category independent of self-harm if it has distinct functions from other types of self-harm, in which case separating NSSI would have clinical utility for developing treatments (Butler & Malone, 2013). However, evidence suggests that the functions for NSSI and self-harm are similar. Nock and Prinstein (2004) proposed four different functions of "self-mutilative" behaviour based on data from 108 adolescent psychiatric inpatients: 1) automatic positive (to produce desirable internal states) 2) automatic negative (to reduce undesirable internal states) 3) social positive (to gain desirable responses from others) and 4) social negative (to reduce undesirable interpersonal demands). Klonsky et al. (2015) highlighted that this research was based on a relatively small sample and that some of the high correlations between factors suggested that the factor structure needed revising.

To account for these limitations, Klonsky et al. (2015) measured NSSI functions in 1,157 patients admitted to hospital as part of an NSSI intervention programme including a mixture of inpatient and outpatient treatment. Patients completed one of two self-report measures: 1) the Inventory of Statements about Self-injury (ISAS; Klonsky & Glenn, 2009) measuring 13 categories of functions for self-injury based on 39 questions, namely affect regulation, anti-dissociation, anti-suicide, autonomy, interpersonal boundaries, interpersonal influence, marking distress, peer bonding, revenge, self-care, self-punishment, sensation seeking and toughness (n=946); 2) the Functional Assessment of Self-Mutilation (FASM; Lloyd et al., 1997) including 22 items assessing reasons for self-injury rated on a four-point Likert scale from "never" to "often" (n=211), grouped into four factors based on the model proposed by Nock and Prinstein (2004). The FASM was completed for the first year of data collection and replaced by the ISAS to gather a more comprehensive overview of NSSI functions. The results suggested a two-factor structure for NSSI functions: 1) Social functions e.g. bonding with others, influencing others, and 2) Intrapersonal functions e.g. reducing distress, emotion regulation. Notably, the mean age was 16.6 years which supports the finding that NSSI is more prevalent in adolescent than adult populations (Klonsky, 2011; Westers et al., 2016).

Evidence exploring the functions of self-harm has led to a range of proposed categories, most commonly to regulate emotions and alleviate distress/negative emotions (Brereton &

McGlinchey, 2019; Klonsky, 2007; Wolff et al., 2019). In research exploring emotional experiences, Chapman and Dixon-Gordon (2007) suggested that anger was the most common consequence of a suicide attempt, whereas relief from negative emotions was more likely in relation to self-harm. In a cross-sectional survey of 30,477 adolescents aged 14-17, Scoliers et al. (2009) explored reasons for self-harm using a self-report measure across 7 countries. The most commonly reported reason were “wanted to get relief from a terrible state of mind” and “wanted to die”. 81% (n=349) of participants meeting the criteria for an episode of self-harm in the past month reported more than one reason for doing so.

Hjelmeland et al. (2002) conducted interviews with 1,646 individuals (aged 15-87) from 13 European countries participating in the WHO/EURO Multicentre Study on Suicidal Behaviour. This multicentre study aimed to monitor epidemiological trends and identify risk factors for future suicidal behaviours for individuals engaging in self-harm using the European Parasuicide Interview Schedule (Kerkhof et al., 1989) which includes 14 possible reasons why an individual would self-harm. Four major categories emerged from the analysis: care seeking/wanting help from others; influencing others either through revenge, punishment or manipulation; temporary relief from an unbearable situation; and as a final act either to die or to end an unbearable situation. Interestingly, there was no significant variation across countries, genders or age groups across the different reasons for self-harm.

There is robust evidence to suggest that one of the key functions of self-harm is emotion regulation (Andover & Morris, 2014; Klonsky, 2007). In adolescents, it is estimated that 65-80% of those who self-harm reported some form of emotional distress as a motivating factor, particularly for girls (Laye-Gindhu & Schonert-Reichl, 2005; Nock & Prinstein, 2004). The function of self-harm is therefore one of a coping strategy to manage negative emotions, albeit a maladaptive one (Klonsky, 2007). This hypothesis has received empirical support in adult populations. Findings from the Adult Psychiatric Morbidity Surveys of the general population suggest a three-fold increase from 2000 to 2014 in individuals engaging in self-harm to relieve negative emotions across both genders, although the rate reported in females was significantly higher than males in 2014 (6.8% and 4.0%, respectively; McManus et al., 2019).

An “emotion regulation model” of NSSI, similar to that of self-harm, has also been stipulated (Andover & Morris, 2014). A study of 52 college students (aged 18-26) with at least one previous NSSI episode completed the ISAS and SASII indicated that individuals who are motivated to harm themselves to relieve negative emotions are more likely to have increased lifetime frequency of NSSI, compared with other reasons relating to positive or social reinforcement (Saraff et al., 2015). This result with a small sample of adolescents requires replication in a larger, more representative sample including a greater number of male participants (n=8).

A prospective study of 436 adolescents from a community sample explored the interplay between emotion regulation deficits, NSSI (as measured by the ISAS) and suicidality at six-month follow-up. The results indicated that NSSI moderated the relationship between emotion regulation deficits and future suicidality, hence emotion regulation deficits in combination with NSSI increased the likelihood of suicidal ideation. This further elucidates the association between NSSI and suicidality, although a causal relationship between emotion regulation deficits and NSSI and it is unclear if the former precedes the latter.

A study of 140 participants (82.1% female) voluntarily admitted to an inpatient hospital for adolescents with personality disorders, using Mentalisation-Based Therapy (MBT) with partial hospitalisation for up to 18 months as treatment, aimed to explore various aspects of NSSI, including how it relates to emotion regulation (Hauber et al., 2019). Baseline and follow-up assessments using the nine-item self-report Non-Suicidal Self-Injury Behaviour Questionnaire (NSSI-BQ) developed by the authors indicated that emotion regulation was the most common self-reported reason for NSSI (n=93, 64% pre-treatment and 71.8% post-treatment). The authors acknowledged that, although they felt the NSSI-BQ was useful as it was designed specifically for adolescents, it has not been assessed for psychometric validity.

Research of adults presenting with NSSI is sparse in comparison with the adolescent literature. Klonsky (2011) conducted a study of 439 individuals willing to answer questions about NSSI identified by contacting a random selection of households in the USA across 48 states. 26 individuals reported lifetime prevalence of NSSI. The highest proportion of individuals endorsed an emotion regulation function of NSSI as a means of reducing negative affect, with 64% reporting that NSSI was used to “release emotional pressure” and 60% “to get rid of bad feelings,” although this study is limited by the small sample size.

A preliminary study by Selby et al. (2012) of 571 adults from a university-based psychology outpatient setting identified 65 individuals with at least one incident of self-injury without suicidal intent in the past year that did not meet diagnostic criteria for BPD. Compared with the group diagnosed with BPD (n=24, 54% with history of NSSI), the NSSI group had higher levels of suicidality as measured by the BSS, highlighting the link between NSSI and suicidality. The NSSI group also reported a greater number of suicide attempts, although a definition of what constituted a suicide attempt was not provided. These results should be interpreted in light of limitations including the focus on treatment-seeking individuals and lack of standardised assessment of NSSI or suicide attempt, which further confuses understanding of NSSI.

1.4.6 Definition of self-harm for this thesis

There appears to be a consensus in the literature that there is some association between NSSI and suicidality (Klonsky & Muehlenkamp, 2007; Nock et al., 2006; Zetterqvist, 2015). Given the issues outlined in the preceding sections with using the term NSSI, as well as the substantial evidence-base indicating similarities between NSSI and self-harm in terms of their motivations/functions and association with future suicidal behaviours, self-harm will be used throughout this research project. Self-harm is more appropriate as it is used in national UK guidance (NICE, 2011), is widely recognised in NHS settings and is predominately used in UK-based epidemiological research studies including national reporting of suicide and related risk factors (NCISH, 2019).

The recognition of NSSI has led to the development of psychometric tools (i.e. ISAS and FASM), however it is argued that it is more useful to categorise self-harm as a spectrum rather than distinct from NSSI. Self-harm therefore represents behaviours that are intended to communicate distress but are not (intended to be) fatal (Hawton et al., 2002). Self-harm typically causes less damage to the individual than more severe, life-threatening behaviours which differ in terms of prevalence, functions and intent (Klonsky et al., 2014).

1.4.7 Life-threatening behaviours

It follows that the next definition to clarify is behaviours that have potential to cause death, where this is the intention of the individual. There may be different functions and motivations of such behaviours for individuals (Suyemoto, 1998) and an intent to die may be explicitly communicated or inferred (Goldsmith et al., 2002). By understanding the differences with self-harm, this would potentially translate into effective risk assessment and treatment planning where the correlates of intent to die are consistent with what the individual is communicating (Bryan & Rudd, 2006), with those at highest risk of suicide receiving intensive, rapid-access treatment. As such, a definition that helped clinicians delineate behaviours that are life-threatening was needed in order to support objective decision-making about treatment and care.

Research indicates that historical suicide attempts are powerfully indicative of future death by suicide (Brown et al., 2002; Cavanagh et al., 1999; Joiner et al., 2005), yet there is a lack of consensus as to what constitutes a suicide attempt (Wagner et al., 2002) and thus a workable set of criteria will be difficult to achieve. Some researchers included all self-injurious behaviours in the definition of suicide attempts, regardless of intent (Bronisch, 1992). Others such as O'Carroll et al. (1996) stated that, to differentiate between the diverse range of behaviours categorised under the umbrella term of suicide attempts, it is necessary to use independent verification (e.g. an A&E clinician) to ascertain medical severity rather than relying on self-reports, given self-report data includes hindsight bias and varying levels of insight, particularly when individuals describe their own suicidal behaviours (Duberstein & Conwell, 1997). Using a clinician's judgement rather than self-report allows for a potentially more objective measure of the lethality of the behaviour based on a series of factors, such as whether medical attention/hospitalisation was required, if help-seeking behaviour was evident and the ability to differentiate between self-harm and suicide attempts. However, clinician confidence may play a role in the objective assessment of suicide risk (Airey & Iqbal, 2020; Regehr et al., 2016).

It is argued that suicide attempt is used too often in the literature without a universally accepted definition or set of criteria. As Linehan, Comtois, Brown, et al. (2006) asserted, a lack of operational definition of suicide attempts or the inclusion of all self-injurious behaviours regardless of intent, confuses understanding of the phenomena. As highlighted by Silverman et al. (2007a), the range of behaviours captured by the term suicide attempt is diverse and dependent on the field of work, for example, medical professionals, researchers and public health consultants may all rely on different indicators and evidence when determining a suicide attempt. A further confound is that behaviours included under suicide attempt vary in their lethality and extent of medical treatment required, if any (Beautrais, 2001). An alternative term proposed for suicide attempt is life-threatening behaviours. Life-threatening behaviour is arguably a more useful definition than suicide attempt for this thesis as it primarily includes behaviours with suicidal intent but also takes into consideration the medical intervention required, as well as the individual's expectations about likelihood of death. Suicidal intent and medical lethality are considered as two separate components of life-threatening behaviours as research indicates that the two variables are not always highly correlated. Data from a psychological autopsy study of 141 deaths attributed to suicide indicated that there was variability in the lethality of methods used by males compared with females but no significant differences in terms of level of intent, based on SIS scores completed by informants (Denning et al., 2000), although the authors recognised that information provided retrospectively is subject to recall bias. A study of 180 individuals presenting to the emergency department (ED) following a suicide attempt, defined as self-injury with intent to die, found that expectations about the likelihood of death moderated the relationship between medical lethality and suicidal intent (Brown et al, 2004). These studies indicate that suicidal intent severity and probability of requiring medical intervention are independent dimensions of suicide risk, which may be influenced by the individual's accuracy of their expectations about lethality of the method chosen.

To collate information about the variables needed to determine life-threatening behaviours, and distinguish such behaviours from self-harm, Linehan, Brown, Comtois, et al. (2006) developed the SASII. This measure aimed to incorporate the range of definitions of suicidal behaviours and self-harm in the literature including those with and without suicidal intent. A distinction was made between acute self-harm, where death by misadventure may be probable, and suicide attempts, which are classified based on the lethality of the behaviour, the extent of physical harm caused to the individual and the level of medical treatment required.

Development of items for the measure were generated through interviews with four participant cohorts. Cohort 1 included individuals that had made a suicide attempt and were admitted to an inpatient psychiatric unit (n=75), Cohort 2 included individuals presenting to the ED following a suicide attempt (n=75) and Cohorts 3 and 4 were female participants recruited from clinical trials examining BPD treatments. The final questionnaire included items relating to type of behaviour, medical lethality, impulsivity, likelihood of rescue, motivations (including intent) and consequences, divided into six scales: “Suicide Intent, “Interpersonal Influence,” “Emotion Relief,” “Suicide Communication,” “Lethality” and “Rescue Likelihood”. Assessment of the psychometric properties of the SASII demonstrated moderate to high internal consistency for the scales (ranging from 0.63 to 0.93) and high inter-rater reliability (r=0.85 for lethality of behaviour and r=0.93 for physical condition following behaviour).

1.4.7.1 Definition of a serious suicide attempt. Several research studies have explored outcomes for individuals making a serious suicide attempt and argued that this represents a distinct category of suicidal behaviours (Beautrais, 2001; Beautrais, 2003; Levi-Belz & Beautrais, 2016; Mościcki, 1995; Rosen, 1976). A serious suicide attempt has been defined as an act that would have been fatal without rapid emergency treatment or chance intervention, and/or use of high-risk methods associated with a greater likelihood of death (Beautrais et al., 1999; Potter et al., 1998).

A review of the literature indicated that several psychological factors are linked to an increased likelihood of a serious suicide attempt for instance, a study of 982 individuals presenting to the ED found that more severe depressive symptoms were associated with more medically lethal suicide attempts (Kim et al., 2020). Deficits with cognitive control predicted the occurrence of near-fatal suicidal behaviour in a sample of 408 older adults over 65, whereas impulsivity (lack of planning) resulted in less lethal behaviours (Szanto et al., 2020). A case-control study indicated that impulsivity may be a frequent component of serious suicide attempts in younger age groups, with 24% of 153 individuals aged 13-34 years presenting to general hospital indicating that the time between thinking about suicide and the attempt occurring was less than five minutes (Simon et al., 2001). Psychological pain has also been implicated, indicated through a study of 336 adults presenting to a general or psychiatric hospital following a serious suicide attempt, although the interaction between psychological pain and communication difficulties (including issues sharing intimate information with others and perceived loneliness) explained a greater proportion of the variance in medical lethality compared with each component alone (Levi et al., 2008). Hopelessness was also significantly higher for those making a serious suicide attempt (n=43) compared with psychiatric patients without a history of suicide attempts (n=47) and controls (n=57), although levels of hopelessness were not significantly greater than a cohort (n=49) where suicide attempts were not medically lethal (Gvion et al., 2014). Further, the interaction between psychological pain and schizoid personality traits (including preference for solitary activities, lack of enjoyment/desire for close relationships) explained some of the variance in lethality scores. Taken together, these studies indicate that the interactions between several factors including psychopathology, psychological pain, hopelessness and impulsivity, may act as “triggers” for a serious suicide attempt (Levi-Belz et al., 2020).

Research has indicated an association between individuals making a serious suicide attempt and future suicidal behaviours. A five-year follow-up study of 886 patients, 186 of whom had made a serious suicide attempt (defined through medical severity and preparations to avoid discovery), found that a significantly higher proportion of this cohort later died by suicide compared with those making less serious attempts (6.5% and 3.1% respectively; Rosen, 1976). A five-year study of 302 individuals making a serious suicide attempt found that 6.7% died by suicide and 37% had made at least one further suicide attempt (Beautrais, 2004). Baseline characteristics were associated with future suicide attempts but were not predictive of death by suicide, although there a consensus is emerging that suicide risk prediction should be avoided (see Section 2.1).

Although the definition of a serious suicide attempt includes some aspects of life-threatening behaviours, such as physical harm and lack of help-seeking behaviours, the definition fails to include the awareness from the individual that without medical treatment they will die.

1.4.7.2 Defining lethality. The Lethality of Suicide Attempt Rating Scale (LSARS; Smith et al., 1984), revised by Berman et al. (2003), rates suicide attempts on an 11-point scale (0= death is an impossible result, 10= death is almost a certainty) with descriptions incorporating both the lethality of the method and circumstances of the event, as well as an appendix of lethal ranges of ingestion for drugs/chemicals by body weight. Examples of descriptions include taking hundreds of medications at a time when help would not ordinarily be available and not communicating with others (high score) and taking an overdose in front of others or telling others immediately (low score).

The LSARS has been tested in both clinical and community samples indicating high inter-rater and test-retest reliability (Lewinsohn et al., 1993; Lewinsohn et al., 1996) although these studies were conducted in adolescent populations. A 15-year prospective study assessing the predictive validity of the scale with 180 adolescents admitted to a psychiatric hospital indicated that the highest intent and lethality score from any previous suicide attempt, rather than from the most recent attempt, was more predictive of future attempts (Sapyta et al., 2012). However, this association was less significant when controlling for lifetime history of suicide attempts.

Despite the LSARS providing an objective measure of medical lethality, it does not ascertain whether the individual undertaking the behaviour is aware of what a lethal dose may be for a particular method. Gilbertson et al. (1996) used questionnaire data to understand students' understanding of paracetamol toxicity and reported that the majority of participants overestimated the number of tablets required to cause death.

1.4.7.3 Working towards a practical definition of life-threatening behaviours.

Overall, there appears to be a distinction in the literature between self-harm and suicide attempts based on lethality. As such, the definition of life-threatening behaviour provided by Linehan (2014) that encapsulates a whole range of self-harm and suicidal behaviours including suicide attempt, “suicide crisis behaviours” and deliberate self-harm, is not specific enough for this research. Both Beck et al. (1973) and O’Carroll et al. (1996) used two components to determine whether suicidal behaviours are classed as a suicide attempt:

1. The level of suicidal intent: intent in this context refers to the aim, purpose or goal of the behaviour which implies, but is not necessarily accompanied by, action (Silverman et al., 2007a). In the context of a suicide attempt, this would translate to an intent to die (or escape from life)
2. The nature and severity of the behaviour, including medical lethality: it is proposed that medical lethality includes a range of variables such as access to lethal means, personal knowledge of the consequences of using lethal means, comfort/familiarity with lethal means, likelihood of rescue and help-seeking behaviours (Silverman et al., 2007a). This includes physical consequences of the act and medical treatment required (Linehan, Comtois, Brown, et al., 2006) as well as the potential lethality of the method if the individual had not received treatment/been discovered (Levi-Belz & Beautrais, 2016)

Help-seeking (or lack of) after a suicide attempt is also useful for defining whether behaviours are life-threatening (Barnes et al., 2002; Choo et al., 2017; Oh et al., 2015). The Risk-Rescue Rating Scale (RRRS) was developed as a means of quantifying the lethality of suicide attempts and likelihood of rescue, consisting of 10 items scored from 1-3 with accompanying guidance for each score (Weisman & Worden, 1972). There are five risk factors (method used, if consciousness was impaired, lesions/toxicity, likelihood of physical recovery, treatment required) and five rescue factors (location, whether person initiated rescue, chances of discovery, accessibility to rescue and time delay until discovery after attempt) equating to a total risk and rescue score each between 5 and 15 points. The risk component has adequate inter-rater reliability (0.67) although this was lower for the rescue items (0.59; Potter et al., 1998), as well as moderate correlation with the Beck Lethality Scale (r=0.60).

A retrospective study of 608 patients with a history of suicide attempts (requiring hospitalisation and with some degree of intent to end one's life) recruited from psychiatric departments used SIS to measure intent and the RRRS to assess lethality (Misson et al., 2010). Participants with a history of a serious suicide attempt (requiring hospitalisation in an intensive care unit) were more likely to take precautions against being discovered and less likely to communicate with others before or during the attempt than those without a history of serious attempts. Further, individuals with a history of violent suicide attempts using criteria developed by Asberg et al. (1976) which included hanging, drowning, jumping from heights, and suicide attempts with firearms or knives, expressed more severe suicidal intent and worse physical consequences as a result of the attempt (as measured by the RRRS). Although based on retrospective data gathered after the attempt, which is subject to recall bias, these results suggest that lack of help-seeking should also be considered alongside the medical treatment required when determining life-threatening behaviours.

To summarise, life-threatening behaviour in this thesis was defined using the following factors:

- Unequivocal intent to die that may be explicitly stated or inferred in the context of the preceding factors, and would be evaluated by assessing the components of a cognitive-specific schema (Beck, 1996; Rudd, 2000). This may include low likelihood of rescue/lack of help-seeking (Barnes et al., 2002; Misson et al., 2010; Weisman & Worden, 1972);

- High lethality of method used/violent methods, or significantly surpassing the subjective threshold of lethality that the individual believes will result in high likelihood of death (Linehan, Comtois, Brown, et al., 2006; Potter et al., 1998).

1.5 Summary of chapter

Understanding of suicidal behaviours has advanced in recent decades and a burgeoning theoretical knowledge has emerged. Early work provided the impetus for psychological models that have stimulated empirical research to support potential pathways from ideation to attempt. Furthermore, individuals that attempt suicide are treated as a distinct cohort from those with ideation only and it is recognised that certain risk factors may be specific to each of these cohorts. The potential risk factors described in this chapter are not exhaustive but emphasise the range of environmental and trait-like variables that can contribute.

In terms of a stress-diathesis model, suicidal behaviour is likely to occur as an interaction between neurobiological/genetic vulnerabilities and stressors such as adversity, negative social circumstances, physical health complications and relationship difficulties (Mann & Arango, 1992). More recently, biopsychosocial models of suicide risk which also emphasise the importance of developmental factors, have been proposed (Turecki et al., 2019). Research indicates well-established risk factors such as self-harm, mental health disorders, substance misuse and a variety of life stressors that can increase the risk for suicide, but suicide prediction remains a significant issue (O’Connor & Nock, 2014).

Operational definitions of suicidal terms are an important area of research design, and the use of inconsistent definitions across studies has arguably hindered research progress to date (Prinstein, 2008). One example is NSSI which suggests a lack of suicidal intent, yet research indicates an association with suicidality, as well as a lack of reliable or valid means of assessing this phenomena in adults as demonstrated in a systematic review of 26 clinical instruments (Faura-Garcia et al., 2020). As such, a distinction has been made in the current research between participants with life-threatening behaviours, self-harm, and those whose needs are more suited to intervention within a primary care setting. Training was provided to all qualified clinicians across the organisation to provide an understanding of these terms and relevant case examples.

The next chapter will outline the understanding of suicide in the NHS and the associated policies and guidance that have been used to inform suicide prevention strategies in the UK.

Chapter 2: Understanding of suicide in the NHS

The chapter commences by summarising almost three decades of key themes from the UK's NHS policy, since the launch of the "Health of the Nation" paper in 1992; the government's first policy paper outlining the need to improve suicide rates on a national scale. The stark finding that despite significant research and policy, suicide rates have remained at around 10 per 100,000 individuals over the last three decades, is discussed to provide an exposition of the possible reasons for this. These include the use of "tick box" checklist-style risk assessment tools that have poor clinical utility, a lack of clarity as to what constitutes "evidence-based" interventions and methodological inconsistencies within research that have arguably hindered meaningful clinical impact. It is further argued that causal models of suicide prevention require an understanding of the relationship between self-harm, clinical diagnoses and suicide, as well as the realisation that post-mortem data may provide phenomenological and epidemiological correlates and trends but little to establish causality. A treatise that despite the consequences of recent NHS developments, including the introduction of Crisis Resolution Home Treatment (CRHT) teams, the management of serious incidents and the impact on clinician confidence, these have led to little cohesive impact primarily as the opportunity for concomitant clinical trial evidence has been neglected. It is postulated that this lack of connectedness has resulted in few, if any, clinically acceptable NHS-based control conditions against which to test promising interventions.

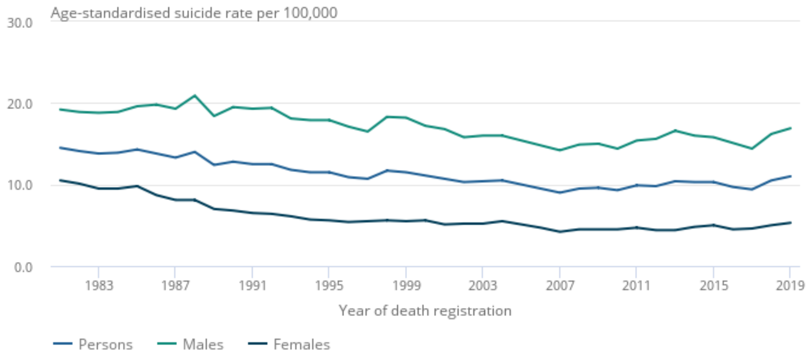
2.1 National policy relating to suicide prevention

The recognition of suicide prevention in policy over the last three decades appears to have done little to consistently improve the suicide rate, which remains at around 10 per 100,000 in England and Wales (ONS, 2020; see Figure 8).

National policy used to inform NHS practices is guided by the NCISH, "the UK's leading research programme into suicide prevention in clinical services" (https://sites.manchester.ac.uk/ncish/about/, para. 1). The NCISH collate data of suicides in the general population and patients under the care of mental health services using quarterly mortality data from the ONS of suicide or undetermined conclusions, as well as providing recommendations to improve patient safety. This research activity includes Scotland, Wales and Northern Ireland however previous research of organisational factors in mental health services has highlighted the heterogeneity of policy implementation and service delivery across the four UK countries (Kapur et al., 2016). Hence, this section will focus specifically on national policy and NHS guidance for England.

Figure 8

Age-standardised suicide rates per 100,000 people in England and Wales (ONS, 2019a)



This chapter will outline areas in the literature focusing on national policy and direction over the previous three decades, including the following areas:

- History of risk assessment tools and scales
- Trend analysis: the link between self-harm and suicide
- Understanding how mental health difficulties relate to suicide
- National guidelines
- Public health perspective

2.1.1 Guidance for approaching suicide risk assessment

Three broad approaches for suicide risk assessment are prevalent in the literature, as outlined by the DoH (2009) in their best practice guidelines: 1) unstructured clinical judgement, which has been discredited as it lacks a standardised, systematic method of gathering information about risk; 2) actuarial methods focusing on phenomenological variables and epidemiological correlates mostly from post-mortem studies; 3) structured clinical judgement. The latter is the preferred method of risk assessment and involves the psychosocial determination of suicide potential incorporating clinical and historical variables (not dissimilar to actuarial methods), but is complemented by a series of individualised questions, devised in real-time and aimed at facilitating engagement with the client and their network (Murphy et al., 2011). This information is used to enhance the clinician's understanding of the individual's risk of suicide and assist the formulation of an effective risk management plan (Bolton et al., 2015; NCISH, 2013).

Dawes et al. (1989) highlighted the benefits of actuarial methods as they are less affected by subjective clinical judgement, have significant implications for saving time and expense, as well as their utility as screening tools prior to conducting a more in-depth clinical assessment. More recently, actuarial risk assessment tools for the prediction of suicide appear to be viewed more deleteriously despite their popularity over the previous decades. The trend appears to have been first indicated in a report by the RCPsych (2004) recommending that locally devised risk assessment tools were abandoned in clinical practice, and reinforced in a position statement (RCPsych, 2010). The NICE guidelines for the long-term management of self-harm state that risk assessment tools and scales should not be used to predict future suicide or self-harm repetition (NICE, 2011). The clinical guide for assessing suicide risk in people with depression produced by the Centre for Suicide Research (2013) warns against the use of scales to quantify suicide risk, stating that they do not take account of the individual's unique circumstances and should be used only as an adjunct to comprehensive clinical assessment.

Aside from the functions of risk assessment outlined above, it has been argued that there should be a greater focus on suicide risk formulation rather than categorical assessment of risk i.e. a focus on prevention, rather than prediction (Pisani et al., 2016), given that the latter approach is not recommended in clinical practice (NICE, 2011; RCPsych, 2010). Berman and Silverman (2013) proposed that the information gathered through a risk assessment could be the basis for a formulation-based approach, whereby the clinician develops an understanding of how the collated risk factors interact to increase (or decrease) the potential for future suicidal behaviours. Graney et al. (2020) further suggested that shifting towards a focus on the therapeutic aspects of the risk assessment process, rather than a prediction-based approach to determine future risk, may be beneficial for improving suicide risk assessment. In the context of the CAMS intervention evaluated in this thesis, the focus is on engaging the individual to develop a shared understanding of the individual's suicidality and formulation of risk (Jobes, 2016) rather than a categorisation of risk level. Such a collaborative approach aims to improve the quality of the therapeutic alliance, which is linked to positive clinical outcomes (Horvath & Symonds, 1991; see Section 2.1.4).

An NCISH report (2018) exploring how risk assessment is conducted in mental health services emphasised that tools and scales should not be used to predict suicide. Some researchers warn that reliance on the scale as a suicide prediction tool may in fact be dangerous for patient outcomes where least restrictive care principles may be lost (false positives) or suicides are missed (Warden et al., 2014) as well as providing false reassurance for clinicians (Chan et al., 2016). A systematic review by Carter et al. (2017) of 70 longitudinal studies of 51 risk assessment scales used for categorising an individual's risk of subsequent suicidal behaviours reported a pooled positive predictive value (PPV) of 5% for future suicide. However, some elements of risk assessment remain a crucial part of understanding suicide risk, such as warning signs (see Section 1.3.9), that may trigger a suicidal crisis and arguably have better clinical utility for identifying near-term suicide risk than static risk factors. These acute variables may include agitation, emotion dysregulation and intense psychological pain, analogous to warning signs for a heart attack such as shortness of breath, pain in the left arm and acute chest pain that would inform a treatment response (Jobes, 2020a; Rudd, 2008). This notion has been further elaborated to include the concept of "drivers," or person-specific variables that are unique to the individual's desire to die by suicide, that are assessed collaboratively with the patient (Fowler, 2012; Jobes, 2016; Tucker et al., 2015). In addition, a meta-analysis of 17 studies (combined n=1,496) demonstrated the therapeutic value of psychological assessment in relation to positive treatment outcomes with a medium effect size (Cohen's d=0.4, Poston & Hanson, 2010).

Despite the missives outlined in this section relating to checklist-style measures, reliance on risk assessment tools and scales is evident nationally. A stratified random sample of 32 hospitals in England indicated that over two-thirds of providers relied on locally developed assessment tools of clinical risk following self-harm that lacked formal validation (Quinlivan et al., 2014). The authors commented that the widespread use of locally developed tools with a limited evidence base in healthcare settings is concerning, particularly given that suicide is a catastrophic outcome for any service. A review of risk assessment tools used in all 85 NHS mental health organisations identified inconsistent use with over a third of organisations using local adaptations (39%) and, despite the recommendations made in national guidance, 85% using checklist-style measures (Graney et al., 2020). The authors asserted that such tools should not be used for risk prediction, yet alternatives with robust empirical evidence supporting their efficacy were not provided.

2.1.2 What is the evidence for current suicide risk assessment measures?

An evidence update of the NICE guidelines (2013) refers to the “SADPERSONS” scale (SPS; Patterson et al., 1983) which outlines 10 risk factors for suicide (male Sex, Aged over 45, Depression, Previous suicide attempts, Ethanol or substance abuse, Rational thinking loss, Social isolation, Organised suicide plan, No spouse, Sickness or physical illness) giving a score out of 10 for low, moderate or high risk of suicide. The SPS was previously identified as the most commonly used risk assessment tool in England for individuals presenting to the ED following self-harm (Quinlivan et al., 2014), yet a meta-analysis of nine studies concluded that insufficient evidence exists to support its use in clinical settings (Warden et al., 2014). One of the included studies, a large prospective cohort study of 4,019 psychiatric referrals to one of two EDs in Canada, showed that the SPS was no better than chance at predicting suicide attempts at six-month follow-up (PPV 5%; Bolton et al., 2012). Prospective longer term data may have provided further understanding of potential variations, or not, in the rate of suicide. Clinical risk within this cohort may also have been affected by the heterogeneity of care provision, given that some individuals would have had an inpatient admission. In a later study, the SPS only predicted 6% of repeated self-harm cases in the six months after admission to a general hospital department (Saunders et al., 2014).

The Ask Suicide-Screening Questions (ASQ; Horowitz et al., 2012) is a screening measure designed for completion in the ED by nursing staff. The ASQ consists of four yes/no self-report items relating to recent thoughts of suicide and whether the individual has ever attempted suicide. An answer of "yes" to any of the four questions results in completion of a fifth "acuity" question i.e. whether the individual has thoughts of killing themselves "right now". If the individual answers yes, it is recommended that a full mental health assessment is completed. Accompanying instructions for the ASQ state that clinical judgement overrides a negative screen i.e. an individual answering "no" to the first four questions.

Psychometric validation of the ASQ in three paediatric EDs (n=524) with patients aged between 10 and 21 years indicated that the measure has high specificity (87.6%) and sensitivity (96.9%; Horowitz et al., 2012). Validation of the ASQ with adults was undertaken in a multicentre, cross-sectional study of medical patients (n=727), further demonstrating high specificity (89%) and sensitivity (100%; (Horowitz et al., 2020), although longitudinal data was not available to determine the predictive validity of the measure for future suicidal behaviours. Further, it is recognised that an issue with using screening tools is the ability to identify a "secondary gain," whereby an individual that is not suicidal may report ideation for alternative reasons (such as gaining access to treatment), or conversely, may minimise suicidality (perhaps to avoid hospitalisation) i.e. the issue of face validity (Hamedi et al., 2019).

In an attempt to estimate the predictive utility of risk scales, Quinlivan et al. (2017) conducted a multisite, prospective study of 1,301 patients presenting to an ED following self-harm. The study compared the diagnostic accuracy for risk categorisation of four widely used scales, namely the SPS, Modified SPS (MSPS), Manchester Self-Harm Rule (MSHR) and ReACT Self-Harm Rule (referred to as "ReACT"). In addition to the factors in the original SPS, the MSPS includes: hopelessness, previous psychiatric care, excessive drug use, single/divorced/widowed, "serious suicide attempt" and stated future suicide intent. MSHR and ReACT are both made up of four questions that categorise high risk based on the individual answering “yes” to at least one of the four questions. MSHR includes previous self-harm, history of psychiatric treatment, currently in receipt of psychiatric treatment and benzodiazepine used for overdose. ReACT includes recent self-harm (in the past year), living status (alone or homeless), cutting as the method of self-harm and currently receiving psychiatric treatment. None of the four scales were better than clinician judgement for predicting future risk of suicide.

Steeg et al., (2018) compared the specificity and sensitivity of the same four scales for 3,157 individuals presenting to hospital following an episode of self-harm. Outcome measures included repetition of self-harm and number of suicides in the six months following self-harm presentation. The MSHR and ReACT had high sensitivity but low specificity for predicting future self-harm in the six-month follow-up i.e. less able to accurately categorise low risk individuals. Specificity for the MSHR was 7.4% (n=3,228) and 20% for ReACT (n=2,459). This may indicate that the scale items possess high face validity and also raise the question of whether subjective measures of emotional distress alone, without additional clinical validation, are viable. Conversely, SPS and MSPS had lower sensitivity resulting in the majority of individuals that died by suicide being categorised as low risk at initial presentation (12 of 18 for SPS and 15 of 18 for MSPS).

Other common risk scales used for assessing components of suicide risk that are recommended by the DoH (2009) are the Beck Scales, specifically, the BHS and Suicidal Intent Scale (SIS). The BHS consists of 20 true-false statements regarding expectations, motivations and negative beliefs about the future. The SIS, a 15-item tool, gathers information about various aspects of a suicide attempt e.g. presence of a suicide note, with the aim of assessing intent to die. The SIS has high inter-rater reliability (Beck et al., 1974; Mieczowski et al., 1993) and is moderately correlated with established measures of depression and hopelessness (Brown et al., 2000). The low rate of suicides in such studies (less than 1% for Brown et al., 2000) has meant that statistical analysis assessing the relationship between any variable and future suicide is unreliable.

Evidence exploring the utility of the SIS for suicide risk assessment is inconsistent, for example, total SIS score did not predict future suicide in a study of 413 individuals hospitalised following a suicide attempt (Beck & Steer, 1989). The error in such a rationale i.e. utilising the Beck scales for categorising level of suicide risk, appears no different to that of predicting suicide using the aforementioned assessment tools. As with other risk checklists, it would be a fallacy to assume psychometric robustness equates to accurate risk assessment for the individual, where a myriad of other suicide-specific factors are at play. Furthermore, the items within the Beck scales all have high face validity and are affected by individual motivations, including secondary gains, which may reduce their reliability (Steeg et al., 2018).

A systematic review and meta-analysis conducted by Chan et al. (2016) identified seven studies evaluating the predictive validity of the BHS and SIS. Both the scales had a low PPV and identified high numbers of false positives i.e. individuals identified as high risk did not die by suicide, with some studies including a long follow-up period of up to 15 years. Although the meta-analysis only identified four studies for inclusion for the BHS (combined n= 4,302) and three studies for the SIS (combined n= 3,124), the authors highlighted a significant challenge for suicide risk assessment; if an individual is identified as high-risk, they may be provided with potentially unhelpful resources (e.g. inpatient admission) and remain in services longer than required (Bolton et al., 2015). In an editorial published in the British Journal of Psychiatry in response to this meta-analysis, Mulder et al. (2016) argued that risk prediction using tools or scales is futile given that they lack specificity and recommended focusing on patient engagement and individualised risk assessment.

Certain subscales of the SIS may have greater predictive validity such as items 1-3 that measure the extent to which an individual takes precautions against being discovered following a suicide attempt (Beck & Steer, 1989). In a Swedish study of 81 individuals presenting to a university hospital following a suicide attempt, only the Planning subscale was significantly associated with future suicide during a 10-15 year follow-up period (Stefansson et al., 2012). Again, correlational relationships implicate the value of certain variables or measures, but tend to defer from the theoretical elaboration of the impact of these that longitudinal modelling may provide. Unsurprisingly and consistent with risk prediction measures as a whole as highlighted in this section, these studies demonstrate the low predictive accuracy of the SIS, further supporting the assertion that risk scales should not be used in isolation to predict future suicide or determine treatment offered (NICE, 2011). Furthermore, given that actively suicidal patients may deny ideation and conversely, those with low intent may express high suicidality, the ability to risk predict through such instruments in isolation must be deterred.

2.1.3 What is the best approach for suicide risk assessment?

Arguably, risk tools and scales in isolation have limited utility for suicide risk assessment. Clearly, clinician elaboration is required where the scale items provide only options of presence or absence for the factors deemed pertinent to suicide risk. The edict from national policymakers within the UK that risk scales may be effective when used in collaboration with comprehensive assessment (Kapur, Steeg, et al., 2013) and should not be used for risk prediction (RSPcych, 2010; NICE, 2011, 2013) would appear reasonable given the above context. However, it is unclear whether comprehensive assessment alone is being recommended. Clarification for utilising risk scales alongside comprehensive assessment in clinical practice, as postulated by Steeg et al. (2018), appears to be lacking. Given the scarce evidence for the effectiveness of risk assessment scales to accurately identify individuals at-risk of suicide, Quinlivan et al. (2017) advocated that risk scales have limited clinical utility and would only be valuable if clinical cut-offs were modified based on locality.

A more robust method of clinical risk assessment is to combine the identification of empirical evidence-based risk factors with structured clinical judgement. One such tool using this method, the Galatean Risk and Safety Tool (GRiST), is a web-based approach that is widely used across NHS services, private organisations and charities. GRiST is one of six recommended tools for assessing multiple risks with individuals experiencing mental health problems (DoH, 2009). GRiST is based on a psychological model of classification for different mental health risks organised in a hierarchical structure, in which higher-level risks such as current suicidal intent and history of attempts are subdivided into more specific questions dependent upon previous answers (Buckingham et al., 2007). The aim of the GRiST tool is not to provide precise risk scores or probabilities, which would be difficult to compute accurately given that suicide is a rare occurrence, but to use the relevant risk information to recommend interventions targeted at reducing future high-risk behaviours (Gilbert et al., 2011).

GRiST addresses one of the key challenges faced when collecting risk data by establishing a comprehensive anonymous database of patient risk profiles, with the potential to analyse how a range of multifaceted factors interact and hence aid risk prediction (Adams & Buckingham, 2012). The database also allows for the exploration of patient risk profiles and the associated clinical judgement (Vail et al., 2012). In addition, algorithms have been developed from the patient database to aid clinical decision-making, such as the reliability of a patient's response when they indicate no suicidal intent (Zaher & Buckingham, 2016).

As is the challenge with any suicide risk assessment measure, clinician proficiency and expertise in utilising the tool is implicated. Rezaei-Yazdi and Buckingham (2014) acknowledged that the utility of effective risk assessment is dependent on the quality and quantity of information inputted by the clinician. A report available on the GRiST training website stated that 32,580 patients did not have the minimum data set recorded to identify a subsequent suicide attempt, resulting in 1,289 missed attempts due to the limited data available to evaluate their suicidal intent (Buckingham, 2019). Further, as with other risk assessment tools, GRiST focuses on risk prediction rather than reduction which has consistently been demonstrated as problematic for suicide prevention (Beautrais, 2004; Harriss et al., 2005; Large et al., 2011).

In summary, suicide risk assessment tools and scales have low predictive value and many have been discredited for use in clinical practice (Quinlivan et al., 2017), which is unsurprising given that such scales are attempting to quantify a complex, multi-faceted, environmental-specific biopsychosocial phenomenon. The RCPsych (2010) proposed that locally devised tools were removed entirely from mental health trusts highlighting the need for alternative, valid assessment methods yet no alternatives were provided, despite the report stating that risk management should be structured and "evidence-based". Bryan and Rudd (2006) highlight several limitations of actuarial methods of assessment including the high numbers of false positives identified, the lack of predictive value and the tendency to over-focus on historical risk variables rather than current acute presentation. Further, inaccurate classification of individuals that are "high-risk" may affect the allocation of expensive specialist resources when this is not necessary or conducive to effective clinical care (Quinlivan et al., 2017).

Making services safe for individuals presenting with suicidality may be an important factor for effective risk management, as highlighted by Kapur et al. (2016). Their ecological analysis of a range of service changes recommended removal of ligature points on inpatient wards, community mental health provision and implementation of national guidelines, whilst also highlighting that a potential weakness for suicide prevention is the pathways to care within mental health services. The authors emphasised that system-wide service changes are key, such as increased suicide-specific training for clinical staff, however they acknowledged that wider organisational factors such as high staff turnover may influence the effectiveness of such changes.

Addressing the unique circumstances of the individual's mental health crisis may be a more effective alternative to unreliable attempts at suicide risk prediction. Until self-report and observational data gathered using current risk assessment tools is validated by an objective process incorporating other variables (clinical, psychological and environmental), which aid in accurately defining the individual's trajectory towards expressed suicidality, such risk tools appear to be little better than chance in preventing suicide. It follows that suicide risk assessment requires a new, holistic approach which combines what is known about risk factors with the clinician's objective judgement.

2.1.4 Therapeutic alliance

Therapeutic alliance is described as the collaborative relationship between client and clinician, which is widely considered to be essential to successful therapy (APA, n.d.). Therapeutic alliance when working with suicide risk can incorporate various components such as recognising the individual's autonomy, creating a safe environment through building trust with the therapist, and a collaborative effort to understand the trajectory towards suicidality (Rudd et al., 2001). It is proposed that therapeutic alliance, based on patient ratings of the quality of alliance, is related to effective treatment (Horvath & Symonds, 1991), although rating of alliance at the first appointment is not always indicative of future treatment outcomes (Bryan et al., 2012). A meta-analysis of 79 studies identified a moderate but consistent relationship between alliance and therapeutic outcomes (Martin et al., 2000).

It is argued that the dyadic relationship between client and clinician is key to the effective treatment of suicidality (Orbach, 2001; Rudd et al., 2001). A qualitative study exploring perceptions of the risk assessment process for veterans (n=34) highlighted the importance of clinicians demonstrating compassion, empathy and focusing on building a relationship with the individual for encouraging honest disclosures about suicide risk (Ganzini et al., 2013). A further qualitative study of 10 individuals presenting as high risk of suicide, recruited from psychiatric services, indicated that connectedness with caring professionals was important for instilling hope (Vatne & Nåden, 2016). A meta-analysis conducted by Poston and Hanson (2010) of 17 studies indicated that psychological assessment has therapeutic benefits for treatment outcomes, provided that the process is individualised and collaborative. However, Rogers and Soyka (2004) argue that, in busy clinical settings, assessment of suicide risk is typically based on surface-level questions such as “Are you suicidal now?” which may meet the needs of the clinician in terms of information gathering, but does not allow the patient to explain their narrative.

Based on the value of therapeutic alliance to treatment outcomes (Dunster-Page et al., 2017), it is argued that suicide risk assessment should be focussed on the ability to not only engage effectively with the individual, but also to reach an understanding of how their unique experiences are implicated in increased clinical risk.

2.2 Trend analysis: the link between self-harm and suicide

Research using epidemiological data estimates that between 0.5-1% of patients die by suicide within one year of self-harm (Hawton & Fagg, 1988; Hawton et al., 2003; Cooper et al., 2005). Hawton and Fagg (1988) followed up 1,914 individuals presenting to a general hospital after a suicide attempt (no definition or criteria provided) for between six and nine years after initial presentation. 1% had died by suicide at one-year follow-up. This figure was greater in males than females, a finding that was replicated by Hawton et al. (2003) in a 20-year follow-up study of 11,582 self-harm patients in England and Wales. Risk of suicide in the year after self-harm, defined as intentional self-poisoning or self-injury irrespective of motivation, was 66 times the annual suicide risk of the general population. However, it is not clear whether specific measures were used to quantify self-harm. Further, this study focused on a single hospital site and would require replication. It also focuses on a very specific cohort of individuals actively help-seeking suggesting increased pathology and medical need.

Evidence that indicates a link between repeat self-harm and suicide risk is largely based on trend analyses from epidemiological data. A systematic review of 90 studies by Owens et al. (2002) used a 10-point quality scale (including recognition of sample size, sample bias, extent of follow-up and method of data analysis) to identify high-quality studies in order to estimate the risk of suicide for individuals that self-harm. Based on the "better-quality studies," they reported that around two-thirds of suicides would have been preceded by self-harm in the previous year. The authors recognised the poor quality of included studies despite their "sifting process," particularly in terms of follow-up data. As outlined in Section 1.4, definitional variations are likely to have resulted in the link between self-harm and suicide across countries and clinical settings becoming a confounder of these results.

A further study estimated that individuals that repeat self-harm are 2.5 times more likely to die by suicide than those with a single episode of self-harm (Zahl & Hawton, 2004). Only age, gender and repetition of self-harm were used to compare cohorts whereas other individual factors were not considered. A prospective study by Cooper et al. (2005)

utilising the same definition of self-harm as Hawton et al. (2003) identified 7,968 patients presenting to one of four EDs in England following self-harm. They identified 66 suicides in the four year follow-up period, suggesting a 30-fold increase in suicide risk for this cohort. Again, several established confounders of suicide risk including individual pathology and psychiatric diagnosis were not assessed.

More recent research suggests a less clear-cut link between self-harm and suicide. A meta-analysis by Franklin et al. (2017) of 365 papers focusing only on longitudinal studies attempted to account for methodological limitations by using operationalised criteria for suicidal thoughts and behaviours, as well as only including studies that reported recruitment and retention rate. A history of self-harm was only weakly associated with future suicide, which remained the case even for longer follow-up studies (mean follow-up= 10 years) and length of follow-up did not improve predictive ability.

Inconsistencies are also apparent when focusing specifically on suicide risk for individuals with a history of suicide attempts, with odds ratios ranging from 4.1 to as high as 31.7 for those who later die by suicide (Appleby et al., 1999; Cavanagh et al., 1999). It is important to note that such studies may be affected by methodological limitations such as inter-rater reliability when categorising self-harm and suicide attempts, the study setting and the reliance on self-report measures with high face validity; all of which can lead to the heterogeneity the authors report for suicide risk.

As highlighted in this section, the relationship between self-harm and suicide is still unclear. Despite many findings of a correlational link between self-harm and suicide, it would be incorrect to advocate that a causal relationship between the two exists. The literature has helped increase understanding of this link yet the specific mechanisms underlying the relationship remain unclear (Franklin et al., 2017). This is complicated further by the relatively low number of subsequent suicides within research and hence underpowered studies (Cooper et al., 2005) and definitions of self-harm and suicidal intent (Fliege et al., 2009). Further, few studies exist that measure the same confounding factors and much of the evidence is based on individual studies that vary in size, generalisability and quality (Chan et al., 2016).

In a systematic review, Fliege et al. (2009) reported that only five of 59 studies used a prospective research design. Prediction of suicide based on previous self-harm is poor and is likely to be related to other factors such as life events, social circumstances, mental health difficulties and treatment interventions (Beautrais et al., 2005), as well as reliance on patient memory from a highly distressing period and the quality of historical clinical data. Chan et al. (2016) recommended that individual factors and precipitating circumstances should be taken into account when assessing self-harm. This could therefore include the context in which self-harm occurred including an understanding of past experiences and interpersonal relationships that may later increase suicide risk. The authors suggested that this method of assessment would hopefully improve patient engagement.

Despite the robust finding of a correlation between self-harm and suicide that is replicated with ease, little empirical evidence elucidating the mechanism that leads from self-harm to life-threatening behaviour has been produced. The promising work that does exist using an ideation-to-action model (i.e. O’Connor & Kirtley, 2018) does not appear to have been operationalised in a NHS clinical setting, although components of the IMV model have been developed for use in clinical practice (e.g. E-SF, De Beurs et al., 2020). More often, self-harm is controversially associated with suicide and has resulted in being advocated as a key indicator of future suicide (Appleby et al., 1999, Cavanagh et al., 1999, Owens et al., 2002).

Until recently, a myriad of such corollaries derived from epidemiological and post-mortem or similar studies have been widely utilised for suicide risk assessment in the NHS (Airey & Iqbal, unpublished). No clarity has been provided on what constitutes an assessment that may assist individualised treatment planning, besides rejection of the "one size fits all" checklist format instruments (National Collaborating Centre for Mental Health, 2018). As such, there is a risk that statistically valid measures aiding this process would also be discontinued.

2.3 Understanding how mental health difficulties relate to suicidality

2.3.1 Defining a "mental health suicide"

Typically, suicidality is viewed in the context of a mental health difficulty, most often depression (Bachmann, 2018; Bertolote et al., 2004; Chesney et al., 2014), although a universally accepted definition of mental health suicide is scarce. It may be useful to think of death by suicide as a consequence of some mental illnesses, rather than suggesting that mental illness is a causal factor for suicide (Hjelmeland & Knizek, 2017). NCISH define mental health suicides as those where there had been contact with mental health services in the 12 months prior to death. However, it is questionable how useful this is as a method of gathering accurate statistics about the number of patients with a mental illness at the time of their suicide.

The first report from the NCISH (2006) presented five years of data including questionnaires from mental health providers of 6,203 patients who died by suicide that were categorised as a mental health suicide based on the NCISH definition. Scrutiny of this data indicated that 63% of this cohort had displayed symptoms associated with poor mental health at time of their last contact with services, as documented in their clinical records. Psychiatrists caring for the patients were sent a questionnaire and asked whether there was evidence of various symptoms at their last contact with the individual. If a patient showed evidence of "emotional distress" and/or "hopelessness," they were deemed to have mental health difficulties. These symptoms may be indicative of mental health issues but do not clearly ascertain whether an active psychiatric diagnosis was observed near the time of death. Of the individuals that had had a psychiatric diagnosis in the past (84%), there was no data to define the proportion of patients who still had active symptoms relating to that diagnosis at the time of last contact with services.

The NCISH report (2019) included a broad spectrum of services in their definition of specialist mental health care, some of which may only indirectly treat mental health difficulties within substance misuse and learning disability services. As such, those that were defined as mental health patients were not necessarily under the care of a mental health team or meeting the diagnostic criteria for a mental health disorder at the time of their death. The mammoth task of collating national datasets is likely to present resource and logistical challenges, where inferences may be valuable but further elucidation, as in this case, is required. NCISH (2019) also reported on general population suicides for those individuals who were not "in receipt" of mental health services. Although this may provide insight into individuals who are not help-seeking, rather than whether they are experiencing mental health problems, without an empirical examination of the circumstances of each individual suicide such categorisations are unlikely to provide the clarity necessary.

A broad range of risk factors including emotional pain (Shneidman, 2001), distress (Wenzel & Beck, 2008), hopelessness (Beck et al., 1989; Beck et al., 1985; Brown et al., 2000), self-hate (Conrad et al., 2009; Jobes et al., 2009) and impulsivity (Baumeister, 1990; Maser et al., 2002) may inform the basis of a psychiatric diagnosis and/or be related to suicidality. Additionally, common cognitive deficits associated with suicidality (Wenzel et al., 2009) including poor problem-solving and negative thinking styles can potentially activate suicide-specific schema in times of crisis without a concomitant diagnosable mental health disorder. Moreover, the threshold of "psychological pain bearability" for suicidal individuals as discussed in Chapter 1 (e.g. Shneidman's cubic model of suicide, 1987; Wenzel et al.'s cognitive theory of suicide, 2009) is not solely due to mental health problems. Thus, the threshold for suicidality can be reached by stressors including difficult life circumstances and physical pain, rather than via a mental health diagnosis in isolation.

2.3.2 Evidence of mental health as a contributing factor to suicide

In the USA, psychiatrists are frequently faced with allegations of malpractice (often negligence) if a patient under their care dies by suicide, particularly if that patient was residing on an inpatient unit (Packman et al., 2004; Tsao & Layde, 2007). For mental health workers in the UK, there are similar risks of liability and questions of competency as well as the emotional and psychological burden associated with an outcome of suicide (Burgess & Hawton, 1998). The blame and accountability that is directed at mental health services following a suicide reinforces the belief that there is a relationship between mental health problems and suicide and, more specifically, that mental health difficulties are often the cause of a patient's suicide (Hawton et al., 2003).

A meta-analysis of 27 studies (pooled n= 3275) indicated that 87.3% of individuals who died by suicide had a psychiatric diagnosis at the time of their death (Arsenault-Lapierre et al., 2004). The studies included varied in methodology used to diagnose mental illness. For example, one study used information gathered primarily from non-professional informants, supplemented where possible by GPs and mental health clinicians, to determine whether that individual had a mental illness prior to their death (Appleby et al., 1999). Of those that died by suicide, it was reported that 76 out of 84 had a mental health diagnosis compared with 17 out of 64 living controls, although this was determined based on discussions between the interviewer and an external psychiatrist rather than a formal diagnosis. The authors acknowledged several problems with this method, including the potential for bias, as most informants were aware that the individual who died by suicide was in receipt of primary care health treatment. Given the attributional link between suicide and mental health (Bachmann, 2018; Bertolote et al., 2004; Chesney et al., 2014; NCISH, 2019), this confound is to be expected. Pouliot and De Leo (2006) raised issues regarding the reliability of the assessment tools used to diagnose a mental health condition which are often not standardised for use with informants.

Boardman et al. (1999) used a four-stage process to identify psychiatric diagnoses for those who died by suicide: 1) identifying suicides where the coroner suspected a psychiatric diagnosis; 2) using medical evidence from the inquest file or case notes to confirm diagnosis, including therapeutic evidence; 3) in the absence of such evidence, a “most like” diagnosis was coded and 4) final diagnoses were agreed by the clinical team to correspond with the broader categories in the International Classification of Diseases – 10th Revision (ICD-10; WHO, 1992). The authors reported that other sociodemographic factors such as recent separation, loss and financial difficulties all had greater associations with suicide than psychiatric diagnosis.

A meta-analysis conducted by Cho, Na, Cho, Im, and Kang (2016) of 48 psychological autopsy studies (pooled n= 6626 suicides) found regional variations in the mean prevalence of diagnosable mental health conditions where East Asia was 69.6% and South Asia was as high as 90.4%. Studies were only included where assessors used standardised interview instruments to determine diagnostic criteria (i.e. ICD or DSM), either prior to suicide or from information provided by informants, as opposed to coroner’s or medical examiner’s reports without corroboration from informants. Other risk factors for suicide such as physical health issues, socioeconomic status (SES) and difficult life events were not included as part of the analysis. It would be useful to conduct a factor analysis to account for the comorbid difficulties contributing to suicide risk as a way of explaining some of the variation in prevalence across countries.

Hawton et al. (1998) argued that a review of each autopsy case could determine a probability, based on interviews with informants, of whether the individual had a mental health problem at the time of their suicide. However, there are several methodological issues when using informants to assess mental health conditions after a suicide has occurred. These include inter-rater reliability with other professional and non-professional informants, variability when using multiple informants, bias relating to the emotional state of the informant, the informant's subjective and cultural/ethnic speculations about the reasons for suicide and issues relating to memory/recall, particularly when the informant is asked to consider events that occurred several months ago (Pouliot & De Leo, 2006).

Further concerns relating to the use of informants to collect data include how well the informant knew the deceased individual (and hence the validity of the information gathered), as well as the possibility of recall bias. Hawton et al. (1998) described this issue in more detail by explaining how informants may fail to disclose negative information about the individual or provide a distorted account of events/characteristics in an attempt to find an explanation for the suicide. Additionally, there is a possibility that certain questions may influence informants' responses in a post-suicide interview (Pridmore, 2015). Owens et al., (2003) demonstrated this issue in their study of 100 suicides by individuals not in receipt of mental health services. When informants were asked specific diagnostic questions, 68% of individuals dying by suicide would have met the criteria for a psychiatric diagnosis according to informants' responses. However, a later study using qualitative interviews with the same group of informants revealed very few references to psychiatric illness playing a role in the individual's suicide (Owens & Lambert, 2012).

2.3.3 Is there a causal link between psychiatric diagnosis and suicide?

Burgess and Hawton (1998) suggested that there is no practicable empirical determinant of whether a death by suicide was due to a mental health difficulty, if this is to be qualified retrospectively. A systematic review of 29 autopsy studies demonstrated the wide variability in the proportion of suicides that are caused by psychiatric illness (Milner, Sveticic et al., 2013). Estimates for suicides occurring in the absence of an Axis I mental health condition ranged from 5.5% to 66.7%, with the percentage varying dependent on study location. Furthermore, recent data from the USA reported a figure of 54% of individuals that died by suicide did not have a mental health problem, as determined by coroner/medical examiner reports indicating no formal diagnosis at time of death (CDC, 2018). However, it is possible that a mental health problem could have existed without it being reported or diagnosed (Bachmann, 2018). The polar position adopted by Burgess and Hawton (1998) regarding retrospective determination of mental health difficulties appears to dismiss that other processes may provide acceptably accurate diagnostic clarity, such as coroner investigations that may include independent reports from experts (NHS England, 2015).

The notion that suicide is commonly the result of mental health symptoms meeting the criteria for a psychiatric diagnosis is often referred to in suicide research (Cavanagh et al., 2003; Foster et al., 1997; Henriksson et al., 1993; Insel & Cuthbert, 2015). Several studies demonstrate an association between suicide and various mental health difficulties including depressive disorders, personality disorders, anorexia nervosa, anxiety and substance use disorders (Chesney et al., 2014; Haw & Hawton, 2015; Isacsson & Rich, 2003). Some researchers even suggest that mental health problems play a role in as many as 90% of suicides (Cavanagh et al., 2003; Hawton et al., 2003), however it is unclear whether this premise is accurate. Hjelmeland and Knizek (2017) highlight a methodological flaw in that a correlational association with suicide does not indicate a causal link with psychiatric diagnosis. It is important to explore the evidence base for this belief to better understand the link between psychiatric diagnosis and suicide and, as such, whether it would be beneficial for the provision of services targeting suicide prevention to be the responsibility of mental health services where no mental health disorders are evident (see Boardman et al., 1999). Establishing a causal link between non-psychiatric difficulties that lead to suicide would clarify the role of social care and services with a specific remit (relational loss, separation and financial difficulties).

There are further issues that bring into question the validity of the link between mental health problems and suicide. As highlighted by Pridmore (2015), the gender imbalance in male versus female suicide rates is incongruent with findings relating to the higher prevalence of mental health diagnoses for females (Martin-Merino et al., 2009; McManus et al., 2016). Further, if mental health difficulties are congruent with increased suicide risk, one would assume that countries with better mental health service outcomes would have reduced suicide rates. However, data collected from 191 countries by Rajkumar et al. (2013) found evidence to the contrary. Countries that reported positive mental health system indicators such as greater numbers of psychiatrists and a larger proportion of health budget allocated to mental health expenditure in fact had higher rates of suicide, although this is based on the assumption that better resources will reflect more positive mental health outcomes.

The presence of diagnosable mental health conditions is not always related to suicide risk and it is possible that confounding factors are related to both mental health difficulties and suicidality (Hjelmeland & Knizek, 2017). In a large scale study of WHO survey data from 108,705 adults from 21 countries, Borges et al. (2010) found that having a diagnosable mental health condition was not predictive of suicide attempts amongst those with suicidal ideation. Additionally, the type of mental health problem that has the greatest association with future suicidal behaviour varies between low, middle and high-income countries, suggesting a large amount of cultural variation (Nock, Borges, Bromet, Alonso, et al., 2008). Kessler et al. (2005) assert that it is unhelpful to focus on mental health treatment alone to prevent suicide as rates of suicidal behaviours have changed very little despite increased uptake of mental health services.

Several researchers have recommended tackling suicide prevention by focusing on factors outside the realm of mental health services including socioeconomic stressors, relationship issues, substance misuse and painful emotions such as shame and sadness (Boardman et al., 1999; Owens et al., 2003; Pridmore, 2015), all of which can play an equally important role in suicide but may not necessarily inform the basis of a diagnosable mental health disorder. Research in this area often ignores the methods used to establish the relationship between mental health difficulties and suicide. Psychological factors are most certainly implicated, yet whether these factors are linked to a psychiatric diagnosis or broader issues such as social inequalities or relationship issues will vary on a case-by-case basis (O'Connor & Nock, 2014). By recognising the various factors that play a causal role in suicide, it may be possible to lessen the burden on mental health services and help alter the belief that psychiatric treatment alone can prevent suicide (Burgess & Hawton, 1998).

In summary, the position that only mental health is a conduit to suicide is not supported by the evidence. It is therefore noteworthy that over two thirds of the UK population do not come into contact with these services prior to their suicide (NCISH, 2019). The 90% statistic linking mental health problems to suicide is often based on psychological autopsy studies, the quality and accuracy of which may differ due to the variability in the level of training and social characteristics of the post-autopsy interviewer (Hjelmeland et al., 2012). In the absence of records of psychiatric diagnoses, it is necessary to consider additional measures to improve the objectivity of informant interviews when assessing an individual's history preceding a suicide, taking into account hindsight bias.

2.4 Key themes from national guidance

2.4.1 Overview of key policies and guidelines for suicide prevention

Launched in 1992, the government's "Health of the Nation" strategy (DoH, 1992) was the first formal attempt to improve suicide prevention on a national scale in the UK. This was followed by a further government initiative titled "Saving Lives: Our Healthier Nation" which aimed to improve mental wellbeing in the general population and targeted suicide reduction as a primary goal (DoH, 1999a). The key aim was to reduce death by suicide by at least 20% by 2010. This was supported by the launch of the "National Suicide Prevention Strategy for England" (DoH, 2002), which outlined specific objectives based on epidemiological evidence of high-risk groups for suicide. The 2008 UK economic recession appears to have coincided with an increase in the suicide rate in England and a failure to meet the proposed 20% reduction, although the association between the recession and suicide is based on correlational rather than causal evidence (Barr et al., 2012).

The updated strategy "Preventing Suicide in England" (DoH, 2012) placed a greater emphasis on a sector-wide approach to suicide prevention, highlighting the role of mental and physical health services as well as businesses and academic institutions. This document highlighted the associations between mental and physical health difficulties and how these could affect the individual's vocation. The shift in strategy seems to have been the recognition that being in employment or full-time higher education establishments could provide a conduit for intervention within these organisations. This also led to the development of locality-specific suicide prevention plans and funded research projects to deliver on the aims set out by the government i.e. to reduce the number of suicides, improve the research evidence-base both locally and nationally and adopt a consistent multi-agency approach to suicide prevention. Recommended research included the impact of the economic recession on suicide, evaluating the assessment and management of self-harm and understanding suicide in high-risk groups such as children and young people. Following this, NHS England produced the "Five-Year Forward View" for mental health (FYFV; NHS England, 2016a) which set out a new target of a 10% reduction in national suicide rates by 2020/2021 with a particular focus on high-risk groups including men and young people who self-harm. The FYFV outlined a plan to implement a "core 24" rapid access mental health crisis service available 24 hours a day, seven days a week for individuals requiring urgent access to care. Further guidance developed by NHS England in conjunction with NICE and the National Collaborating Centre for Mental health (2016b) included a treatment pathway for individuals presenting to general hospital requiring emergency mental health care, accessed through Liaison Psychiatry services. This included the requirement for the Liaison Psychiatry team to respond to a referral within one and hour and for the individual to have received a "full biopsychosocial assessment" within four hours of ED presentation.

At the time of writing, the latest plan to support suicide prevention (DHSC, 2019) focused on the implementation of locality-based strategies to support high risk groups, specifically men, people in the care of mental health services, people in contact with the criminal justice system, occupational groups where elevated suicide risk is evident and individuals with a history of self-harm. Further, the NICE (2018) guidelines and quality standard for suicide prevention in community and custodial settings provided several recommendations including the following 10 key points:

1. <u>Suicide prevention partnerships:</u> Local authorities working with local organisations to set up a multi-agency partnership for suicide prevention
2. <u>Suicide prevention strategies:</u> Develop a multi-agency strategy based on the DoH suicide prevention strategy for England (and other relevant strategies)
3. <u>Suicide prevention action plans:</u> Develop an action plan based on local patterns and evidence-based practice for suicide prevention and for after a suspected suicide

4. Gathering and analysing suicide-related information: Use national data from Public Health England (PHE) and locally collected data on suicide and self-harm including information on method, location, timing and demographics of individual
5. Awareness raising by suicide prevention partnerships: Local activities to raise community awareness of support available to encourage help-seeking behaviours and reduce stigma
6. Reducing access to methods of suicide: Use local and national data to identify trends and reduce opportunities at locations where suicide is more likely
7. Training by suicide prevention partnerships: Ensure training is available for those in contact with high-risk groups and people working at locations where suicide is more likely
8. Supporting people bereaved or affected by a suspected suicide: Use rapid intelligence to identify individuals that may be affected by a suspected suicide or benefit from bereavement support
9. Preventing and responding to suicide clusters: Aim to identify and prevent potential suicide clusters and provide ongoing support to those who may be affected to reduce the risk of additional suicides
10. Reducing the potential harmful effects of media reporting of a suspected suicide: Identify someone from within multi-agency partnership to liaise with the media regarding reporting, in particular, highlighting the need for sensitive language that is not stigmatising and avoiding speculative reporting/presenting details about suicide methods

In the main, the aforementioned are principally propagating a public health approach to the management of suicidality. For example, the guidance reports that a high proportion of individuals who die by suicide have previously presented to A&E, typically for self-harm.

Despite this assertion, there is no assessment guidance provided to support clinicians assessing suicide risk in A&E, nor is there any reference to alternative guidelines that should be used. Ostensibly, the rationale here appears to be one of multiagency working, health promotion, combatting local trends in suicide variables and a reliance on "evidence-based research," despite the dearth of trial data (see Section 3.1.2).

2.4.2 Defining "evidence-based"

Recommendations for delivering interventions within health and social care settings are developed by NICE and outlined in "evidence-based" guidelines for the management of specific conditions (NICE, 2012). The process for analysing evidence includes four key stages (NICE, 2014):

1. Identifying relevant evidence: including both published and unpublished literature, conference abstracts and studies in progress;
2. Assessing quality of evidence: critical appraisal using a standardised method for assessing risk of bias, with preferred methods outlined for different study types;
3. Equality considerations: an understanding of how people will be affected by the guidelines, taking into account different characteristics such as socioeconomic status, ethnicity and geographic location;
4. Presenting the evidence: including a summary of studies, quality appraisal and study design.

A Randomised Controlled Trial (RCT) is considered the "gold standard" for establishing the efficacy of an intervention (National Collaborating Centre for Mental Health, 2018). RCTs are deemed to be particularly valuable when the results of several RCTs are combined as part of a systematic review (Evans, 2003). Well-conducted RCTs can provide the most valid, unbiased effects of a treatment, although it is acknowledged that non-randomised trials may be more appropriate when it would be unethical to assign participants to control and intervention groups (NICE, 2014). As such, it is argued that evidence-based research within the field of suicide prevention should, where ethically acceptable, include RCT efficacy of interventions. Where this is not possible, it is proposed that research should evaluate promising interventions and, if the intervention is deemed to be effective and acceptable to participants, can be validated through an RCT.

2.4.3 Psychosocial assessment

It is recommended that a psychosocial assessment is undertaken as part of routine care with all patients presenting to A&E departments (NICE, 2004; RCPsych, 2010). NICE guidelines (2004, 2011) stipulate that this includes an assessment of psychological and social care needs, including mental and physical health difficulties, to understand the circumstances and motivations for self-harm as well as to facilitate engagement. Further, it is recommended that clinicians identify known demographic and clinical risk factors, such as hopelessness, depression and ongoing suicidal intent.

A review of the implementation of the NICE guidelines on self-harm (2004) identified several issues that require clarification including when a psychosocial assessment should be conducted, who should undertake the assessment and the specific components that should be included (Pitman & Tyrer, 2008). Further, the evidence for the utility of psychosocial assessment for impacting on self-harm is equivocal. A study of 13,966 individuals presenting to one of three EDs in England with their first episode of self-harm, found that psychosocial assessment (undertaken in 54.7% of cases) was associated with reduced repetition of self-harm at two-year follow-up (Bergen et al., 2010). The study methodology was limited to a three-year history to determine “no previous self-harm,” which may preclude recovered mental health and non-mental health historical cohorts. Additionally, follow-up would potentially miss ED self-harm data outside of the study localities. In another large study of the same three EDs (n=15,113, 41.1% receiving a psychosocial assessment), there was some evidence to suggest that psychosocial assessment may be associated with reduced repetition of self-harm at 12-month follow-up (Carroll et al., 2016). However, the impact of confounders such as unemployment and alcohol misuse were not fully addressed, thus not following the recommendation that a "comprehensive" psychosocial assessment following self-harm should include consideration of contextual factors such as social circumstances, occupational functioning and need for drug treatment (NICE, 2011).

Other research indicates that psychosocial assessment does not impact on future self-harm, for instance, an 18-month study identifying 9,231 episodes of self-harm from six EDs, 60% of which resulted in a psychosocial assessment, did not find an overall relationship between psychosocial assessment and repeat self-harm (Kapur et al., 2008). However, findings differed by hospital i.e. reduced risk of repeat self-harm in some and increased risk in others, which may indicate the varying quality of psychosocial assessments. Certain cohorts such as individuals that were unemployed, younger people (under 24) and those that used cutting to self-harm were less likely to receive a psychosocial assessment. A further study collecting data over a 10-year period (n=35,938) indicated that psychosocial assessment was less effective for reducing repeat self-harm in more deprived areas at 12-month follow-up (Kapur, Steeg, et al., 2013). Due to the observational nature of the study, causal inferences regarding the association between outcomes following psychosocial assessment and deprivation cannot be made. For individuals presenting to the ED for the first time with self-harm (n=12,652), Pitman et al. (2020) reported a reduced probability of repeat self-harm at 12-month follow-up that did not differ in terms of the professional conducting the assessment (psychiatrist or psychiatric nurse) or type of aftercare provided. 77% of participants had received a psychosocial assessment suggesting an increase on previous research, although this study used data from only one hospital site.

Without elucidation as to the core ingredients of recommendations made for psychosocial assessment, including the content, therapeutic aspects and effective follow-up care, it is unclear how best to improve the quality and delivery of the assessment process (Pitman et al., 2020). This lack of clarity is of little value to the grassroots clinician attempting to follow such advice, particularly given the limited utility of risk prediction tools and lack of alternative, causally informed approaches in national guidance.

2.4.4 Crisis and community mental health service provision for managing risk

Services for individuals with mental health difficulties has changed from provision through long-term care in large district psychiatric hospitals since the 1950s, towards a community based approach (NHS Community Care Act, 1990). This legislation gave local authorities the responsibility of assessing and providing community services, with the aim of ensuring that people were able to access appropriate care. Community care services were intended to support people within their own homes, reducing institutionalisation and providing individualised needs-based care plans.

A result of community care was the recognition that services for individuals with acute mental health difficulties would require bespoke risk management and clinical intervention. The importance of mental health crisis care was becoming increasingly recognised as a priority both locally and nationally. As a result, several services including CRHT, Assertive Outreach Teams (AOT) and Early Intervention Teams (EIT; for individuals with first episode psychosis) were introduced as part of the "National Service Framework for Mental Health" (DoH, 1999b). CRHTs were intended to provide a rapid assessment and interventions for people experiencing a mental health crisis, "gatekeeping" inpatient beds and providing alternatives to admission where possible in the least restrictive environment (Sainsbury

Centre for Mental Health, 2006). Crisis in this context can be defined as an individual feeling overwhelmed by a life event or situation resulting in disruption to their daily functioning and/or an inability to utilise their usual coping mechanisms (James & Gilliland, 2005). AOTs were implemented to improve community care by providing more intensive support for individuals with serious continuing-care mental health problems and complex needs. These teams were intended to provide input over a longer period of time, whereas CRHTs typically remained involved on a short-term basis for usually a month or less (Wheeler et al., 2015).

The NHS plan (DoH, 2000) commissioned the implementation of 335 CRHTs in England by 2004 to reduce the pressures on acute wards by assessing and treating people with severe mental illness out of hospital. In their practical guide, The Sainsbury Centre for Mental Health (2006) defined the target population for CRHTs as primarily individuals with schizophrenia, bipolar affective disorder, severe depression and BPD. This also includes individuals experiencing an acute mental health crisis which may be expressed through suicidal behaviours, self-harm and psychotic episodes, regardless of psychiatric diagnosis. By 2005, 335 CRHT teams were established across England (National Audit Office, 2007). These teams remained distinct from liaison mental health services, known hereon in as “Liaison Psychiatry,” providing an on-site hospital service to meet the one-hour response time as recommended by NHS England’s “Achieving Better Access to Mental Health Services by 2020” programme developed in collaboration with NICE and the National Collaborating Centre for Mental Health (DoH, 2014a).

It is argued that access to CRHTs has provided a viable alternative to inpatient hospitalisation, particularly if the team make regular home visits and are responsible for both health and social care needs (Joy et al., 2006). Preliminary RCT data indicated that implementation of a CRHT successfully reduced inpatient hospital admissions from 59% to 22% in the eight weeks following a “psychiatric crisis” warranting mental health service input (Johnson et al., 2005), although this was based on data from one CRHT in inner London which may limit generalisability. Further, reduction in availability of acute psychiatric beds in England from 67,100 in 1987/88 to 18,400 (Wyatt et al., 2019) may potentially confound these results.

Despite this initial drive for better crisis care, the FYFV (NHS England, 2016a) highlighted inadequate services in some regions and mandated nationwide 24/7 crisis response and intensive home treatment support by 2020/21. A nationwide survey of service managers from 95% of the CRHTs in England (n= 233) comprising of 190 adult, 30 older adult and 13 children and young people's teams highlighted that only one team was fully compliant with the policy guidelines outlined by the DoH (2001) for a CRHT (Lloyd-Evans et al., 2018). Only 69% of teams were able to offer a full 24-hour service including home treatment and only 43% accepted self-referrals, with caseloads varying from 5 to 144 patients. 76% of adult teams met the minimum recommended staffing level and this was 59% for both children and older adult teams. Adherence to the CRHT model for waiting times ranged from one hour to one week, which the authors described as a random "lottery" for mental health crisis provision depending on locality. Similarly, service provision and staffing availability of CRHTs for older adults and young people showed regional variations across the NHS. Such provision for older adults and children was comparatively scarce, with 198 adult CRHTs compared to 31 and 15 for older adults and children, respectively.

In an attempt to improve crisis care, 25 national bodies signed up to the "Crisis Care Concordat" (DoH, 2014b). This agreement was set up to ensure quality and effective crisis care that is consistent across localities and meets national standards. Access to mental health Crisis and Liaison Psychiatry services was one of the top priority areas as well as suicide prevention. More recently, and building upon the FYFV, the NHS Long Term Plan has provided operational parameters for mental health crisis service provision including 24/7 access to community-based CRHT support and Liaison Psychiatry services in all A&E departments by 2020/21 (NHS England, 2019). Further, the plan stipulated that all areas would have an Integrated Care System (ICS) by April 2021, forming partnerships between local organisations, with the ambition to deliver co-ordinated health and social care services.

2.4.5 Reviewing serious incidents of life-threatening and suicidal behaviours

The "Serious Incident Framework" (NHS England, 2015) outlined the roles and responsibilities of NHS healthcare providers for managing serious incidents, defined as "adverse events, where the consequences to patients, families and carers, staff or organisations are so significant or the potential for learning is so great, that a heightened level of response is justified" (p. 7, para 1). These include acts or omissions leading to unexpected or avoidable death, injury resulting in serious harm, "never events" that prevent an organisation's ability to deliver acceptable quality clinical provision and incidents that cause widespread public concern resulting in a loss of confidence in the provider's service. The framework outlined a set of criteria for managing serious incidents in the UK which included the suicide of patients under the care of NHS services. Serious incident reports produced within the NHS will include a root-cause analysis of factors that would prevent the negative consequence (the adverse event), which are a constituent component of the healthcare provision from the organisation. Additionally, an analysis of the probability of a similar future occurrence and recommendations or learning to prevent such an outcome are outlined with clear timeframes and defined monitoring parameters.

As part of the judicial process under English law, all suicides are reviewed by the coroner's court alongside a safety investigation into the organisation(s) involved, the extent of which depends on the nature and severity of the incident. A recent report by NHS Improvement (2018a), the body responsible for patient safety, highlighted weaknesses in the serious incident process including a lack of support for staff being investigated and staff feeling blamed for incidents involving patients under their care. As emphasised by Rawlinson (2008), target-driven care environments may also be partly responsible for influencing healthcare delivery as clinicians are often faced with conflicting demands, which could potentially result in healthcare failures. Given the findings from Lloyd-Evans et al. (2018) regarding the disparity of CRHT efficiencies across the NHS in England, the multiple demands on clinicians, both operational and clinical, when considered alongside such investigations may well lead to a higher degree of occupational stress.

In extreme cases, failings in care can lead to disastrous consequences for patients as demonstrated by the inquiry into the Mid-Staffordshire NHS Foundation Trust. Concerns were raised about the Trust's high mortality rate resulting in an investigation into care delivery and services (Francis, 2010). Following the original inquiry, Francis (2015) stated that holding individuals accountable for the failings would be of little benefit and instead highlighted the need for organisational culture change. Notably, Francis (2015) made a series of recommendations in the "Freedom to Speak up" review to promote a safe, supportive environment within the NHS where staff feel valued and are encouraged to raise any concerns. Kapur (2014) wrote several reports following the Mid-Staffordshire inquiry exploring whistleblowing procedures and the process for responding to staff concerns within the NHS. He also commented on the importance of an open culture within NHS organisations and emphasised how this is linked with more positive outcomes for patients. A mixed methods study by Dixon-Woods et al. (2014) comprising interviews with senior stakeholders (internal NHS staff and external agencies), observations in services, focus groups and surveys from patients/carers found a positive correlation between level of staff support and patient experience. As part of this study, analysis of NHS Staff Survey results from 2007-2011 highlighted an ongoing blame culture and continuing negative treatment of staff involved in serious incidents. The authors concluded that it is important for staff to feel valued and respected within organisations to improve the quality of patient care.

2.4.6 Standard of proof for suicide.

The Court of Appeal in England and Wales issued a change to the standard of proof required for suicide verdicts following a legal challenge that reached the High Court in 2018 and was upheld at appeal (Maughan v. Her Majesty's Senior Coroner for Oxfordshire, 2019). The change meant that a coroner's judgement of suicide could be based on the lower civil threshold i.e. balance of probabilities, as opposed to the previous criminal standard i.e. beyond reasonable doubt. The decision was welcomed by charities such as the Parents' Association for the Prevention of Young Suicide (PAPYRUS; 2018), given the potential that the ruling would lead to a more accurate understanding of suicide numbers in the UK, as well as hopefully reducing the stigma associated with the criminal standard. It is anticipated that there will be changes to national suicide prevention priorities depending on which cohorts are most affected by the new ruling (Appleby et al., 2019). As such, the official recording of suicide rate during the period of the research project described in this thesis was expected to increase, potentially more so for high risk groups such as individuals with mental health conditions, although the NCISH already include "undetermined" cause of death within their suicide data.

2.5 Public health perspective

Public health has been defined as "the science and art of promoting and protecting health and wellbeing, preventing ill-health and prolonging life through the organised efforts of society" (Faculty of Public Health, 2016, para. 1). Public health initiatives have been postulated as a valuable component of suicide prevention work, for instance, providing suicide prevention training to professionals and community members, responding to and containing suicide "clusters," preventing suicide in public places and providing support to those bereaved by suicide (DHSC, 2019).

To guide the implementation of public health initiatives for suicide prevention, Potter et al. (1995) described four key processes:

1. Surveillance: identifying and defining the problem through trend data, such as reporting on suicide rates by gender, age and geographical location,
2. Identifying risk factors: attempting to understand the causes of suicide including characteristics associated with an increased likelihood of suicide, as well as protective factors,
3. Design and implement interventions: this includes suicide prevention interventions that are universal (available to everyone in a defined population, such as education programmes), selective (for certain high-risk cohorts and professionals working with these groups) and indicated (for specific individuals identified as high risk, such as those presenting to Crisis services following a high-risk suicide attempt),
4. Evaluate prevention programmes: identifying which interventions work to determine the best “evidence-based” approaches.

This four step process has been mirrored by the CDC (2012) in their public health approach to suicide prevention:

1. Population approach: impacting on the problem of suicide through large-scale approaches that target populations rather than specific individuals,
2. Primary prevention: attempting to intervene before suicidal behaviours occur,
3. Commitment to science: increase knowledge in order to evaluate the efficacy of prevention efforts and use this to inform the development of new interventions,
4. Multi-disciplinary perspective: working across sectors to ensure that a variety of perspectives and experiences are included in order to address the complexity of suicide.

An effective public health initiative for a complex issue such as suicide must have clear objectives and use a multiagency approach (WHO, 2012). This includes a range of sectors such as health and social care, the media, the criminal justice system, scientific research bodies and educational institutions. The DoH (2012) highlighted that, to evaluate the success of suicide prevention guidance, national guidelines need to be applied consistently across mental health providers in both primary and secondary care settings so that valid and reliable data about the success of such implementations can be gathered.

Examples of public health interventions for suicide have been undertaken worldwide, including 1998 legislative changes to paracetamol pack sizes in England (Hawton, Townsend, et al., 2001) with follow-up of mortality statistics up to 2009 indicating a reduction in suicides involving paracetamol (Hawton et al., 2013). A reduction in railway suicides was reported following barrier installation at underground train platforms in Hong Kong, with 51 railway suicides pre-installation (1997-2001) compared with 22 suicides post installation (2003-2007; Law et al., 2009). De Leo et al. (2002) evaluated the impact of a public health intervention offering twice weekly phone calls to older adults at risk of suicide, identified due to various factors including disability, social isolation, psychiatric illness, waiting times for inpatient admission and/or poor engagement with outpatient alternatives. A 10-year follow-up reported that only six suicides occurred by users of the intervention during this time period (n=20.86 expected based on a similar region). However, females were overrepresented in this study (84%) hence it is unclear whether these findings are generalisable to males at high risk of suicide.

Several studies have assessed the efficacy of training and educational suicide prevention programmes. “Gatekeeper” training such as Applied Suicide Intervention Skills Training (ASIST) is provided to help professionals and community members identify and assist individuals that may be at risk of suicide (Sareen et al., 2013). A trial of individuals expressing suicidality and contacting a crisis helpline in the USA (n= 1,410) compared crisis calls between professionals that had had ASIST training (n= 764) and a control group without ASIST training (n= 646; Gould et al., 2013). Trained crisis counsellors silently monitored calls and assessed counsellor behaviours (e.g. asking about suicidal plans/intent and safety planning) as well as caller behavioural changes (e.g. indicating that they felt less agitated/suicidal and more hopeful). Comparisons between call ratings indicated little difference in terms of counsellor behaviours but improvements in caller outcomes for those that were ASIST trained.

A further trial of ASIST training for community members found no significant differences between the ability of ASIST-trained individuals to manage suicide risk compared with a control group completing resilience training (Sareen et al., 2013). The authors highlighted their concerns that gatekeeper training is widely recommended as a suicide prevention strategy despite the lack of evidence of its effectiveness.

An RCT in Australia by Almeida et al. (2012) assessed the efficacy of an educational intervention implemented in 188 GP practices, which included information about the assessment and management of depression and self-harm in older adults. A detailed audit for each practice of 20 patients aged 60 and over was also conducted in the first six months of the trial. This reported on the number of patients with depression, self-harm and/or suicidal ideation in the practice and a comparison with other participating practices. Both the intervention and control group (n=185 GPs) received a newsletter every six months over two years about the study progress, which included general information about study findings and tips for identifying depression and suicide risk. The Patient Health Questionnaire 9 (PHQ-9; Spitzer et al., 1999) was used to assess outcomes for 21,762 adults over 60 across all practices, indicating 10% reduced prevalence of depression and self-harm in the practices receiving the intervention. The authors acknowledged that outcome measures were based on self-report data rather than clinical interviews, which were not externally validated.

Some research studies suggest that public health initiatives for suicide prevention are not always effective. A study of a depression management educational programme for GPs in Hungary reported a greater reduction in suicide rates following intervention implementation, although this reduction was not significantly different to a control region (Szanto et al., 2007). de Beurs et al. (2016) conducted an RCT of 45 psychiatric departments and delivered a one-day training of suicide prevention guidelines with a complementary e-learning package. Patient data from admission to three-month follow-up was collected once all staff had been trained. For the control group, admission data was collated from the time that the service was informed of study allocation. For patients presenting with suicidal ideation, there was no effect of the intervention on ideation scores at follow-up. A community-based trial in Sri Lanka aimed to reduce the number of pesticide self-poisonings by proving lockable containers to 90 households for the safe storage of pesticides alongside promotional material, however this did not significantly reduce pesticide self-poisonings at three year follow-up compared with a control group (Pearson et al., 2017).

The “Zero Suicide” movement is a further public health strategy that has been launched worldwide, initiated by the National Action Alliance for Suicide Prevention in the USA. The initiative arose from the concept that suicides by individuals in receipt of healthcare services are preventable (zerosuicide.edc.org). A range of evidence-based practices, trainings and quality improvement efforts have been recommended to guide suicide prevention in healthcare to support the Zero Suicide movement. The framework provided includes seven core components that should be incorporated to develop safer healthcare systems (zerosuicide.edc.org):

1. Strong leadership to initiate system-wide changes and promote a commitment to suicide reduction, including a blame-free culture if a patient attempts or dies by suicide;
2. Training to ensure that clinicians are competent and confident when working with patients at-risk of suicide;
3. Identifying patients at-risk of suicide through comprehensive assessment;
4. Facilitating engagement with at-risk individuals through individualised risk management plans;
5. Treatment for suicidality using evidence-based interventions such as CT-SP, the Collaborative Assessment and Management of Suicidality (CAMS) and Dialectical Behaviour Therapy (DBT);
6. Continuing interventions following inpatient psychiatric hospitalisation and ensuring patients have clear expectations of follow-up caring contact;
7. Monitoring of any quality improvements that need to be made to safety policies and procedures.

In the UK, the "Zero Suicide Alliance" formed creating a network of NHS trusts, organisations, charities and individuals and the development of resources to support suicide prevention. This included the launch of a campaign to encourage members of the public to undertake a free 20-minute online training which has been accessed by over 1.5 million people globally.

2.6 Summary of chapter

Missives from national bodies regarding suicide risk assessment have rejected the use of risk assessment tools and scales for predicting future suicide (National Collaborating Centre for Mental Health, 2018; NICE, 2011, 2013; RCPsych, 2010). A review of the literature following this statement to ascertain what may constitute "evidence-based" assessment highlighted that there is a lack of consistency across healthcare services or clarity regarding what would constitute an evidence-based alternative (Chan et al., 2016; Graney et al., 2020; Quinlivan et al., 2017; Steeg et al., 2018).

Unfortunately, a cohesive and detailed clinical operational process does not appear to be evident despite the extensive literature (NICE, 2004, 2018; NHS, 2016, 2019). The lack of robustness within the literature that tends to be disseminated through high-impact journals and professional bodies appears to have led to a number of unhelpful outcomes. Besides the publication of tools lacking appropriate psychometric properties, ambiguous directives and policy statements only confound the challenge of suicide prevention further. It would be a reasonable assumption, given this has been a policy target within the NHS for almost 30 years, that the annual number of deaths by suicide would reduce. However, without causal models of suicidality it is difficult to attribute the reasons for the almost constant rate of 10 suicides per annum for every 100,000 people (0.01%).

Terms such as “psychosocial assessment” are widely used, however, guidance on the content and usage of such assessments is limited (Pitman et al., 2020). The NICE guidelines describe psychosocial assessment as a method of engaging the service user that extends beyond assessment of risk (NICE, 2004) as well as developing an understanding of contextual factors (NICE, 2011), yet no consistent definition exists. Despite these challenges within the NHS, the public health perspective that has been encouraged in recent years may well provide greater awareness and recognition within the population, possibly resulting in more efficient pathways to care. However, if the pressures within frontline services are partly due to a lack of clarity and leadership in the management of suicide risk presentations, no doubt exacerbated by a lack of research to determine causality via RCT data, it will remain unproven whether frontline services despite the current national initiatives have impacted on suicide rates.

Despite a growth in the population of over 10 million since the 1990s (ONS, 2021), it is unknown whether the suicide prevention strategies and directives outlined in this chapter have impacted positively, negatively or at all on the annual rate. The challenge of establishing causality within an ethical research framework has to be a paramount consideration if this impasse is to be traversed. Thus, many of the quality standards proposed within NHS policy may allow for a cohesive multifaceted provision incorporating local authority, public health and third sector organisations, alongside clinical treatment. However, at best such an achievement ensures ethical robustness for a "treatment-as-usual" (TAU) standard rather than causal efficacy. It is postulated that a combination of policy around raising awareness and resources has underpinned a targeted methodology that is reactive to epidemiological trends, but potentially at the expense of RCT development that could provide understanding of possible causal variables of suicide and their efficacious prevention.

As is the theme of Section 2.1, unfortunately a robust risk assessment tool has not been postulated. There is a risk that valid psychometric instruments are also rejected alongside poorly constructed tools where measurements are no better than chance, through either a lack of familiarity with the individual measures or a globalised opinion that all rating scales are unhelpful (A. Chapman, personal communication). Measures such as the Suicide Status Form (SSF), the core empirical component of the CAMS intervention, that have evidence of psychometric validity and reliability (Brausch et al., 2019; Conrad et al., 2009; Jobes et al., 1997; see Section 4.3.3) and powerful statistical data supporting clinical efficacy (Swift et al., in press), are likely to be rejected due to the wholesale impression generated by national guidance. It is recommended that a more prudent approach, particularly where statistical robustness and burgeoning efficacy for treatment has been demonstrated, is adopted to ensure all viable resources remain in play in tackling the challenge of suicide prevention.

Chapter 3: Literature review of interventions

The chapter reviews trial data for adults where the treatment of suicide, self-harm and/or suicidality are primary outcomes, including burgeoning empirical evidence of the CAMS intervention across a diverse range of settings. Separate reviews of trial data for telephone and digital interventions are undertaken to highlight recent developments in the literature, particularly during the Covid-19 pandemic, when social distancing measures have restricted face-to-face treatment. Results indicate that despite the development of potential mechanisms explicating various aspects of suicidality and self-harm, a dearth of efficacious psychological or psychosocial interventions is evident. The chapter concludes by presenting the research questions to be addressed. These include the impact of a bespoke suicide risk triage model embedded within a NHS setting and incorporating the CAMS intervention, its utilisation and acceptability for service users and clinicians.

3.1 Conducting intervention research for suicidality and self-harm

As outlined in Chapter 2, a vast amount of research focusing on suicidality and self-harm has been conducted using correlational design to detect epidemiological trends. Although this research is useful for understanding risk factors, the methodology employed does not allow for the identification of causal mechanisms for suicidality that could be established through longitudinal, prospective trials. To impact on the problem of suicide, research efforts need to focus on the development of systems that potentially counter some of the deficits in care identified through public health strategies (NICE, 2018). Public health strategies available in national guidance, although beneficial to an extent, are primarily based on trend analysis and may not allow for a precise understanding of their effectiveness due to the multifaceted and complex nature of suicide (Streiner, 2002).

In suicidality research, it can be difficult to design an appropriate control arm to measure the effectiveness of an intervention, given the lack of a clinically acceptable standardised TAU for suicidality and the ethical issues raised by withholding a promising treatment (Reynolds et al., 2001; Spirito et al., 2002). RCTs are considered the gold standard for minimising bias when evaluating treatment efficacy, allowing for an approximately even distribution of baseline covariates across the experimental and control groups (Tarrier et al., 2008). Sareen et al. (2014) acknowledged that, despite the associated ethical issues, randomisation may be considered acceptable if the (potentially better) experimental treatment is compared against a treatment that has already been proven to be effective. RCTs are still considered the most acceptable method of studying suicidality, provided that ethical issues are addressed in the research design (Brown et al., 2008; Kim, 2003; Oquendo et al., 2004; Reynolds et al., 2001; Storosum et al., 2003, 2005).

3.1.1 Search strategy and eligibility criteria

The literature search included RCT evidence of psychological and psychosocial interventions for suicidality and self-harm in adults, including trials focusing exclusively on cohorts with specific clinical diagnoses. Regarding pharmacological interventions, which are not the focus of this thesis, a summary of meta-analytic studies and reviews of potential treatments will be briefly outlined in Section 3.6. The evidence base for the CAMS intervention will be outlined in a separate section (see Section 3.2).

Searches of RCT evidence for the treatment of life-threatening behaviours (including suicide), self-harm and suicidality were conducted on each of the following databases: Cochrane, Google Scholar and PubMed. Reference lists from pertinent systematic reviews were checked to identify any additional trials (Fox et al., 2020; Hawton et al., 2016; Zalsman et al., 2016).

Medical Subject Headings (MeSH) and variations of the following key words/phrases were included: suicide, parasuicide, self-injury, self-harm combined with treatment, intervention and/or prevention. The search strategy is shown in Appendix A. More specific forms of self-harm such as “self-poisoning”, “self-burning” and “self-cutting” were not included as search terms. Thus, a potential limitation of the search strategy is the exclusion of interventions focusing specifically on these subtypes, although the meta-analysis conducted by Fox et al. (2020) did include these terms (reference list checked and cross-referenced for this literature search). A further point to acknowledge is that resource/time implications precluded the ability to follow an established protocol such as the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA). As such, this narrative review of the literature does not follow a standardised methodology (e.g. formal quality appraisal of studies) that would be expected of a systematic review.

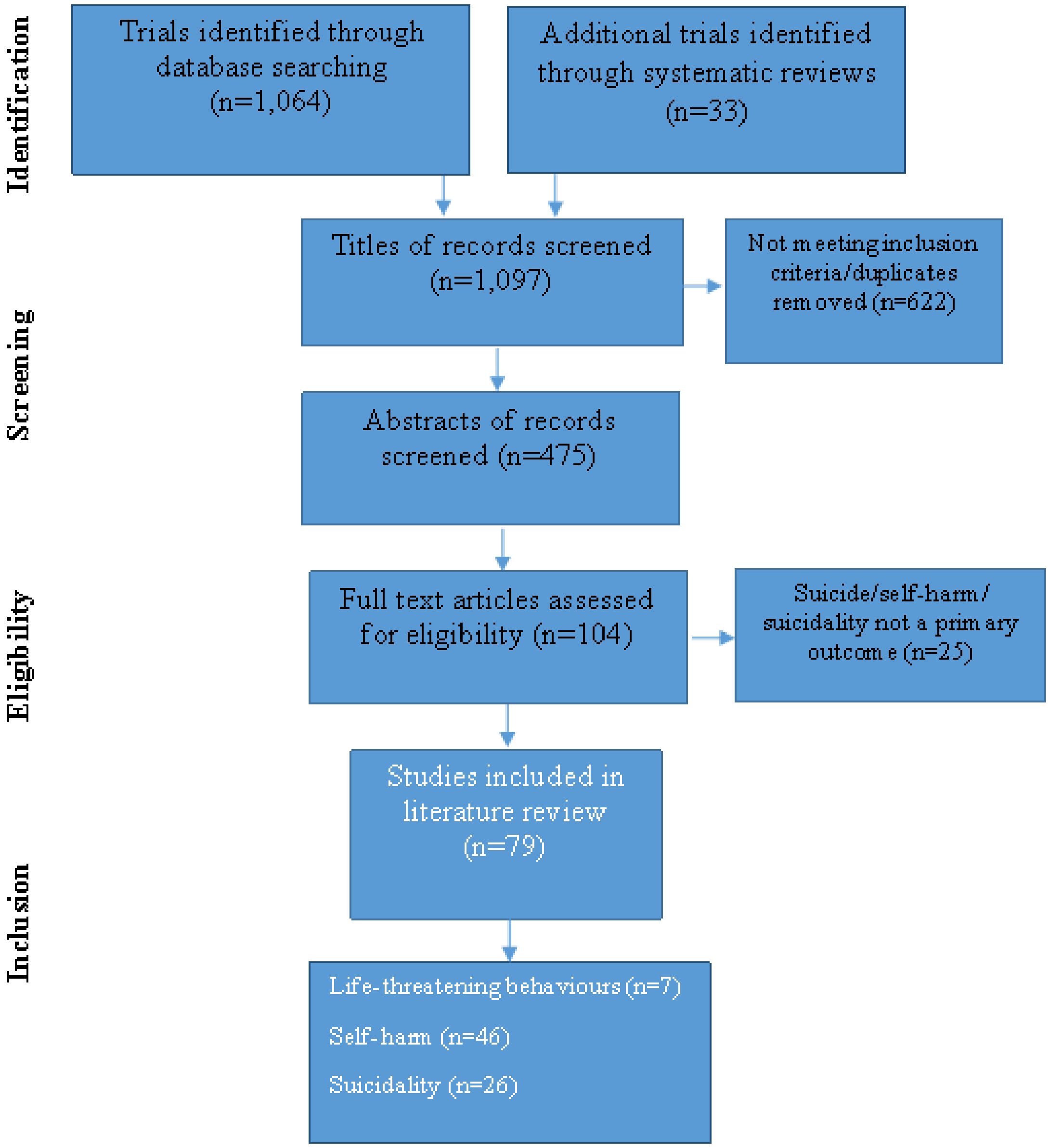
All RCTs conducted from 1990 onwards were included in the search. 1990 was chosen to coincide with the earliest NHS drive for suicide reduction, namely the “Health Of The Nation” policy (DoH, 1992). Focussing at this juncture is key as this policy was the catalyst for suicide prevention targets, allowing for a thorough search of how the community of researchers and clinicians have responded since this date. The exclusion criteria consisted of:

- Suicidal behaviours/self-harm/suicidality not a primary outcome
- Educational/training programmes
- Trials conducted with child or adolescent populations
- Trials conducted with prison populations or specific occupational groups (e.g. healthcare staff, military personnel) due to the potentially unique variables relating to forensic risk (Favril et al., 2020; Winters et al, 2017) and occupational groups (Hawton et al., 2011; Nock et al., 2013; ONS, 2017)
- Systematic reviews or meta-analyses
- Case examples/case studies
- Study protocols only/still recruiting for trial

A flow diagram of the study selection is displayed in Figure 9. Appendices B, C and D include a complete list of trial data including study design, sample sizes, description of the intervention/control conditions and limitations. RCT evidence for the treatment of life-threatening behaviours, self-harm and suicidality will be outlined in turn in the following sections.

Figure 9

Flow chart of trial selection



3.1.2 Interventions with life-threatening behaviours as a primary outcome

Seven trials reported on death by suicide as a primary outcome. The study of a rapid outreach intervention (Outreach, Problem-solving, Adherence and Continuity; OPAC) for self-harm presentations at A&E observed three suicides in total as verified by the coroner's office (Hvid et al., 2011). One suicide occurred in the intervention group, one in the nonintervention group and one in the dropout group. The low number of participants involved (n=133), as well as the short length of follow-up (six months of intervention plus six months post-intervention), makes it difficult to ascertain whether there was any impact on suicide given that this was a rare outcome and may have occurred beyond the follow-up period. According to further analyses, the significant effect of OPAC on self-harm was only applicable to women, with reductions primarily observed in the six-month follow-up post-intervention. Given the sparsity of suicide-specific treatment in the TAU arm, where no additional mental health input was provided, the lack of a clinical effect in this trial would suggest that the constituents of this rapid outreach intervention have little impact on suicide prevention.

A brief psychological support intervention delivered by telephone in addition to TAU reported 48 self-harm events (n=103) prior to commencement of the intervention one month after ED presentation (Vaiva et al., 2006). The authors' rationale suggests that self-harm may lead to eventual suicide and that a telephone intervention may have impact on the latter. However, the methodology suggests a potential confounding variable as the impact of the 48 self-harm events occurring within the first month prior to the intervention being delivered, is unclear. No information is provided as to how many of these self-harm events occurred in either condition, within a specific number of participants or their temporal relationship to the interventions' commencement. The results did not include any reference to psychiatric diagnoses, therefore it is possible that the individuals presenting with repeated self-harm may meet diagnostic criteria for Cluster B personality disorder (American Psychiatric Association, 2013). As such, a telephone intervention that included development of therapeutic skills akin to the telephone consult component of DBT would have likely benefitted this clinical cohort (Linehan, Comtois, Murray, et al., 2006), rather than a non-specific psychological intervention. The high rate of recruitment (72%) may suggest a preference for phone call contact but also an attractiveness for participants with personality disorder traits such as high dependency on services and rapid disengagement (American Psychiatric Association, 2013), which would explain the reported high attrition rate. Given the lack of clinical difference, perhaps the components of the intervention would need tailoring towards a DBT approach if it is to be of benefit, given the latter has demonstrated efficacy (DeCou et al., 2019; Hawton et al., 2016; Zalsman et al., 2016).

A second trial measuring a brief contact intervention and nine follow-up calls or visits for 1,867 individuals attempting suicide in five countries indicated a significant effect on number of deaths by suicide, with two suicides in the intervention group compared with 18 in the TAU group (Fleischmann et al., 2008). The authors acknowledged several limitations of the study including the lack of official mortality statistics across sites, difficulties recruiting patients before they left the ED and missing data at follow-up for 168 participants. A further trial (n=680) reported a significantly greater number of deaths attributed to suicide in the TAU group compared with the intervention group as a result of a brief contact intervention (nine and one respectively; Vijayakumar et al., 2011), although it is unclear where the suicide data was obtained from. Further, the intervention was compared against a relatively poor standard of TAU that did not include psychiatric or psychological assessment.

A trial of CBT for psychosis (CBTp) following an inpatient admission (n=278), specifically for individuals with schizophrenia, reported three suicides (one in the CBT group) at 18-month follow-up (Tarrier et al., 2006). No significant differences were observed in terms of repeated suicidal behaviours at follow-up, although CBTp was designed to alleviate the distress associated with positive, drug-resistant symptoms of schizophrenia rather than to specifically target suicidality (Birchwood et al., 2004). The authors reported that a lower rate of suicidal behaviours was observed than would be expected based on previous trials, therefore there is a possibility that selection or recruitment biases meant that acutely suicidal individuals were excluded.

A case management crisis intervention (n=43), incorporating 8-20 additional outreach contacts and active monitoring components, reported no differences in number of suicides between groups despite including data on all-cause mortality (Morthorst et al., 2012). The rationale may be sound given misclassification of suicide as death by accident/misadventure (particularly by self-poisoning) can impact on suicide incidence (Bohnert et al., 2013; Gunnell et al., 2013). This may also provide greater variance on the outcome measure between the groups given that suicide is a rare occurrence (Turecki et al., 2019) whereas self-harm is far more prevalent (McManus et al., 2019).

A trial of a contact intervention conducted by Motto and Bostrom (2001) of individuals that refused treatment following hospital admission for depression or suicidality (n=843) analysed the efficacy of letter contact (at least four times a year for five years) compared with no contact. The letters consisted of expressions of concern for the individual e.g. “it has been some time since you were here at the hospital, and we hope things are going well for you,” and inviting a response if the patient wanted to. The group receiving letter contact had a lower number of suicides in the five years of contact (15 versus 21 in no contact group) however this effect had diminished by the 15-year follow-up. Parameters for what constituted the inclusion criteria of “depressive or suicidal state” were not defined in the study, therefore it is unclear if these results are generalisable to other clinical cohorts.

3.1.3 Interventions with self-harm as a primary outcome

Trials for self-harm focused on a range of interventions including various types of psychotherapy (CBT, DBT or psychodynamic therapy), proactive case management and “caring contact” interventions.

Six trials focusing on brief psychological interventions were identified. A pilot trial by Tapolaa et al. (2010) of a four session CBT-based intervention, designed to target emotion dysregulation and positive future thinking, reported a significant reduction in self-harm for the experimental group. However, inclusion of only a small number of participants (n=16) and lack of reported effect size, limits the statistical power of the results. Given the use of a volunteer sample, which would suggest not only motivation for therapy but also a conceptualisation of their self-harm as a pathology that requires treatment, these results are potentially less generalisable to self-harm cohorts (Heard & Linehan, 1994). It would be useful to have a comparison of self-harm typology for the entire recruitment cohort to allow for a comparison between participators and those that refused to participate.

The Attempted Suicide Short Intervention Program (ASSIP) that aims to establish an early therapeutic alliance over three sessions, reduced the risk of suicide attempt repetition (defined as self-harm with a non-fatal outcome and intent to die) at 24-month follow-up compared with TAU (Gysin-Maillart et al., 2016). Despite a relatively small trial (n=120), a large treatment effect of ASSIP was observed resulting in an 80% reduction in repetition of suicide attempts, which could be attributed to greater fidelity to the treatment model but may also be the result of a high dropout rate in the control group (22% versus 7% experimental) and missing data at follow-up (37% versus 10% of experimental participants). This may suggest that the control group were not sufficiently blinded to treatment condition (and hence dropped out) or that TAU was not sufficiently impactful, given that detailed information about the nature of TAU was not available.

One trial of 274 participants utilised brief hospital admission with limited effect (van der Sande et al., 1997), although other research has suggested that brief admission is not an intervention that will impact on self-harm as such, but rather as an immediate crisis management response (Westling et al., 2019). This is further considered in the context of the potential negative impacts of admission, for instance, a position statement from the RCPsych (2020b) reported that acute admission for young people with diagnosable personality disorder may increase dependency on services, instead recommending specialist psychosocial interventions. The RCPsych (2020b) further recommended that admissions, if necessary, should be short crisis admissions for both young people and adults.

The sole trial of a brief alcohol misuse counselling intervention only recruited 103 of 1,400 participants necessary to achieve 80% statistical power (Crawford et al., 2010).

A trial evaluating a Brief Intervention and Contact (BIC) intervention following a suicide attempt (n=632), consisting of one-hour psychoeducational session plus phone calls over a 12-month period, did not significantly reduce repeat self-harm (Hassanzadeh et al., 2010). It is unclear whether the medical severity of the initial self-harm differed between groups and what the distribution of psychiatric diagnoses was. In a study of 538 participants receiving hospital treatment following self-harm, O'Connor et al. (2017) found no overall effect of a brief psychological intervention utilising a volitional helpsheet (VHS) on future self-harm. Post-hoc analyses suggested a benefit for individuals with a history of self-harm resulting in ED help-seeking, although self-harm not resulting in such behaviour was not recorded as part of the outcome measures.

11 trials evaluated the impact of cognitive therapy on self-harm. A large outpatient trial (n=120) demonstrated a significant effect of CT-SP compared with enhanced TAU (Brown et al., 2005). Participants in the CT-SP condition were 50% less likely to engage in self-harmful acts at 18-month follow-up, a finding that has been replicated in a military sample (Rudd et al., 2015). A feasibility trial (n=51) of Cognitive Behavioural Suicide Prevention therapy (CBSP) has demonstrated the acceptability of this approach for individuals presenting with suicidality in an inpatient setting (Haddock et al., 2019), although RCT data is needed to establish the effectiveness of the intervention with suicidal behaviours as a primary outcome.

A trial by Slee et al. (2008) of 90 participants demonstrated a significant effect of CBT for individuals with no history of self-harm, however over half of CBT participants received psychotherapy as part of TAU therefore treatment effects are not necessarily specific to CBT. A later trial in China (n=239) was unable to reliably analyse treatment effects of CBT due to the high dropout rate at follow-up, which was 69.5% for the CBT intervention (Wei et al., 2013).

For individuals with personality disorder traits, a small pilot trial (n=34) did not find a significant impact of brief CBT (Manual-Assisted Cognitive-behaviour Therapy; MACT) compared with a control group (Evans et al., 1999). In a large multicentre trial of MACT (n=480), 12-month data could not be obtained for 16.2% of participants (Tyrer et al., 2003). Individuals were only included if they had a history of self-harm, resulting in 42% of the sample having a diagnosis of a personality disorder. In a further trial of MACT (n=30), based on the manual developed by Schmidt and Davidson (2004), intervention participants indicated less frequent and medically severe self-harm at six-month follow-up (Weinberg et al., 2006), although it is unclear what the effects of adjunctive TAU were on outcomes. Given the evidence base for longer-term treatment for self-harm in this clinical population, it is not surprising that a brief intervention would have little effect (Arensman et al., 2004).

CBT was beneficial for reducing mean number of self-harm episodes for individuals with BPD (n=106), with effects sustained 12 months after treatment (Davidson et al., 2006). Outcome assessors determining number of self-harm events were blind to treatment allocation thus reducing bias for this measure, however TAU input varied across participants. Motivational interviewing and CBT were not effective as an adjunct to standard psychiatric care for individuals with psychosis and comorbid substance misuse (n=327; Barrowclough et al., 2010). These results are not surprising given the low incidence of self-harm in each group at 24-month follow-up (n=12 therapy group, n=8 control group), as well as the lack of treatment specifically targeting self-harm. One trial (n=433) used a group CBT approach to prevent repeat self-harm without success (McAuliffe et al., 2014) and possibly, given the lack of reporting of psychiatric diagnoses would indicate a heterogeneity, this may have reduced the impact of the intervention. It is possible that more intensive treatment was required which could have been a factor in the high dropout rate from the trial (20% of therapy group and 30% of control group at six-month follow-up).

For self-poisoning specifically, McLeavey et al. (1994) identified a positive effect of a brief problem-solving approach (n=39) however a meta-analysis conducted by Townsend et al. (2001) highlighted quality issues around concealment of participant treatment allocation.

One trial compared an integrated cognitive therapy, specifically Schema-Focused Therapy (SFT), to psychodynamic therapy (Transference-Focused Psychotherapy; TFP) for individuals with BPD (n=88) over a three-year period (Giesen-Bloo et al., 2006). SFT was superior to TFP for reducing “parasuicide” including suicide plans, attempts and NSSI, although these outcomes were measured using a subscale on the diagnostically constrained (pathology and criteria specific) Borderline Personality Disorder Severity Index – 4th Edition (Arntz et al., 2003) rather than a specific measure of self-harm.

The effectiveness of DBT as a treatment for “self-directed violence,” including self-harm and NSSI, has been demonstrated through a meta-analysis of 15 controlled studies indicating a significant, moderate reduction in self-injurious acts (d= -.324) compared to control conditions (DeCou et al., 2019). In terms of RCT data, 11 trials evaluated the efficacy of DBT for self-harm. An initial trial by Linehan et al. (1991) with a small, exclusively female sample (n=44) demonstrated a significant effect on incidences of self-harm compared with TAU. A positive short-term effect of DBT for 58 individuals with BPD was identified by Verheul et al. (2003), but treatment effect was only significant for those with a greater lifetime frequency of self-harm. Reductions in self-harm using DBT have also been demonstrated in individuals with BPD and comorbid drug dependence and/or alcohol misuse (Linehan et al., 1999, van den Bosch et al., 2005) with samples of 28 and 58, respectively. However, the participants in these trials were exclusively female. Further, the low prevalence of self-harm in both studies means that it is unclear how these results would apply to individuals with more acute and frequent self-harm presentations. A trial comparing DBT to general psychiatric management in a cohort of individuals with BPD that were predominantly female (n=18; 86.1% female) found significant reductions in self-harm in both groups (McMain et al., 2009). Contrary to the authors' expectations, no statistically significant differences in treatment outcomes were observed between the groups. The authors suggested that this may have been due to the superiority of psychiatric management compared to TAU interventions in previous trials and/or the influence of adjunctive interventions that were not controlled for. A further trial that only included female participants (n=73) did not find a significant effect of DBT for reducing hospital-treated self-harm compared with a wait-list control group (Carter et al., 2010). The six-month (rather than 12 month) follow-up may have been too short for significant differences to emerge.

A comparison of DBT against therapy by experts (n=101) indicated that participants in the DBT group were less likely to repeat self-harm and self-harm was less medically severe than the control group at one-year post-treatment (Linehan, Comtois, Murray, et al., 2006). Greater dropout rates were observed in the control group compared with DBT group (28.6% and 11.5% respectively), which is positive in terms of treatment retention for DBT, although it is unclear what the clinical outcomes were for those that dropped out of treatment. A further longer-term follow-up trial suggested that DBT can decrease risk of self-harm compared with TAU (Priebe et al., 2012), though this lacked statistical power due to the small sample size (n=80). Treatment adherence was a key methodological concern as only 19 of 40 participants originally enrolled in the experimental arm completed the DBT intervention. A trial comparing three different types of DBT (full version, group skills training only and individual therapy only) demonstrated significant treatment effects for self-harm across all groups (n=99), although nearly a third of participants were lost to follow-up and not assessed at one year post-treatment (Linehan et al., 2015).

Trials evaluating modified versions of DBT including a shortened 20-week intervention (compared with the original 52-week DBT treatment protocol; Linehan, 1993) demonstrated a significant effect of the intervention for reducing self-harm (n=84; McMain et al., 2017), although there was no follow-up beyond the treatment period to explore whether this effect was sustained. A pilot trial of DBT in combination with prolonged exposure (DBT-PE) therapy for individuals with comorbid BPD and posttraumatic stress disorder (PTSD) also demonstrated a significant impact on reducing self-harm compared with standard DBT (Harned et al., 2014). This small pilot trial requires replication given the sample size (n=38) and reliance on individuals initiating DBT-PE, meaning that participants were only partially randomly assigned to treatment arms. Both trials require replication due not only to the small sample sizes but also for evaluating generalisability across clinical settings.

One trial of a 14-week adjunctive emotion regulation group therapy (ERGT) for women with BPD (n=61) demonstrated a significant treatment effect for self-harm compared with TAU, although this trial of a specific cohort without follow-up data requires replication (Gratz et al., 2014). A model of PST, developed by D’Zurilla and Goldfried (1971), was not effective for reducing self-harm in a large cohort of 1,094 individuals presenting to hospital with self-harm (Hatcher et al., 2011), although the results indicated that PST may be effective for a subgroup of participants with a history of self-harm. A group therapy intervention, namely Future Oriented Cognitive Training (FOGT), for individuals with affective disorders (n=150) was no more effective than TAU for reducing suicidal ideation (van Beek et al., 2009). There was an effect for those adhering to the intervention, defined as completing seven sessions or more at three-month follow-up, although this was not statistically significant. It is noteworthy that dropout rates were high in the study (66 out of 150 dropped out before follow-up) as was therapy non-adherence (40% did not attend seven or more sessions), hence future research would be needed to assess the suitability of this intervention.

Five trials evaluated psychodynamic interventions. Psychodynamic therapy had a superior effect over TAU for reducing self-harm for individuals with BPD (Bateman & Fonagy, 1999), with treatment gains sustained at 18-month follow-up (Bateman & Fonagy, 2001), although this was based on a small sample (n=38). It should be noted that the experimental group continued to receive treatment (group therapy twice a week) during the follow-up period whereas the TAU group received no formal psychotherapy. An evaluation of MBT (n=134) indicated greater reductions in self-harm compared with structured case management, with a moderate effect size (d=0.62), although both groups showed significant improvements on measures of self-harm (Bateman & Fonagy, 2009). An 18-week day hospital psychotherapy (DHP) intervention for individuals with personality disorders (n=114) was not significantly different to outpatient individual psychotherapy (OIP) for reducing self-harm (Arnevik et al., 2009), although the authors acknowledged that a short-term intervention may not be sufficient for this clinical cohort. Further, the exclusion of individuals with severe pathology led to a low number of participants reporting self-harm at baseline (16 out of 114) and follow-up (4 of 104) therefore numbers were too small to calculate statistical significance. For individuals with BPD and comorbid alcohol use disorder, a significant effect of dynamic deconstructive psychotherapy (DDP) on self-harm compared with TAU was found based on a small sample of 30 participants (Gregory et al., 2008), although the measure used to assess self-harm did not have published psychometric validity or reliability data. A trial of TFP indicated that the intervention did not impact on self-harm (n=104), which the authors attributed to a lower-than-expected baseline rate of self-harm which was reported as an average of six self-injurious acts in the year before treatment (Doering et al., 2010). Availability of data affected the trial outcomes with 16 participants dropping out of treatment following self-harm. Only 49 out of 104 participants remained in treatment for the full year and follow-up data was available for only 69% of participants.

Two trials evaluated the impact of interventions designed to enhance compliance with outpatient treatment following ED presentation for self-harm (Allard et al., 1992; van Heeringen et al., 1995) with sample sizes of 126 and 516, respectively. Although the latter trial increased compliance with treatment from 42.5% to 51.2%, neither intervention significantly reduced repetition of self-harm at follow-up compared with TAU. Losses to follow-up were an issue for both trials (15-17% and 25%, respectively, of missing data).

A case management intervention delivered by nurses (Clarke et al., 2002) was ineffective for preventing repeat self-harm (n=467), although this could be related to the heterogeneity of psychiatric diagnoses that were not reported on in the trial (aside from schizoaffective disorder; 5% of sample). It should be noted that the relatively low occurrence of self-harm may have affected the ability to detect between group-differences, although a further trial in Japan (n=914) found no significant differences between case management and enhanced TAU (Kawanishi et al., 2014). Clarke et al. (2002) identified a low uptake of the experimental intervention offered, which may reflect the difficulties engaging individuals presenting to A&E with self-harm.

A trial of an intervention led by GPs reported no overall impact on self-harm (n=1,932), but some effect for specific subgroups who had previously self-harmed (Bennewith et al., 2002). This may have been linked with greater service contact with GPs in similar crises previously, and hence a better therapeutic alliance, but as a post-hoc finding would need to be replicated. The heterogeneity of the participant group, which included individuals that self-harmed as well as individuals with more severe suicidal intent, may have limited the success of the intervention (Mitchell, 2002).

Evidence for “postcard” interventions to reduce repetition of self-harm is mixed. Carter et al. (2007) sent eight postcards during the 12 months after discharge from hospital following self-poisoning (n=772). Although the intervention reduced the number of repeat self-poisoning presentations by half, this reduction was not significantly different to the no contact group. A further trial by Beautrais et al. (2010) of a similar postcard intervention did not find an effect of the intervention on repeat self-harm (n=327). A trial of 2,300 individuals presenting to hospital with self-poisoning in Persia used the intervention developed by Carter et al. (2007) and demonstrated significant reductions in suicidality and attempts (Hassanian-Moghaddam et al., 2011). Standardised measures were not used to assess outcome variables and were based on self-report, with only hospital-treated self-harm cross-validated against medical records. The authors acknowledged that the TAU received by the control group was of poor standard. A package of care including postcard contact did not find a significant treatment effect for self-harm (n=1,474) although issues were identified with engagement across all aspects of the intervention (Hatcher et al., 2015). A smaller trial evaluating the impact of a crisis coping card for suicidal individuals with case management compared to a control group with case management alone (n=64) indicated a significantly greater reduction in further suicidal behaviours for the former (Wang et al., 2016). However, there was no follow-up of outcomes after the initial three-month intervention period.

3.1.4 Interventions with suicidality as a primary outcome

16 trials in total reported on the impact of CBT on suicidality with mixed results. The earliest of these utilised a short problem-solving intervention for suicidal ideation (n=20) delivered by a Community Psychiatric Nurse, with significant improvements sustained at one-year follow-up, although it is unclear what TAU in the comparison group consisted of

(Salkovskis et al., 1990). A small trial utilising CBT techniques (n=40) suggested a significant effect for reducing suicidality compared with TAU (Raj et al., 2001), although there was no follow-up beyond the treatment period to assess whether this effect was maintained. A comparison of CBT, PST and TAU showed a significant effect of CBT and PST compared with TAU (Stewart et al., 2009). This trial requires replication given the small sample size (n=32) and lack of follow-up post-treatment, as well as the differences in clinical diagnoses across groups as a possible confounder.

Two pilot trials evaluating a brief six-session MACT intervention demonstrated efficacy for reduced suicidal ideation at post-treatment for 16 individuals with BPD (Morey et al., 2010) as well as for 20 individuals with BPD and comorbid substance misuse (Davidson et al., 2014). However these small trials require replication with larger samples. A trial of a clinically heterogeneous sample (n=185) with suicidality and comorbid substance use found no significant differences between an opportunistic CBT intervention package (OCB) and TAU (Morley et al., 2013). The authors acknowledged that psychiatric diagnosis may have explained the variability in engagement with the intervention and high attrition rate (60%), although formal diagnostic information for participants was not available.

For individuals with psychosis (n=74), suicidal ideation was reduced using CBTp in an outpatient setting but was not significant compared with reductions in the control group (Peters et al., 2010); this study was underpowered and relied on a self-report measure of suicidal ideation. A further community-based pilot study (n=49) by Tarrier et al. (2014) demonstrated a significant effect of Cognitive Behavioural Prevention of Suicide in psychosis (CBSPp) for reduced suicidality using the Adult Suicidal Ideation Questionnaire (ASIQ; Reynolds, 1991) providing further support for CBT with a suicide-specific focus. However, this also relied on self-report measures of suicidal ideation rather than a comprehensive and clinician-led assessment, and suicidality measured using the BSS was not reduced. A larger trial (n=341) that utilised integrated treatment rather than CBT for individuals with schizophrenia, including social skills training and measures to facilitate engagement (such as home visits) in addition to standard community and antipsychotic treatment, did not have a superior effect on suicidality or self-harm (Nordentoft et al., 2002). This study only included half of the participants necessary to detect significant differences based on power calculations.

A trial of individuals with mood disorders (n=69) demonstrated a significant effect of CBT plus TAU compared with TAU alone (Sinniah et al., 2017), although medication was a potential confounding factor that was not controlled for in this study. A trial of CBT with an additional exercise component (n=70) was also significant for reducing suicidality compared with CBT alone (Abdollahi et al., 2017). Due to the lack of follow-up data following the treatment phase of the trial, it is unclear whether these positive findings would be maintained post-treatment.

All four treatment groups evaluated by Weitz et al. (2014), including cognitive therapy, interpersonal therapy (IPT), medication and a placebo group, showed significant decreases in suicidal ideation (n=293). The largest effect size was observed for IPT (d=0.56), although this was measured using only one item on each of two outcome measures. Additionally, moderate to severe suicidal ideation was an exclusion criteria for the study, therefore the results only apply to individuals presenting with mild to moderate suicidality.

Three trials for suicidality included the evaluation of “third wave” CBT approaches and focused on the impact of Mindfulness-Based Cognitive Therapy (MBCT) for individuals with comorbid depressive symptoms, with mixed results. A pilot trial of MBCT (n=28) indicated a non-significant trend for reducing suicidal ideation, however this was not significantly different to a control TAU group (Barnhofer et al., 2009). A larger trial of MBCT showed promise (n=194), however this study only reported outcomes as six weeks post-treatment with no long-term follow-up and excluded individuals with severe depressive symptoms (Barnhofer et al., 2015). Longer follow-up studies are needed to evaluate whether treatment effects of MBCT for suicidal ideation are sustained.

The results of a trial of Acceptance and Commitment Therapy (ACT) were encouraging as an adjunctive treatment, though only a small sample (n=40) was included (Ducasse et al., 2018). A trial (n=60) delivering a mixture of face-to-face sessions utilising ACT techniques and phone calls over a 12-month period demonstrated a significant effect of the intervention compared with TAU (Mousavi et al., 2017). It is unclear how suicidal ideation was assessed and whether this was based on self-report or clinician ratings.

Four trials evaluated interventions that incorporated elements of DBT. The earliest of these conducted by Springer et al. (1996) did not find any significant group differences between two types of group intervention (n=31), one of which was based on the DBT skills group (Linehan et al., 1991), for inpatients meeting screening criteria for a personality disorder. The authors reported that discrepancies between prevalence of personality disorders using screening criteria compared with diagnoses by psychiatrists highlighted difficulties with accurately diagnosing at the point of inpatient admission. Andreoli et al (2016) demonstrated the effectiveness of abandonment psychotherapy (AP), utilising elements of DBT, compared with TAU for 170 participants with BPD and Major Depressive Disorder (MDD). However, over 80% of participants in each treatment group were female and over a third of participants (11 of 30) in the TAU condition dropped out of treatment. The authors acknowledged that antidepressant medication, which was provided as an adjunct in the experimental groups, may have contributed to better treatment outcomes compared to TAU, however the between-group differences remained significant even when controlling for additional antidepressant medication in the analysis. A trial evaluating a single session of DBT reduced suicidality in a sample of 93 participants presenting to a university outpatient clinic but was no more effective than a control group receiving a single session of relaxation training (Ward-Ciesielski et al., 2017). The authors acknowledged that the experimental and control sessions were similar in content and were both delivered by DBT-trained therapists, hence significant between-group differences would have been difficult to detect. A comparison between TFP and DBT (n=90) indicated that both therapies were effective for reducing suicidality (Clarkin et al., 2007), although concerns have been raised over the scale used to measure suicidality as it primarily aims to measure “impulsive aggression” (Mattes, 2010). A meta-analysis of 10 DBT studies, including those where suicidal ideation was not a primary outcome, did not find a significant effect for reduced suicidality although a “trend” was identified in favour of DBT over control conditions (DeCou et al., 2019). The authors recommended that more studies of DBT should include measures of suicidality, given that eight of the 18 studies identified for the meta-analysis did not include such measures.

Two trials of brief psychological interventions for suicidality demonstrated significant effects. Guthrie et al. (2001) implemented four sessions of community-based psychotherapy, designed to target interpersonal difficulties, achieving a recruitment rate of 51% (119 out of 233 eligible participants). Potential participants were excluded if they required inpatient psychiatric treatment. As such, severity of suicide risk tended to be lower, which would reduce the generalisability of the findings to more severe cohorts. It is unclear whether group differences in suicidal ideation would have remained significant beyond the six-month follow-up. Outcome measures for self-harm relied on self-report data, which is confounded potentially by high face validity in comparison to more objective indicators such as medical records. A brief psychological intervention utilising two versions of a self-help sheet (n=226) found a superior effect on suicidality and self-harm in the experimental group, who were given prompts to implement intentions around situations that may trigger self-harm

(Armitage et al., 2016). However, outcome measures did not distinguish between suicidality and self-harm and were based on self-report data.

Mixed results are noted for the impact of PST on reducing suicidality. One trial demonstrated a significant effect of group PST (n=18), though this was not superior to individual TAU therapy sessions (Bannan, 2010). This requires replication with a larger sample to explore whether group PST is effective for reducing suicidality over a longer follow-up period. A culturally adapted PST intervention (C-MAP) delivered in Pakistan over six sessions (n=221) demonstrated significant reductions in suicidality compared with TAU (Husain et al., 2014). TAU did not routinely include psychological treatment therefore non-specific factors relating to psychotherapeutic input such as therapeutic contact may have led to significant treatment effects.

When considering more eclectic interventions, the sole trial evaluating general hospital admission (n=77) was not significant for reducing suicidality (Waterhouse & Platt, 1990). A pilot trial reported a beneficial effect of a hiking intervention on individuals with suicidality, however this included a small volunteer sample (n=20) and outcome assessors were not blinded to treatment allocation (Sturm et al., 2012).

A structured follow-up GP-led intervention involving 176 participants had no effect on suicidality (Grimholt et al., 2015). High dropout rates meant that participant numbers were not substantial to achieve adequate statistical power. The authors suggested that future studies evaluating GP-led interventions would benefit from an adjunctive educational programme and supervisory structure with a more homogeneous patient population, e.g. participants with a particular mental health diagnosis, as well as complementary psychiatric input.

3.2 CAMS trial data

This thesis will evaluate the clinical utility of the CAMS intervention, a psychosocial, semi-structured interview process that can be used across settings but is mainly outpatient-focused (Jobes, 2006, 2016). The intervention addresses several of the caveats identified in this review by combining both components of self-report measures and personal factors, or “drivers,” of an individual’s suicidal behaviour, which allows an appropriately skilled clinician to effectively evaluate the risk of suicide (Jobes, 2016). Five correlational studies support the clinical utility of the CAMS intervention for use with suicidal outpatients (Arkov et al., 2008; Jobes et al., 1997; 2005; 2009; Nielsen et al., 2011). The CAMS approach has a burgeoning evidence base of trial data across a range of clinical settings internationally and has proven efficacy in reducing suicidality, as is outlined in this section. The CAMS intervention is described in more detail in Section 4.3.4.

Early studies of CAMS in a range of clinical settings highlighted that it is a useful treatment for suicidality. A retrospective study of CAMS in a military setting compared a CAMS treatment group (n=25) to TAU (n=30), which consisted of CBT in the majority of cases, using archived medical record data (Jobes et al., 2005). Participants were included if they reported having suicidal thoughts “sometimes,” “frequently” or “always” on the Outcome Questionnaire-45. Additionally, suicidality had to have been discussed as an issue during prior treatment and included in the therapy session notes. Participants in the CAMS group resolved their suicidality significantly more quickly than the TAU group (average of 7.35 sessions compared with 11.4 sessions for TAU), although participants were not randomly assigned and therapist fidelity to treatment was not monitored.

Five RCTs demonstrating the efficacy of CAMS for reducing suicidality have been conducted across the USA and Europe. A pilot trial (n=32) conducted by Comtois et al. (2011) reported significantly reduced suicidal ideation, as well as significantly lower overall symptom distress and increased hope at 12-months post-treatment for individuals completing the CAMS intervention compared with an Enhanced Care As Usual (E-CAU) control group.

Although a small, underpowered trial, it is noteworthy that individuals in the CAMS group rated their treatment significantly more favourably than the E-CAU group.

A trial of 148 active-duty army soldiers showed a significant treatment effect of CAMS on suicidality compared with E-CAU at three months, however this difference was no longer statistically significant at 12 months (Jobes et al., 2017). Both groups improved significantly on all measures which may have been due to the “enhanced” components of E-CAU that do not reflect typical TAU, including recording of all E-CAU treatment sessions.

A trial in Norway conducted by Ryberg et al. (2019) demonstrated a significant effect on suicidality for the CAMS compared with TAU cohort at six-month follow-up, in a heterogeneous participant sample recruited from both inpatient and outpatient settings (n=80). The authors argued that, although the lack of monitoring of treatment fidelity and heterogeneous patient sample increased generalisability, they may also have diminished study effects as suicidality was no longer significantly different between groups at 12-month follow-up. Further, it is unclear given the diverse sampling employed, the precise treatment-specific gains of the clinical improvements reported.

A trial of 62 college students demonstrated that CAMS was more effective than TAU for reducing suicidality and, as predicted, this effect was more pronounced with less complex cases (Pistorello et al., 2020). Conversely, TAU was more effective for participants with BPD features and a history of suicide attempts, although the reasons for this were unclear.

CAMS is also effective as a therapeutic intervention when compared with other evidence-based treatments for self-harm and suicidality, namely a shortened version of DBT (16 weeks rather than 52 weeks), a NICE-recommended evidence-based treatment, in adults with BPD symptoms (74.1% female; 54.6% BPD diagnosis) (Andreasson et al., 2016). The authors acknowledged that the trial was limited by the reliance on self-report data for the primary outcome measures and lack of participants recruited based on statistical power calculations

(108 of 154 recruited). Additionally, over 30% of participants in each group were lost to follow-up at the 28-week assessment stage. Further, two of the four DBT therapists had no previous experience of DBT in clinical practice, and adherence measures identified some shortcomings in therapeutic delivery.

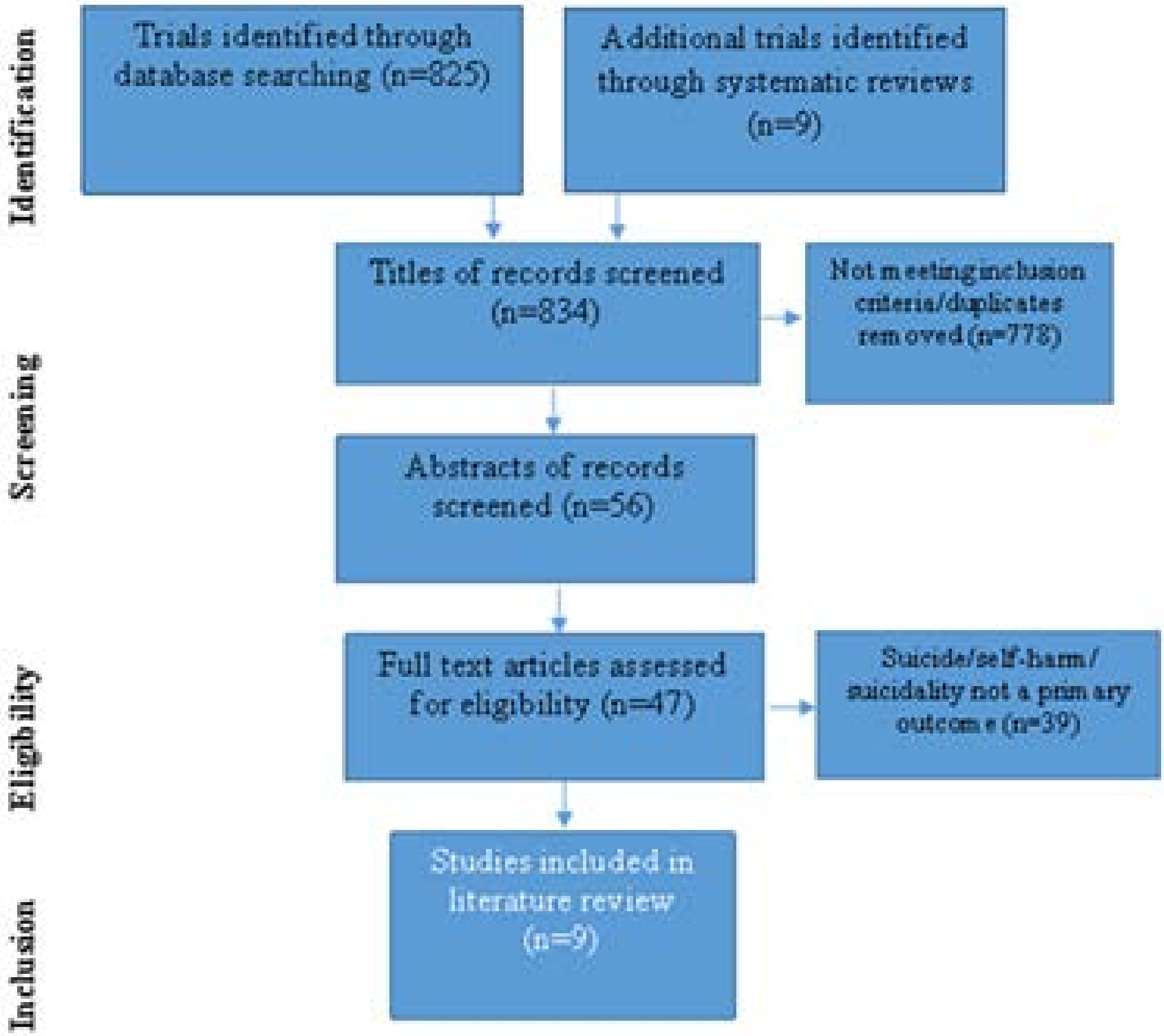
Three studies evaluating CAMS in an inpatient setting suggest a positive impact of CAMS on suicide-specific outcomes. A pilot trial conducted by Ellis et al. (2012) with 20 participants where suicidality was part of their reason for admission indicated that CAMS was effective for reducing suicidal ideation and could be adapted for use in an inpatient setting, although no follow-up data post-discharge was provided. These results were replicated in a naturalistic controlled comparison study with 52 participants admitted to the same inpatient hospital comparing the CAMS intervention with twice-weekly individual psychotherapy (TAU), with participants matched on key demographic and clinical variables. Although both groups showed improvements during the course of therapy, the CAMS participants had significantly reduced suicidal ideation at discharge compared with TAU (mean score on BSS 1.58 and 3.6, respectively). The authors highlighted that the lack of randomisation of participants and inclusion of a homogeneous inpatient group with similar cultural and above average SES limits the generalisability of the results. A continuation of this study with double the sample size (n= 104) and a six-month post-discharge follow-up, found a significant effect of CAMS for all suicidality and non-suicide specific measures during inpatient stay, although these differences were not significant at follow-up (Ellis et al., 2017). Data was only available for 39 participants at follow-up, however, the findings from pre- to post-discharge indicate that CAMS can resolve suicidality more quickly than TAU.

3.3 Telephone interventions.

There is a burgeoning literature of interventions utilising follow-up telephone contact to prevent future suicidality, which is pertinent to this thesis as follow-up telephone contact was regularly provided by the CRHT team for individuals presenting with suicidality. Healthcare professionals have increasingly relied on telephone contact during the Covid-19 pandemic restrictions (see Section 4.8) to support individuals when face-to-face appointments were limited (Gunnell et al., 2020; Jobes et al., 2020). As such, a separate review of telephone interventions for individuals presenting with suicidality and self-harm was undertaken. A flow diagram of study selection is presented in Figure 10. Full details of the search strategy and interventions are in Appendices E and F.

Figure 10

Flow chart of trial selection for telephone interventions



A total of nine RCTS were included. Two studies focused exclusively on the impact of offering access to a 24/7 crisis helpline, rather than follow-up phone calls, using a crisis card (Morgan et al., 1993; Evans et al., 1999). The results from Morgan et al. (1993) showed some promise for non-significant reductions in repeat self-harm (n= 212), although participants were only included if it was their first episode of self-harm. A larger scale study (n= 827) found no benefit of the intervention on reducing self-harm at six months (Evans et al., 1999), which was also confirmed at 12-month follow-up (Evans et al., 2005). Nevertheless, there was some evidence of a positive effect on the intervention for individuals with no history of self-harm, prior to that which led to their inception into the trial. Evans et al. (2005) suggested that qualitative research with individuals presenting with self-harm for the first time may help in the design of such interventions. It is noteworthy that these studies were undertaken in the early 1990s, prior to changes to mental health crisis service provision described in Section 2.4.2 and thus, it is unclear whether the intervention would be effective if delivered from within a CRHT service.

Five trials had additional components alongside a telephone intervention. A pilot RCT (n= 66) combing an information leaflet with two phone calls and letters over a 12-month period found a higher repetition rate of self-harm in the intervention group compared with TAU, although only self-harm resulting in hospital attendance was measured (Kapur, Gunnell, et al., 2013). Amadéo et al. (2015) combined a brief intervention with nine phone calls over an 18-month period (n= 200) and found no significant differences in terms of suicidal behaviours compared with TAU, although the only suicides occurring were in the TAU arm (n=2). A trial by Mouaffak et al. (2015) reported no significant effect of a “caring contact” intervention combining telephone calls and letters on repetition of suicidal behaviours, compared with TAU. Only 9% of 320 participants were lost to follow-up, which may reflect the acceptability of the control treatment to participants. A trial with a large number of participants (n=1,376) identified a reduction in repetition of suicidal behaviours at follow-up compared with a TAU phase (Miller et al., 2017), although the authors acknowledged that confounding factors potentially impacted the different phases of the intervention due to the sequential design. A further large scale trial of 1,040 participants by Vaiva et al. (2018) utilised crisis cards and personalised postcards dependent on whether the individual had a history of self-harm or not. The authors reported a significant impact on repeat self-harm with suicidal intent, but only for individuals with no history of self-harm prior to study recruitment. Medical lethality was not assessed as part of this study, which does not allow for a consideration of the medical severity of self-harm. Additionally, results were based on an "as-treated" rather than "intention-to-treat" approach, which may have biased results as the characteristics of individuals withdrawing from the study was unknown (Messiah et al., 2019).

Two further trials evaluated the impact of a telephone intervention with no additional components. A telephone intervention lasting 20-45 minutes (n= 216), delivered by a psychiatric nurse or social counsellor, did not find an effect on repetition of suicidal behaviours compared with TAU (Cedereke et al., 2002). Notably, two participants had died by suicide prior to the first follow-up contact that occurred one month after trial enrolment, indicating the need to provide rapid support following a suicide attempt. Similarly, Vaiva et al. (2006) implemented a telephone contact intervention at one-month following ED presentation for self-poisoning and identified the need for earlier contact, given the high number of self-harm events (48 in total) occurring prior to the intervention initiation. Nevertheless, a significantly lower number of participants had repeated self-harm at one-month compared with controls. A strength of this trial is the validation of suicide attempt data through hospital records rather than relying on self-report data. However, the high percentage of individuals lost to follow-up (n=121, 20%) may have affected the study outcomes.

3.4 Digital interventions.

Digital interventions (either online or through mobile phone applications) have received recent attention with regards to suicide and self-harm prevention, which may act as a means of overcoming some of the key barriers to help-seeking for at-risk individuals that do not present to healthcare services (Gunnell et al., 2020). Such interventions usually take one of two forms: 1) guided by the clinician either through email, telephone or face-to-face or 2) unguided self-help, which is postulated to improve accessibility as it is initiated by the individual (Christensen et al., 2014), although there is an assumption of acceptability and client skillset with the latter. Some digital interventions have directly targeted suicidality (e.g. Pauwels et al., 2017), whereas others have an indirect effect but are primarily aimed at improving depressive symptoms (e.g. Moritz et al., 2012).

There is a small, emerging evidence base evaluating the effectiveness of digital interventions, offered either online or through mobile phone applications (Torok et al., 2020). With regards to the use of a mobile phone application (referred to herein on as "app") for suicide prevention, three RCTs by the same authors explored the impact of a brief, game-like app with 408 participants recruited from a web forum reporting at least two episodes of self-cutting in the past month (Franklin et al., 2016). The app, called Therapeutic Evaluative Conditioning (TEC), was designed to increase aversion to suicide and self-harm related stimuli and could be accessed several times a day. At follow-up, of the 408 participants, only 12 using TEC and 12 using the control app reported suicidal behaviours yet there were no significant reductions in terms of suicidality for the entire cohort. The authors acknowledged several limitations of their recruitment methods, which resulted in a sample primarily of young adults and a bias towards individuals that had the ability to engage in web-based treatment.

Pauwels et al. (2017) evaluated the effectiveness of "BackUp," an app developed to help individuals cope with suicidal crises, for 21 participants expressing any degree of suicidality. The app included four self-help tools: social support contacts to utilise at times of distress, a hope kit (e.g. pictures, music, quotes), coping strategies (written in the app user's own words) and a safety planning tool. A small, non-significant decrease was observed in suicidality based on BSS scores, however a more robust clinical trial using a larger, randomised sample (rather than using volunteers) would be needed to demonstrate the efficacy of this app.

O'Toole et al. (2019) evaluated the use of "LifeApp'tite" as an adjunct to face-to-face psychotherapy, namely the CAMS intervention, where the latter alone formed the TAU arm (n=129). The app included the following elements: psychoeducation for the individual and their support network, daily self-rating scales, a safety plan for suicidal crises, a digital hope kit and access to a range of potential coping strategies. Contrary to the anticipated results, app users reported smaller reductions in suicide risk compared with those receiving face-to-face therapy alone. The authors hypothesised that use of the app may have been a greater focus in face-to-face treatment than development of therapeutic skills, thus reducing the usual amount of psychotherapeutic input, as opposed to the app having negative effects on suicidality. Additionally, there was no evaluation of the technological skills of the target population or any guidelines as to how the app should be used alongside psychotherapy.

A pilot RCT (n=31) integrating the CAMS SSF core assessment as part of tablet-based app used in the ED, namely "Jaspr Health", indicated high ratings of satisfaction for participants presenting with suicidality both for the app and their ED experience (Dimeff et al., 2021). The authors reported limitations of the study including the lack of placebo app for control participants, hence it was unclear whether the positive benefits related to simply having access to an electronic tablet.

With regards to web-based psychotherapy, use of a brief mobile treatment intervention in Sri Lanka for 68 individuals presenting to hospital following a suicide attempt led to reductions in self-reported suicidality, compared with a wait-list control (Marasinghe et al., 2012). The authors reported that both groups showed improvements in the six-month follow-up period when they were given a mobile phone, which may have contributed to treatment effects due to easier access to social support or alternatively, could be attributed to the benefits of owning a mobile phone. Batterham et al. (2018) compared two versions of the "FitMindKit" intervention, designed to incorporate core behavioural therapy strategies, with a control programme. Neither the generic version of FitMindKit nor the version tailored to specific symptoms of mental health conditions were more effective than the control programme for reducing suicidality.

van Spijker et al. (2014) offered unguided self-help, based on CBT principles, aimed at individuals experiencing low level suicidality, to improve access to suicide-specific interventions in areas where implementation of guided options may be limited due to financial constraints. A small, significant effect of the intervention on suicidality was observed (d=0.28). It should be noted that individuals with severe suicidality or depressive symptoms were excluded from the study therefore efficacy is limited to mild to moderate suicide risk presentations. A replication of this trial aimed to recruit a broader community sample (n=418) and did not exclude individuals with severe depression (van Spijker et al., 2018). Severity of suicidal thinking was significantly reduced at 12-month follow-up, however this was no more effective than a matched control group participating in a six-week online lifestyle course.

A trial of the above the intervention adapted for a Flemish context reported a similar effect size (d=0.34) for reduced suicidality (De Jaegere et al., 2019). However, a much higher attrition rate was reported in the intervention group (64.2%, compared with 9.4%), equivalent to a dropout of 187 participants from baseline to assessment in the intervention group and 61 in the control group. Attrition bias may have contributed to the significantly reduced suicidal ideation as observed in the intervention group, as individuals with a preference for self-help may have been more likely to remain in the study. Nevertheless, this study benefitted from including participants with a range of psychiatric diagnoses.

Some studies have reported the effect of digital interventions, aimed primarily at targeting depressive symptoms, on suicidality. For instance, a study of internet-based therapy utilising CBT techniques identified a slight increase in self-reported suicidality in both the treatment and control groups (Moritz et al., 2012).. Notably, engagement with the programme was over 80% and resulted in significantly lower depressive symptoms however, this is confounded by the methodology which utilised volunteer sampling to recruit participants. This may lead to recruitment biases, such as those that prefer online technologies or individuals that may be avoidant of direct help-seeking with face-to-face services. Additionally, a diagnosis of depression was only verified in 29% of cases, and those with acute suicidality were discouraged from taking part. Thus, it is unclear whether the programme would be beneficial to individuals with severe depressive symptoms or acute suicidality.

A trial of 155 individuals contacting a national helpline with moderate to high psychological distress randomised participants to one of four conditions: 1) a six-week web-based CBT intervention with a 10-minute weekly telephone call from a counsellor, 2) a six-week web-based CBT intervention only, 3) weekly telephone phone calls only, and 4) no intervention (Christensen et al., 2013). There was no significant effect of type of intervention on suicidal ideation, measured through four self-report items, although the authors reported that completion rates for the intervention were lower than expected (75%). Wagner et al. (2014) did not find a treatment effect of a therapist-supported online version of CBT for depression. It is noteworthy that seven participants failed to complete treatment in the online group, whereas only two participants dropped out of face-to-face treatment, which may have implications for attrition rates if delivering interventions for suicidality online.

Taken together, these studies indicate that digital interventions may have some utility for targeting low-level suicidality, particularly in areas where there is limited access to healthcare services (Torok et al., 2020), although it is noteworthy that that effect size of such interventions is small. Evidence also demonstrates that digital interventions can be cost-effective compared with a control group in terms of healthcare service utilisation (van Spijker et al., 2012), although this was based solely on a six week follow-up post-intervention. Digital interventions may cause difficulties for some clinicians, with issues such as accurate assessment and appropriate management of risk identified as concerns by healthcare providers (Gilmore & Ward-Ciesielski, 2019).

A key aspect that should be considered when utilising a digital intervention is how the intervention is integrated into face-to-face treatment, ensuring clear guidelines about how/when to use the digital intervention and developing content that is appropriate for the target population. Taking into account any neuropsychological difficulties and individual skills is also important (O'Toole et al., 2019), as well as acknowledging the preferred method of therapeutic input for each individual. A study by Wilks et al. (2018) suggested that individuals without a history of psychological input had a preference for seeking online versus face-to-face help for suicidality, although this study was undertaken by individuals agreeing to participate in an online survey which requires replication to counter potential biases. Nevertheless, digital methods including app-based support provide a promising adjunct alongside treatment effects with demonstrated efficacy, whilst also having the potential for greater acceptability.

3.5 Interventions for older adults

Additional considerations must be taken into account for preventing suicide in later life such as the impact of physical illness, changes in social role and relocation, some of which have negative consequences for the individual (De Leo & Arnautovska, 2016). Common risk factors for suicide in this cohort included depression, living alone, bereavement and physical illness. Indeed, research indicates that loneliness and social isolation are linked with a range of adverse health outcomes in older adults, as well as an increased risk of all-cause mortality (Holt-Lunstad et al., 2015; Luo et al., 2012; Steptoe et al., 2013).

Evidence suggests that self-harm by older adults is often more lethal compared with middle-aged adults (Hawton & Harriss, 2006, 2008; Oude Voshaar et al., 2011). NICE guidance for England recommends that older adults are assessed by a mental health practitioner with experience of working with older adults who self-harm, with particular consideration given to identifying cognitive impairment, physical health issues and depressive symptoms (NICE, 2004). Indeed, the FYFV included plans for all-age mental health liaison services, with the goal of improving access to acute mental health care across the lifespan (NHS England, 2016a). A study investigating the clinical management of older adults (aged 65 and over) presenting with self-harm in a primary care context (n=2,854) found that only a small proportion were referred to mental health services (11.7%), with a third less chance of a referral for older adults registered to GPs in the most deprived areas (Morgan et al., 2018).

The evidence from a systematic review of 19 studies with a focus on suicide prevention for older people (aged 60 years and over) found that most interventions tended to focus on the reduction of comorbid risk factors such as depressive symptoms and social isolation (Lapierre et al., 2011). Studies of psychotherapy for older adults included pooled data from three studies of weekly IPT (n=395) for older adults (over 65 years) with major depression, indicating a rapid reduction in suicidal ideation during treatment (Szanto et al., 2003), although the authors acknowledged that it was unclear how adjunctive pharmacotherapy impacted on the findings. Further, participants identified as high and moderate risk (with higher levels of suicidality at baseline) took longer to respond to treatment than low-risk individuals. A pilot study of a 16-week IPT course adapted for older adults, including an increased focus on social connections and engaging in meaningful activities, reduced suicidal ideation in a small sample of 17 participants with mood disorders that were already receiving psychiatric/pharmacological treatment (Heisel et al., 2015). A randomised controlled trial with a larger sample would be needed to determine the efficacy of the adapted IPT intervention.

In terms of primary care interventions, two trials were identified with a focus on depression treatment as a target of the intervention. The "Prevention of Suicide in Primary Care Elderly: Collaborative Trial" involved a combination of treatment guidelines for GPs and care management for adults over 60 with depression (n=598), with participants receiving the intervention reporting quicker resolution of suicidality compared with TAU (Bruce et al., 2004). It should be noted that 30% of participants in each group dropped out of the trial. In addition, the intervention was only effective for individuals with major (rather than minor) depression. The second trial, namely "Improving Mood – Promoting Access to Collaborative Treatment," demonstrated that the intervention (including depression care management, antidepressant medication and PST) was significantly more effective than TAU for reducing suicidality in older adults with depression (n=1,801; Unützer et al., 2006). However, individuals with acute suicidality were excluded from this study and suicidal ideation was assessed using a single self-report item. Neither trial evaluated whether there were any gender-specific impacts of the intervention (Lapierre et al., 2011).

In summary, specific considerations for older adults including physical illness, pain and cognitive functioning need to be taken into account when developing interventions to prevent suicide in this age group, as well as focusing on increasing social connectedness and reducing isolation (Conwell, 2014; Van Orden & Deming, 2018). Few psychosocial interventions with evidence of efficacy exist for older adults that reliably reduce suicidality, thus more trials with long-term follow-up data evaluating suicidal behaviours as a primary outcome, are needed (Zeppegno et al., 2019).

3.6 Pharmacological interventions

Evidence suggests that pharmacological interventions may have some efficacy in the treatment of suicidality (Fox et al., 2020; Zalsman et al., 2016). A meta-analysis of 48 RCTs (combined n= 6,674) indicated that lithium may be effective for the treatment of suicidality for individuals with affective disorders when compared with placebo drugs but was not significantly better than other active medications (Cipriani et al., 2013). The authors acknowledged that a limitation of the findings was that 60% of trials had less than 100 participants. Further, the low rate of suicide across studies (38 in total), resulted in estimates of treatment effects with wide confidence intervals. A specific anti-suicidal effect of lithium was identified in a trial of adjunctive lithium treatment for individuals with affective disorders and a recent suicide attempt presenting to the ED (n=167), with all three suicides occurring in the placebo-treated control group (Lauterbach et al., 2008). Generalisability of the results are limited due to low recruitment numbers and high dropout rates (57%- 59%) across groups at 12 month follow-up. Additionally, with only 36% of participants recruited for adequate statistical power, it is unclear whether this equates to a representative sample. There are also potential clinical and treatment effects differentiating between those who dropped out compared with those who remained in the study, which the authors acknowledged may have led to an experimental group that are more likely to comply with therapy and less likely to attempt or die by suicide.

Concerns have been raised regarding the initiation of pharmacotherapy for depression in children and adolescents, indicating an increased risk of suicidality (Zalsman et al., 2016). In 2004, the USA Food and Drug Administration reported that antidepressant medications should include warnings about increased risk of suicidality in young adults aged 18 to 24 (www.fda.gov/drugs). Their evidence, based on 372 RCTs with a combined n of 99,839 participants, indicated an elevated risk for this age group evidenced from trials evaluating the short-term effects of these medications for individuals with psychiatric disorders (Friedman & Leon, 2007).

Evidence that clozapine may have anti-suicidal effects for individuals with schizophrenia is mixed (Zalsman et al., 2016). A meta-analysis of 27 RCTs (combined n= 3,099) suggested that clozapine may be slightly more effective than other similar antipsychotic medications (Asenjo Lobos et al., 2010). However the high attrition rate across trials of antipsychotic drugs (30.1% overall), particularly for those treated with clozapine, suggests that the results should be interpreted with caution. A two-year multicentre trial in 11 countries conducted by Meltzer et al. (2003) compared clozapine with olanzapine for treating suicidality in individuals with schizophrenia (n= 980) and found a reduced risk of attempted suicide in the clozapine group (34 and 55 participants, respectively). A meta-analysis of 43 RCTs (combined n= 7,217) found no significant effects of quetiapine for suicidality or death by suicide (Suttajit et al., 2013).

Ketamine has been identified as a potential pharmacological treatment for suicidality (D’Anci et al., 2019). A systematic review of 10 comparison intervention studies (n=167) indicated reduced suicidality for individuals treated with ketamine, although this was primarily for patients with mood disorders and only included short-term follow-ups of up to seven days (Wilkinson et al., 2018). An additional RCT for adults with major depressive disorder (n= 80) prescribed antidepressant medication found a greater reduction in suicidality scores for individuals randomised to adjunctive ketamine treatment compared with a placebo (Grunebaum et al., 2018). Individuals were excluded if they had current psychosis or substance dependence within the previous six months, which limits generalisability to these groups. This trial also had a short six-week follow-up therefore longer follow-ups are needed to determine whether treatment effects are maintained.

For self-harm, Hawton et al. (2016) identified seven trials evaluating the effectiveness of pharmacological interventions in adult cohorts (combined n= 546). Trials were included where participants had had a self-harm episode within the previous six months. No significant treatment effects were found for the interventions in these trials with the exception of a small trial (n=37) of the antipsychotic flupenthixol. The authors reported that the quality of this trial was low due to concerns around random assignment of treatment and blinding procedures, as well as the small number of participants in the trial.

3.7 Summary of chapter

Despite the magnitude of suicide and self-harm globally, there are few effective evidence-based psychological or psychosocial treatments that have demonstrated efficacy (Hawton et al. 2015, 2016). RCTs evaluating DBT and CBT show some promise in reducing repetition of self-harm in adults, however, there is little evidence suggesting that other interventions are consistently effective (Zalsman et al., 2016). CBT focusing on suicidal cognitions and behaviours i.e. CT-SP, is a promising suicide-specific intervention given that it is informed by evidence-based CBT techniques (Comtois & Linehan, 2006; Tarrier et al., 2008). A pilot trial of CT-SP adapted to a mental health inpatient setting (Post-Admission Cognitive Therapy; PACT) for military personnel was not superior to TAU for reducing suicidality despite gains in reduction of psychopathology (LaCroix et al., 2018). Replication of the beneficial effects demonstrated through the few RCTs that do exist is required to provide further empirical support for CT-SP.

Given the obvious ethical considerations of randomising suicide cohorts to control conditions within current NHS provisions, the most important first step is to develop a TAU that is clinically acceptable for both service users and clinicians, which can be used as a high-quality control condition in a feasibility trial. This will ensure a more robust control condition, developing a gold standard against which efficacy of interventions can be evaluated through RCTs (O'Connor et al., 2011). In order to do this, the NHS clinician requires the ability to delineate suicidality, including that driven by non-clinical and environmental factors and how this can be managed through the provision of clinical and/or social care interventions. The stark finding that, despite the development and validation of potential mechanisms that expound various aspects of self-harm, suicidality and suicide intent (see Section 1.2), these have not informed NHS approaches to the management of suicide. For cohorts that require mental health guideline standard evidence-based clinical intervention, such a process will ensure best clinical practice is provided pertinently. Testing experimental innovative treatments for suicide against a high-quality control would perhaps address the concerns raised by research ethics committees, given that rigorous ethical review is required to conduct suicide-related research (Andriessen et al., 2019a).

This thesis will outline an attempt to incorporate theoretical models of suicide and self-harm to inform the development and testing of effectiveness for a service improvement initiative within a NHS mental health provider area. The overview of efficacy of interventions for suicidality has highlighted the CAMS intervention as one of the few models that incorporate the rich theoretical underpinnings that are available in the literature, within an efficacious treatment model. It is envisaged that by doing so, if successful, promising and innovative treatments where an RCT standard evidence base exists across other global sites, can be evaluated both operationally and clinically for their viability and “fit” into the NHS. Additionally, innovations can be evaluated against this potentially high-quality TAU, thus providing gold standard, causal RCT data.

3.8 Research questions

The research questions and hypotheses explored were:

Question One: What is the effect of an open-access systems-level suicide-risk triage model on future service utilisation?

Hypothesis: Measures of engagement with services, Crisis/Liaison Psychiatry presentations and mental health hospital admissions will be different pre and post suicide risk triage.

Question Two: What is the impact of implementation of the CAMS intervention for service users at high risk of suicide, in comparison with TAU for a historical matched control group, at six months post index Crisis assessment?

Hypothesis One: Crisis/Liaison Psychiatry presentations will be different for the CAMS and control groups at follow-up.

Hypothesis Two: Home treatment contacts will be different for the CAMS and control groups at follow-up.

Hypothesis Three: Community mental health input in terms of the Care Programme Approach (CPA), defined as a package of co-ordinated care delivered by secondary care community mental health teams (DoH, 2008), will be similar for the CAMS and control groups at follow-up.

Hypothesis Four: Mental health hospital admissions will be similar for the CAMS and control groups at follow-up.

Question Three: Do CAMS SSF core assessment ratings reduce over the course of the CAMS intervention?

Hypothesis: For those individuals undertaking the CAMS intervention, the six CAMS SSF core assessment constructs will reduce significantly from the initial SSF to final session.

Question Four: Do service users find the CAMS intervention sensitive to their needs?

Hypothesis: Elements of the CAMS intervention including a suicide focus, collaboration and individualised treatment planning suggests that it will be sensitive to service user needs.

Question Five: Does suicide-specific training, and in particular CAMS training, impact on clinician confidence?

Hypothesis: CAMS-trained clinicians will report feeling more confident when assessing, managing and treating suicide risk.

Chapter 4: Methodology

** Aspects of the service improvement model described in this chapter have been published (Brown et al., 2020).*

The chapter outlines the methodology employed within the research project including the specific operational components of the suicide risk triage model, namely the supervision hierarchy and the essential training undertaken by all clinicians. Participant recruitment, study design, data capture, outcome measures and the methodological/ethical issues associated with the research are also described. It is argued that the lack of an ethically and clinically viable control arm precludes the opportunity to conduct a randomised controlled trial. Thus, the rationale for utilising a mixed-methods approach is discussed, including key research supporting this view, which emphasises the value of corroborating evidence from quantitative enquiry alongside subjective experiences. Given the heterogeneity for variables deemed to impact on suicide risk, collation of clinical data using Propensity Score Matching (PSM) is outlined as an appropriate method to identify a statistically matched historical cohort. The epidemiological and interventional literature in the preceding chapters is utilised to determine the choice of demographic and clinical variables that are most likely to influence suicide risk and inform PSM.

4.1 Outline of the project

This study was carried out in a NHS secondary care mental health service, based in the North of England and serving a population of approximately 160,000 people spread across a semi-rural area encapsulating three small towns (Brown et al., 2020). Based on the English Indices of Deprivation (Ministry of Housing, Communities and Local Government, 2019), the area ranked in the top 20 local authority districts with the highest proportion of deprived neighbourhoods; the latter having increased by 4% since the 2010 publication. An additional factor, given the long waiting time for psychological therapy for serious mental illness of 2.20 years (Iqbal et al., 2021), was the lack of timely access to evidence-based therapies. The high local rate of suicide remained above the national average over the 2017-19 period (11.2 and 10.1 suicides per 100,000 inhabitants per annum, respectively; PHE, 2019).

The NHS provider received an overall rating of "Good" for mental health services following a Care Quality Commission (CQC) inspection in 2017. Local provision included acute inpatient services, Liaison Psychiatry, an open-access CRHT, older adult inpatient and memory services, community mental health support as well as a range of specialist teams supporting adults with serious mental illness including eating disorders and personality disorders (Brown et al., 2020). The provider met NICE guidelines and quality standards for all Axis I and II disorders.

The current research project aimed to facilitate timely access to care by using a decision-making triage framework to offer rapid access to a range of social care and/or secondary care mental health services for individuals presenting with suicidality. This included 24/7 open-access CRHT and Liaison Psychiatry services, the latter based at the local general hospital, which incorporated individualised biopsychosocial assessment that directly informed care planning. In addition, CRHT and Liaison Psychiatry teams worked in partnership with local organisations to signpost individuals to a range of other health and social care agencies, usually outside the remit of a mental health CRHT, including substance misuse, physical health, housing, domestic violence, legal/financial services, employment/vocational support and bereavement, with ongoing active monitoring of engagement by the CRHT as required. This innovative practice, given the health and social care model was locally embedded in 2011 and NHS policy required such innovation years later (FYFV; NHS England, 2016a), included incorporation of collaborative and person-centred care for individuals presenting with suicidality. These components were subsequently identified in the competency frameworks provided by the National Collaborating Centre for Mental Health, in conjunction with NHS Health Education England (2018).

The risk management system employed within the organisation, DICES (Describe, Identify, Choose, Explain, Share), provided by the Association for Psychological Therapies (APT) was used by over 6,000 professionals from various health and social care providers at the time of writing (www.apt.ac). The Brief DICE provides an overview of potential areas of clinical risk including questions around the presence or absence of mental health difficulties, substance misuse problems, risks for suicide/self-harm, self-neglect, violence, vulnerability and potential risk “triggers”. There is also advice on undertaking a risk assessment and devising a management plan. Clinicians are given access to risk assessment checklists for certain types of risk (e.g. suicide, violence, self-neglect, substance misuse) as well as those designed specifically for children and older adults. Clinicians are encouraged to complete these additional risk assessments alongside the Brief DICE as appropriate, including assessing the risk of suicide (DICES-S), which aims to help the clinician decide whether the individual poses a significant risk of suicide and/or self-harm through a series of questions around “fixed” and “fluid” factors.

No reliability or validity data is provided for DICES questionnaires, although there is anecdotal evidence supporting the acceptability to attendees of the DICES training courses on the APT website. However, given the assertion that risk prediction using scales should be avoided (see Section 2.1), it is questionable how useful the DICES-S checklist is as an effective risk assessment tool, particularly as its psychometric properties are unknown. Despite the positive written feedback from DICES-trained clinicians, the effective use of suicide risk assessments such as the DICES-S relies on clinical experience which varies greatly. It is also difficult to ensure that checklist-style tools do not negate clinical judgement. Such a checklist approach may reduce the opportunity presented by collaborative assessment with individuals during the risk management process, but also lead to rapid completion of the checklist where service pressures are evident; the latter being a key issue identified within NHS CRHT services (Lloyd-Evans et al., 2018). Additionally, undertaking a "checklist" approach with a help-seeking and potentially distressed individual and/or family/carer may reduce the opportunity to shape the assessment to their unique presentation needs (Graney et al., 2020). Thus, poor acceptability may disrupt the therapeutic alliance, which has been identified as key for instilling motivation (Horvath & Symonds, 1991; NICE, 2009).

To counter these issues, the development of a comprehensive assessment process for risk was identified as a core component of the research project. A training protocol within the host organisation was designed to ensure all frontline clinicians with a core duty to assess suicide risk could utilise the assessment process effectively. All qualified staff were required to attend a one-day training course entitled "Risk triage training". Besides this training providing an overview of how to implement the suicide risk triage framework within clinical practice, it also allowed for the collation of variables that clinicians felt impacted on their confidence during risk assessment, as well as ensuring they met a baseline level of ability and knowledge regarding suicidality. Risk triage training was delivered to all new qualified clinicians as they joined the organisation. A pre and post-training survey (Jobes, 2016) was undertaken. A written document was provided as an aide memoire for clinicians and to support the recording of each suicide risk triage on the electronic record system.

4.1.1 Suicide risk triage

The service improvement initiative was centred around the suicide risk triage decision-making framework. This helped identify service users' needs based upon a sensitive and collaborative engagement process, allowing for further verification with the service user and/or other members of their family/social network as required. Based on the assessed level of suicidality, or alternatively whether the individual's needs would be better met by other services, the clinician would record their evaluation of the level of risk and care plan actions to be undertaken. To ensure the framework was consistently implemented across all service access points, and in order to support clinicians following the triage training, departmental champions were identified and trained to provide a further level of support where clinicians struggled to make a decision regarding a service user's needs. Champions were nominated clinicians from each service who attended an extra half-day training session to help clarify the distinction between non-mental health needs, self-harm (including low to moderate level suicidality) and associated mental health difficulties, and life-threatening presentations. Champions received ongoing supervision from the research team to enable them to support their colleagues with the triage process.

The suicide risk triage process was set up to precede and further facilitate all clinical risk decisions when a service user expressed suicidality, suicidal intent or where a clinician had concerns that such risk may be evident. The latter included risk behaviours associated with previous suicidal behaviours, concerns from carers/family or inconsistences between a service user's presentation and their expressed suicidality. Suicide risk triage involved the clinician making a decision about whether suicide risk indicated a need for social and practical support, identification of a relapse in already supported cohorts, or additional risks due to self-harm or life-threatening behaviour. Within this decision-making process, besides supervision from the departmental champion, a hierarchy was set up across the organisation to support clinicians/champions if uncertainty about the level of suicide risk was still evident, or if they felt that the risk was potentially life-threatening and therefore needed escalation to the CRHT.

Besides ensuring a consistent approach across the organisation, the triage system was expected to increase clinician confidence through individualised case supervision. Anecdotally from triage training feedback, it was evident that complex, multifactorial presentations may reduce the clinician's certainty in determining the level of risk. In such instances, the aim was for clinicians to feel supported when making challenging risk decisions and reassured that supervision was readily available. The triage process also aimed to improve the continuity of care for service users where their needs could be met within their own service, thus providing a level of consistency of provision within a familiar team, rather than referring to the CRHT.

4.1.2 Supervision hierarchy

For the majority of cases, triage-trained clinicians agreed that they would be able to consider clinical variables pertaining to risk and make a triage decision accordingly. However, if a clinician was unclear about the severity of suicidal risk, the supervision system would be accessed. This involved having a discussion with the next level of the hierarchy so as to further elucidate the clinical picture pertaining to the individual service user and thus, establish more accurately the extent of suicidality.

Four levels comprised the supervision hierarchy for the triage process:

1. All individual clinicians
2. Nominated departmental champions
3. CRHT clinicians and research leads

4. Medical, Clinical and Operational leads (all clinically qualified)

Levels 3 and 4 of the hierarchy were CAMS-trained.

If a clinician was concerned about a service user expressing suicidality and was unsure how to proceed in terms of care provision, they would discuss the case with their departmental champion in the first instance. Where there was still uncertainty as to the decision despite supervision from the champion, the clinician was directed to discuss all collated information thus far with a Level 3 clinician. Level 4 of the hierarchy were contacted in exceptional circumstances and only by Level 3 clinicians when they were unable to make an objective decision about suicide risk. Level 4 clinicians were available for contact out-of-hours to provide consultation about such cases. All clinicians were encouraged to re-triage as necessary if new information was available, or a change in level of suicide risk was observed. This allowed for real-time, organisation-wide management of suicidality and incorporation of clinical opinion across the widest number of professionals and their multiple expertise.

4.1.3 Electronic recording and data capture

The suicide risk triage process was recorded on the service user's electronic record system as part of a bespoke online form where the clinician documented their decision as to the level of suicidality, as well as providing a rationale for the decision. Clinicians also used the online suicide risk triage form to document if they were unclear about the level of risk and to record discussions with colleagues within the supervision hierarchy.

Data capture was set up via an electronic recording system which collated real-time data about suicide risk triages, including numbers per team and demographic information, to ensure data was accurately recorded.

4.1.4 Research site and team

The research was undertaken at the base for CRHT and Acute services. The open-access CRHT was available through self-presentation or phone 24 hours a day, seven days a week.

The CRHT was comprised of qualified clinicians primarily from social work and nursing backgrounds. External referrals to the CRHT were through various pathways including primary care, the general hospital (via Liaison Psychiatry) and other teams within secondary care mental health services. Anyone presenting to the service was assessed for suitability and where mental health/suicidality were not evident, signposted to appropriate services for support with their other difficulties.

For those requiring CRHT support, a range of options could be utilised including inpatient admission, medication review, referral to community services, social prescribing and/or signposting to third sector organisations (whilst monitoring outcome through the Home Treatment service).

4.1.5 CAMS training

All members of the CRHT and Liaison Psychiatry teams, Level 4 of the supervision hierarchy and secondary care Psychology clinicians, were trained to use the CAMS intervention. Training consisted of the aforementioned "Risk triage training" workshop, reading the second edition of the CAMS manual (Jobes, 2016), followed by a three-hour CAMS online video providing an overview of the CAMS intervention and a clinical demonstration with a service user. The video demonstrated the key techniques and components of the CAMS framework with an emphasis on remaining "suicide-focused" and working collaboratively with the service user.

To roll out the CAMS competencies, it was necessary to ensure a small group of senior clinicians were CAMS concordant. These clinicians observed a CAMS assessment undertaken by a CAMS-accredited consultant, before being observed conducting the same process themselves. Once concordance was established using the CAMS rating scale (CRS.3; Jobes, 2016), they would continue honing these skills and receive supervision accordingly. This cohort of senior clinicians applied the same training and concordance process with other colleagues requiring CAMS competence. The psychometric properties of the CRS.3 have demonstrated high internal consistency (α=0.89) and inter-rater reliability (Corona et al., 2018, 2019).

4.1.6 Service user involvement

It is recommended that research on suicidality and self-harm involves service user collaboration at all stages of the research process (Holmes et al., 2018). The research methodology, data analysis and proposed dissemination plan were discussed at the local service user-carer forum at three separate meetings prior to the project commencing. The final project methodology was agreed before being approved through the organisation's governance board, which also included service user and carer representation. Service users were continually consulted throughout the project and provided progress updates.

4.2 Study design

4.2.1 Rationale for a mixed methods approach

As outlined in Chapters 2 and 3, suicide research tends to be quantitative in nature, focusing mainly on the prevalence, epidemiology and efficacy of interventions impacting on self-harm and suicidality. It is argued that qualitative research can provide valuable theoretical contributions to the field. Hjelmeland and Knizek (2010) reported that, during 2005-2007, less than three percent of published research articles used qualitative methods within the three major suicidology journals ("Crisis", "Suicide and Life Threatening Behavior" and "Archives of Suicide Research"). Combining qualitative methods with quantitative data may provide a more comprehensive understanding of the aetiology of suicidality, highlighting the subjectivity of lived experience (Flick, 2007). Consistent with this notion, Fitzpatrick (2011) asserted that research needs to take into account the wider contextual factors implicated in suicidality, some of which may not be quantifiable.

The value of those with lived experience of suicidality and self-harm is acknowledged as a key component of local suicide prevention planning (PHE, 2020). However, the subjective viewpoints of individuals who have attempted suicide is arguably lacking within research designs (Lakeman & Fitzgerald, 2008). Bergmans and Links (2009) adopted a mixed methods approach to evaluating a psychosocial intervention programme for individuals with recurrent suicidal behaviour (n=163). Supplementary qualitative interviews with 16 participants allowed for a better understanding of how changes in suicidal behaviours occurred, as well as the factors influencing change and recovery.

A systematic review by Lakeman and Fitzgerald (2009) identified 12 studies from 1997 to 2007 that utilised qualitative methodologies, most often semi-structured interviews, to explore subjective accounts of suicidality. Content analysis identified five key themes: “psychache,” widely implicated in the suicidality literature; struggle (at varying time points and with different meanings depending on the study cohort); social connectedness as key to recovery; “turning points” away from suicide, and coping strategies. Further, through a literature review, White (2016) highlighted the importance of qualitative research for the following areas: investigating lived experience of suicidality, exploring the experiences of care and treatment from healthcare services and, how these elements relate to prevention. It is argued that the narratives of those with lived experience can provide valuable insights into the complexity of suicide that can be missed if research is exclusively quantitative (Rogers, 2001).

Quantitative approaches have historically dominated suicidality research, however, there is growing interest in the advantages of mixed methods designs (Rogers & Apel, 2010). This research adopted a mixed methods approach, integrating quantitative data analysis with qualitative interviews from service users and clinicians. It was hoped that this process of methodological triangulation, using a combination of data methods to gather information

(Denzin, 1978), would provide a more robust understanding of the study objectives. Additionally, comparing both convergent and divergent findings within a mixed methods approach can help identify further lines of research (Kral et al., 2011).

4.2.2 Overview of study design

It was not deemed ethically appropriate to utilise RCT methodology as randomisation to a control group not provided the CAMS intervention (i.e. TAU), despite presenting with life-threatening behaviours, was potentially unacceptable given that current provisions within national guidance are not evidenced (NICE, 2018). Thus, a historical cohort of matched cases was used.

The experimental and matched control cases were compared on outcome measures of service utilisation. SSF core assessment scores were utilised for within-group analyses for the experimental group i.e. whether their scores on measures of suicidality reduced with use of the CAMS intervention.

The qualitative component of the research involved undertaking face-to-face semi-structured interviews with a subgroup of service users receiving a range of treatment outcomes, to explore their experiences of the CAMS intervention. Interviews were also undertaken with a subgroup of clinicians from varying professions and levels of clinical experience, to examine any effects of triage and CAMS training on clinician confidence. Participants were invited to give feedback on the themes that emerged from the individual interviews to ensure that the researcher had accurately conceptualised the range of thoughts and feelings relating to the CAMS intervention.

4.2.3 Outcome measures

Outcome measures are summarised in Table 1:

Table 1

Summary of quantitative and qualitative data collected

Method	Data collected
Quantitative	• Electronic records (experimental data) • Archival electronic records (control data) • CAMS SSF core assessment data (within-group comparisons) • Suicide risk triage data (via the electronic dashboard)
Qualitative	• Semi-structured interviews with service users undertaking CAMS assessments • Semi-structured interviews with clinicians • Focus groups with service user/clinician interviewees for feedback on key themes from interview analysis

The following outcome measures were collected for all experimental and matched control participants in the six months post Crisis assessment:

- Deaths attributed to suicide (where coroner inquest conclusions were available)
- Crisis contact/hours of input
- Liaison Psychiatry contacts/hours of input
- Home Treatment contacts/hours of input
- Mental health hospital admissions
- CPA hours
- Total mental health service utilisation (in hours)

4.3 Quantitative methodology

4.3.1 Participants and recruitment

All participants forming the experimental cohort were identified as part of the routine clinical assessment process conducted by the CRHT, where suicidality was part of the service user's presentation. Participants were referred to the CRHT via various organisation-wide and external pathways. Inclusion in the research was voluntary and participants could withdraw their consent at any time without giving a reason.

Eligible participants were provided with a Participant Information Sheet (Appendix G) which was documented on their electronic record once consent was obtained. Given that participants presented during a mental health crisis or a period of acute suicidality, the time taken to obtain consent varied from a few hours to several weeks. If participants did not communicate consent during their initial CAMS assessment, they were given at least one week before being contacted by a CRHT clinician to clarify this outstanding issue. This was extended to two to four weeks if the participant was admitted to hospital.

Consent for the matched control cases was identified from the archival electronic record held by the host organisation. Control cases were only included in the study if there was evidence of a written confidentiality agreement that was routinely completed on presentation to mental health services. As part of TAU, confidentiality information was provided regarding how an individual's information was used, including an "opt-in" process for data in relation to research. An alert was created on the service user's electronic record if they did not agree to their personal information being used for research purposes to ensure their data was excluded from analysis and also assure that refusal did not impact on care.

The following inclusion criteria was used:

- Adults aged 18+;

- Where triage confirmed either life-threatening behaviours or, in the absence of such behaviours, high suicide intent coupled with a lack of information upon which to make an objective decision about risk;
- Consent to participate in the research was obtained.

Participants were excluded from the research if they met the following:

- The individual was under the age of 18;
- The individual had a significant intellectual or pervasive developmental disorder impacting on their ability to conceptualise emotional states and linked behaviours, central to the CAMS intervention;
- The individual had an intellectual or cognitive disability impacting on their ability to provide informed consent;
- The case was used primarily for training purposes to help clinicians improve their understanding of the CAMS intervention.

4.3.2 Sample size calculations

Based on CRHT referral rates over the 12 months prior to the project, it was expected that a minimum of 65 CAMS assessments would be conducted throughout the project's duration, although it was recognised that not all of this cohort would provide consent. A methodologically-similar retrospective study of suicidal outpatients by Jobes et al. (2005) found significantly higher numbers of ED presentations for TAU participants versus those provided the CAMS intervention in the six months after initiation of mental health care, with an effect size of d=0.63. Based on this, an a-priori sample size calculation was conducted using a moderate effect size of d=0.5. It was estimated that a sample of 51 participants in each group (total n=102) would be sufficient to detect an effect size of d=0.5 with alpha level= 0.05 and delta=0.8. Ongoing analysis of missing data was undertaken every four months.

4.3.3 Measures: CAMS

The core empirical component of the CAMS intervention, the SSF, is a multidimensional tool used for comprehensive assessment, treatment planning and tracking of suicidal risk (Jobes, 2016). The quantitative component has established reliability and validity (ranging from a= .78 to a= .98, Conrad et al., 2009) and is complemented by a qualitative assessment of the psychological drivers and risk factors implicated in suicidality.

The SSF core assessment is used in the initial session and throughout the treatment process, usually on a weekly basis ("tracking"), until suicidality is resolved. Where possible, the individual completes the ratings and written responses in Section A of the SSF, which is an important aspect of the CAMS intervention in terms of the patient/therapist dynamic i.e. the individual is the expert regarding their suicidal suffering (Jobes, 2016). The individual rates five key constructs: psychological pain; stress; agitation; hopelessness and self-hate, based on a five-point Likert scale (1 = low, 5 = high). The first three constructs are derived from Shneidman's cubic model of suicide (see Section 1.2.2). Shneidman's concept of presses (1993), called stress in the SSF core assessment as this is typically better understood by the patient (Jobes, 2016), are pressures on the individual that cause them to feel overwhelmed. These are usually external, such as job loss and bereavement, but also includes internal presses such as hallucinations.

The fourth construct, hopelessness, relates to the work of Beck and colleagues (1979) and has consistently been implicated in suicidality (Beck et al., 1985; Brown et al., 2000). Self-hate was developed from the work of Baumeister (1990) who described suicide as a need to escape from negative perceptions of the self.

Each of the five SSF core assessment constructs are accompanied by a qualitative statement which is written by the individual as follows:

- "What I find most painful is…"

- “What I find most stressful is…”
- “I most need to take action when…”
- “I am most hopeless about…”
- “What I hate most about myself is…”

The individual then ranks the five constructs in order of importance to them and provides an “overall risk of suicide” score ranging from 1 (extremely low risk of suicide) to 5 (extremely high risk).

Two further questions assessing the extent to which suicidality is related to thoughts about self and/or about others are also completed by the individual (ranging from 1=not at all to 5=completely). The individual then provides reasons for living, reasons for dying and a “one thing” response that would make them no longer feel suicidal.

Section B is completed by the clinician and collates information about established risk factors for suicide, which is followed by a treatment plan in Section C. The SSF core assessment is supported by a stabilisation plan which is developed in collaboration with the individual. The stabilisation plan is targeted at reducing access to lethal means and identifying coping strategies, particularly at times of personal crisis.

The length of the CAMS intervention varies depending on the number of sessions that it takes for the individual to resolve their suicidality. For individuals that are engaged with treatment following their initial assessment, CAMS tracking is undertaken as part of their treatment process and the treatment plan is reviewed in every session. Clinical resolution of CAMS occurs after three consecutive sessions of no suicidal behaviour and/or effective management of suicidality (overall suicide risk < 3). This is determined based on the individual’s responses on the SSF core assessment (i.e. low ratings = low suicidal risk) and a congruence with subjective information provided by the individual. If this resolution criteria is met, a final outcome (“disposition”) form is undertaken and the CAMS intervention is complete, although the individual may remain in treatment. The individual is given a copy of their stabilisation plan to help prevent suicidal relapse.

Three key studies exploring the psychometric properties of the SSF core assessment have been conducted. The first of these with an outpatient sample of suicidal college students (n=103) demonstrated that the six SSF core assessment variables (pain, stress, agitation, hopelessness, self-hate and overall risk of suicide) are not explained by a single underlying factor (Jobes et al., 1997). This was highlighted by the low inter-item correlations and limited shared common variance of the six items, accounting for around 36% of the total variance, suggesting that each of the variables measure unique aspects of suicidality. Each of the six variables were validated against similar established measures (see Table 2) and all were significantly correlated, indicating good convergent validity. Criterion validity was demonstrated using between-group analyses with a non-suicidal student control group (n=72), indicating significantly higher ratings by students experiencing suicidality on each of the six variables (p<.0001 for each of the SSF items).

Reliability was measured for the non-suicidal controls at a two week follow-up, with correlations from assessment to follow-up ranging from 0.35 (hopelessness) to 0.69 (psychological pain). Although this would indicate low reliability, the authors argued that the SSF core assessment variables measure transitory rather than trait-based concepts, which can change at any given time of measurement. Hence it is not surprising that the correlations were low to moderate. The authors acknowledged that further reliability data with suicidal samples was warranted.

Table 2

Correlations between SSF core constructs and established measures (Jobes et al., 1997)

Variable	Measure	N	Pearson r
Pain	HSCL-90; GSI	70	.25*
Stress	PI	37	.50***

Agitation	HSCL-90; GSI	70	.24*
Hopelessness	HS	26	.73****
Self-hate	OSD	26	.74***
Overall risk	RFL	37	-.42**

*p <.05. **p < .005. ***p < .001. ****p < .0001.
HSCL-90 = Hopkins Symptom Checklist; GSI = Global Severity Index; PI = Pressure Inventory; HS = Hopelessness Scale; OSD = Osgood's Semantic Differential; RFL = Reasons for Living Inventory.

The second study, conducted with a higher risk sample of psychiatric inpatients (n=149; 79 suicidal ideation, 29 suicidal behaviour, 41 non-suicidal controls), obtained SSF core assessment scores within 24 hours of admission and 48-72 hours later (Conrad et al., 2009). A replication of the factor analysis in the Jobes et al. (1997) study using the first five SSF core assessment variables (excluding overall risk of suicide) indicated a two-factor solution, however this accounted for a greater proportion of the variance (72% compared with 36% in the original study). The first factor, labelled "acute," included stress and agitation and was thought to be more prevalent in individuals that resolve their suicidality more quickly during treatment. The second factor, labelled "chronic," incorporated pain, self-hate and hopelessness and was considered more prevalent in individuals that are more "difficult to treat" and require several treatment sessions to resolve suicidality.

As with the Jobes et al. (1997) study, convergent validity was demonstrated by comparing the six SSF core constructs to established measures. All were significantly correlated (see Table 3), with the exception of stress and the Pressure Inventory-III, although it is recognised that the latter is a globalised measure of several areas of stress whereas the SSF core assessment measures the intensity of stress. Criterion validity was demonstrated through between-group analyses which indicated significant differences on the six SSF core variables between the suicidal and non-suicidal group, whilst controlling for overall distress. Test-retest reliability analyses were significant for all variables, with low to moderate correlations ranging from .23 (stress) to .57 (self-hate). Cronbach's alpha analyses ranged from .78 to .98 indicating high internal consistency.

Table 3

Correlations between SSF core constructs and established measures (Conrad et al., 2009)

Variable	Measure	N	Pearson r
Pain	BHQ-20	113	-.35*
	OQ-45.2	127	.45*
	OMMP	110	.43*
Stress	PI-III	129	.12
	STICSA-S	130	.36*
	STICSA-T	136	.27*
	STICSA -Total	121	.31*
Agitation	STICSA-S	128	.42*
	STICSA-T	134	.28*
	STICSA –Total	119	.36*
	BIS-11	133	.36*
Hopelessness	BHS	140	.52*
Self-hate	BST	141	-.37*
Overall risk	RFL	137	-.51*

*p <.01 (one-tailed).

BHQ-20 = Behavioral Health Questionnaire-20; OQ-45.2 = Outcome Questionnaire-45.2; OMMP = Orbach & Mikulincer Mental Pain Scale; PI-III = Pressure Inventory III; STICSA = Strait-Trait Inventory for Cognitive and Somatic Anxiety; STICSA-S = STICSA State Subscale; STICSA-T = STICSA Trait Subscale; BIS = Barratt Impulsiveness Scale-11; BHS = Beck Hopelessness Scale; BST = Beck Self-Concept Test; RFL = Reasons for Living Inventory

The SSF core assessment has further been validated in an adolescent psychiatric inpatient sample (n=100) 12-17 year olds, with evidence of good internal consistency (α=0.77; Brausch et al., 2019). The six SSF constructs significantly correlated with similar measures (with the exception of stress), demonstrating convergent validity. Criterion validity was assessed by comparing scores for participants with and without a history of suicidal behaviours, with significant differences between the two groups for psychological pain (p=0.012), hopelessness (p=0.006), self-hate (p<.001) and overall risk of suicide (p<.001) scores. Further, the overall suicide risk rating was significantly correlated with implicit suicide risk ($r=0.35$, $p<0.05$), as measured by the death/suicide implicit association test (Nock, Park, et al., 2010) which is used to assess automatic mental associations that the individual has relating to life and death. The authors identified that further measures of the reliability of the SSF core assessment in adolescent samples should be conducted, including test-retest reliability.

4.3.4 Procedure.

The suicide risk triage process would identify whether a service user required a CAMS assessment. The supervision hierarchy (see Section 4.1.2) could be utilised when requiring advice regarding the appropriateness of a CAMS assessment.

Once identified as eligible for inclusion, a CAMS assessment was completed at the earliest opportunity. For service users not requiring hospital admission, this was usually within 24 hours of triage and as soon as a CAMS-trained clinician was available. For participants requiring acute mental health admission or substance detoxification, the CAMS assessment was not completed until a period of stabilisation had elapsed (at least 48 hours) to determine whether the service user was able to engage with the assessment. Following this stabilisation period, the need for CAMS was reassessed based on any changes to the level of suicide risk.

CAMS tracking was initiated depending on clinical need, as identified by the CAMS treatment plan at assessment. For some service users, hospital admission allowed for a period of stabilisation and substantially reduced suicide risk such that CAMS tracking was not required. Additionally, some service users disengaged after their initial assessment and therefore tracking was not initiated.

Data from participants was collected at the following time points:

1. On first referral to the CRHT, to identify primary reason for suicidality and/or help-seeking (through triage)
2. When they were identified for a CAMS assessment (checks made regarding consent and suicide risk triage questionnaire detailing rationale for CAMS assessment)
3. Once confirmation was received that the participant had received a Participant Information Sheet and consented to their data being used for the purposes of the project (demographic data, mental health history and SSF core assessment scores collated)
4. For service users identified for CAMS tracking, data was collected throughout the tracking process (SSF core assessment construct scores for each tracking session)
5. At monthly intervals throughout the duration of the project to collate outcome data
6. Once six months had elapsed since the CAMS intervention ended, service users were contacted by letter and/or telephone to invite them to participate in an interview to discuss their experience of CAMS

Participants were offered the opportunity to receive an executive summary of the research at the end of the study.

4.4 Qualitative methodology

4.4.1 Participants and recruitment

For service user interviews, potential participants were contacted at least six months after the CAMS intervention was completed or from the time point at which the service user disengaged. Participants were first followed up by letter and up to three phone call attempts. Some service users were excluded at first contact, for instance, if they had moved out of area or did not want to participate in the interviews.

For clinician interviews, a purposive sample of clinicians were chosen based on their involvement with the CAMS process. Clinicians had various professions and levels of experience. As per the ethical approval for the project, clinicians were sent a maximum of two emails and if there was no response, they would not be contacted again in order to mitigate against coercion. All clinicians approached for an interview agreed to take part.

The following inclusion criteria were used for service user interviews:

- Completed a CAMS assessment (including those that had subsequently disengaged with the CAMS intervention and/or treatment plan)
- At least six months had elapsed since their CAMS assessment, or, for tracking cases, six months since their last CAMS tracking
- Had not "opted out" of being contacted for follow-up, as confirmed on the Participant Information Sheet

For clinicians, there was no specific inclusion/exclusion criteria. Clinicians who were at various stages of CAMS training (online training only, used CAMS once, regular use of CAMS) and with different levels of involvement in the project were included. The majority of interviews were conducted with clinicians from CRHT, Liaison Psychiatry and Acute services as these were the service areas regularly using the CAMS intervention as part of their routine clinical practice. Other service areas had little or no use of the CAMS intervention itself and therefore it would be difficult for them to comment on its utility.

4.4.2 Sample size

Qualitative phenomenological research often relies on purposive sampling, a method of choosing participants based on a set of criteria that is usually pre-defined in the research protocol (Patton, 2002). Participants are typically identified based on their knowledge or experience of the phenomenon under study to achieve depth of understanding, rather than generalisability (Creswell & Plano Clark, 2011; Patton, 2002). A homogeneous set of participants is often chosen for insight into a particular experience (Smith et al., 2009).

Whereas adequate sample sizes for quantitative methodologies can be determined mathematically using power calculations, the sufficient number of participants required for qualitative research is open to interpretation (Guest et al., 2006). It is recommended that a sufficient sample is achieved when theoretical saturation occurs i.e. sampling is stopped when no new information is gleaned from adding participants (Glaser & Strauss, 1967; Miles & Huberman, 1994). This can pose difficulties for researchers who often have to state their required number of participants in advance of their study (Cheek, 2000).

The literature suggests that the number of participants required for qualitative research will vary depending on the type of analysis to be conducted (Morse & Niehaus, 2009). Morse (1994) recommended at least six participants for phenomenological studies, 30-50 for grounded theory and around 30-50 for an ethnographic study. In an attempt to develop practical guidance for sample sizes, Guest et al. (2006) analysed 60 qualitative interviews to explore the point at which theoretical saturation occurred. Analysis suggested that a maximum of 12 interviews was sufficient, with the majority of key themes identified by the first six interviews. Crouch and McKenzie (2006) argued the case for small sample sizes, where in-depth interviews are supported by knowledge of the social context in which the information was gathered. This would include detailed history-taking and comparing how participants' experiences relate to one another. Consequently, a small number of participants (less than 20) was recommended to gather rich rather than extensive data.

Based on the literature outlined above, a minimum sample of six participants per group (service user and clinicians, respectively) was chosen for the research.

4.4.3 Interview setting

Of the eight service user interviews conducted, five took place at the CRHT base. One interview took place at a local GP surgery as this location was more accessible for the participant. Two interviews took place via telephone due to social distancing rules around the Covid-19 pandemic (see Section 4.8).

Of the ten clinician interviews, seven interviews took place at the CRHT base. Three interviews took place via video link due to social distancing rules around the Covid-19 pandemic. An independent clinician conducted the interviews to minimise the influence of pre-existing working relationships between the researcher and clinicians on response desirability.

4.4.4 Measures

Participants received a copy of the Participant Information Sheet, distinct from the information sheet referred to in Section 4.3.1, that outlined the interview procedure (Appendix H) as well as an accompanying consent form. Participants were reminded that they could withdraw their consent at any time throughout the interview or prior to data analysis.

Semi-structured interviews were used for both sets of participants. This approach is guided by a set of key questions, whilst being flexible to allow the interviewer to discuss certain topics in more detail (Britten, 1995). This process facilitates engagement with the participant by adapting the interview to suit the interaction, whilst ensuring that all participants are asked a common set of questions. Additionally, new or interesting findings that have not been considered as part of the interview schedule can be explored.

The interview guide consisted of five open-ended questions. Questions explored service users' experiences of the CAMS intervention, including the process of care and treatment planning, their experiences with mental health services and how any of these aspects could be improved. For clinicians, questions included whether there had been any changes to confidence or clinical practice as a result of CAMS training, as well as any barriers to use of the CAMS intervention. In addition to the five core questions, supplementary questions were asked by the interviewer to explore topics of interest or gather more specific information.

4.4.5 Procedure

Demographic information was collected at the start of all interviews. All respondents were asked all five questions in the same order, however the number of sub-questions varied depending on the level of detail provided by the participant. Debriefing procedures were available for all participants.

A university-approved recording device was used for the interviews. The original interview recordings were transferred onto a secure server with restricted access and deleted from the digital recording device. Once transcribed, the original recordings were destroyed and the written interviews were stored on encrypted portable media.

4.4.6 The interview method

It is widely recognised that the researcher will introduce some element of subjectivity when conducting qualitative data collection, regardless of the methods used (Hammersley & Atkinson, 1995; Piantanida & Garman, 1999; Turato, 2005). The quality of information gathered is arguably dependent on the researcher and their abilities to facilitate engagement (Morse et al., 2002). With interviews, it is therefore necessary to use a range of techniques to develop rapport with the interviewee, such as choosing a comfortable environment for the interview to take place and allowing the participant to have some control over the interview agenda (Sanjari et al., 2014). Participants may be more willing to contribute to discussions and share information when such techniques are used (Eder & Fingerson, 2001; Sanjari et al., 2014). Additionally, exercising reflexivity throughout the research process can mitigate the effects that the researcher's personal characteristics can have on the interview process.

4.4.7 Reflexivity

Regardless of the qualitative method used, reflexivity is a key element of the research process (Shaw, 2010). This process of critical self-reflection allows the researcher to explicitly state how their personal involvement and feelings about the research can affect data collection (Wilkinson, 1988). The researcher‘s own beliefs about the world, ideologies, morals and values are explicitly stated in an attempt to counter the influence that the researcher’s personal stance may have on any aspect of the research process (Ellis et al., 1997; Stanley & Wise, 1993).

Within IPA, the researcher’s own preconceptions, beliefs and experiences can influence how they interpret data (Smith & Osborn, 2008). Exercising reflexivity aims to minimise the potential effect that these variables may have on data analysis (Shaw, 2010), which include the researcher’s knowledge of the research aims and anticipated outcomes (Finlay, 2003). “Bracketing” is involved in this process, whereby the researcher sets aside their own judgements, knowledge and assumptions to understand the phenomenon in question as described by participants (Gearing, 2004). However, some researchers reject the notion that it is possible to remain impartial from one’s personal experiences and biases (Tufford & Newman, 2010). Rodham et al. (2013) suggest that, instead of setting aside these components, the researcher should aim to continually self-reflect and recognise the impact that preconceptions may have on their interpretation of the data.

With this in mind, it is important to acknowledge the researcher’s personal and professional experience. The researcher’s previous role as an Assistant Psychologist allowed them to develop an understanding of evidence-based psychological interventions for adults with severe and enduring mental health difficulties, including suicide risk formulation. The researcher had regular experience conducting psychological assessments which enhanced their ability to discuss sensitive topics and respond empathically, thus facilitating engagement with participants and conducting interviews in a sensitive way such that service users were able to recognise their importance in the process. It is acknowledged that the researcher's role in demonstrating an effective, guideline-standard interventions led secondary care Psychology service (Iqbal et al., 2021) may have informed their values around objective, collaborative and individualised assessment, however there is also a possible bias towards finding information that fits with these themes.

It is possible that the researcher's "investment" in demonstrating the effectiveness of the intervention to enhance care for the service user population they supported may have biased them towards extracting data of positive experiences. Further, the researcher was aware of the dissemination of the findings to senior colleagues that had supported the implementation of the intervention and also hoped it would be successful. As such, a sample of interviews (n=6, 3 from each participant group) were analysed by an independent clinician to check reliability of the themes identified by the researcher. Given the inevitable subjectivity of IPA, it is recognised that the themes generated by the researcher would be one of several possible interpretations (Brocki & Wearden, 2006). Thus, as recommended by Osborn and Smith (1998), these checks involved discussion of each interview, agreement on the theme categories and monitoring of the emergent themes as data analysis proceeded, with the aim of ensuring that the analytic account was justified by the interview data.

It is essential for researchers to take field notes of interactions with participants to record their personal impressions of the exchange and note any interviewer effects observed (Eder & Fingerson, 2001; Gilbert & Stoneman, 2016). The researcher kept contemporaneous notes of their reflections of the interviewer-participant interaction during the interview, including non-verbal cues (for face-to-face interviews), tone of voice and participant responsiveness to questions. These were revisited during the data analysis for each individual transcript to aid the researcher when understanding the possible intended meaning of participant responses.

4.5 Ethical and methodological considerations

4.5.1 Matching in case-control studies

As discussed in Section 4.2.2, when random assignment is not feasible, it is still possible to produce treatment estimates about an experimental group using controls that are matched on particular baseline characteristics (Steyer, 2005). For successful statistical matching, control and treatment groups must be similar to the extent that differences between group outcomes are attributable to the treatment effect and not confounding covariates (Steiner & Cook, 2013). Steiner et al. (2010) proposed that using theoretical knowledge of the effect of the covariate on the treatment outcome, combined with information from experts in the field, is the best method of selecting covariates to reduce bias. Evidence to support the choice of matching covariates can be gathered through a pilot study and re-evaluated if necessary (Steiner & Cook, 2013; Tanner-Smith & Lipsey, 2014).

4.5.2 Methodological issues

It was essential to address the design and methodological issues within this suicide research project to ensure that the study was both informative and safe for participants (Pearson et al., 2001). The National Institute of Mental Health (NIMH, 2018) research body provided a set of guidelines to support effective study designs when working with patients at high risk of suicide, which were considered when developing the protocol for the current study. As recommended by the NIMH guidelines (2018), inpatient admission and immediate aftercare was available for service users involved in the study as part of the existing care package provided by mental health services. Further, NIMH advised using outcome measures that complements data from other studies. The findings from the most methodologically similar study of CAMS to date (Jobes et al., 2005) reported mental health care utilisation at six-month follow-up in terms of number of subsequent psychiatric hospitalisations and inpatient days, and was therefore comparable to the current research.

Smith and Maris (1986) emphasised the utility of separating participants with suicidal ideation or low-risk attempts from those exhibiting life-threatening behaviours. The theoretical literature supports this notion, highlighting that certain factors are more predictive of suicidal behaviour as opposed to suicidal ideation alone (see Section 1.4), as well as differences depending on whether the individual expresses suicidality with or without intent (Wetherall et al., 2018). It was important that these differences were acknowledged within the research and only individuals presenting with life-threatening or high-risk self-harm were offered a CAMS assessment to distinguish them from those individuals expressing suicidality without intent.

4.5.3 Ethical considerations for suicidality research

Involving individuals experiencing suicidality in research raises several ethical issues which were considered and addressed as part of the methodology.

Capacity to consent may be impacted when an individual is acutely suicidal (Fisher et al., 2002). Guidance from the NIMH (2018) highlighted the need for using open and explicit language within suicide research and clear information in terms of what research participation involves. The Participant Information Sheet (Appendix G) was provided to all participants detailing the nature of the study and how their information would be used.

Choosing an appropriate control condition presents further ethical challenges (Prinstein, 2008), as does the choice of the treatment to be adopted in the comparison group (Lakeman & Fitzgerald, 2009). Researchers have acknowledged that using a control group with minimal or no treatment intervention raises ethical concerns, yet TAU may be considered more acceptable (Fisher et al., 2002; Spirito et al., 2002). As outlined in Section 4.2.2, the lack of efficacious treatments for suicidality within NHS delivery determined the non-RCT design implemented. Thus, participants were not randomly assigned to an intervention as the control group was a historical cohort. Additionally, all individuals presenting to the CRHT since the start of the project were considered for a CAMS assessment, as opposed to withholding treatment from some participants.

Sensitive and upsetting topics were inevitably discussed when exploring the “drivers” of the individual’s suicidality during the CAMS intervention, which was considered a necessary process in order to develop an objective and valid assessment of their trajectory towards life-threatening behaviours. All CAMS assessments were conducted by mental health professionals who had received extensive training to deal with such issues. Additionally, there was a risk that potentially upsetting or distressing experiences could be discussed as part of the interview process. To help mitigate this issue, the interview schedule was designed to focus on the intervention process of the CAMS rather than an individual's reasons for presenting to services. Interviews were terminated if a participant became highly distressed. All participants were offered a debriefing session with a clinician and provided with further support as required.

Despite these ethical concerns, there are several benefits to undertaking research with individuals experiencing acute suicidal intent. In particular, it is argued that the opportunity to enhance the individual’s and clinician’s understanding of suicidality can improve suicide risk assessment and crucially, aid with suicide prevention (Lakeman & Fitzgerald, 2009). Suicide research may need to adhere to additional safeguarding protocols to protect patient safety, however, this should not prevent the advent of such research (Hom et al., 2017). The proposed research did not place any undue risk on individuals based on adherence to usual operational policy, and clinical data was only utilised for service users that consented to participate in research. The research did not change anything about the clinical experience for the service user regardless of whether or not they consented to inclusion in the research, in terms of additional access to treatment. The only participants that had a different clinical experience were those that agreed to participate in the semi-structured qualitative interviews.

4.6 Quantitative data analysis

4.6.1 Finding a comparable control group

As the rationale for completing a DICES-S assessment was whether a service user expressed suicidality and/or suicidal intent, this rationale continued to be followed in addition to the concurrent completion of a suicide risk triage on the service user's electronic record system. Given that the rationale for both assessments was the same, this was felt to be the most appropriate way to define a cohort for a suitable matched control group.

4.6.2 PSM

The control group participants were identified using 1:1 PSM to find appropriate matches based on the demographic and clinical characteristics of the experimental group. A propensity score is defined as the probability of being assigned to the treatment condition (as opposed to the control condition) on the basis of pre-treatment covariates (Rosenbaum & Rubin, 1983). In non-randomised studies, baseline characteristics are likely to differ between participants that do and do not receive treatment, hence PSM can account for some of this variation (Austin, 2011). The rationale for PSM is to achieve similar distributions of baseline characteristics across both treated and untreated participants so that intervention effects can be examined, with the aim of balancing treatment covariates as closely as possible in order to resemble the randomisation process of an RCT (Austin, 2011; Steiner et al., 2010; Stuart, 2010).

Although 1:1 matching is a commonly used approach in PSM (Austin, 2011; McMurry et al., 2015) and has been used in a previous CAMS study (Ellis et al., 2015), it is acknowledged that there are limitations of such an approach. For example, 1:1 matching does not use all of the data available. As such, the majority of potential control data will be discarded, despite these control individuals having a propensity score that is still within the range of the treatment group (Stuart, 2010). Further, when a large number of matching variables are used, there is a reduced probability of finding an appropriate match from the control data using a 1:1 strategy (Guo et al., 2020). Thus, it is recognised that researchers may choose to use a many-to-one strategy to account for these limitations (Ming & Rosenbaum, 2000).

Prior to conducting PSM, demographic and clinical covariates that may influence treatment outcome were identified, with the aim of an approximately even distribution across the experimental and control groups. Demographic variables for suicide from epidemiological data and trend analyses consistently demonstrate that age and gender are important risk factors for suicide (see Section 1.3.1). As such, exact matches for these two variables were required to reduce potential bias.

Further matching variables were identified through exploring the literature. A study of the CAMS intervention by Huh et al. (2018) with 148 active military personnel with moderate to severe suicidality reported that the effect of the CAMS intervention was moderated by the participant's complexity (specifically, baseline symptom distress and number of combat deployments), with more positive treatment results for "lower complexity" soldiers following the CAMS intervention. The CAMS intervention tended to be more effective for participants that were married (and older in age), with a previous study also identifying that marriage may have a protective effect on soldiers during deployment in terms of reduced suicide risk (Gilman et al., 2014). This trend is consistent with epidemiological evidence indicating an increased risk of suicide and suicidal behaviours for unmarried individuals (Kposowa, 2000; Nock, Borges, Bromet, Alonso, et al., 2008; Yamauchi et al., 2013).

Unemployment and deprivation have also been recognised as risk factors for suicide from general population and patient suicide data (NCISH, 2018; Madsen et al., 2017). The majority of the cases within the current research lived in a highly deprived area, therefore it was arguably less useful to match on level of deprivation within this research. However, employment data was used as a matching variable given the association between unemployment and increased risk of suicide, which may be moderated by sociodemographic factors (see Section 1.3.5).

As well as demographic factors, it was important to match on pre-intervention clinical variables that may be predictive of the service user's outcome. Evidence has demonstrated that individuals experiencing mental health problems may have difficulties engaging with treatment, resulting in high dropout rates and poor clinical outcomes (Dixon et al., 2016; Kessler et al., 2001; O'Brien et al., 2009). This may be elevated amongst certain clinical cohorts such as individuals with first episode psychosis, schizophrenia and comorbid substance abuse (Kreyenbuhl et al., 2009; Lal & Malla, 2015). Psychiatric diagnosis was included as a matching variable to account for differences in terms of clinical need and likelihood of engagement with treatment during the follow-up period. To further account for different types of pathology, lifetime CRHT referrals and years known to mental health services were included as matching variables. These were used as a measure of clinical severity in terms of number of previous Crisis presentations, but also to account for first time presentations to mental health services compared with individuals with a history of service input.

4.6.3 Final matching variables

The matching variables that were utilised in the research were:

1. Age group (16-25, 26-35, 36-45, 46-55, 56-65, over 65) – exact match
2. Gender (male/female) – exact match
3. Marital status
4. Employment status
5. Diagnosis
6. Years known to mental health services (less than 1 year, 1-5 years, 5+ years)

7. Lifetime CRHT referral count (1-5, 6-10, 11+)

4.7 Qualitative data analysis

4.7.1 IPA

Data was analysed using an IPA-informed approach, as outlined by Smith (1996). This method of analysis is referred to as “IPA-informed” as the more recent steps outlined by Smith and Shinebourne (2012), including a more extensive coding methodology, were not undertaken.

The focus of IPA is to understand how an individual makes sense of their experiences, rather than objective knowledge of a particular event or experience (Smith & Osborn, 2008). IPA is both idiographic, allowing the researcher to gather detailed data about subjective experience, and interpretative, as the researcher identifies patterns in the data (Smith, 2004). A double hermeneutic exists; IPA explores the meaning an individual ascribes to their experiences, which is accessed by the researcher who makes sense of the individual’s perspective (Smith & Osborn, 2008).

Several researchers have used a phenomenological approach to understanding suicidality, both with service users (Akotia et al., 2014; Brooke & Horn, 2010; Crocker et al., 2006; Orri et al., 2014) and healthcare professionals (Jones et al., 2015; Osafo et al., 2012; Wee et al., 2018). IPA was chosen as an appropriate method for gathering in-depth information, based on inductive reasoning, which allows the researcher to gather rich data about complex phenomenon (Smith, 1996).

4.7.2 Analytic procedure

The following steps, outlined by Smith and Osborn (2008), were used to analyse each transcribed interview:

1. The researcher read the interview transcript at least twice without making any annotations to become familiar with the text. Then, the researcher annotated useful,

interesting or significant pieces of text within the transcript to form first-order codes. Annotations took the form of summarising a piece of text, noting similarities/differences with other text in the transcript and/or making initial interpretations. The goal of Stage 1 was to summarise the content of the transcript for each interview participant, ensuring the annotations reflected the material.

2. Second-order codes were developed primarily from the annotations made in Stage 1 to start forming initial themes. Second-order codes were succinct phrases, sometimes including psychological terminology (Pietkiewicz & Smith, 2014). Certain words and phrases were repeated throughout the second-order codes as similar themes emerged.
3. Second-order codes were analysed to find connections between similar codes that were grouped together to create themes. These superordinate themes had a cluster of second-order codes (subordinate themes) associated with them. This stage involved checking that the themes accurately reflected the transcript itself, and quotes from the text were extracted as evidence of each theme. In instances where second-order codes did not fit within this thematic structure, the researcher reviewed the transcript to assess whether further evidence supported these codes. Codes with a weak evidence base were excluded from the final analysis.
4. A table of themes was produced for each participant, starting with the superordinate themes that most strongly represented the findings from that particular transcript.
5. Themes were compared to identify patterns across transcripts. This step was used to identify converging and diverging themes. Themes in this context represent a set of similar subordinate themes grouped together with a common interpretation or meaning (Pietkiewicz & Smith, 2014).
6. A final table of superordinate themes was developed to summarise the entire dataset, starting with those that had the most evidence of commonalties across transcripts.

Subordinate themes relating to each superordinate category were listed in the table with links to evidence from the interviews.

4.8 Impact of Covid-19

In December 2019, a novel coronavirus (referred to as “Covid-19”) causing severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) in humans was identified in Wuhan, China. Due to the rapid spread worldwide and rising deaths as a result of the virus, the WHO announced a “Public Health Emergency of International Concern” in January 2020 which was later declared as a pandemic in March 2020 (WHO, 2020). In response to the Covid-19 outbreak, on 23rd March 2020 the UK government announced strict guidelines around staying at home and social distancing to prevent the spread of the virus, with exceptions only for essential work, travel and medical needs. This also included the closure of schools, businesses and rules around leaving home, which were limited to shopping for essential items and one exercise per day with members of the same household. Between March and April 2020, 38,156 deaths in the UK were attributed to Covid-19 with a 43% increase in average number of deaths from any cause during the same time period in the previous five years (ONS, 2020).

Beyond the economic impact of the Covid-19 pandemic, there may be an adverse effect on mental health and suicide rates (John et al., 2020; O’Connor et al., 2020; Pierce et al., 2020; Zortea et al., 2020). In countries such as Japan, cross-sectional data indicates that there has been an increase in suicide rates during the Covid-19 pandemic compared with previous years, particularly for women (Sakamoto et al., 2021), although such a finding has not been observed in the UK (NCISH, 2020b). Hawton et al. (2020) emphasised the need for caution when reporting on the link between the pandemic and suicidal behaviours due to sensationalised and inaccurate media coverage that could create stigma and discourage people from help-seeking.

At the time of writing, the extent of the psychological impact of Covid-19 is unclear, although research of previous pandemics may provide an indication of the possible consequences. Wasserman (1992) demonstrated an association between the mortality rate and suicide rate in the U.S. following the Great Influenza Epidemic of 1918.

Three studies evaluating suicide as the primary outcome indicated increased suicide rates for older adults aged 65 and over following the severe acute respiratory syndrome (SARS) epidemic in 2003 (Chan et al., 2006; Cheung et al., 2008; Yip et al., 2010). Chan et al. (2006) compared suicide rates in older adults in Hong Kong from 2002 to 2003 and reported an increase for females. The authors suggested that this increase was linked to disruption to social support networks and limited access to healthcare services. These findings were replicated by Cheung et al. (2008) in a study comparing the suicide rate in older adults in 2003 to five reference years (1993, 1997, 1998, 2001 and 2002). Coroner records indicated that more severe physical illness, greater dependency on others and worrying about contracting SARS during the outbreak were characteristic of those older adults who later died by suicide. This was further supported by qualitative data analysis of coroner's inquests for older adult suicides conducted by Yip et al. (2010), which indicated that fear of contracting SARS, worries around social isolation and burdening others were often implicated where the SARS outbreak was reported as a contributing factor to suicide. Increases in suicidal behaviours have also been reported following SARS (Huang et al., 2005). The authors reported correlational evidence of an increase in ED presentations for self-induced poisoning in Taiwan in the peak-epidemic phase compared with pre- and post-outbreak.

As well as the short-term effects of social distancing and self-isolation during the Covid-19 pandemic, including job losses, financial hardship, boredom, social isolation, increases in alcohol consumption and domestic violence (Brooks et al., 2020; Gunnell et al., 2020), it is argued that there is likely to be a longer term impact on mental health and psychological wellbeing (Holmes et al., 2020). The British Medical Association (2020) warned of the possible negative impacts on mental health, particularly for those at greater risk of contracting the virus such as those from Black and Minority Ethnic populations, vulnerable groups at risk of isolation such as older adults, the psychological impact on young people and work-related stress for frontline healthcare workers.

O'Connor et al., (2020) conducted a survey with 2,604 adults at three time points (waves one, two and three) over a six-week period (31st March 2020 to 11th May 2020) following the announcement of the Covid-19 triggered national "lockdown". Using a quota sampling methodology, participants were recruited across age ranges and socioeconomic groups from 12 regions in the UK, with an even gender distribution. History of suicidal behaviour was measured using two questions from the Adult Psychiatric Morbidity Survey (McManus et al., 2016), with a follow-up question asking about most recent suicidal behaviour, if participants answered "yes" to either question. Results indicated a significant rise in suicidal ideation from the first to last time point, with 9.8% reporting suicidal ideation in wave three compared with 8.2% in wave one, and young adults most likely to experience increased suicidality. Those from more disadvantaged socioeconomic groups and with pre-existing mental health conditions, as reported by the individual, were most affected across all outcome measures, including anxiety and depressive symptoms, mental wellbeing and loneliness. This highlights the groups that are most at risk of mental health deterioration, although further longitudinal analysis is needed given that the data is based on self-report measures and was only accessed through online responses; a necessity due to social isolation being in place.

Early research relating to the Covid-19 pandemic highlights the potential impact on suicidal behaviours. In a U.S. study using online recruitment (n=907 aged 18-74), Ammerman et al. (2020) demonstrated an association between four Covid-19 related experiences (a loved one testing Covid-19 positive, concerns about physical safety as a result of Covid-19 spread, perceived disruption to daily activity due to social distancing and impact of social distancing practices on mental health) and increased suicidal thoughts/behaviours in the previous month. Further longitudinal research is needed to establish causal links between Covid-19 related experiences and suicidal behaviours.

In terms of suicide rates, the NCISH (2020b) analysed data from real-time surveillance (RTS) systems, a system that allows for identification of "suspected" suicides by local constabulary, which provides early detection of possible suicides near the time of death in advance of a coroner's conclusion. The regional data from areas with an established RTS system indicated no significant changes in the pre-lockdown period (January to March 2020) compared with the post-lockdown period (April to August 2020). A 7.3% increase in suicides during post-lockdown compared with rates from the same period in 2019 was reported, however it is unclear whether this was due to the impact of Covid-19, the newly established RTS systems or an annual national increase in suicide rates.

4.9 Summary of chapter

This chapter has described the participants involved in the research, study design, data collection procedures and the methodological/ethical issues associated with the research. In summary, the research included an opportunistic sample of adults presenting to the CRHT with life-threatening behaviour and/or high risk of suicide identified for a CAMS assessment. Service utilisation at six-month follow-up were compared for the CAMS cohort and a historical matched control group receiving TAU. Semi-structured interviews were undertaken with the aim of exploring service user and clinician experience of the CAMS intervention.

Chapter 5: Quantitative results

This chapter presents the quantitative analyses of the research hypotheses. Several significant findings relating to the impact of the triage model are presented (n=2,176), including reduced CRHT presentations, inpatient admissions and hospital length of stay, as well as increased mental health appointment attendance. A comparison of individuals undertaking the CAMS intervention (n=52) with a historical matched control group identified using PSM (n=52), highlights significantly reduced Crisis presentations for CAMS participants compared with matched controls. No differences for other mental health service inputs are observed, besides the need for increased Home Treatment Team contacts for the CAMS group. The chapter concludes with the results of within-group analyses undertaken to explore the impact of the CAMS intervention on measures of suicidality. The findings demonstrate significantly reduced scores for all six SSF core assessment scores from the initial to final CAMS sessions, indicating the effectiveness of the CAMS intervention in targeting suicidality.

5.1 Research Question One. What is the effect of an open-access systems-level suicide-risk triage model on future service utilisation?

5.1.1 Suicide risk triage data

Demographic data was collected for 2,176 service users (49.2% male) presenting to mental health services with suicidality between 24th April 2018 and 30th June 2020 (Table 4). Age ranged from 14 to 97 years, and the highest proportions were in the 16-25 (25.9%) and 26-35 (26.1%) age groups. The majority were White British (81.9%).

Table 4

Demographic data for all service users with a recorded suicide risk triage (n= 2,176)

Variable	N (%)
Gender	
Male	1,070 (49.2%)
Female	1,106 (50.8%)
Age (years)	
Under 16	2 (<.1%)
16-25	564 (25.9%)
26-35	568 (26.1%)
36-45	355 (16.3%)
46-55	372 (17.1%)
56-65	183 (8.4%)
Over 65	132 (6.1%)
Ethnicity	
White British	1,782 (81.9%)
Other white background	53 (2.4%)
African	2 (<.1%)
Chinese	1 (<.1%)
Indian	1 (<.1%)
Pakistani	1 (<.1%)
Other ethnic group (not specified)	213 (9.8%)
Not stated	123 (5.7%)

The breakdown of primary diagnoses, based on ICD-10 (WHO, 1992) coding, for those with a recorded diagnosis at time of suicide risk triage, was collated (Table 5). No diagnosis was recorded for the majority of service users (89.0%). In such cases, it is unclear whether the individual would meet the criteria for a formal diagnosis based on ICD-10 coding, or whether this information was not recorded. For service users presenting to the CRHT, a diagnostic category would not usually be assigned upon first contact, which is when a triage questionnaire was entered onto the system. Therefore it is not unusual that the majority of service users did not have a recorded diagnosis as this would likely be assessed post-triage.

Table 5

Breakdown of primary diagnosis where recorded (n= 240)

Diagnosis	N (%)
Psychotic disorders	51 (21.3%)
Mood disorders	50 (20.8%)
Personality disorders	45 (18.8%)
Organic disorders	23 (9.6%)
Adjustment disorders	22 (9.2%)
Anxiety disorders	19 (7.9%)
Mixed anxiety and depression	17 (7.1%)
Substance misuse	9 (3.8%)
ADHD	2 (<1%)
Hyperkinetic disorders	1 (<1%)
Somatoform disorders	1 (<1%)

5.1.2 Primary reason for suicidality

The “primary reason for expressed suicidality” question was added to the electronic questionnaire on 24th May 2019 and included a set of pre-defined answers based on the suicidality literature and analysis of initial triage cases (n=60), that was continually added to throughout the project duration. This question was included to capture the reason for a service user expressing suicidality, based on clinician judgement. For the CAMS group where this question was available (n=16), reasons were primarily related to "severe anxiety/depression/intrusive thoughts" (n=5) or "self-harm/emotional dysregulation" (n=5). Other reasons included "bereavement/significant loss" (n=2), "relationship breakdown/difficulties" (n=1), "substance misuse/drug induced symptomology" (n=1), "delirium/confusion" (n=1) and "domestic abuse/fleeing violence" (n=1).

Table 6 displays the answer to this question based on 2,597 triages relating to 1,502 service users, 573 of whom had two or more suicide risk triages recorded on their electronic record. The data suggests that suicidality in the local area related to psychological health needs as well as biological/social issues. The latter included life events such as relationship breakdown and housing issues, as well as biological factors such as physical health difficulties. The most common reasons for service users presenting with suicidality was "self-harm/emotion dysregulation" (21.4%), followed by "mild to moderate anxiety/depression" (18.5%), "severe anxiety/depression/intrusive thoughts" (16.2%) and "relationship breakdown/difficulties" (13.9%).

Table 6

Breakdown of answers to "Primary reason for expressed suicidality" question

Questionnaire answer	N triages (%)
Self-harm / emotional dysregulation	557 (21.4%)
Mild to moderate anxiety / depression	480 (18.5%)
Severe anxiety / depression / intrusive thoughts	422 (16.2%)
Relationship breakdown/difficulties	362 (13.9%)
Substance misuse / drug-induced symptomology	186 (7.2%)
Physical health / pain issues	113 (4.4%)
Psychotic episode / relapse of psychotic illness	108 (4.2%)
Bereavement / significant loss	103 (4.0%)
Social isolation / poor social skills	51 (2.0%)
Housing issues	43 (1.7%)
Social services involvement / children's removal	38 (1.5%)
Legal / financial issues	31 (1.2%)
Domestic abuse / fleeing violence	26 (1%)
Covid-19 related distress	29 (1%)
Pre / postnatal issues	13 (<1%)
Benefit problems / reassessment / withdrawal of benefits	13 (<1%)
Delirium / confusion	11 (<1%)
Medication seeking	8 (<1%)
Gender identity	3 (<1%)

N.B. One service user may have multiple triages, total n=1,502. Covid-19 was added as an option in April 2020 for suicidality triggered by distress relating to the pandemic.

5.1.3 Individuals dying by suicide

Data for the locality from PHE (2019) for the numbers of deaths attributed to suicide since 2013 is reported in Table 7.

Table 7

Suicide data for the locality obtained from fingertips.phe.org.uk

Period	Number of suicides
2013-15	45
2014-16	41
2015-17	46
2016-18*	40
2017-19*	46

*data from these two periods is subject to ratification through coroner judicial processes.

Of 2,176 service users that had a suicide risk triage in a period spanning over two years from April 2018 to June 2020, five deaths occurred where a conclusion of suicide was determined by the coroner following inquest. Given the registration delays between date of death and date of registration (median 152 days; ONS, 2019b), it is possible that this number will increase when conclusions are given for ongoing coroner inquests.

All five service users where death was attributed to suicide were male. Four had no mental health diagnosis recorded at the time of their suicide risk triage. For three of the five service users, current support/management was the chosen outcome following the triage. The time between suicide risk triage and suicide ranged from five days to 14 months.

5.1.4 Hypothesis: Measures of engagement with services, Crisis/Liaison Psychiatry presentations and mental health hospital admissions will be different pre and post suicide risk triage

The majority of service users were under the care of the CRHT (79%) at the time of their suicide risk triage. Analysis of clinical data for service users (where data was available six months post-triage) was used to explore whether service utilisation was different in the six months post-triage, compared with six months pre-triage. As the data did not meet the assumption of parametricity, non-parametric testing was undertaken using the Wilcoxon signed-rank test (see Table 8).

Table 8

Service utilisation data for six-month pre and post suicide risk triage (n= 2,176)

Variable	Pre triage M (SD)	Post triage M (SD)	Test of association
Crisis/Liaison Psychiatry contacts per service user	0.97 (0.99)	0.30 (0.75)	Z=-26.03, p<.001**
Mental health hospital admissions per service user	0.11 (0.37)	0.03 (0.21)	Z=-8.78, p<.001**
Length of hospital stay per service user (days)	2.39 (13.40)	0.67 (6.17)	Z=-7.47, p<.001**
Attended appointments per service user	5.27 (12.29)	9.24 (16.85)	Z=-18.32, p<.001**

**p <.005.

As shown in the table, the average number of subsequent Crisis/Liaison Psychiatry contacts, mental health hospital admissions and length of hospital stay reduced significantly in the six months post suicide risk triage. Number of attended appointments also increased significantly.

5.1.5 Post-hoc analyses: Impact of Covid-19

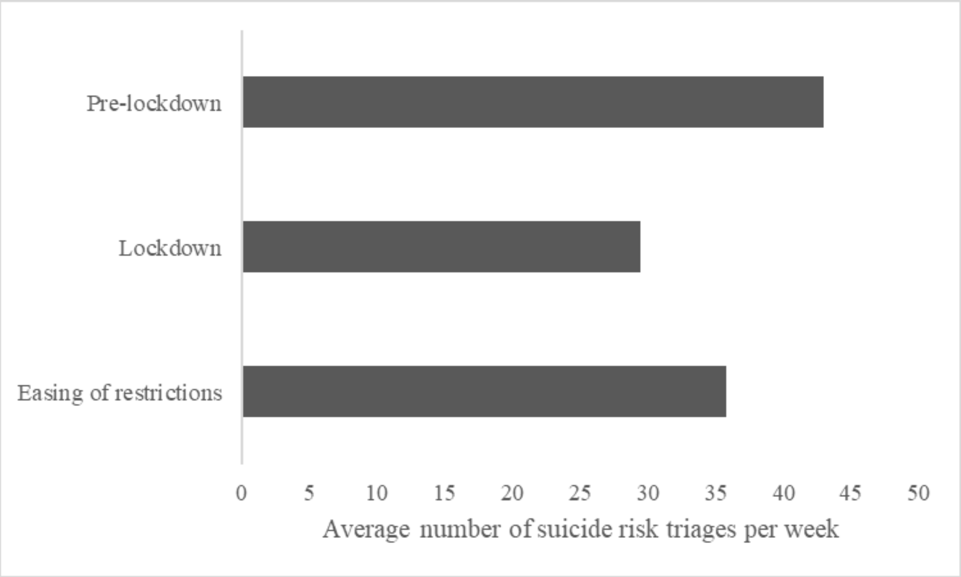
The Covid-19 pandemic occurred during the data collection period, resulting in a national lockdown in March 2020. Possible adverse effects of the pandemic on suicidality and mental health have been reported (John et al., 2020; O'Connor et al., 2020; Pierce et al., 2020; Zortea et al., 2020), hence it is possible that data for suicide risk triages may have been skewed during this period. As this was not accounted for in the initial hypotheses, post-hoc analyses were conducted to explore the impact on suicidality presentations to mental health services in the study locality, including additional data beyond the initial study period up to 2nd August 2020.

Number of suicide risk triages in the "pre-lockdown" period (30th December 2019 to 22nd March 2020) was compared with the "lockdown" period (23rd March 2020 to 10th May 2020) and period where there was an "easing of restrictions" around social distancing (11th May 2020 to 2nd August 2020). A comparison between the lockdown period and the same time period in the previous year was also undertaken.

The average weekly suicide risk triages recorded on the electronic record system for pre-lockdown, lockdown and easing of restrictions were 42.9 (SD=6.26), 29.4 (SD=4.89) and 35.8 (SD=4.83), respectively; this data is displayed in Figure 11. Data for all groups was approximately normally distributed (Shapiro Wilk p value>.05) and did not violate the homogeneity of variance assumption (Levene's test p value>.05), hence a one-way independent Analysis Of Variance was conducted. Weekly triages were significantly different between the three time periods, F(2,28)=14.151, p<.001. Post-hoc analyses indicated a significant decrease in weekly triages between pre-lockdown and lockdown (M difference =-13.49, standard error=2.59, p<.001) and between pre-lockdown and easing of restrictions (M difference =.7.167, standard error=2.22, p=.009). Comparisons between lockdown and easing of restrictions indicated a rise in triages which was approaching statistical significance (M difference=6.23, standard error=2.59, p=.054).

Figure 11

Comparing average number of suicide risk triages per week for the three time periods during the Covid-19 pandemic



The number of suicide risk triages during the seven-week lockdown period was compared with the same time period in the previous year (2019). There were no significant differences between the average number of weekly triages between the two time periods, t(12)=1.555, p=.146, with an average difference of six triages per week.

5.2 Research Question Two: What is the impact of implementation of the CAMS intervention for service users at high risk of suicide, in comparison with TAU for a historical matched control group, at six months post index Crisis assessment?

5.2.1 Identification of an appropriate matched control cohort

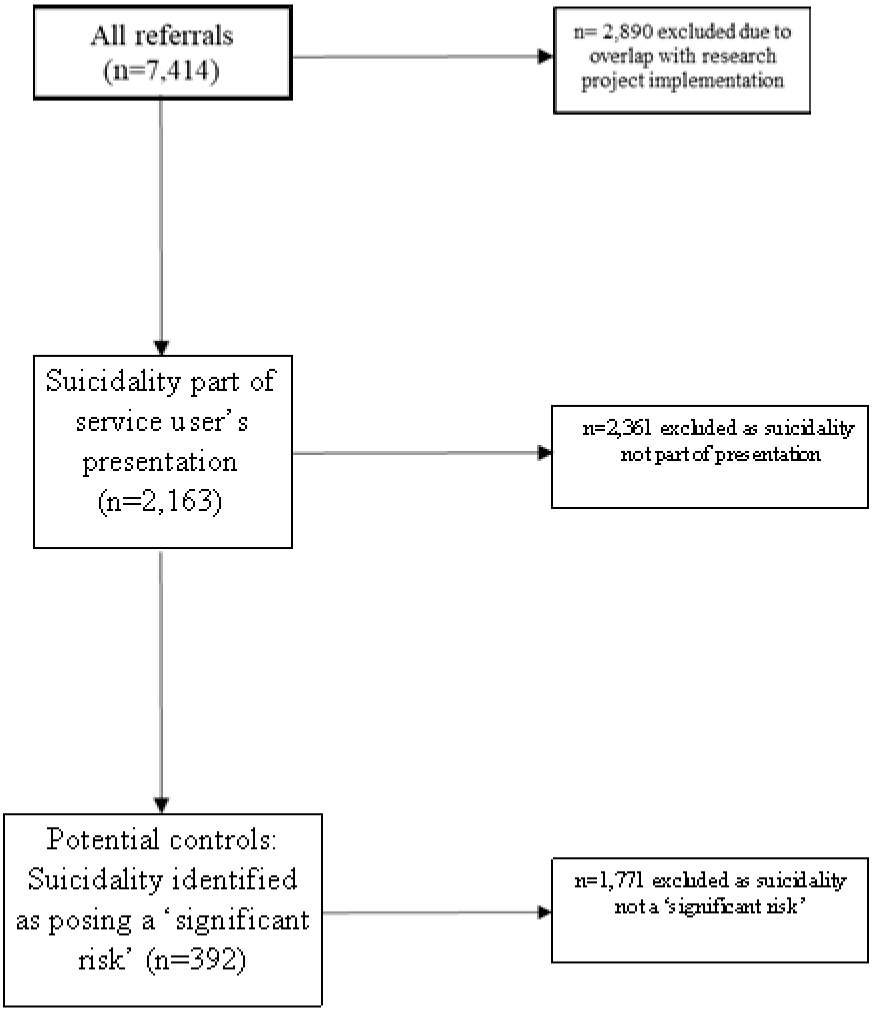
In order to obtain an appropriate cohort from which to find a matched sample, it was deemed necessary to identify a subgroup of individuals from historical CRHT referrals that 1) had presented with suicidality, and 2) had a similar level of clinical risk to CAMS participants.

A total of 7,414 patients were referred to the CRHT teams between 17th April 2013 and 16th May 2019. Referrals after the start of the research project (15th April 2018) were excluded to ensure that service changes related to the research had limited impact on TAU. The remaining data was stratified according to the following steps, as depicted in Figure 12:

1. Suicidality subsample: This group comprised of individuals that had a suicide risk questionnaire (DICES-S) on their record, indicating that suicidality had been identified as a core issue at assessment (n=2,163);
2. Significant risk subsample: A proportion of the suicidality subsample were identified as "high risk" by the assessing clinician (n=392). This was determined based on the clinician answering "yes" to the following question on the DICES-S: "weighing up all the factors you have indicated, do you believe they add up to a significant risk or not?" Of those that had a CAMS assessment where a DICES-S was completed concurrently on the electronic record system, 92% of participants also had an answer of yes to this question. As such, this was considered the most reliable way of identifying a control group from which to match to CAMS participants, in terms of clinical risk.

Figure 12

Process for identifying potential matched controls for CAMS participants



5.2.2 Explaining key terms

"Index Crisis assessment" refers to the CRHT assessment that is used as a reference point for determining pre and post data. For matched controls, this was the most recent Crisis assessment where suicidality was part of the individual's presentation and clinical risk was identified. For the experimental cohort, the index Crisis assessment was the CAMS assessment.

CRHT hours is split into three components: Liaison Psychiatry (mental health assessment and treatment in general hospital), Crisis (assessment and treatment through the 24/7 open-access Crisis service) and Home Treatment (short-term active monitoring and treatment at home until the mental health crisis is resolved, either following Crisis assessment or inpatient discharge).

CPA refers to co-ordinated care for individuals with severe mental health conditions and/or clinical risk (DoH, 2008). CPA hours therefore refers to input from a range of secondary care mental health services including community mental health teams, access to psychological therapies, AOT and EIT.

5.2.3 Descriptive statistics

Descriptive statistics for the total sample, suicidality subsample, significant risk subsample and CAMS experimental group are presented in Table 9. Medians are reported for the age variable due to the negative skew. There was missing data for employment status (n=3,922) and marital status (n=2,899) therefore percentages are reported as a proportion of the available data.

Table 9

Descriptive statistics for each sample

Variable	CRHT/Liaison referrals	Suicidality subsample	Significant risk subsample	CAMS group
Male (%)	48.7	51.5	56.6	57.7
Age bracket (%)				
16-25*	13.2	20.0	15.1	15.4
26-35	13.6	22.8	21.4	21.2
36-45	10.3	18.1	19.6	23.1
46-55	9.7	16.3	17.3	21.2
56-65	6.2	8.7	10.2	11.5
Over 65	47.0	14.1	16.3	7.7
Median (SD)	61 (25.18)	39 (18.94)	43 (19.41)	41 (14.7)
Lowest	17	17	17	18
Highest	102	99	98	73
Unemployed (%)	86.0	80.0	75.3	69.2
Single (%)	69.0	75.9	69.1	55.8
Years known to services (%)				
Less than one year	64.5	44.5	37.0	44.2
1-5 years	26.3	37.2	43.1	44.2
5+ years	9.2	18.3	19.9	11.5
Crisis referral count (%)				
1-5	92.8	79.0	78.1	86.5
6-10	4.6	12.8	14.3	9.6
11+	2.5	8.2	7.7	3.8

SD=Standard Deviation. *16 included as the lower age limit due to open-access nature of the CRHT service, although under 18s were not included as potential matches.

The table above indicates a relatively even distribution of males (48.7%-57.7%) across all groups. High levels of unemployment (69.2%-86%) and single individuals (55.8%-69%) were consistent across all groups, although this data should be interpreted with caution due to large amounts of missing data on the electronic record system. This data is compared across the four groups in Figure 13.

The median age for the groups associated with the greatest suicide risk i.e. suicidality subsample, significant risk subsample and CAMS group, are reflective of the age groups that are most at risk of suicide from the ONS (2019a) data (13.1 and 14.7 per 100,000 for 35-39 years and 40-44 years, respectively). Comparison of age spread for the four samples is displayed in Figure 14.

Figure 13

Distribution of key risk factors for suicide across the four groups

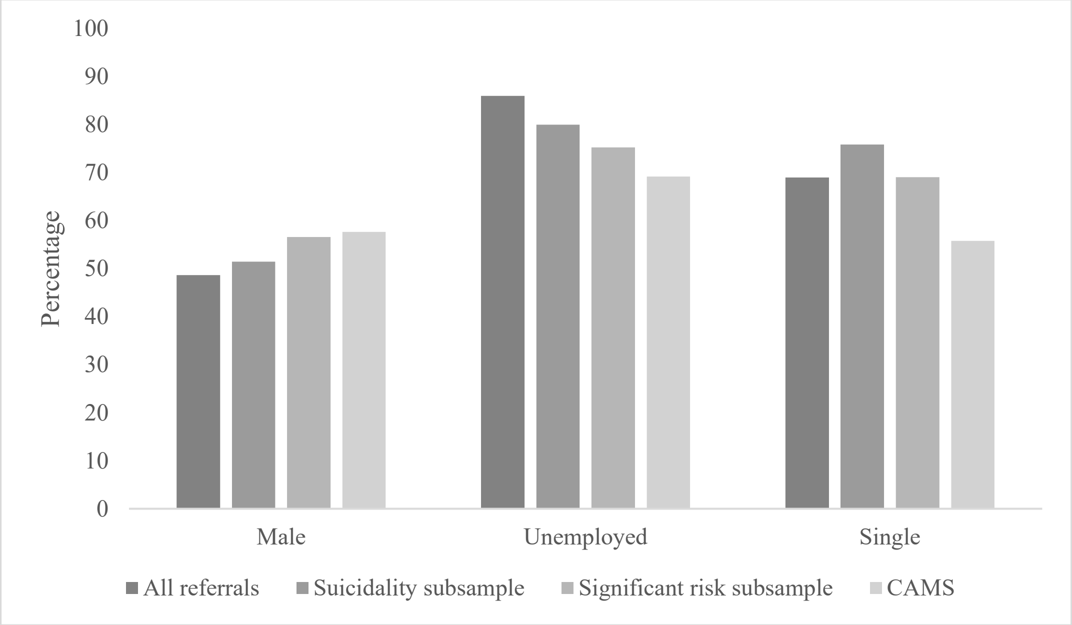
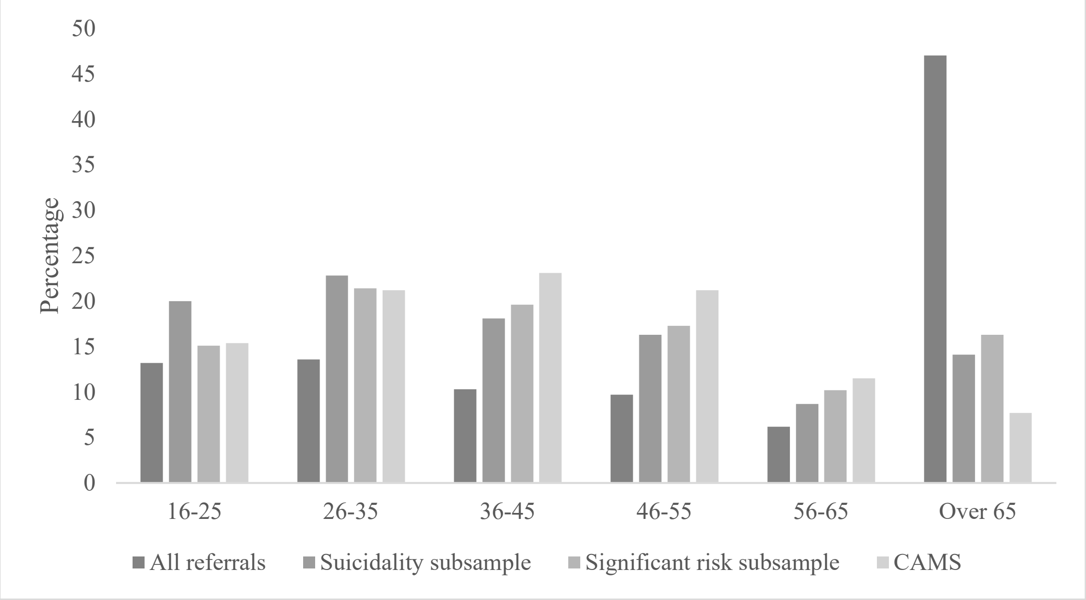


Figure 14

Distribution of ages across the four groups



A greater proportion of the suicidality and significant risk subsamples had been known to services for 5+ years and had 11+ previous CRHT referrals, indicating the clinical severity of the groups at greater risk of suicide compared with the entire CRHT cohort.

5.2.4 Comparison between the "significant risk" subsample (potential matches) and CAMS participants

The significant risk subsample (n=392) were identified as potential matches for the CAMS experimental cohort to form the control group. Table 10 compares the 12 month data for the two groups prior to the index Crisis assessment.

Table 10

Comparison of clinical data 12 months prior to the index Crisis assessment

Variable	Significant risk subsample (%)	CAMS (%)
Diagnosis		
No diagnosis	53.6	36.5
Liaison Psychiatry pre		
Zero	82.1	76.9
One or more	17.9	23.1
Crisis contacts pre		
Zero	70.2	46.2
One or more	29.8	53.8
Inpatient admissions pre		
Zero	99	63.5
One or more	1	36.5
CPA hours pre		
Yes	40.6	30.8

As can be seen in the table, a higher proportion of CAMS participants had a mental health diagnosis recorded. A similar proportion of both groups had had one or more Liaison Psychiatry contacts in the previous 12 months. CAMS participants had a greater proportion of Crisis contacts and inpatient admissions in the 12 months prior to the index Crisis assessment, whereas a greater proportion of the significant risk subsample had had CPA input.

In terms of outcome data, the two groups were compared in terms of the number of participants with a Liaison Psychiatry contact, Crisis contact or mental health hospital admission in the six months following their index Crisis assessment (Table 11).

Table 11

Comparison of clinical data six months post index Crisis assessment

Variable	Significant risk subsample	CAMS group
Liaison Psychiatry contact		
One or more contacts	26.0%	28.8%
Range	20	14
Median	0	0
Crisis contact		
One or more contacts	65.8%	34.6%
Range	39	12
Median	0	0
Inpatient admissions		
One or more admissions	14.5%	7.7%
Range	2	2
Median	0	0

Given the skewed distribution of the outcome data (as demonstrated through a median of 0 across all outcomes), as well as the lack of variance for higher numbers (above 1), it was felt that the most appropriate method of analysing the data for Research Question Two was as a binary outcome rather than count data. Thus, further analyses dichotomised the outcome variables into 0 or 1 (i.e. whether the individual had a Liaison Psychiatry contact/Crisis contact/Home Treatment contact/inpatient admission, yes = 1, or no = 0).

5.3 Regression analyses for the significant risk subsample

A series of regression analyses were undertaken to assess whether two additional variables (any previous psychological therapy and Liaison Psychiatry in the previous 12 months) that may be predictive of the outcomes in question (Ellis et al., 2017; Iqbal et al., 2021), as well as the matching variables outlined in Section 4.6.3, predicted service utilisation in the six months following the index Crisis assessment.

Assumption testing indicated heteroscedasticity therefore bootstrapping was performed. Due to concerns over the validity of marital and employment status data extracted from the electronic record system, these variables were not included in the regression analyses but were checked for all participants once the matched cohort was identified.

Separate binary logistic regressions were undertaken to predict three outcomes: Liaison Psychiatry contact, Crisis contact or mental health hospital admission, in the six months post index Crisis assessment. The following potential predictor variables were included:

- Gender
- Age
- Years known to mental health services
- Lifetime CRHT referral count
- Diagnosis
- Any previous psychological therapy
- Liaison Psychiatry contact (12 months prior)

5.3.1. Liaison Psychiatry contacts during six-month follow-up

102 individuals had at least one Liaison Psychiatry contact during the six months post index assessment. The full model containing all predictors was statistically significant, $X^2(13) = 154.79$, $p<0.001$ accounting for between 32.6% and 47.8% of the variance. Table 12 below shows the contribution of all significant predictors.

Table 12

Regression statistics for predictor variables of Liaison Psychiatry contact

	β (95% CI)	Wald	p
Model 1			
Constant	-2.24 (-3.90, -1.16)	16.94	.001**
Age		67.93	<.001**
Lifetime CRHT referrals		6.38	.041*
Years known to services		8.57	.014*
Previous Liaison Psychiatry		35.11	.001**
Excluded variables		Wald	P
Gender		.899	.403
Diagnosis		.038	.861
Previous psychology		.079	.789

CI=confidence interval. *p <.05. **p <.005.

As depicted in Table 12, age, lifetime Crisis referrals, years known to services and at least one Liaison Psychiatry contact in the previous 12 months, emerged as significant predictors of having a Liaison Psychiatry contact at six-month follow-up. Individuals in the older age categories (56-65 and over 65) were more likely to have a Liaison Psychiatry contact at follow-up, representing 60 of 102 individuals (58.8%). In terms of lifetime Crisis referrals, 90 of these 102 individuals had had 1-5 previous referrals (88.2%). Individuals with a Liaison Psychiatry contact at follow-up were more likely to have been open to mental health services for less than one year (48.0%) and to have been assessed by Liaison Psychiatry in the previous 12 months (60.8%).

5.3.2 Crisis contacts during six-month follow-up

258 individuals had at least one further Crisis assessment in the six months post index assessment. The full model containing all predictors was statistically significant, $X^2(13) = 157.78$, $p<0.001$ accounting for between 33.1% and 45.8% of the variance. Table 13 below shows the contribution of all significant predictors.

Table 13

Regressions statistics for predictor variables of Crisis contact

	B (95% CI)	Wald	p
Model 1			
Constant	2.02 (1.19, 3.32)	16.44	.001**
Age		48.41	<.001**
Lifetime CRHT referrals		7.62	.022*
Years known to services		6.57	.037*
Previous Liaison Psychiatry		54.95	.001**
Excluded variables		Wald	P
Gender		1.04	.325
Diagnosis		2.12	.151
Previous psychology		.70	.427

CI=confidence interval. *p <.05. **p <.005.

As can be seen in Tables 12 and 13, the same predictor variables for Liaison Psychiatry contact at follow-up predicted whether an individual had a Crisis contact in the six months following their index Crisis assessment. 114 of 258 individuals (44.2%) that had a Crisis contact at follow-up were in the younger age categories (16-25 and 26-35). 193 individuals (74.8%) with a further Crisis contact at follow-up had a history of 1-5 previous Crisis referrals, and 122 (47.3%) had been known to services for 1-5 years. Individuals that had a Liaison Psychiatry contact in the previous 12 months were less likely to have a Crisis contact at follow-up (5.8%), perhaps because these individuals were more likely to re-present at the general hospital (i.e. Liaison Psychiatry) rather than to the CRHT. This is consistent with the finding in the previous section that individuals with a Liaison Psychiatry contact in the previous 12 months were more likely to have re-presented to Liaison Psychiatry at follow-up.

5.3.3 Mental health hospital admissions during six-month follow-up

57 service users had had an inpatient admission at six months post index assessment. The full model containing all predictors was not statistically significant $X^2(13) = 13.68$, p=.322. None of the variables significantly predicted inpatient admissions at follow-up.

5.4 Comparing the CAMS experimental and matched control groups

5.4.1 The matching process

A total of 62 individuals completed a CAMS assessment between 16th April 2018 and 30th September 2020. Of 62 individuals eligible to participate, 10 did not provide consent. The total number of participants in the experimental group was 52.

A matched control for each of the 52 CAMS participants was identified using PSM. The variables outlined in Section 4.6.3 were used for matching (age group, gender, marital status, employment status, diagnosis, years known to mental health services and lifetime CRHT referrals). In addition, the regression analyses in Section 5.3 indicated that Liaison Psychiatry contact in the 12 months prior to the index Crisis assessment significantly predicted Liaison Psychiatry and Crisis contact at six-month follow-up. Hence, Liaison Psychiatry contact in the 12 months prior to index assessment was added as a matching variable.

Additional checks were completed to ratify marital and employment status data for all experimental and control participants at the time of their index Crisis assessment. For all analyses, M denotes the mean and SD denotes the standard deviation.

5.4.2 Descriptive statistics for the CAMS experimental group

Participants in the experimental group were 57.7% male and aged between 18 and 73 (M=42.2 years, SD=14.7 years). 55.8% were single and 69.2% were unemployed. The majority had no psychiatric diagnosis recorded (36.5%). For those with a diagnosis, the most common diagnostic categories were mood disorders (26.9%) and trauma and stressor-related disorders (17.3%). Most participants had been open to mental health services for either less than one year (44.2%) or 1-5 years (44.2%). The majority of CAMS participants had had 1-5 previous CRHT referrals (86.5%). 12 participants had had at least one Liaison Psychiatry contact in the previous 12 months (ranging from one to 17 contacts) with each contact lasting an average of 0.9 hours.

5.4.3 Descriptive statistics for the matched control group

Participants in the matched control group (n=52) were 57.7% male and aged between 20 and 88 (M=43.0 years, SD=15.9 years). 50% were single and 69.2% were unemployed. In terms of clinical diagnoses, the majority had no diagnosis (42.3%). For those with a diagnosis, the most common diagnostic category was mood disorders (21.2%) and trauma and stressor-related disorders (19.2%). Most control participants had been open to mental health services for either less than one year (46.2%) or 1-5 years (53.8%). The majority of participants had had 1-5 previous CRHT referrals (94.2%). 12 participants had had at least one Liaison Psychiatry contact in the previous 12 months (ranging from one to seven contacts) with each contact lasting an average of 1.5 hours.

5.4.4 Comparison of descriptive statistics for experimental and control groups

The groups were matched exactly on gender and age groups. There were no significant differences between the groups in terms of marital status, employment status, diagnostic groups, lifetime CRHT referral count or Liaison Psychiatry 12 months prior.

Table 14 depicts the tests of association for the matching variables. The two groups were only significantly different in terms of years known to mental health services. On further exploration of this variable, it was evident that both groups had similar numbers of participants that had been known to services for less than one year (CAMS=23, Control=24) and 1-5 years (CAMS=23, Control=28), however only the CAMS group included participants that had been in contact with mental health services for 5+ years (n=6).

Additional data regarding recent mental health service utilisation in the previous 12 months was obtained to ensure the groups were similar in terms of pre-treatment variables. The number of hours of input in terms of Liaison Psychiatry, Crisis, Home Treatment and CPA, as well as mental health hospital inpatient admissions, was collated for the CAMS and historical matched control cohorts. In addition, lifetime hours of psychological therapy was recorded to account for differences in future service utilisation for individuals that have previously completed psychological therapy, compared with those that were referred but disengaged (Iqbal et al., 2021). Tests of association were conducted to explore whether the two groups differed significantly in terms of historical clinical variables.

In terms of pre-treatment clinical variables, there were no significant differences in number of Liaison Psychiatry hours, Home Treatment hours or CPA hours in the 12 months prior to the index Crisis assessment, nor did the groups differ significantly in terms of lifetime hours of psychological therapy as recorded on their electronic record (see Table 14). The groups differed significantly in terms of hours of Crisis input in the 12 months prior to the index Crisis assessment, with a higher average number of hours of Crisis input for CAMS compared with control participants (M= 3.30 hours, SD= 2.72 and M= 1.92 hours, SD= 1.38 respectively). 28 CAMS participants had at least one Crisis assessment (range one to 12 contacts) compared with 15 control participants (range one to five contacts). The groups also differed significantly in terms of previous mental health hospital inpatient admissions. 19

individuals in the CAMS group had had an inpatient admission in the previous 12 months lasting an average of five days. Only one control participant had had an inpatient admission in the previous 12 months.

Table 14

Tests of association for sample characteristics comparing the CAMS and control groups

Sample characteristics	Test of association
Age	U=1336.00, z=-.104, p=.917
Marital status	X^2(1)=.347, p=.556
Employment status	X^2(1)=.00, p=1.000
Diagnosis	X^2(8)=4.42, p=.818
Years known to services	X^2(2)=6.51, p=.039*
Lifetime CRHT referrals	X^2(2)=2.67, p=.263
Liaison Psychiatry contacts 12 months pre	X^2(1)=.00, p=1.000
Liaison Psychiatry hours 12 months pre	U=1316.00, z=-.317, p=.751
Crisis hours 12 months pre	U=942.00, z=-2.984, p=.003**
Home Treatment hours 12 months pre	U=1326.00, z=-.277, p=.782
CPA hours 12 months pre	U=1340.00, z=-.098, p=.922
Inpatient admissions 12 months pre	X^2(1)=20.06, p=<.001**
Lifetime psychological therapy hours	U=1158.00, z=-1.474, p=.141

*p <.05. **p <.005.

To further ensure that the CAMS and control groups were well matched, a binary logistic regression using bootstrapping was undertaken to assess whether the matching variables predicted group membership. The contribution of matching variables in the model was not significant, $X^2(17)= 16.35$, p=.499. None of the individual matching variables significantly predicated group membership, indicating that matching was efficient.

5.5 Outcomes at six months post CAMS/index Crisis assessment

5.5.1 Comparison of outcome measures for experimental and matched control groups

Table 15 depicts the differences in outcome measures between the CAMS experimental and matched control groups. A series of Pearson's chi-square tests were used to determine whether there were significant differences between the two groups in terms of categorical outcomes: i.e. whether participants had contact with Liaison Psychiatry, Crisis, Home Treatment and community mental health services (CPA) in the six-month follow-up period. Continuous data in terms of number of hours of input for each of these outcomes did not meet the assumptions of parametricity. As such, nonparametric testing was undertaken to compare differences between groups in terms of hours of input from Liaison Psychiatry, Crisis, Home Treatment, total CRHT, CPA and total mental health service utilisation.

Continuous data for hours of input was checked for outliers. All analyses were first completed without outliers (n=4 for Liaison Psychiatry hours, n=3 for Crisis hours, n=3 for Home Treatment hours, n=3 total CPA hours, n=2 total CRHT hours and n=1 total service utilisation). A comparison between the tests of association with and without outliers did not change whether tests of association were significant or not. Significance values for all tests of association with outliers included are available in Table 16.

The CAMS intervention has not been evaluated in older adults, therefore four participants from each group were analysed separately to form the "Older Adult" cohort.

Table 15

Outcome measures at six-month follow-up for CAMS and control participants

Variable	CAMS	Control
Suicide	0	0
Further Crisis contact (n)	15	30
Hours M (SD)	3.93 (4.00)	2.07 (1.56)
Further Liaison contact (n)	15	11
Hours M (SD)	5.53 (5.28)	2.29 (1.57)
Further Home Treatment contact (n)	18	7
Hours M (SD)	4.92 (3.82)	6.13 (4.61)
CRHT input (n)	34	41
Hours M (SD)	6.78 (6.21)	3.17 (3.59)
CPA input (n)	21	23
Hours M (SD)	10.49 (10.43)	7.83 (8.52)
Inpatient admissions (n)	4	8
Days M (SD)	1.48 (4.98)	2.99 (10.70)
Total service utilisation (n)	41	46
Hours M (SD)	9.39 (10.23)	6.46 (8.70)

Table 16

Tests of association for outcome variables comparing the CAMS and control groups

Variable	N	Test of association
Liaison Psychiatry contact	96	$X^2(1)=.844$, $p=.358$
Liaison Psychiatry hours	26	U=58.00, z=-1.274, p=.203
Crisis contact	96	$X^2(1)=9.412$, $p=.002$**
Crisis hours	45	U=146.00, z=-1.905, p=.057
Crisis/Liaison Psychiatry total contact	96	$X^2(1)=6.235$, $p=.013$*
Crisis/Liaison Psychiatry total hours	69	U=401.50, z=-2.173, p=.030*
Home Treatment contact	96	$X^2(1)=6.544$, $p=.011$*
Home Treatment hours	25	U=52.50, z=-.636, p=.525
CRHT contact	96	$X^2(1)=.549$, $p=.459$
CRHT hours	75	U=510.50, z=-2.032, p=.042*
CPA contact	96	$X^2(1)=.671$, $p=.413$
CPA total hours	44	U=193.00, z=-1.14, p=.254
Mental health hospital admission	96	$X^2(1)=1.524$, $p=.217$
Total mental health service utilisation	96	U=954.50, z=-1.448, p=.148

Participants with zero hours removed from analyses of difference in average number of hours of input for each variable. *p <.05. **p <.005.

5.5.2 Suicides

Inquest forms from the coroner were checked to establish whether there were any suicide conclusions for participants in either group occurring within six months of the index Crisis assessment. At the time of writing, there were no deaths attributed to suicide in either group occurring during the follow-up period.

5.5.3 Hypothesis One: Crisis/Liaison Psychiatry presentations will be different for the CAMS and control groups at follow-up

5.5.3.1 Crisis contact/hours of input. 15 participants in the CAMS group and 30 participants in the control group had at least one Crisis contact at six-month follow-up. For those with at least one contact, maximum Crisis input was 15.75 hours (M=3.93, SD=4.00) in the CAMS group and 6.67 hours (M=2.07, SD=1.56) in the control group. In support of the hypothesis, the difference between groups in terms of whether participants had a Crisis contact at follow-up was significant ($p<.005$). For participants with one or more Crisis contacts (33% of CAMS group and 66% of control group, n=45), the group difference between number of hours of Crisis input was not significant.

5.5.3.2 Liaison Psychiatry contact/hours of input. 15 participants in the CAMS group and 11 participants in the control group had at least one Liaison Psychiatry contact at six-month follow-up. For those with at least one contact, maximum Liaison Psychiatry input was 16.5 hours in the CAMS group (M=5.53, SD=5.28), and 5.75 hours in the control group (M=2.29, SD=1.57). Contrary to the hypothesis, there were no significant differences between groups in terms of whether participants had had a Liaison Psychiatry contact at follow-up. For participants with one or more Liaison Psychiatry contacts (33% of CAMS group and 24% of control group, n=26), the maximum number of contacts for CAMS versus control group was 14 and 5, respectively. Analysis of group differences between hours of Liaison Psychiatry input was not significant.

5.5.4 Hypothesis Two: Home Treatment contacts will be different for the CAMS and control groups at follow-up

18 participants in the CAMS group and 7 participants in the control group had at least one Home Treatment contact at six-month follow-up. For those with at least one contact, maximum Home Treatment input was 13.15 hours (M=4.92, SD=3.82) in the CAMS group

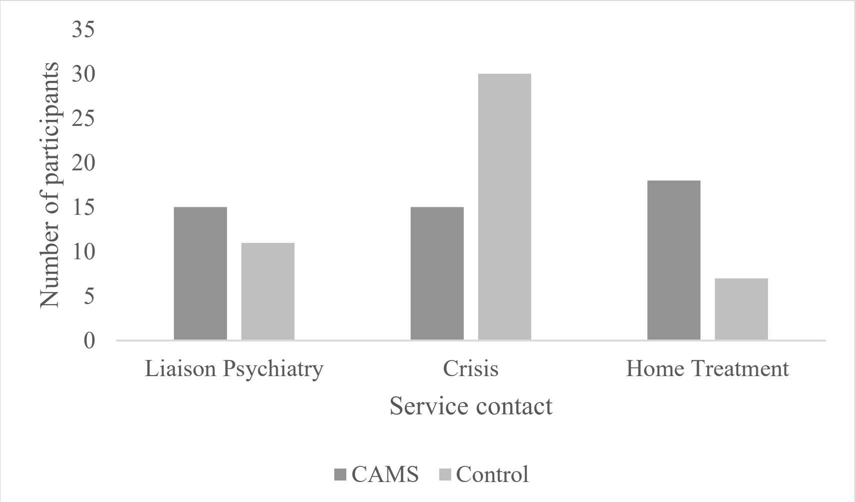
and 14.83 hours (M=6.13, SD=4.61) in the control group. In support of the hypothesis, the difference between groups in terms of whether participants had a Home Treatment contact at follow-up was significant (p<.05). For participants with one or more Home Treatment contacts (39% of CAMS group and 15% of control group, n=25), the group difference between number of hours of Home Treatment input was not significant.

5.5.5 Total CRHT service input

34 participants in the CAMS group and 41 participants in the control group had had involvement with CRHT at six-month follow-up. The difference between groups in terms of whether participants had contact with the CRHT at follow-up was not significant. For those with CRHT input, maximum total CRHT input was 25 hours (M=6.78, SD=6.21) in the CAMS group and 18.33 hours (M=3.17, SD=3.59) in the control group. For participants with CRHT input (74% of CAMS group and 89% of control group, n=75), the group difference between number of hours was significant (p<.05). Figure 15 shows the number of participants with CRHT contact in each group.

Figure 15

Service contact with each CRHT team at six-month follow-up for the CAMS and control groups



5.5.6 Hypothesis Three: Community mental health services (in terms of CPA hours) will be similar for the CAMS and control groups at follow-up

21 participants in the CAMS group and 23 participants in the control group had involvement with community mental health services (CPA) at six-month follow-up. For those with CPA hours, maximum total CPA hours was 40.75 hours (M=10.49, SD=10.43) for the CAMS group and 27.75 hours (M=7.83, 8.52) for the control group. In support of the hypothesis, the difference between groups in terms of whether participants had CPA hours was not significant. For participants with CPA hours (46% of CAMS group and 50% of control group, n=44), there were no significant differences between groups in terms of total number of hours of CPA input.

A comparison of CPA input for each of the six months of follow-up was undertaken, with tests of association displayed in Table 17 (n=44). In terms of CPA hours by month, there were no significant differences between number of hours for the CAMS and control participants at Month 1, 2, 3, 4, 5 or 6. The average change in CPA hours from Months 1 to 6 was a reduction of one hour for the CAMS group and two hours for the control group. Hours of CPA change was not significantly different between groups.

Table 17

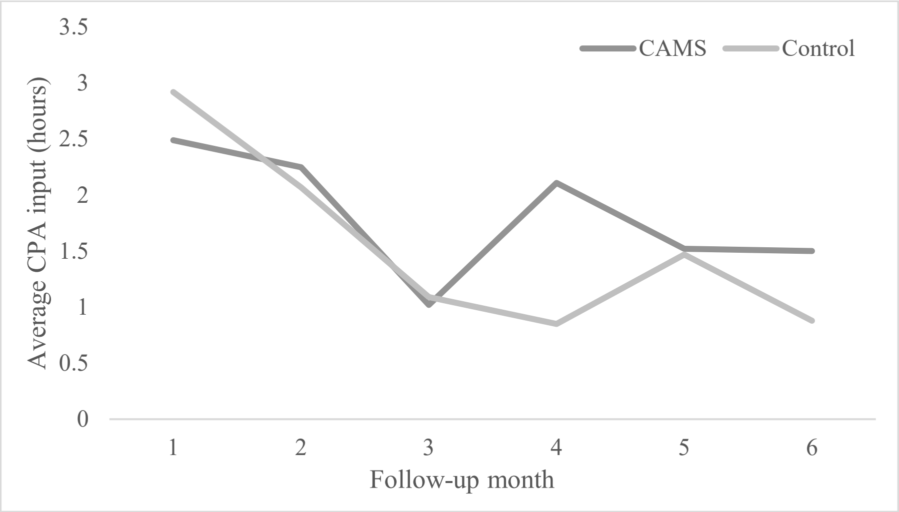
Comparison of average CPA hours by month for the CAMS and control groups

Variable	Test of association
CPA Month 1	U=218.00, z==.557, p=.577
CPA Month 2	U=203.50, z=-.909, p=.364
CPA Month 3	U=230.00, z=-.299, p=.765
CPA Month 4	U=179.50, z=-1.502, p=.133
CPA Month 5	U=194.00, z=-1.193, p=.233
CPA Month 6	U=191.50 z=-1.245, p=.213
CPA change from Month 1 to 6	U=175.00, z=-1.567, p=.117

Figure 16 shows the average CPA input by month for the two groups where there was CPA input. Both groups declined rapidly from Months 1 to 3. At Month 4, the CAMS group increased whereas the control group decreased. Average input was the same for Month 5 and remained similar at Month 6 (1.5 hours and 0.9 hours, respectively).

Figure 16

Mean CPA input by month for the CAMS and control groups (n=44)



5.5.7 Hypothesis Four: Mental health hospital admissions will be similar for the CAMS and control groups at follow-up

Four CAMS participants and eight control participants had a mental health hospital admission during the six-month follow-up (excluding if there was an admission at the time of the index Crisis assessment). Length of admission ranged between 15 and 19 days for the CAMS cohort (M=1.48, SD=4.98) and between 3 and 55 days for the control cohort (M=2.99, SD=10.70). There were no significant differences between groups in terms of whether participants had an inpatient admission at follow-up.

5.5.8 Total mental health service utilisation

Seven participants in the CAMS group and two participants in the control group had no input from mental health services in terms of CRHT or CPA hours at six-month follow-up. The maximum input for the CAMS group was 44.25 hours (M=9.39, SD=10.23) compared with 39.25 hours for the control group (M=6.46, SD=8.70). There were no significant differences between total mental health service utilisation between the two groups. This outcome did not change with six outliers removed (n=90, p=.115).

5.5.9 Comparisons by gender

Given the gender disparities in terms of suicide and suicidal behaviours (see Section 1.3.1), group outcomes were analysed by gender. For the CAMS and control groups combined, Pearson’s chi-square tests indicated that there were no significant differences in terms of Liaison Psychiatry, Crisis, Home Treatment or community mental health (CPA) contacts at six-month follow-up between males and females. Nonparametric tests comparing number of hours of input for each of these four outcome variables revealed a significant difference in terms of CPA hours, with females having significantly more CPA hours at six-month follow-up (M=5.92, SD=7.66) compared with males (M=2.81, SD=7.76).

All analyses were repeated with the CAMS group only. The same pattern of results was observed, with only CPA hours differing significantly by gender. Females had a significantly higher number of CPA hours at six-month follow-up (n=21, M=5.94, SD=6.96) compared with males (n=27, M=3.52, SD=9.69).

5.5.10 Older adults cohort

Given that the CAMS intervention has not been evaluated in an older adult cohort, participants in the over 65 age group (M=72.3) were separated from the main CAMS cohort. Descriptive statistics are displayed in Table 18.

Table 18

Descriptive statistics for the older adult CAMS and control groups

Variable	CAMS n (%)	Control n (%)
Gender (male)	3 (75)	3 (75)
Single	3 (75)	3 (75)
Unemployed	4 (100)	4 (100)
Diagnosis (mood disorders)	4 (100)	3 (75)
Years known to services		
Less than one year	1 (25)	1 (25)
1-5 years	2 (50)	3 (75)
5+ years	1 (25)	0
Lifetime CRHT referrals		
1-5	2 (50)	4 (100)
6-10	1 (25)	0
11+	1 (25)	0

The table suggests that the characteristics of the older adults cohort shares similar risk factors for suicidality as adult cohorts i.e. male (75%), single (75%) and unemployed (100%).

Seven out of a total eight older adult participants had been diagnosed with a mood disorder and six out of eight had been open to mental health services for 1-5 years (62.5%).

Outcome measures at six-month follow-up are displayed in Table 19. Statistical analyses between groups were not undertaken due to the small sample size (n=8, 4 per group).

Table 19

Outcome measures at six-month follow-up for older adult participants

Variable	CAMS (n)	Control (n)
Liaison Psychiatry contact	0	3
Further Crisis contact	0	1
Home Treatment contact	4	4
Hours M (SD)	34.69 (47.89)	18.91 (18.03)
CPA input	3	4
Hours M (SD)	14.69 (11.21)	6.21 (3.03)
Inpatient admissions	0	0
Total service utilisation M (SD)	49.38 (56.41)	28.73 (24.24)

None of the CAMS participants had further Liaison Psychiatry or Crisis contacts compared with three participants that had a Liaison Psychiatry contact and one participant that had a Crisis contact in the control group. All eight participants had Home Treatment contact and seven had CPA input, with the mean number of hours suggesting a greater amount of Home Treatment and CPA input for the CAMS group. There were no participants in either group that had had a mental health inpatient admission during follow-up. Total service utilisation was higher for the CAMS group.

5.6 Research Question Three. Do CAMS SSF core assessment ratings reduce over the course of the CAMS intervention?

5.6.1 Hypothesis: For those individuals undertaking the CAMS intervention, the six CAMS SSF core assessment constructs will reduce significantly from the initial SSF to final session

The difference between pre and post SSF core assessment scores were analysed (n=21) to explore whether ratings changed from initial to final session of the CAMS tracking. The Shapiro-Wilk test highlighted that the assumption of parametricity was met for pre and post assessment scores, *p*>.05. As the hypothesis for tracking data was directional predicting a reduction in SSF core assessment scores, a p value of 0.025 was used to determine significant test statistics.

In support of the hypothesis, there was a significant reduction across all SSF core assessment ratings, as is evident in Table 20 (depicted in Figure 17). There were no significant differences in the average score reduction on the SSF core assessment by gender, t(19)= 0.442, p=0.664, (M reduction male= 7.8, M reduction female= 8.9).

Table 20

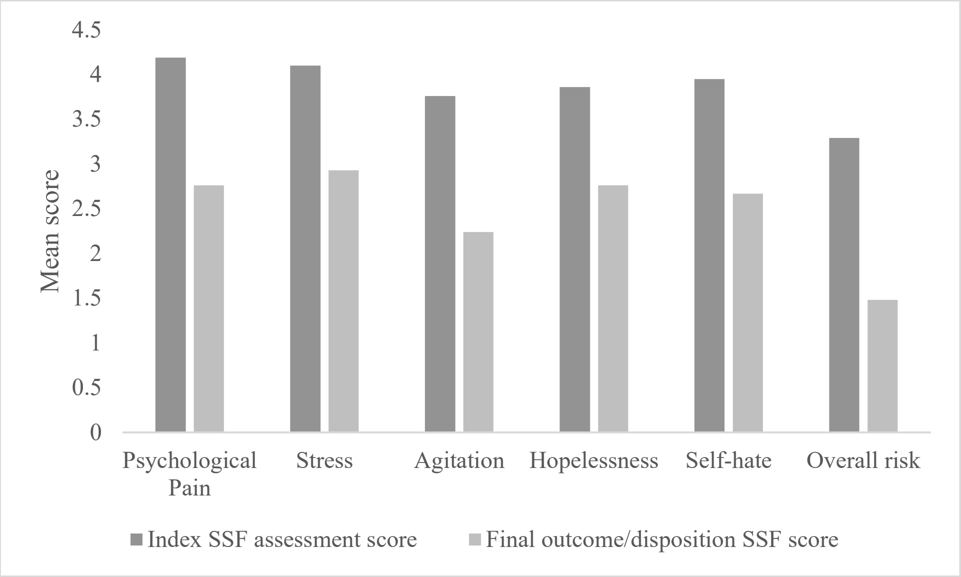
Tests of association comparing initial and final SSF core assessment scores

Variable	Initial assessment M (SD)	Final assessment M (SD)	t	p
Psychological Pain	4.19 (1.03)	2.76 (1.04)	4.80	<.001*
Stress	4.10 (1.04)	2.93 (1.12)	4.32	<.001*
Agitation	3.76 (1.09)	2.24 (1.14)	4.86	<.001*
Hopelessness	3.86 (1.24)	2.76 (1.18)	2.77	.006*
Self-hate	3.95 (1.24)	2.67 (1.16)	3.72	.001*
Overall risk	3.29 (1.10)	1.48 (0.81)	7.69	<.001*

M=Mean, SD=Standard Deviation. *p <.025.

Figure 17

Scores for each SSF core assessment construct at initial and final session



5.6.2 Regression analyses for the CAMS group

A series of linear regression analyses using bootstrapping were conducted to determine whether any aspects of the initial SSF core assessment rated by the service user (pain, stress, agitation, hopelessness, self-hate, overall risk, wish to live and wish to die), predicted mental health input for the CAMS group at six-month follow-up in terms of Crisis/Liaison Psychiatry hours, Home Treatment hours, CPA hours, change in CPA hours (from Months 1 to 6) and total service utilisation. The results of the regression analyses are displayed in Table 21.

Table 21

Regression analyses for outcome measures using SSF core constructs as predictor variables

Variable	Regression output
Crisis/Liaison Psychiatry hours	F(8,38)=.214, R^2=.043, p=.986
Home Treatment hours	F(8,38)=.601, R^2=.112, p=.771
CRHT total hours	F(8,38)=.546, R^2=.103, p=.815
CPA hours	F(8,38)=1.501, R^2=.240, p=.189
Change in CPA hours	F(8,38)=2.945, R^2=.383, p=.012*
Total service utilisation	F(8,38)=1.394, R^2=.227, p=.230

*p <.05.

As shown in Table 22, change in CPA hours from Month 1 to Month 6 was significantly predicted by “wish to live” score, as rated by the service user. The combination of SSF core assessment variables accounted for 38.3% of the variance for change in CPA hours.

Table 22

Regression statistics for variables predicting change in CPA hours

	β (95% CI)	t	p
Model 1			
Constant	2.64 (-1.15, 7.82)	1.19	.236
Wish to live	-.41 (-.69, -.10)	-2.75	.047*
Excluded variables		t	p
Pain		-1.25	.344
Stress		-1.02	.446
Agitation		3.60	.053
Hopelessness		1.96	.054
Self-hate		-1.35	.286
Overall risk		-2.28	.075
Wish to die		-.33	.743

CI=confidence interval. *p <.05.

As can be seen in the table, agitation (p=.053) and hopelessness (p=.054) were approaching significance as predictor variables.

Average change in CPA hours from Month 1 to Month 6 was a reduction by 1 hour, with an average input of 2.49 hours at Month 1 and 1.5 hours at Month 6. Median wish to live score was 4 (on a 0-8 Likert scale, 0 indicating no wish to live, 8 indicating strong wish to live).

Chapter 6: Research Question Four. Qualitative analysis of service user interviews

This chapter presents the results of semi-structured interviews with service user participants (n=8) that explored their experiences of the CAMS intervention, analysed using an IPA-informed approach. Key themes identified several positives of the CAMS intervention, particularly its utility for encouraging honest responses regarding suicide risk which, in turn, informed a targeted, individualised treatment plan. Other positives cited were the quality of the therapeutic alliance with the CAMS clinician and emphasis on collaboration throughout the intervention, which aided service users effectively manage their suicidality. Areas for improvement raised included a need for a more "joined up" approach across mental health service areas and a streamlined communication process to prevent unnecessary delays for additional treatment delivery.

6.1 Sample characteristics

Participants were four males and four females aged between 21 and 63 (mean age=39.4, SD=17.5). All participants were White British and resided in the local area. Five of the participants were single, one was co-habiting and two were married. Seven participants had had 1-5 CRHT referrals and one participant had 6-10. Two participants had been involved with mental health services for less than one year, five participants for 1-5 years and one participant for 5+ years. Three participants reported no history of suicidal behaviours prior to their recent involvement with the CRHT. The remaining five had a history of suicidal behaviours, although data obtained during the CAMS assessments indicated that the majority of these incidents had not required medical intervention.

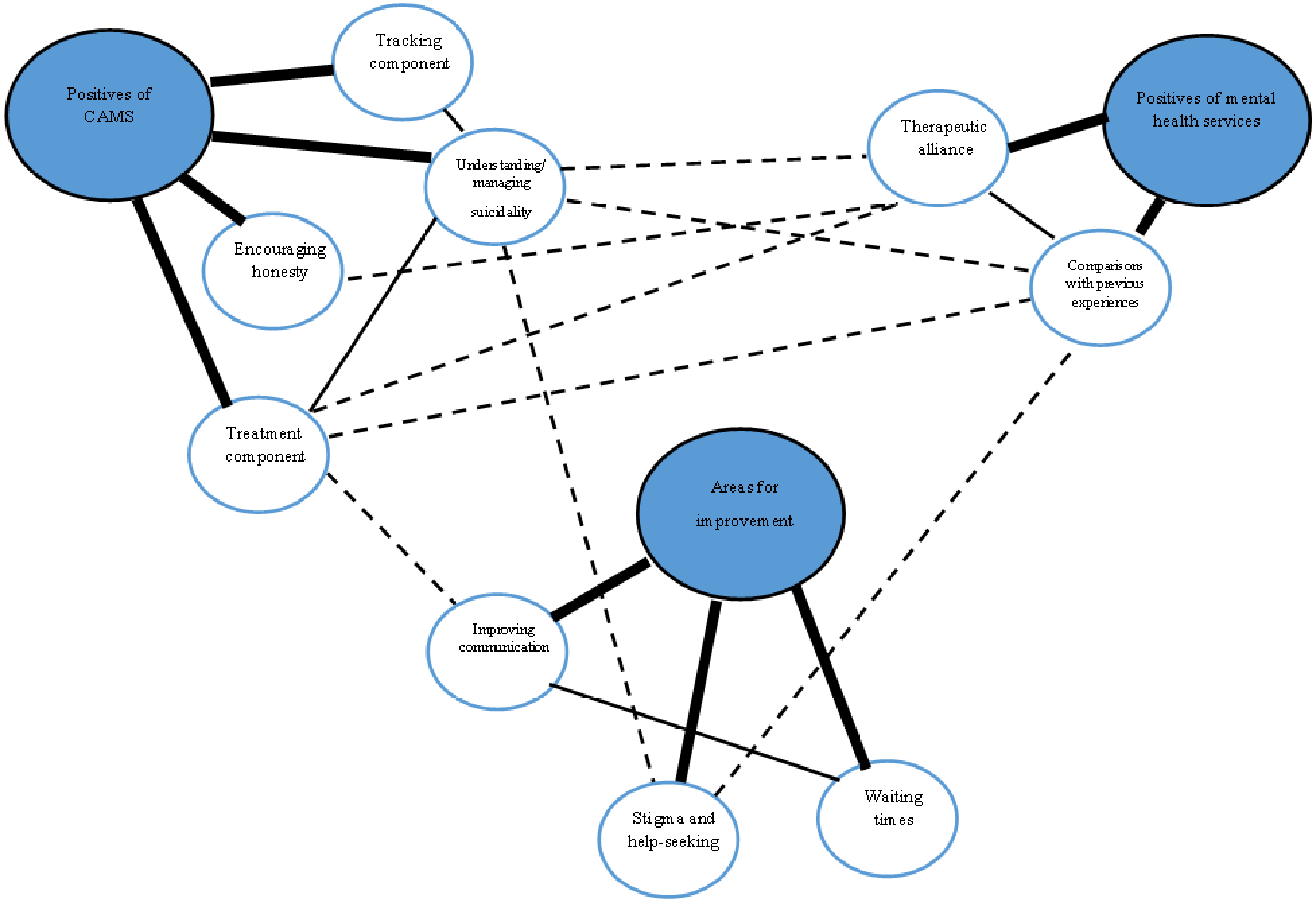
6.2 Themes from service user interviews

6.2.1 Overview of themes

Three superordinate themes and nine interrelated subthemes were identified from the analysis. Proposed relationships between themes are displayed in Figure 18.

Figure 18

Links between subordinate themes identified through service user interviews



Solid lines represent links within the same superordinate theme, whereas dashed lines represent relationships across superordinate themes.

The themes are summarised in Table 23:

Table 23

Summary of themes from service user interviews

Superordinate theme	Subordinate theme
1. Positives of CAMS	• Understanding and managing suicidality • Encouraging honesty • Tracking component • Treatment component
2. Positives of mental health services	• Therapeutic alliance • Comparisons with previous experiences
3. Areas for improvement	• Improving communication • Waiting times • Stigma and help-seeking

6.2.2 Positives of CAMS

6.2.2.1 Understanding and managing suicidality. Participants expressed the severity of suicidality prior to their CAMS assessment:

> *I was starting to lose attachment with emotions and there was nothing left inside eventually…I'd already been in sort of a very dark place by that point and had kind of separated myself from society in many respects and I just felt I'd reached the end of the line and I just kind of convinced myself that suicide was the only way to resolve this because my life as much as I'd tried had had just been like a continual decline.* (Participant 1).
>
> *My thoughts were so extreme.* (Participant 2).

I just hadn't really been myself I was behind on work I was forgetting things and like stuff that was important to the role stuff that I was supposed to be remembering…just not coping with my workload. (Participant 3).

I got really low… I look back on it and remember that I was confused and…not being able to manage. (Participant 7).

I'm able to look back and realise how destructive my way of coping was...had I been successful with my very very serious suicide attempt it would have devastated lives of those who love me and are close to me. (Participant 8).

Some participants described using substances to cope:

I used to use alcohol as a coping strategy. (Participant 1).

I had like quite a bad drug problem at that time. (Participant 3).

Participants 1 and 3 were both male. A systematic review of barriers to help-seeking in men expressing suicidality highlighted that self-medication was a recurring theme expressed by males as a means of coping with negative emotions (Jones et al., 2019). One of the seven qualitative studies included in the review reported interview data from 52 men following a suicide attempt (Cleary, 2017). Thematic analysis indicated that participants used alcohol and drugs to reduce distress, which for some led to further deterioration of their mental health. The majority of participants had not disclosed suicidality to anyone in their support network prior to the suicide attempt. This may be indicative of some men's attitudes towards help-seeking for mental health difficulties, as expressed by participants:

It took some weeks to actually feel as though I was worthy of coming. (Participant 1).

I didn't want to tell anyone…had it not have been for my attempt and being in hospital…I probably never would. (Participant 8).

A qualitative study aimed to identify the possible reasons that 10 men aged 18-30 did not consult a healthcare professional prior to their suicide using information from informants

(Rasmussen et al., 2018). Informants identified that a fear of disclosing mental health difficulties was a possible barrier to help-seeking, as well as feelings of shame and fears around showing perceived “weakness”. Although informant data has its limitations (see Section 2.3.2), the above quote from Participant 1 appears to support the theme that such barriers may leave men feeling that they have no other option but to end their lives.

A key theme that emerged as a positive aspect of the CAMS intervention was enhancing service users’ understanding of their difficulties. Some described how it helped them to make their thoughts more coherent and aided communication of distress, for example:

In the CAMS I had time to I think speak about what had happened in the past as well…I guess like they could see that I was struggling but not every area of where I was struggling whereas in CAMS they picked up on it. (Participant 3).

It helps… just to get it there in black and white and…I suppose to help sort your own mind out when you’re trying to explain … what’s going on and helping myself understand … like all the different thoughts and emotions that come in with mental health. (Participant 4).

I remember having an assessment with her and…she mentioned suicide and that brought it up if you know what I mean…it made me feel that I’ve told someone about it and it made me feel like I had to get over it…I had to push myself to understand it…I started understanding it and I’ve gone on from there to be honest. (Participant 7).

Participants further explained that the CAMS intervention helped them understand their suicidality from a different perspective:

At the time I do remember thinking it really got me thinking…because at that point I was kind of trapped in this bubble. (Participant 1).

> *I think when they had like a better picture of what had actually happened with the context there I felt there was more of a like understanding in the following sessions.* (Participant 3).
>
> *Putting things into categories… it lists all the different aspects of mental health problems…so I think again that… that helps people to convey … where they are at with each area.* (Participant 4).

This was supported by Participant 3 who explained that the CAMS assessment had helped them get to the *"root causes"* of their suicidality.

Improved management of suicidality also emerged as an important aspect of the CAMS intervention, as demonstrated through the following quotes:

> *I think I'm massively more self-aware…so that's good in that I don't just push it all down.* (Participant 2).
>
> *Well I have good days and bad days I won't say it's… it's gone away completely but I'm… I'm dealing with it a bit better.* (Participant 5)
>
> *I've had a few things going on but I'm coping with my anxiety.* (Participant 7)
>
> *I've understood and accepted a lot of things about myself which puts me in a much better position to realise why I'm feeling something…what may have triggered that and what I can do to deal with it.* (Participant 8).

As outlined in Section 3.1.4, few evidence-based treatments exist for suicidality. Trials of the CAMS intervention have demonstrated sustained treatment gains at 12-month follow-up, including reduced suicidality and psychological distress (Comtois et al., 2011; Jobes et al., 2017). Further, a qualitative study of CAMS responses indicated that developing introspective coping methods throughout the intervention were useful for individuals to prevent future relapse (Schembari et al., 2016). This is supported by the above quotes, which indicates that participants appear to have developed more adaptive coping strategies as a result of the CAMS intervention and associated treatment.

6.2.2.2 Encouraging honesty. Participants described how the CAMS intervention encouraged them to be honest regarding their suicidality and experiences. This may have been a result of their relationships with clinicians, for instance:

> *I felt more comfortable to start talking about that so I guess being more open and honest about what exactly it was I was actually struggling with.* (Participant 3).
>
> *I think it just helped me…tell them exactly how I was feeling.* (Participant 4).
>
> *I opened up to be honest… just opening up instead of holding it all in…it was very helpful…it saved my life.* (Participant 7).
>
> *I was answering and acknowledging questions about the state I was in…which for somebody who has before this never spoken about my mental health or my past… this was the start for being able to do that… for the first time.* (Participant 8).

Honest and open communication is a key part of the CAMS intervention (Jobes, 2016). Clinicians undertaking CAMS training are introduced to the key principles of the intervention, which focus on being non-judgemental and not reacting negatively to disclosures of suicidality (Jobes et al., 2011). Retrospective studies indicate that clinicians may encounter a range of emotional responses to a suicidality disclosure including anxiety, distress and feeling overwhelmed (Maltsberger et al., 2003; Richards, 2000; Yaseen et al., 2013). Indeed, the RCPsych (2020a) practical guidance for managing risk of suicide and self-harm in adults recommends that clinicians avoid strong or negative emotional reactions to disclosures.

6.2.2.3 Tracking component. Six of the eight interview participants completed the tracking component of the CAMS intervention. Participants explained that initially they had found it difficult to score the constructs that form the SSF core assessment, stating:

Sometimes it would be how have you felt in the last week circle a number …but you could have had a number of feelings and thoughts…it's probably harder to do the numbers when you first come and you're in crisis … as to when things stabilise a little bit. (Participant 4).

I remember the circling the numbers I've…I don't know I've always found that quite difficult...it varies from one day to the next… (Participant 5).

Research of self-report questionnaires that are commonly used in mental health services have identified some of the issues relating to self-ratings. A qualitative study of 18 adults with mild, moderate and severe depression (n=6 in each group) used cognitive interviewing to explore patient understanding of PHQ-9 items (Malpass et al., 2016). The PHQ-9 is a nine-item self-report measure consisting of questions about depressive symptoms over the last two weeks, rated on a scale of frequency from "not at all" to "nearly every day," that is widely used in primary care settings (Kroenke et al., 2001). Participants expressed difficulties with answering some questions due to inclusion of several components, such as Question 9 around suicidality e.g. "Thoughts that you would be better off dead, or of hurting yourself in some way?" Participants also reported issues with distinguishing between frequency and intensity of such symptoms, which has been identified in a previous study suggesting that suicidality is under-reported on the PHQ-9 (Malpass et al., 2010). This is consistent with a study of 116 participants admitted to general hospital screening positive for suicide risk using the ASQ and/or ASIQ, of which 62.9% did not endorse the PHQ-9 Question 9 (Mournet et al., 2021). In contrast, the collaborative nature of the CAMS intervention allows the clinician to elaborate on any aspects of the SSF core assessment that may be confusing or require clarification.

Over the sessions, participants felt that they were able to see the value of the tracking component:

> *As they did track how I was getting on they did get a more clearer picture of where I was struggling as well.* (Participant 3).
>
> *I remember towards the end filling these out before I left…and I think it showed me how I'd progressed … through my treatment…so I know I've spoken about the numbers saying they weren't good but in another aspect they are good because I knew … that I was rating myself in a higher mood.* (Participant 4).
>
> *As the numbers change you feel like you're improving which is … you can physically kind of see it.* (Participant 5).
>
> *The assessments and monitoring of that…and the support… was unbelievable.* (Participant 8).

Research has acknowledged that several factors can affect ratings on self-report questionnaires, including the influence of recent life events (positive or negative), fluctuations in mood and the extent to which the service user feels the questions are an accurate representation of their symptoms (Robinson et al., 2017). One example is the BDI, with one study indicating that service users may reformulate questions that are problematic to answer (Galasiński & Kozłowska, 2010). In relation to CAMS, these issues are overcome as responses are completed with the clinician sitting side-by-side the patient, with an emphasis on the dyadic relationship (Jobes, 2016). In this way the CAMS intervention acts as a therapeutic assessment, which research suggests has positive effects on clinical outcomes (Poston & Hanson, 2010).

6.2.2.4 Treatment component. Several participants commented on the beneficial effects of the treatment aspect of the CAMS intervention. Participants reflected on the impact that their treatment had had:

> *I couldn't control my emotional states and now I can see why… the treatment so far has been honestly unbelievable and theres still a lot more to learn.* (Participant 1).
>
> *The suicidal thoughts stemmed from anxiety…just things with contamination … intrusive thoughts… and now I'm doing my cognitive behavioural therapy.* (Participant 4).
>
> *They sorted me out…made me not feel as bad.* (Participant 6).
>
> *I felt incredibly grateful to have the support I received…and looking back I appreciate it more than ever …and without it I almost certainly wouldn't be speaking with you now.* (Participant 8).

Participant 4 expressed that since the start of psychological therapy, which the participant was able to access through a fast-track referral following the CAMS intervention, their mental health had *"definitely, definitely improved".* The CAMS intervention is designed to ensure that all aspects are collaborative and interactive, allowing the patient to input on their treatment plan and review with the clinician whether any elements need amending (Jobes, 2016). This is consistent with national guidance recommending an individualised approach to suicide risk assessment and management (DoH, 2009, NICE, 2013), as well as recognition of the importance of service user involvement in the risk mitigation process (NCISH, 2018).

6.2.3 Positives of mental health services

6.2.3.1 Therapeutic alliance. Researchers have suggested that therapeutic alliance is a causal factor for treatment outcome (Baldwin et al., 2007; Barber et al., 2000), although it is also argued that differing conceptualisations and measurements of alliance mean that the causal role of therapeutic alliance has yet to be robustly measured (Barber et al., 2010). Several participants described how the relationship that they developed with clinician(s) undertaking the CAMS intervention had a positive impact on their experiences with mental health services.

Participants described the qualities of the assessing clinician which had helped facilitate engagement with the intervention:

She's brilliant she's really really good at her job and she really stood out and she made it feel as though she was listening. (Participant 1).

I was allowed to take my time…I felt relieved after it. (Participant 3).

I was depressed but these people came round and they were so professional and they made me laugh…the way they came across and they spoke to me like a normal person…like they'd known me for a long time and that made me feel…better. (Participant 7).

I got so much understanding and support and patience…and I came to know both the ladies and they got to know me…so although I would be naïve to say that we became friends….the service was very friendly. (Participant 8).

Participant 2 further explained that the clinicians were *"understanding"* which helped them make difficult disclosures around past abuse that they had not shared during previous contacts with mental health services.

Interview participants appeared to value their interactions with clinicians:

I felt like I got to know everyone that I engaged with quite well. (Participant 3).

We are now facing each of those issues together one by one. (Participant 4).

> *I didn't at any time feel like a patient or part of their work…it was more sensitive and personal than that…to the point where I looked forward to hearing from them.* (Participant 8).

This highlights the collaborative nature of the relationship with the clinician undertaking their treatment. Indeed, CAMS is based on the notion of a therapeutic, collaborative assessment process where the goal is that the patient feels understood and supported (Finn, 2007; Jobes, 2016).

6.2.3.2 Comparisons with previous experiences. Participants described how their experience with mental health services differed from previous service contact. Participants explained how their current input compared with past experiences:

> *It wasn't until I engaged with the CAMS assessment that really I started getting some support for that.* (Participant 1).
>
> *When I've tried to get support when I was younger in the end I've just…like I said it wasn't that they wasn't listening to me it's just I wasn't getting my full point across as to why I was struggling with these problems… I think one of the reasons why I did stop engaging after about three weeks was the tips that they gave me then were actually like tips that I probably have relearned now and use today but at the same time it was giving you advice but it wasn't really hearing your story first I guess.* (Participant 3).
>
> *This time was better…because before I was at the safe house…I don't know what its called but… it was just like a house…that was a bit more informal.* (Participant 5).

Participant 5 further described that their recent inpatient admission weas beneficial for managing their suicidality due to *"more kind of boundaries".* Participant 6 explained that they had had a *"better"* experience with mental health services than previously, comparing their past experiences with their current psychological therapy:

> *There wasn't all the information like there is with the counselling now.* (Participant 6).

These quotes suggest that the treatment service users received contributed to the positive experience they had with mental health services. This may relate to the individualised, person-centred philosophy of the CAMS intervention. Consistent with this notion, survey data of service users' experiences of suicide risk assessment indicated the need for a personalised rather than tick-box approach, taking into account the service user's narrative (Graney et al., 2020).

Continuity of care in terms of involvement with the same clinician(s) appeared to have a positive impact on service user experience, as reflected in the following quotes:

> *Sometimes when you go into them like drop-in crisis sessions its…that can be one of the barriers I think because you don't really know the person it's a complete stranger and I mean they are really supportive and friendly and like welcoming its just through the CAMS assessment I got to know the people I was speaking to a bit more so I think it helps with like that trust.* (Participant 3).
>
> *It was scary at first but…these people that came round honestly they were quite open but not forceful…they all stand out to be honest… but I would say that every one of them helped me get over feeling suicidal…they all had a positive impact on me because of what they did and what they do.* (Participant 7).

A qualitative study with 13 service users that had had contact with mental health services in the previous two years expressed that continuity with the same clinician increased feelings of safety (Berzins et al., 2020), a theme that is also evident in qualitative research conducted in primary care settings (Coffey et al., 2017; Hernan et al., 2015; Rhodes et al., 2016). This notion is supported by Pavulans et al. (2012) who reported that continuity with healthcare professionals where possible is beneficial so that clinicians can develop a thorough understanding of the individual in order to hopefully recognise warning signs for suicidal relapse. It is recommended that the CAMS intervention is conducted with the same clinician if possible (Jobes, 2016), which appears to be an important aspect of effective treatment for service users.

6.2.4 Areas for improvement

6.2.4.1 Improving communication. Communication was identified as an issue by participants and involved different aspects of their experiences. Some participants felt that initially, they were unaware of the purpose of the CAMS intervention and suggested that explaining this prior to the assessment would be useful:

The only thing that I think would be beneficial is to be given more of an understanding of exactly what the questionnaire is for and how it relates to individual people and…basically what it's about that would I think you know be more useful then you actually put it into context of why you're doing it. (Participant 1).

It was just a piece of paper to me. (Participant 6).

At first I was confused and didn't understand what was happening. (Participant 7).

Similar findings have been reported in relation to qualitative studies of patient experience of psychosocial assessment. A qualitative interview study with 13 service users presenting to the ED following self-harm identified that participants were unclear what the purpose of the psychosocial assessment was and perceived that it was a routine part of general hospital care (Hunter et al., 2013). In the current research, some participants were unable to recall the CAMS assessment, which may have been due to their levels of distress but may also be a result of an unclear explanation, or lack of explanation, of the purpose of the assessment:

I would think I was very honest in it but I didn't for me there was…I didn't see being there as useful…my family are aware that someone came and did an assessment…I have no recollection of that so I just think it's worth making sure that the person is sane of mind before they do them…because they might not take it on board. (Participant 2).

I can't remember the first time I did this assessment… (Participant 4).

It was at some point whilst I was in hospital…but I can't remember. (Participant 5).

This supports previous research indicating that service users are not always aware that a risk assessment is taking place (Graney et al., 2020; Langan, 2008).

Communication issues also related to follow-up care after the CAMS assessment, for example:

I felt lost for a few weeks and I'd be chasing up the different people. (Participant 4).

I was told that this would happen and this would happen … some things didn't happen…I was meant to get a care coordinator and stuff…but nothing like that ever happened. (Participant 6).

Participants reported that the gaps in care occurred primarily during the period between inpatient discharge and follow-up from community mental health services. Consistent with these findings, participants in the study by Hunter et al. (2013) reported that there were delays to follow-up care following discharge from the ED, which reinforced feelings of hopelessness and impacted on their future engagement with services. Thus, it is important that the APA practice guidelines for managing suicidality are adhered to, including the recommendation that there is clear communication between professionals when providing treatment to individuals presenting with suicidal risk (Jacobs et al., 2010). The guidance emphasises the importance of clarifying the specific role of each professional providing care and keeping records of communications across teams.

6.2.4.2 Waiting times. Some participants explained that they had to wait for treatment and described the impact that this had on their mental health, for example:

Nothing happened within about six weeks… it seemed like a lifetime its six weeks but that honestly felt…it felt like a hundred years you know…because I was in a crisis or in continual crises and it feels at the time when you're desperate that things needed to be

> *resolved as soon as possible…when you feel like that indefinitely obviously you can do things you wouldn't normally do in a rational state of mind.* (Participant 1).
>
> *After I was discharged…I was still suicidal like I still voiced that but they said they didn't want me in the system for too long…so they wanted me back in normal work but then I took another overdose and I was hospitalised…in that time I have 72 hours where I have no recollection at all.* (Participant 2).
>
> *There was a gap…once I was discharged…before my therapy started.* (Participant 5).
>
> *I was kind of economical with the truth as far as leaving here was concerned because it did feel at the time like it wasn't the real world it was a false environment being kept on the ward it was voluntary and…I did leave and within about six weeks the suicide had turned into a very very real risk.* (Participant 6).

Waiting times in mental health services are considered a significant issue than can impact on patient safety (Berzins et al., 2018) and engagement with treatment when offered (Wooster, 2008). A qualitative study of 10 service users under the care of community mental health services indicated that waiting for services negatively impacted on their mental health (Biringer et al., 2017). An audit of waiting lists for psychotherapy in the NHS indicated that 166 of 183 CCGs did not keep records of waiting times (British Medical Association, 2018).

6.2.4.3 Stigma and help-seeking. Stigma around mental health difficulties and suicidality have been identified as possible barriers to help-seeking (Goldsmith et al., 2002; Knaak et al., 2017; Reynders et al., 2014). Participants described issues around stigma from their recent experiences with mental health services:

> *I wasn't somebody who did things like self-harm…I didn't think I would receive treatment because I had no history other than depression…of any kind of crisis really.* (Participant 1).

> *It was probably not helped by my own family stuff but it always seemed very taboo which actually its not.* (Participant 2).
>
> *I kind of had just like a rule for myself and it was just don't mention any drugs because I … I felt like I was going to get better support if I didn't mention drugs.* (Participant 3).
>
> *I thought it was a good thing that they did call it a hospital…as opposed to … you know … nut house or whatever.* (Participant 5).
>
> *It was something that I didn't ever see myself relying on…especially not needing support from somebody who works in the mental health services.* (Participant 8).

Several "experts by experience" have identified some potentially stigmatising aspects of mental health care, for instance, Hemmingfield (2017) described being defined as a "psychiatric patient" and not feeling listened to whilst detained on an inpatient ward. Additionally, Deegan (2000) described witnessing restraints, seclusions and patients being forcefully given medication during her inpatient admission. Such environments can be distressing for individuals and may in fact be anti-therapeutic (Holmes, 2002), as well as potentially resulting in poorer outcomes and lower levels of subsequent engagement with services (Williams et al., 2014).

Participants described the positive impact that their experiences had had on their likelihood of help-seeking in future. Participants further explained that they were encouraged to contact mental health services if they experienced similar difficulties:

> *I think just being aware of what services are there…I didn't even know that you could have a care coordinator in the community I didn't know that…I didn't know about the helplines…so that is good.* (Participant 2).
>
> *My main concern is that if it happens again I know that I've got somewhere to come and I would be sort of… listened to not been turned away…because I've been turned away before.* (Participant 5).

> *It wasn't until I was in hospital that I even knew these services existed…if I had of known the support that was available I almost certainly would have reached out earlier…and I have learnt that I don't need to deal with things by myself…I now know there is a lot of help out there…and if I need to reach out to them I know they are there...if something terrible happens in the future.* (Participant 8).

Feedback from service users regarding their views of risk assessment (n=27) indicated that providing information about support available, including local services rather than only national helplines, would be useful for improving the risk assessment process (Graney et al., 2020). This is integrated as part of the stabilisation planning component of the CAMS intervention that helps service users identify internal resources to cope during crises as well as external support, including an emergency phone number which was the CRHT 24/7 number in the case of this research.

6.3 Summary of chapter

This chapter has provided an insight into service users' experiences of the CAMS intervention through interviews. In support of the hypothesis, themes from participant interviews indicate that the CAMS intervention is sensitive to service users' needs. Participants identified several positives of CAMS that they found favourable including a deeper understanding and management of suicidality, access to useful interventions indicated as part of the CAMS treatment plan and facilitating engagement with clinicians through the collaborative nature of the process. Participants highlighted some shortfalls of the current approach, such as the waiting time for treatment following inpatient discharge. It appears that the impact of this could be reduced with improved communication between inpatient and outpatient teams, as well as more intensive follow-up contact following the CAMS intervention prior to initiation of outpatient treatment.

Chapter 7: Research Question Five. Qualitative analysis of clinician interviews

This chapter explores the impact of the service improvement initiative and CAMS training on clinician confidence through semi-structured interviews (n=10). Themes from the interviews, analysed using an IPA-informed approach, highlight that clinicians valued the suicide-specific emphasis adopted throughout the CAMS intervention. The approach was associated with more effective engagement with service users and positive changes to wider clinical practice. Clinicians also reported feeling reassured and confident due to the supervision hierarchy embedded within the suicide risk triage model and an organisation-wide, collective responsibility for suicidality presentations. Confidence was also found to be bolstered as a result of increased theoretical knowledge of suicide risk and objective decision-making when faced with challenging cases. Issues relating to implementation of the research were identified, highlighting some of the operational difficulties faced when attempting to embed the triage model into routine practice.

7.1 Sample characteristics

Participants were four males and six females with between one and 30 years of clinical experience working in mental health services. Participants had a range of professional backgrounds including social work, nursing and counselling. Five worked for the CRHT, one in Liaison Psychiatry, two in acute inpatient services and one in IAPT services. One participant held a senior management position at executive level with a further two participants holding clinical lead roles; all three of these participants were part of the research project team. Six participants were fully CAMS-trained, two had completed their CAMS online training, one was a departmental champion and one was a level one clinician that used suicide risk triage regularly but did not have any training in the CAMS intervention.

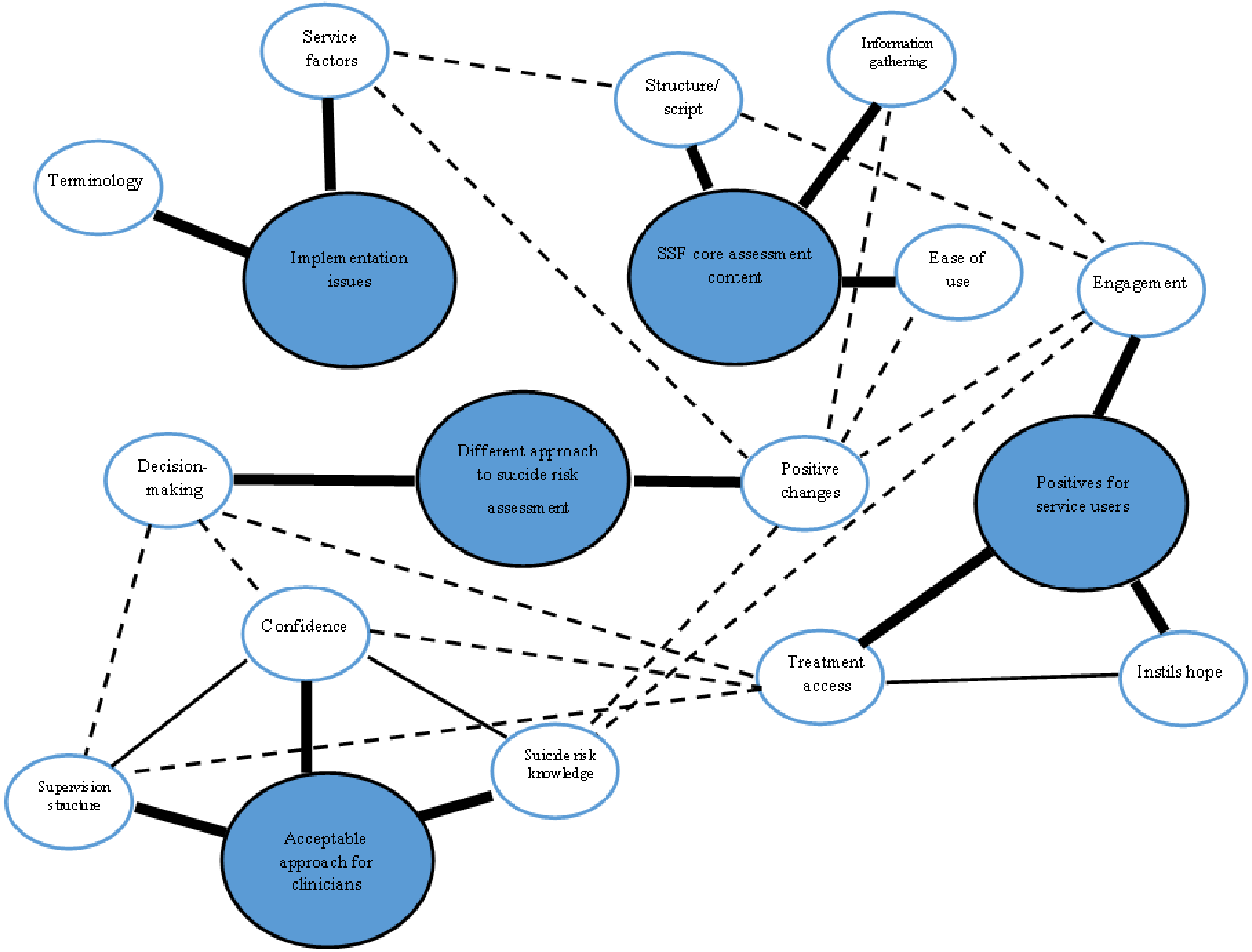
7.2 Themes from clinician interviews

7.2.1 Overview of themes

Five superordinate themes and 13 interrelated subthemes were identified from the analysis. Proposed relationships between themes are displayed in Figure 19.

Figure 19

Links between subordinate themes identified through clinician interviews



Solid lines represent links within the same superordinate theme, whereas dashed lines represent relationships across superordinate themes.

The themes are summarised in Table 24:

Table 24

Summary of themes from clinician interviews

Superordinate theme	Subordinate theme
1. Issues with implementation of the research project	• Organisational/service-related factors • Terminology
2. Content of the SSF core assessment	• Ease of use • Information gathering • Structured/scripted approach
3. Different approach to suicide risk assessment	• Positive changes to clinical practice • Improved decision-making
4. Positives for service users	• Access to treatment options • Facilitates engagement • Instils hope
5. Acceptable approach for clinicians	• Impact on confidence • Knowledge of suicide risk • Supervision structure

7.2.2 Issues with implementation of the research project

7.2.2.1 Organisational/service-related factors. It was evident that consistent implementation of the CAMS research protocols within and across teams was a key barrier in the early stages of the project. This mainly related to lack of understanding of suicide risk triage, communication issues and delays in training. Misconceptions about how and when to do a suicide risk triage, additional administrative procedures and the CAMS intervention itself were also key issues described by interviewees. The following quotes demonstrate these issues:

Some people have took to it better than others. (Participant 3).

I think some people try and view it as a risk assessment and its not just a risk assessment. (Participant 5).

When people used it initially we thought it was going to be a huge piece of work. (Participant 7).

A key issue for services was that established risk assessment protocols already existed in operational policy. Hence, a new approach caused confusion in terms of embedding within the risk assessment structure and complementing existing protocols. Evidence across interviews suggests that some of the issues identified during implementation of the CAMS research project were rectified over time:

I think some staff maybe were off when we were initially doing all the training… and learning about it… then we've had a lot of new starters as well so that kind of impacted… but I haven't really had a lot in terms of helping put triages on the system now… I just check it to make sure that it is inputted correctly. (Participant 1).

Its not happened to me but there's only three champions and if they're not necessarily available because of training commitments or you know annual leave that sort of thing…. but I also know that it's very well reinforced that if you can't get hold of the champions then you would contact the crisis service anyway so there is always that back up. (Participant 9).

I think on the whole it has been really well received. (Participant 10).

A key challenge for organisational change in mental health services, particularly acute inpatient areas, appears to be frequent changes to policy and practices, with nursing staff expected to adapt quickly to new ways of working despite little time to plan effectively (Laker et al., 2014). This is supported by a statement from Participant 7, *"change is difficult especially within healthcare".* Research conducted by Benn et al. (2009) highlighted that staff in direct care roles may be more resistant to change than management as they are typically less involved in the planning process. This may reflect the traditional "top-down" approach associated with organisational change in the NHS, whereby those in leadership roles dominate change rather than collaborating with employees at all levels (NHS Institute for Innovation and Improvement, 2009). The monthly departmental champions meetings as part of the research project aimed to mitigate this impact by ensuring clinicians across the organisation had a forum to raise any concerns or issues that they had with the implementation process.

Interviewees described the additional support required from the research team during implementation, for example, Participant 1 stated that *"a lot of input"* was needed. At the time of interviews, it appeared that this was an ongoing process:

> *If you'd have asked me at the beginning when everything would have been a negative {laughs} because I didn't understand it fully…but now I understand it a lot better I think it's quite a useful tool.* (Participant 1).
>
> *I think there's still a bit more joining up that needs doing.* (Participant 5).
>
> *I've realised it's just a form that I have to input…seeing it as helpful rather than a problem.* (Participant 6).

These statement reflect a positive shift as clinicians developed a better understanding of triage and the CAMS intervention, although it appears that communication across terms in terms of *"joining up"* still needed to be addressed.

7.2.2.2 Terminology. Terminology around suicide risk triage and CAMS was consistently raised as an issue across interviews:

> *At that moment in time that plan is appropriate to meet their needs so you do that then apparently it's not because they need further CAMS whilst they're an inpatient so it's a little bit misleading that bit…but I think that's just a technical thing.* (Participant 4).

I need to be using it more so that in my head I've got a clear understanding … sometimes it's still a bit like… foggy areas. (Participant 6).

I'm still not quite sure about the choice of decision outcome on the triage form… (Participant 9).

I do think some of the main areas…it takes a lot to get. (Participant 10).

Research undertaken by NHS Improvement (2018b) highlighted that excessive use of jargon and acronyms was one of the key barriers to effective communication between service users and healthcare staff. The above quotes highlight that further clarity was needed around certain aspects of the research project. These issues were continually refined through departmental champion meetings, training sessions and informal drop-in time offered by the research team.

7.2.3 Content of the SSF core assessment

7.2.3.1 Ease of use. Interviewees commented on the value of the CAMS intervention in their clinical practice. In particular, interviewees liked the simplicity of the tool:

I would say it's a really simple tool to use. (Participant 2).

It's so simple but you know it's brilliant. (Participant 4).

These statements reflect the design of the CAMS intervention as a tool that can be quickly administered and requires relatively little training (Jobes, 2016). Participants commented on how this had benefits for wider clinical practice, stating:

It kind of helped me broaden the questions that I ask really. (Participant 3).

I use self rating a lot more. (Participant 5).

Despite the simplicity, participants also commented:

You've got to be careful to not be too focused on your paperwork and forget that there's a person sat in front of you. (Participant 2).

When you're trying to manage workload and things like that…it can be quite labour intensive. (Participant 8).

This emphasises the importance of collaboration with the service user to ensure that their narrative is central to any decisions made about their care (NCISH, 2018). Ensuring that there is a shared decision-making process is a critical element of inpatient mental health care and is likely to be conducive to positive patient outcomes (Staniszewska et al., 2019).

7.2.3.2 Information gathering. Interviewees expressed how the CAMS intervention helped with gathering detailed information about the factors implicated in the individual's suicidality:

You're really going into that in-depth assessment. (Participant 2).

It got to the real crux of everything with him. (Participant 6).

There's no unknown…we're not guessing. (Participant 7).

I have found it quite helpful in terms of really getting to the… you know the nitty gritty of it I would say you know the bare bones of what people have done why they've done it their plans around doing it and also looking at what you can do to resolve that…because I think a lot of the time people haven't even thought about it themselves so it gives you a nice framework to properly explore it. (Participant 8).

This highlights the objectivity in terms of gathering information about suicide risk factors that is complemented by an understanding of suicidality from the individual's own perspective, rather than that of the assessing clinician (Jobes, 2016). Gathering detailed information about suicide risk is not only important for defensible practice, but also as a means of reference for the clinician in their care of the patient (Shea, 1999; Weber et al., 2017). As such, the CAMS intervention may also be useful as all information is recorded on one form.

7.2.3.3 Structured/scripted approach. A recurrent theme for interviewees was an appreciation of the structure of the SSF core assessment:

The whole scripted kind of element of it I like. (Participant 3).

The suicide status form when we use that…it gives a non-interpreted version of the person's own truth. (Participant 5).

It helps with asking the difficult questions in a structured way. (Participant 7).

It has been really really positive because it doesn't really allow that wiggle room whilst other tools and things have done. (Participant 10).

Given the considerable pressure on clinicians to assess suicide risk effectively, often within time constraints, it is useful to have measures that gather detailed and relevant information in an efficient manner (Lotito & Cook, 2015).

7.2.4 Different approach to suicide risk assessment

7.2.4.1 Positive changes to clinical practice. Interviewees reported that they had noticed changes to how they approached suicide risk assessment since the start of the research project. Several clinicians explained the positive changes to their clinical practice:

It has helped me broaden … the questions that I ask and really kind of given me a few more ideas as to how to get to the bottom of what's happening for people. (Participant 3).

I try not to use my interpretation of the discussion as much as I can…I can later give an analysis and my view of the conversation but I try and use self-rating and self-description of the issue much more. (Participant 5).

Helping you feel comfortable to directly ask about suicide…I think that's the crux. (Participant 7).

It gets you thinking about suicidality in a way that you wouldn't…you know like in that it really does drill down into it. (Participant 8).

The CAMS system really gives that reassurance that it's not just me that's making these decisions…other people are involved in that process and there's a collective responsibility there. (Participant 9).

It helps me to teach others around the importance of asking what reasons have you got for living what is there out there for you…some of the questions which can give you an idea as to…what the person's got left in their life. (Participant 10).

These statements suggest that CAMS training has a positive influence on the types of questions asked about suicidality, encouraging a suicide-specific focus during the assessment process. It is possible that a direct approach to addressing suicidality is favoured by service users. In an online survey regarding experiences of risk assessment (n= 42), service users identified that they would benefit from clinicians asking directly about suicide and doing so in a confident manner (Graney et al., 2020), although selection bias was acknowledged given that the study was only accessible online. Evidence from a meta-analysis of 18 studies highlighted that asking directly about suicide risk did not increase the likelihood of suicidal ideation or behaviours (Blades et al., 2018), although these studies did not involve clinical samples.

Participants further explained the improvements observed in terms of reflecting on clinical decisions:

The paperwork became more important than the patient and your plan…and I'd end up telling people you need to do this you need to do this you need to do this…so actually reflecting on what you've done I think is a good thing…I think in that way it reminds me to be a bit more reflective. (Participant 4).

I would say it has definitely made me think twice about…not the treatment or the support that I offer but the way in which I ask people the questions… and the comfort to be able to say you know let's talk about suicide. (Participant 7).

Some clinicians commented that CAMS training had helped positively shape their interactions with service users:

When people present and say they're suicidal you know in your head… I suppose you're really armed in your head with all the questions you ask on a CAMS. (Participant 2).

People tend to focus on… the reasons to end their life they don't really look at… the reasons why they might want to live. (Participant 6).

The ability to differentiate between different levels of severity of suicide risk emerged as a positive change for clinicians:

We're more able to identify possibly the nuances between self-harming behaviour help seeking behaviour and suicidality…and then target resources to the people that are identified as actively suicidal. (Participant 5).

We do the triage system and I like how it differentiates and distinguishes between…I like how it sets out to distinguish between people who are displaying worrying self-harm behaviour and people who are absolutely suicidal…so I think it's good in that respect. (Participant 8).

It is important to recognise that, as outlined in the reflexive statement (see Section 4.4.7), the support from senior managers in terms of "championing" the intervention may also have influenced positive reactions in terms of clinicians' own appraisals of the CAMS intervention.

7.2.4.2 Improved decision-making. Interviewees expressed positive changes to their decision-making skills and objectivity when assessing suicide risk:

It gives you a little bit more insight I think into how to manage the aspects of suicidality. (Participant 1).

As professionals we make assumptions about what that means based on our background and our understanding…this gives you the opportunity to have a facilitated discussion with a service user about their perspective. (Participant 5).

It gives you the confidence to work with your decision making and to feel comfortable with it because you've got it there in black and white you're using that formulation…you're drawing a conclusion and a care plan based on what you've got in front of you. (Participant 7).

Even though I've got various different experience in the past this is my first qualified nursing job so to have that kind of… that differentiation because it is quite important you know when you're making decisions. (Participant 8).

This suggests that CAMS training increases clinician confidence around decision-making and implementation of best practices for managing suicide risk (LoParo et al., 2019).

7.2.5 Positives for service users

7.2.5.1 Access to treatment options. Interviewees recognised the value of access to targeted treatment options for service users following a CAMS assessment:

I think the main strength of it is how quick we can access what they need…that's been the best thing about it… so we can literally assess somebody and they need psychology and they are having their first session the next day… so you feel more confident to open that box because that person is going to be getting that help straight away. (Participant 2).

It kind of opens up doors for fast tracking options… so you can actually make more of a better plan… specifically to what's happening for them. (Participant 3).

There's always a resource available to support that plan. (Participant 5).

We've got trauma therapy and stuff like that and … that people can access these things … to ease that pain … and they can move forward hopefully. (Participant 6).

> *It's very much been about historically getting people into hospital to keep them safe…but I'm seeing changes...* (Participant 7).
>
> *They fast tracked her straight through to psychology…in another trust without this process you might be kind of stuck as to what you would do.* (Participant 8).

Offering rapid access to outpatient evidence-based treatments was viewed as a key benefit of the CAMS research project. It is possible that lack of clarity and knowledge around effective treatments for suicidality may lead to an overreliance on more restrictive clinical practices such as inpatient admission (Jobes, 2017). It is argued that the optimal approach to a tiered system of treating suicidality is to provide targeted interventions appropriate for the level of suicide risk (Jobes & Chalker, 2019). This is particularly pertinent given the evidence suggesting that inpatient hospitalisation may actually increase suicidality for some individuals, relating to adverse factors associated with admission such as stigma and feeling frightened or trapped (Large et al., 2014).

7.2.5.2 Facilitates engagement. Another benefit evident from the interviews was that using the CAMS intervention helped facilitate engagement with the service user. Participants described how service users had engaged with the intervention:

> *I like the way that it helps people to open up…and the feedback that I've had from service users is that although they've not really known what it is at the point of doing it they've seen the value of it… which is fair enough because it's not something you come across in everyday life.* (Participant 7).
>
> *I've been working in suicide risk assessment for a long time…there's depression there's suicide there's hopelessness there's problem solving… and all of a sudden to bring that into one sort of tool if you like it really gets the service user engaged… I think has been really really rewarding.* (Participant 10).

On the contrary, participants described some of the issues with undertaking the CAMS intervention with some service users on the basis of level of engagement and/or distress:

It's hard if you've got someone who's not a talker that's really closed… but again its about we can only help you if you speak to us and try and word it in a way that they can relate to I suppose. (Participant 2).

What I would say is a difficult aspect is when we're dealing with someone and I don't feel as though they're give you honest responses. (Participant 2).

If you're assessing somebody with like a…with either a diagnosis of personality disorder or somebody you feel may display sort of personality disorder traits maybe emotionally dysregulated and things like that… there's always a question of whether a CAMS is appropriate in that situation. (Participant 8).

If somebody is potentially over scoring because of that level of distress it can… I think it can lead you down the wrong avenue to an extent if somebody's dysregulated. (Participant 8).

Lack of engagement from individuals presenting to services with acute suicidality has been identified as a barrier to effective treatment (Lizardi & Stanley, 2010). In particular, males experiencing suicidality may find it difficult to engage with services, reporting key barriers such as stigma surrounding help-seeking and societal and self-appraisals of masculinity (Jones et al., 2019).

7.2.5.3 Instils hope. A positive aspect of the CAMS intervention described by the interviewees was instilling hope:

We can work alongside them continuing that positive approach and saying well you know this is in place now so you know that things are improving…and you can see the positive impact it can have. (Participant 1).

When you say you know…things are going to be moving forward for you…it's like they can see there is a light at the end of the tunnel. (Participant 5).

It's like a lightbulb moment for the service user when they're in that assessment and it's kind of like they… they get an understanding of…it's not that I want my life to end...and I think what we do helps that. (Participant 6).

You can see the impact it has on that individual…knowing that the clinician has really understood them. (Participant 10).

It has been proposed that hopelessness is a key cognitive process implicated in suicide risk (Abramson et al., 2002; Wenzel & Beck, 2008) and is a predictor of later suicide in clinical populations (Beck et al., 1989; Brown et al., 2000). Consistent with the qualitative feedback outlined here, RCTs demonstrate that the CAMS intervention can reduce hopelessness (Comtois et al., 2011; Ryberg et al., 2019).

7.2.6 Acceptable approach for clinicians

7.2.6.1 Impact on confidence. Interviewees expressed some of the pressures when managing suicide risk relating to confidence:

I think you always have some confidence issues when dealing with people that are extremely suicidal. (Participant 1)

When you're dealing with someone who's truly suicidal it's scary. (Participant 2).

I almost feel that sometimes when you're sat with someone who is feeling so…so low and having these suicidal thoughts and thinking about ways that they can hurt themselves I never thought that that would be me having to make those decisions. (Participant 9).

CAMS training appeared to have a positive impact on clinician confidence, as illustrated in the following quotes:

I suppose you feel more confident… and more skilled if you like to sort of establish if you think someone is truly suicidal…it improves your confidence because you feel like you know what you're talking about. (Participant 2).

I think I was confident anyway but I'm able to justify my confidence. (Participant 5).

It has definitely improved my… confidence not just to assess risk and ask the difficult questions and challenge in a … probably a more positive way … rather than I guess you would maybe see it as a critical way if I look back to my previous practice…the process of learning about the tool and working with the team that developed the tool has definitely improved my confidence. (Participant 7).

It does help with confidence and decision-making specifically…when sometimes you do question yourself quite a bit. (Participant 8).

Evidence suggests that CAMS training can improve clinician confidence, with elevated confidence sustained at three-month follow-up (Schuberg et al., 2009), as well as having a positive impact on evidence-based practices (LoParo et al., 2019).

7.2.6.2 Knowledge of suicide risk. Interviewees explained that their knowledge of suicide risk had improved since implementation of the research project:

It gives you a little bit more insight I think into how to manage the aspects of suicidality. (Participant 1).

It's opened my eyes a little bit as to what more there is to look at when you're engaging with suicidal patients. (Participant 8).

One of the things that I've found quite interesting is that there's often a distinction between having thoughts of wanting to escape or wanting to change the situation or their life that they're in at the minute…not necessarily actually feeling suicidal but they often… often clients struggle with that kind of distinction. (Participant 9).

CAMS has so many things around it which helps with…understanding the phenomenon…it was clear that there was something about this which was resonating. (Participant 10).

Research suggests that training to improve knowledge of suicide can be of benefit to clinician confidence (Oordt et al., 2009). It is likely that a range of personal and professional factors may impact on confidence when working with suicide risk including experience of working with suicidality, attitudes towards suicide and expectations of potential outcomes (both positive and negative) for the individual (Neimeyer et al., 2001; Rothes et al., 2014; Roush et al., 2018; Scheerder et al., 2010).

7.2.6.3 Supervision structure. The supervision structure associated with suicide risk triage appeared to be a positive component of the research project. Clinicians reported feeling reassured and supported:

Knowing you've got the support and you can come and have supervision and find out how to kind of manage that particular patient because they'll have obviously done their CAMS assessment and have an understanding… it's easier to be able to go to somebody now to be able to get more information and work alongside them. (Participant 1).

It's also improved my confidence in … being able to supervise others taking risk so… talking through and helping them to understand when I don't deem there to be a life threatening risk…when it may appear unclear to the junior members of staff or people that don't work with the tool all the time. (Participant 7).

Once you're in the CAMS process having that kind of supervision structure is very helpful and it kind of… it helps you get through a lot of the… not the bureaucracy but some of the arguments that you can sometimes have in terms of if you're admitting or you're trying to get stuff in place. (Participant 8).

> *The fact that we've got these CAMS champions and that you can get hold of people when you need them is really good…it's good for me as a professional…as a clinician to be able to get that for myself and the emotional impact that that has.* (Participant 9).

Although actuarial tools derived from the evidence base can support identification of common suicide risk factors, decision-making still relies heavily on subjective clinical judgement (Bouch & Marshall, 2005). The potential burden of such a task may explain why interviewees described the supervision structure as an advantage as it provided a framework for clinicians to share ideas and responsibility with more senior colleagues:

> *To ask without feeling stupid which…I think sometimes when you're viewed as somebody that's senior…you've got twelve years experience of doing this so you don't actually sometimes ask anyone about your plan…it does help you with that.* (Participant 4).

> *I think I definitely feel more confident knowing that there's a structure there and for me having a structure is really important…having that process that's very clear and it's not convoluted it's just three or four stages that you go through…I think it's just you've got that framework as a clinician that is there supporting you.* (Participant 9).

Confidence in decision-making around suicide risk may be linked to clinical experience, although the accuracy of such decisions may be dependent on other factors including professional values (Hay et al., 2008), individual stress levels (Regehr et al., 2016) and the anxiety-provoking nature of such high impact decisions (Jobes, 1995).

Interviewees also commented on the utility of the triage supervision structure:

> *It gives you more of a structured pathway... making me feel a bit safer… it's a sort of little safety net.* (Participant 1).

> *It gives more of a formal network to check things out with.* (Participant 5).

> *When you have supervision and can understand it better… they can help you work out what extra information you need and you have someone to bounce ideas off.* (Participant 9).

This suggests that the shared organisational responsibility component of suicide risk triage was reassuring for clinicians. Supervision has been emphasised as a key aspect of improving clinician confidence when working with suicidality (Rudd et al., 2008). A questionnaire-based study by Wheeler et al. (2004) of British Association for Counselling and Psychotherapy accredited courses found that training providers valued one-to-one supervision with trainees as the most crucial element in the development of suicide risk assessment skills. Peer supervision has also been recommended as a useful strategy for enhancing confidence in suicide risk assessment, giving clinicians an opportunity to explore the rationale for their decision-making with colleagues (McLaughlin et al., 2014). This was a key goal of the supervision hierarchy and interview findings indicated that having a framework of support had a beneficial effect on reassuring clinicians and improving confidence.

7.3 Summary of chapter

Key themes emerging from the interviews indicated that CAMS training enhanced clinician confidence, supporting the hypothesis. This included improved knowledge of suicidality presentations and a structured, suicide-specific assessment process which were linked to positive changes to clinical practice and objective decision-making when assessing and managing suicide risk. Further positive outcomes in relation to interactions with service users were reported, particularly regarding patient engagement although it was acknowledged that the CAMS intervention was not appropriate to use with all individuals. Participants expressed that the treatment component of the CAMS intervention met the needs of service users. Several organisational issues around implementation of the research protocols were highlighted, although these appeared to relate more to the earlier stages of the project. Wider benefits of the suicide risk triage system were also observed, particularly in relation to the supervision structure, which further instilled confidence in clinicians when making challenging clinical risk decisions.

Chapter 8: Discussion

The final chapter summarises the key findings from the thesis, drawing comparisons between current research and results of similar studies within the field, including an exploration of how the triage and CAMS cohort outcomes may inform the literature. Limitations of the research are outlined, including an acknowledgement of potential biases arising from the study design. Several recommendations for future research within the field are made and the clinical implications of the findings are discussed. It is further argued that the relatively low incidence of suicide within research timeframes warrants a broader focus on suicidality as a target of intervention, rather than suicide in isolation. A “spectrum model” of suicidality that could be tested in clinical settings is presented as a potential approach if suicidality is to become the primary focus for suicide prevention research. Finally, a series of standards for those working within the NHS and suicide prevention are postulated in order to facilitate greater cohesion across the research undertaken by all stakeholders.

8.1 Summary of findings

8.1.1 Research Question One: What is the effect of an open-access systems-level suicide-risk triage model on future service utilisation?

Hypothesis: Measures of engagement with services, Crisis/Liaison Psychiatry presentations and mental health hospital admissions will be different pre and post suicide risk triage.

The hypothesis was supported. Compared with six-month pre-triage data, Crisis contacts, Liaison Psychiatry contacts, number of inpatient admissions and duration of admissions (in days) were significantly reduced in the six-month post-triage period. In addition, attended appointments were significantly increased post-triage.

8.1.2 Research Question Two: What is the impact of implementation of the CAMS intervention for service users at high risk of suicide, in comparison with TAU for a historical matched control group, at six months post index Crisis assessment?

The CAMS and control groups were well matched in terms of pre-treatment demographic and clinical variables (age, gender, marital status, employment status, diagnosis and lifetime CRHT referrals), which was further supported by the regression analysis indicating that none of the matching variables predicted group membership. This indicates that PSM was an acceptable means of controlling for confounding variables as randomisation was not possible (due to ethical issues regarding suicidality research, see Section 4.5), and is consistent with a previous study of CAMS in an inpatient setting that used PSM (Ellis et al., 2015).

Several significant findings were observed in relation to between-group analyses that will be outlined below.

8.1.2.1 Hypothesis One: *Crisis/Liaison Psychiatry presentations will be different for the CAMS and control groups at follow-up.*

Hypothesis One was partially supported. There were no differences between the CAMS and control cohorts in terms of repeat presentations to Liaison Psychiatry, however, the CAMS group had significantly less repeat presentations to Crisis services at follow-up than controls. This was despite the fact that CAMS participants had a significantly greater amount of Crisis input in the 12 months prior to study entry.

Though the current research found that the CAMS cohort had significantly less participants with one or more Crisis contacts at six-month follow-up, the mean number of hours for these participants was approaching significance, with a greater number of Crisis hours for the CAMS cohort compared with controls (M= 3.93 and M= 2.07 hours, respectively). This may be explained by a suicidality relapse requiring intensive CAMS intervention work over several sessions.

It is possible that the pattern of Crisis contacts in the 12 months prior could be a random effect of the different time periods of presentation for CAMS participants (2018-2020) compared with control participants (2013-2018). It is possible that greater public awareness of help-seeking and improved access to healthcare services may explain this effect. Evidence suggests that suicide prevention media campaigns may have a positive effect on help-seeking (Pirkis et al., 2019), although this effect may be more pronounced for certain types of help-seeking, such as telephone support lines (Bossarte et al., 2014; Jenner et al., 2010; Oliver et al., 2008). A detailed analysis of the reasons for increased Crisis input 12 months prior was not in the remit of this thesis.

8.1.2.2 Hypothesis Two: *Home treatment contacts will be different for the CAMS and control groups at follow-up.*

Hypothesis Two was supported, with the CAMS participants significantly more likely to have contact with Home Treatment than controls, although there were no significant differences in terms of mean hours of input provided. Such a finding is likely to be the result of the intensive nature of the CAMS intervention, which targets suicidality until abated via regular Home Treatment team tracking and was not a component of the historical TAU.

8.1.2.3 Hypothesis Three: *Community mental health input (in terms of CPA hours) will be similar for the CAMS and control groups at follow-up.*

Hypothesis Three was supported, with no significant differences between the two groups in terms of CPA hours during the six-month follow-up. The CAMS intervention forms part of the CRHT service, whereas CPA input is provided post-crisis and through secondary care services. Thus, the need for CPA input would remain similar for both groups due to matching for clinical severity and ongoing mental health need. At the commencement of CRHT input, both groups required a similar level of CPA input at Month 1, averaging 2.5 hours for CAMS participants and 2.9 hours for controls, which had reduced by Month 6 (1.5 and 0.9 hours for CAMS and control participants, respectively). Although control participants had a greater average reduction in hours from Months 1 to 6 (two hours compared with one hour for the CAMS group), this difference was not statistically significant (p=.117).

8.1.2.4 Hypothesis Four: *Mental health hospital admissions will be similar for the CAMS and control groups at follow-up.*

There were no significant differences between groups during the six-month follow-up. Four CAMS participants were hospitalised a total of five times, compared with eight control participants hospitalised a total of eight times. The average duration of admission was similar across both groups, although two control participants had particularly long admissions (50 and 55 days).

8.1.3 Research Question Three: Do CAMS SSF core assessment ratings reduce over the course of the CAMS intervention?

Hypothesis: For those individuals undertaking the CAMS intervention, the six CAMS SSF core assessment constructs will reduce significantly from the initial SSF to final session.

The hypothesis was supported, with significant differences observed between pre and post-SSF core assessment scores for all six constructs (psychological pain, stress, agitation, hopelessness, self-hate and overall risk).

8.1.4 Research Question Four: Do service users find the CAMS intervention sensitive to their needs?

Hypothesis: Elements of the CAMS intervention including a suicide focus, collaboration and individualised treatment planning suggests that it will be sensitive to service user needs.

The results indicated that, in the main, service users' experiences of the CAMS intervention and mental health services more broadly, was positive. In support of the hypothesis relating to the CAMS intervention, service users attributed their positive experiences to improved management of suicidality, targeted treatment planning and their therapeutic relationships with clinicians. Service users also identified the impact of waiting times, poor communication of follow-up care and barriers to help-seeking.

8.1.5 Research Question Five: Does suicide-specific training, and in particular CAMS training, impact on clinician confidence?

Hypothesis: CAMS-trained clinicians will report feeling more confident when assessing, managing and treating suicide risk.

The results of the qualitative data analysis from clinician interviews supported the hypothesis that CAMS training improves clinician confidence. Participants attributed this to improved knowledge of suicide risk, including delineations between life-threatening behaviour and self-harm, as well as the support from senior colleagues through the supervision structure providing advice and reassurance to experienced and junior clinicians alike. Participants illustrated the positives of suicide-specific training, as well as identifying some of the organisational barriers to implementation of a systems-level suicide-risk triage model.

8.2 Comparisons with previous studies

The findings from Research Questions Two, Three, Four and Five, which are examining the utility of the CAMS intervention, will be compared with the existing literature. Where other studies not utilising CAMS are relevant to the topic, these will also be discussed in this section. Parenthetically, Research Question One considers a unique model, which has not previously been tested.

8.2.1 Research Question Two

A meta-analysis of seven trials of the CAMS intervention suggests that CAMS is more effective in terms of reduced suicidality compared with TAU, and that treatment satisfaction is high (Swift et al., in press). The present study is most methodologically similar to a CAMS study with outpatients (Jobes et al., 2005), which employed a retrospective design with archival medical record data to compare participants undergoing therapy, primarily CBT, with or without adjunctive CAMS intervention (n=25 or n=30, respectively). Arguably, the severity of suicide risk may not have been as high in this study compared with the current research due to use of psychotherapy cases rather than CRHT presentations. Nonetheless, this study assessed service utilisation of both groups over a six-month follow-up and found that CAMS participants had significantly lower numbers of medical (non-mental health) appointments than controls. Consistent with the findings in the current research, there were no significant differences between groups in terms of number of inpatient admissions or duration of admission. Post-hoc analyses indicated that CAMS participants had significantly less ED visits and time spent in ED appointments than controls. Although this finding was not replicated in this thesis, this may be due to the nature of the mental healthcare system in the USA where individuals experiencing mental health crises (including suicidality) are commonly assessed in the ED (Boudreaux et al., 2016; Miller et al., 2017). In the current research, Crisis and Liaison Psychiatry services received similar amounts of monthly referrals. Hence, the reduced Crisis presentations for CAMS participants may reflect a similar outcome to the difference in ED presentations found by Jobes et al. (2005).

A trial of army soldiers with suicidality (n=148) compared CAMS with enhanced TAU (Jobes et al., 2017). TAU was supplemented with components similar to those provided in the CAMS intervention, namely recorded treatment sessions, clinicians offering a weekly treatment session for a minimum of four weeks and extra clinical consultation (adjunctive to regular supervision). Although CAMS participants were significantly less likely to report suicidality at month three of the 12-month follow-up, there were no significant differences between groups in terms of ED or inpatient psychiatric admissions. The authors acknowledged that a 12-month follow-up may have been too short to determine any differential impacts of CAMS treatment compared with TAU, with other research of suicide-specific interventions undertaking longer follow-ups (Brown et al., 2005; Rudd et al., 2015). It is possible that the short follow-up of six-months reported in this thesis may not have been long enough to ascertain any potential differences in terms of mental health service utilisation.

CAMS participants were more significantly more likely to have Home Treatment contact at six-month follow-up than controls. It is unclear whether this pattern is due to an increased likelihood of engagement for CAMS participants given the acceptability of the CAMS intervention (Ellis et al., 2012), a greater level of need for intensive support or that CAMS was embedded within the CRHT service. However, mean hours of Home Treatment input were not significantly different to the control group, though higher in the latter (M= 4.92 and M= 6.13 hours, respectively). In a feasibility trial of next-day appointments, Comtois et al. (2011) reported that individuals presenting with high levels of suicidality required intensive input from services, including long-term case management and for non-mental health needs. The authors recommended that it would be more effective to develop a model co-ordinating the next-day appointments with longer term follow-up care. Such a model was evaluated in this research and may explain the increased number of CAMS participants requiring Home Treatment input, a necessary component whilst CRHT clinicians supported the transition into other community-based services.

The level of CPA input was less than one hour a week for both cohorts during the six-month follow-up and 54.2% of participants had no CPA input at all during this period. This suggests a relatively low intensity of input, however, it is unclear how this relates to service uptake rather than clinical need, clarification of which was beyond the scope of this research. The challenge of investigating this issue is highlighted in a review of 14 studies of patient disengagement from mental health services where the heterogeneity of findings estimated this occurred anywhere between 4-46%, primarily due to a lack of a standardised definition or measurement of disengagement (O’Brien et al., 2009). Anecdotally, NCISH (2019) identified that 13,806 individuals who died by suicide (27% of all suicides) between 2007 and 2017 had had contact with mental health services in the 12 months prior to death, though a shorter time period than this may elucidate whether mental health contact had a direct association with suicide. Without prospective and more frequent active monitoring, the association between mental health need and suicide cannot be accurately determined. Indeed the 73% cited as not having contact with mental health services does not exclude prior mental health needs and/or disengagement from help-seeking or other barriers (Jones et al., 2019).

The findings from the current research suggested that, for those individuals undertaking the CAMS intervention, female participants had a higher number of hours of CPA input during the six-month follow-up than males. A meta-analysis of CAMS intervention studies indicated that CAMS may be more effective for females than males (Swift et al., in press), although it is unclear whether this is related to greater service uptake by the former.

Evidence suggests that males are more likely to disengage with healthcare services prior to suicide whereas females more frequently help seek (Biddle et al., 2004; Leavey et al., 2016; O'Neill et al., 2014; Stene-Larsen & Reneflot, 2017). Interestingly, 57.7% of CAMS participants in the current research project (that had help sought) were males. This may be due to the inclusion criteria of life-threatening behaviour for the CAMS cohort, as the literature indicates that males tend to utilise more lethal methods of suicidal behaviours than females (Hawton, 2000).

8.2.2 Research Question Three

The CAMS tracking data using pre and post-SSF scores is consistent with previous studies demonstrating the effectiveness of the CAMS intervention in both inpatient and outpatient settings. A study of 106 students receiving outpatient treatment at a University Counselling Centre indicated that, where suicidality was resolved through treatment (n=55), there were significant decreases across all six SSF constructs from pre to post-treatment (Jobes et al., 1997). This has also been replicated in a pilot study (n=20) of CAMS in an inpatient setting for all six SSF core constructs, as well as suicidality as measured by the BSS (Ellis et al., 2012). Further, an archival study using data from an emergency respite care centre providing short-term, recovery-focused support for individuals experiencing psychological crises (n=61), found a statistically significant reduction in all six SSF core assessment constructs from initial to outcome treatment session (Graure et al., 2021). Regression analyses indicated that initial session self-hate rating was a significant predictor of change in self-reported suicide risk over treatment. Further, stress and hopelessness predicted the rating of suicide risk at the final CAMS outcome session. The authors acknowledged that the cross-sectional and non-randomised nature of the study precluded the ability to determine causal reasons for the reduction in SSF core construct scores.

8.2.3 Research Question Four

Using an online survey, Graney et al. (2020) investigated service users experiences of risk assessment in mental health services and found that broader factors such as therapeutic relationships, a personalised approach to assessment and the clinician's understanding of risk, were more important than the risk assessment tool itself. Although based on a small convenience sample (n=27), 12 service users felt that they were not listened to and indicated a preference for a direct focus on suicidality during the risk assessment process. Nine service users were unaware of risk assessment tools being used, despite 90% of clinicians (n=262) reporting using such tools in their clinical practice. Some of these findings are consistent with the current study, for instance, some service users explained that more clarity regarding the purpose of the CAMS intervention would have been useful, and a minority reported that greater consideration of their mental state at the time of assessment was warranted. One of the themes that emerged was the direct suicide-specific focus during the CAMS assessment that encouraged honesty. Honesty is a core component of the CAMS philosophy, with the clinician overtly acknowledging that suicide is an option for the individual whilst also presenting the alternative options (Jobes, 2016). This was considered a positive aspect of service user experience with regards to understanding and managing their suicidality. Service users highlighted the individualised nature of the CAMS intervention, owing to the in-depth assessment process that takes into account contextual and historical factors which may not always be explored in detail with checklist-style approaches.

In a qualitative study of 17 service users considered a risk to self or others, 14 of whom presented with suicidality, delayed support for mental health crises when living in the community was considered a key issue for risk management (Langan & Lindow, 2004). Participants in the current research reported similar issues in relation to timely access to care, particularly following inpatient discharge, and the impact of waiting times for outpatient follow-up care on their mental health, although all service users reported that the treatment they received as a result of the CAMS intervention was beneficial for their needs.

A trusting relationship between clinician and service user i.e. a strong therapeutic alliance, has been emphasised as an important aspect of suicide risk assessment (Cole-King et al., 2013) and was reported as a beneficial aspect of the CAMS intervention. Previous studies are consistent with this finding. A systematic review of 12 qualitative studies (combined n=308) identified that connecting with others, including healthcare professionals, was important for effectively treating suicidality (Lakeman & FitzGerald, 2008). A qualitative analysis of 49 individuals completing the CAMS intervention asked the question, "Were there any aspects of your treatment that were particularly helpful to you?" (Schembari et al., 2016). The greatest proportion of answers related to components of therapy including the treatment received, the therapeutic process as well as being able to discuss their suicidality openly. In the current research, participants reported that the relationship with the CAMS clinician(s) was a key component of engagement with the intervention.

Participants highlighted the negative impact of waiting for treatment, with some experiencing a relapse in their mental health during this period. Extensive research of patient safety exists in general healthcare, however the research literature in mental health settings is sparse in comparison (Dewa et al., 2018) and even more so in relation to suicide prevention (Quinlivan et al., 2020). In a study of suicides during inpatient admission or shortly after discharge (n=76), 49% with a prior suicide attempt, 78% had denied suicidal ideation during their last contact with mental health professionals regarding suicide risk (Busch et al., 2003). O’Connor and Portzky (2018) emphasised the importance of long-term follow-up of high-risk groups as well as understanding acute suicide risk, for example, monitoring suicidality in the short-term following hospital discharge. Evidence suggests that suicide risk can increase during this period (Chan et al., 2016; Owens et al., 2002; Ribeiro et al., 2016), particularly in the first week post-discharge (Crawford, 2004; O’Connell et al., 2020; Qin & Nordentoft, 2005). Indeed, this was highlighted as an issue for participants, which indicates the utility of providing additional follow-up contact during this period.

8.2.4 Research Question Five

The findings from clinician interviews were consistent with several previous studies of CAMS training. Schuberg et al. (2009) conducted questionnaires with 165 clinicians working in Veterans Affairs mental health services pre and post CAMS training using Likert scales to explore anxiety and confidence levels when assessing suicide risk. The results demonstrated a significant reduction in clinician anxiety working with suicide risk following CAMS training and increases in confidence. Follow-up assessments with a subset of clinicians (n=36) showed that this significant increase in confidence was sustained at three-month post training. A trend towards decreased anxiety was observed but this was no longer statistically significant at follow-up, hence indicating the importance of continued training for individuals to refresh their knowledge of suicide risk and maintain increased confidence levels. Clinician responses to the question “What, if anything, would prevent you from using CAMS in your clinical practice?” indicated that ‘time constraints’ were an issue, which was also identified in the current research. However, clinicians explained that the negatives of the additional time required to undertake the CAMS intervention were offset by the benefits to the service user.

In an online survey of 120 clinicians, CAMS-trained clinicians reported moderate to high adherence to the CAMS philosophy that was consistent across disciplines and clinical settings

(Crowley et al., 2014). Clinicians reported feeling comfortable and confident that, with practice, they could successfully implement CAMS strategies, use CAMS with ease and felt that CAMS training positively impacted on their clinical practices. However, self-report data of behavioural change is not necessarily reflective of implementation of clinical practices in real-world settings (Beidas & Kendall, 2010).

Suicide-specific training has been linked to improved knowledge and competence when working with suicidal individuals (Ferguson et al., 2018; Jacobson, Osteen, Jones et al., 2012), although it is argued that competence and confidence are used interchangeably when in reality they are different constructs (Stewart et al., 2000). Research highlights that training in suicide prevention can improve confidence and perceived self-efficacy to carry out a role relating to suicide risk (Jacobson, Osteen, Sharpe et al., 2012; Matthieu & Swensen, 2014), however impacts on confidence may not be consistent or sustained without ongoing training (Botega et al., 2005; Pisani et al., 2011).

In a comparison of suicide-specific trainings, LoParo et al. (2019) evaluated the association between four different training types on clinician confidence and practices: CAMS, DBT, Assessing and Managing Suicide Risk (AMSR; Pisani et al., 2011) and Question Persuade Refer (QPR; Quinnett, 2012). The research, based on survey data from 137 clinicians working across three community mental health providers in the USA, indicated that those clinicians reporting greater confidence in their skills working with suicide risk were more likely to implement evidence-based clinical practices. CAMS-trained clinicians (n=47) were significantly more likely to use best clinical practices, such as accessing supervision and asking new patients about suicide risk, than those that were not CAMS-trained. The authors concluded that CAMS training was superior for encouraging the implementation of best clinical practice behaviours whilst recognising that the cross-sectional design of the study did not allow for conclusions around causality. Further, the findings were based on self-report data without evidence to corroborate the implementation of such practices in real-world clinical situations .The findings provide support for the utility of CAMS training for improving clinical practice and knowledge of suicide risk, which is consistent with the current research, although clinicians reported that confidence may vary depending on clinical experience.

In a mixed methods study of suicide risk by Graney et al. (2020), clinicians participating in telephone interviews (n=22) highlighted the importance of ongoing training and supervision for increasing confidence in risk assessment. This finding was reflected in the current research as clinicians reported feeling reassured and “safe” having a supervision structure in place to support with challenging risk decisions. Some clinicians found the CAMS intervention time-consuming to complete however this was offset by the wider benefits of using CAMS. Participants felt that the CAMS intervention enhanced the risk assessment process by facilitating communication with the service user in a way that helped develop a comprehensive understanding of the individual, rather than using a “tick-box” checklist approach.

8.3 How does the suicide risk triage data (Research Question One) inform theories of suicide?

It is postulated that the development of suicidality is a multifaceted interaction of environmental and trait-like variables, although the complex aetiology of suicide is not fully understood (Mann & Arango, 1992; O’Connor & Nock, 2014). Given the relatively low incidence of death by suicide within study timespans, it is argued that focusing on suicide prevention in isolation is too narrow and should extend to suicidality as a target of intervention (Jobes & Joiner, 2019). As such, the findings from this thesis will be applied to traditional theories that focus only on suicide, as well as more recent theories that attempt to account for suicidal behaviours.

Anecdotally from the suicide risk triage data, the most frequently observed triggers of suicidality and subsequent help-seeking were identified through the “primary reason for expressed suicidality” question. These were “self-harm/emotion dysregulation” (21.4%), “mild to moderate anxiety/depression” (18.5%) and “severe anxiety/depression/intrusive thoughts” (16.2%).

A tentative appraisal of the suicidality presentations from the risk triage on the four categories of suicide proposed by Durkheim (1897) have some relevance to the current research. In terms of egoistic suicide, occurring as a result of isolation from society, the “social isolation/poor social skills” and “bereavement/significant loss” categories from the suicide risk triage data are relevant, with bereavement potentially resulting in emotional detachment and feelings of loneliness (Buglass, 2010). 6% of individuals reported one of these reasons as primary “triggers” for suicidality, supporting the role of social and emotional conditions as possible factors implicated in suicide. More recent research suggests that social networks can have a negative impact on suicidal behaviours through social contagion (Mueller et al., 2015), as well as the protective effect proposed by Durkheim. The current research did not investigate the potential role of altruistic and fatalistic categories in relation to suicidality, although Durkheim’s categories related to suicide alone. Data relating to the Covid-19 pandemic regarding suicides attributed to the effects of social isolation may inform understanding of the anomic category (resulting from extreme or sudden change to societal circumstances) and, although beyond the scope of this research, may be an important aspect to consider as the pandemic abates.

There was some congruence for triage presentations with the suicide typologies outlined by Baechler (1979). The three escapist motivations for suicide (either to end intolerable pain, as a result of significant loss or self-punishment) were evident in the suicide risk triage data, with the “self-harm/emotional dysregulation” category comprising the largest proportion of suicidality presentations (21.4%). Thus, escapist categories appear to be relevant to understanding the aetiology of suicidality, and possibly suicide. Anecdotal observations suggest that the aggressive category may link to the "relationship breakdown/difficulties" (13.9%) reason for suicidality, although refinements to this category would be required to elucidate whether the individual's behaviour related to such emotions. There was little clinically observed relevance for the oblative (self-sacrifice) or ludic (as a result of risky activities) motivations for suicidality in the triage data, although this was not directly assessed.

From serious incident investigations in the locality, there was no evidence of any suicide pacts as proposed by Reynolds and Berman (1995), and coroner's verdicts confirmed this finding. Despite the topical review of six case studies by Griffiths and Mamun (2020) of couple suicide pacts as a result of issues related to the Covid-19 pandemic, this was not evident locally given that the research was being completed within the same backdrop. Further longitudinal data will determine whether there is an increase in suicide pacts due to the negative effects of the pandemic triggered by economic downturn, movement restriction (i.e. "stay at home" guidance) and the associated psychological impact.

The components of irrationality and disinhibition proposed by Baumeister (1990) were partially observed within the triage cohort, albeit through the "self-harm/emotional dysregulation" and "substance misuse/drug-induced symptomology" categories, accounting for almost one third of suicidality presentations. Disinhibition or intoxication were concomitant with suicidality as invariably the latter reduced following admission for detoxification. It is possible that the high expressed suicidality of individuals presenting with intense emotional dysregulation may be a subjective means to communicate and escape distress, as has been indicated through qualitative data exploring the experiences of individuals with psychosis and suicidality (Harris et al., 2020).

The triage “triggers” are validated by the proposed factors from the IPTS model (Joiner et al., 2005; Van Orden et al., 2010), that increase risk of suicidality, including social isolation, family conflict (i.e. relationship breakdown/difficulties) and physical health issues. Similarly, these “triggers” support the 3ST (Klonsky & May, 2015) in terms of the emphasis on interpersonal roles at Stage 2 of the model, i.e. “relationship breakdown/difficulties” and “social isolation/poor social skills,” although it is unclear whether such factors determined the extent of ideation.

8.4 How do findings from the CAMS experimental cohort inform theories of suicide?

The ratings of the five constructs of the SSF core assessment provide further elucidation of the theoretical models of suicide and suicidal behaviours. Intense psychological pain (or psychache), stress and agitation appear to be core components of suicidality for individuals presenting with life-threatening behaviours. High ratings of 4 or 5 out of a possible 5 were reported by 43 CAMS participants (83%) for psychological pain, 40 CAMS participants (77%) for stress and 36 participants (69%) for agitation, thus providing support for Shneidman’s cubic model (1987) as well as the IMV model (O’Connor, 2011; O’Connor & Kirtley, 2018). The IMV model informed the risk triage training in providing clinicians with knowledge of the transitional components from suicidality to suicidal behaviours and support with objective decision-making regarding suicide risk.

In terms of self-hate, 38 CAMS participants (73%) provided a rating of 4 or 5 out of a possible 5. Self-hate and the need to escape are consistently evident through CAMS research studies of suicidal individuals (Conrad et al., 2009; Jobes et al., 2009; Jobes & Mann, 1999). This provides support for the conceptualisation by Baumeister (1990) postulating that unacceptable perceptions and extreme negative views of the self can increase risk of suicide.

Consistent with cognitive theories of suicide (Beck 1967, 1996; Wenzel & Beck, 2008; Wenzel et al., 2009), high levels of hopelessness were evident in the CAMS group. 38 of 52 participants (73%) rated their level of hopelessness as either 4 or 5 out of a possible 5 rating. The high ratings of psychological pain and hopelessness also provide support for the 3ST (Klonsky and May, 2015), namely the first of three stages towards suicidal behavioural enactment.

The three subcategories of suicidal behaviour proposed by Nock, Borges, Bromet, Alonso, et al. (2008) in their international study (i.e. suicidal ideation, plans and attempts) are included in the CAMS SSF assessment (Section B) and appear to have clinical utility for delineating thoughts of suicide from intent. However, a lack of understanding as to the mechanisms linking the aforementioned categories to death by suicide is evident in the breadth of the theoretical literature.

8.5 Limitations of the research

The recruitment of 52 participants to the CAMS experimental cohort meant that the study was sufficiently powered to test the hypotheses. However, the incidence of suicide in the majority of research spanning several years, can be relatively low (Cooper et al., 2005; Franklin et al., 2017; Qiu et al., 2017), as is evident in this thesis, which is further complicated by delays in the UK when registering suicide as a cause of death (ONS, 2020). Hence, long-term follow-up studies are necessary to ensure adequate power. Further, in terms of the CAMS intervention, a 12-month (rather than six-month) follow-up may be more useful to see if the effects of the intervention are maintained (e.g. Comtois et al., 2011; Jobes et al., 2017).

A further limitation is the absence of randomisation to treatment groups, although PSM was considered the most effective way of finding an appropriate control cohort given the ethical considerations involved in withholding a promising treatment. In terms of the matching process, the findings indicated that the groups were relatively well-matched with regards to pre-treatment variables. However, significant differences were evident in terms of years known to mental health services, as well as Crisis input and inpatient admissions in the 12 months prior to the index Crisis assessment. Six CAMS participants had 5+ years involvement with services compared with none of the control participants. Inpatient admissions also differed significantly between the two groups, with 19 CAMS participants compared with one control participant having an inpatient admission in the 12 months prior. Nevertheless, a number of possible confounds including age, gender, marital status, employment status, diagnosis, lifetime CRHT referrals and previous psychological therapy were effectively balanced across groups, attesting to the extensive datasets within the electronic record system.

The cohort was from a locality with specific sociodemographic characteristics e.g. predominantly White British, high levels of deprivation and unemployment. As such, it is unclear whether the results are generalisable to different populations, although previous studies of CAMS indicate that the intervention is effective across a variety of clinical settings and cohorts.

Inclusion in the research relied on some degree of help-seeking/engagement from the individual to ultimately engage with mental health services. The research scope did not allow for the exploration of barriers to help-seeking for individuals presenting with life-threatening behaviours who refused involvement services. It is therefore unclear whether individuals who refused to participate differed from those that consented (n=10).

The study benefitted from a mixed methods approach, allowing for an in-depth understanding of service users' and clinicians' experiences of the CAMS intervention. Service users may have been more willing to respond to the invite to interview if they felt strongly about providing positive and/or negative feedback about their experiences (Sharma, 2017). Further, although the researcher attempted to contact all service users where six months had elapsed since the CAMS intervention for interview, there was a possible bias towards service users that were still under the care of mental health services as clinicians could facilitate contact with the individual. Thus, individuals that had a less positive experience of the process (and subsequently disengaged with services) may not have self-selected to participate in the interviews.

All clinicians that were approached for interview agreed to participate. It is recognised that an awareness of the purposes of the interview i.e. for this thesis, may have influenced the likelihood of positive responses, although the possibility of this was reduced through the use of an independent interviewer.

Finally, the data provided here in terms of the outcomes following the CAMS intervention and suicide risk triage are cross-sectional and do not infer causality. It is recommended that validation of this methodology precedes a potential multicentre RCT evaluating the CAMS intervention embedded within the suicide risk triage model.

8.6 Recommendations for future research

8.6.1 Theories of suicide

In terms of neurobiological/genetic vulnerabilities, the research findings did not consider whether these factors increase the risk of suicide. It would be useful to explore this component of suicide risk in future research to ascertain whether the proposed biological trait-like predisposition for suicide exists (van Heeringen & Mann, 2014).

Although there is validation for some of the IPTS components, it was not possible to establish whether there is an “acquired capability” for suicide evident in the life-threatening behaviour cohort, despite thwarted belongingness and perceived burdensomeness being components of the SSF, alongside access to lethal means. It is postulated that acquired capability partially explains the gender disparity in suicide rates finding (ONS, 2020), with evidence suggesting that males have higher levels of pain tolerance and reduced fear of suicide (Braid & Cahusac, 2006; Ellis & Lamis, 2007; Gratz et al., 2011; Riley et al, 1998), and greater self-reported capability for suicide (Donker et al., 2014). Replication with clinical cohorts is required to examine the link between IPTS factors and future suicide.

Components of the IMV model (O’Connor, 2011; O’Connor & Kirtley, 2018) were elucidated within the SSF data including access to means, planning, impulsivity and past suicidal behaviours. Although outside the thesis remit, it is recommended that the link between suicidality and impulsivity is explored in more detail as a means to validate these variables. There is potentially a mechanism as to the role of impulsivity (Section B of the SSF) that may be clarified for individuals surviving life-threatening behaviours that would otherwise have resulted in death by suicide.

Although Lucht et al. (2020) provided some empirical evidence supporting the motivational phase of the IMV, this was based on cross-sectional data. It would be useful to conduct research using a prospective design to help clarify the predictive utility of entrapment to suicide. Future research should also seek to validate the volitional moderators in clinical settings, including whether the individual has been exposed to suicide/suicidal behaviours, physical pain endurance, fearlessness about death and mental imagery. These could be added as items in the suicide risk triage questionnaire to provide empirical validity for the IMV model.

38% of individuals with a suicide risk triage (n=573) presenting during the study period had two or more triages on their electronic record. This finding may represent a specific cohort that experience the cyclical link between suicidal ideation and behaviours proposed by O’Connor and Kirtley (2018), suggesting a different pathway in the context of repeated suicidal behaviours. Longitudinal follow-up of triage data may help elucidate some of these components, as well as clarifying whether a history of self-harm and suicidality is a risk factor for future suicide (Chan et al., 2016), despite these being reported as weak predictors of suicide (Franklin et al., 2017). Given the health and social care inclusivity of the host provider, a future recommendation is to explore the impact of signposting and support for non-mental health needs. Such data may determine the impact of the resolution (or not, if lost to follow-up) of previous crises and whether this can lead to increased severity of suicidality.

8.6.2 Demographic factors

The proportion of males and females presenting with suicidality to mental health services was balanced across the triage data, with a slightly higher proportion of male service users (57.7%) in the CAMS experimental cohort. Broadly consistent with national data reporting three times as many male suicides to female (NCISH, 2019; ONS, 2020), all five service users that died by suicide with a suicide risk triage on their electronic record during the research period, were male. As expected, females demonstrated better engagement via a significantly higher number of hours of CPA input than males at six-month follow-up. Future research should seek to determine gender differences in help-seeking, acceptability and engagement with services given a disparity may be evident, and not solely due to clinical risk (Jones et al., 2019).

8.6.3 Psychiatric comorbidities

A notable proportion of individuals across both groups (36.5% of CAMS and 42.3% of controls) did not have a psychiatric diagnosis. This may be indicative of a first presentation, not meeting the criteria for a diagnosable condition. NCISH (2019) data highlighted that the most common primary psychiatric diagnosis of individuals that died by suicide between 2007 and 2017 was affective disorders (5,982 individuals, 44% of total), which was also the highest category for both the CAMS and triage cohorts. This finding has also been observed in psychological autopsy studies, as demonstrated in several systematic reviews (Arsenault-Lapierre et al., 2004; Cavanagh et al., 2003; Hawton et al., 2013). The presence of an affective disorder only partially explains suicidality, given that many individuals without such a diagnosis do not experience thoughts of suicide (Isometsä, 2014). Longer term follow-up of the research data may provide further clarity regarding the relationship between psychiatric diagnosis and suicide.

A psychiatric diagnosis was not recorded in 89% of triage cases and four out of five individuals that died by suicide during the study period did not have a recorded diagnosis. This is consistent with models that recognise the role of multiple factors that contribute to suicide risk, including biological, sociocultural and environmental variables (e.g. Turecki et al., 2019). Anecdotally, conclusions from root-cause analyses for the five suicides revealed high impulsivity over a period of hours for each of these. The research focus needs to include not only the establishment of causality but also psychological mechanisms where emotional reactivity is implicated as a primary reason for suicidality (Proudlock & Peris, 2020).

8.6.4 Substance misuse

Epidemiological studies indicate an increased risk of suicide for individuals presenting with substance misuse (Hawton et al., 1993; Schneider, 2009), which may be more common in the presence of a comorbid mood disorder (Kessler et al., 1999), as well as the psychological factors of impulsivity and hopelessness (Conner & Duberstein, 2004). It has been proposed that increased impulsivity through alcohol use may lead to suicidal behaviours through disinhibition, whilst also taking into account the influence of genetic and environmental vulnerability factors (Pompili et al., 2010). It is important to clarify the role of substance misuse in suicidality and the relationship with death by suicide, including whether impulsivity and disinhibition moderate the association with increased risk of suicidal behaviours. Additionally, mental capacity during inebriated or intoxicated states can make it more difficult for the clinician to accurately assess suicide risk, with the individual potentially denying suicidality once sober (Urban et al., 2018).

8.6.5 Socioeconomic factors

Research has identified a link between sociodemographic factors and suicide, particularly with regards to unemployment (Nordt et al., 2015; Platt & Hawton, 2000; Stuckler et al., 2009). A meta-analysis conducted by Franklin et al. (2017) collating 50 years of research identified lower socioeconomic status as one of five main risk factors for suicide. High levels of unemployment were evident in the CAMS cohort (69.2%), “significant risk” subsample (75.3%), suicidality subsample (historically identified using the DICES-S; 80.0%) and all CRHT referrals (86.0%). The research was undertaken in a socioeconomically deprived area with higher rates of unemployment than the national average (5.7% compared with 4.1%; PHE, 2018). Hence, though it was difficult to extricate the impact of individual socioeconomic factors, “primary reasons for suicidality” included “housing issues” (1.7%), “legal/financial issues” (1.2%) and issues relating to benefits (<1%). The robust finding by Franklin et al. (2017) from primarily correlational data provides a suitable foundation from which the impact of individual components of socioeconomic status can be commenced.

8.6.6 Self-harm and previous suicidal behaviours

Triage data included individuals presenting to services where the primary trigger was self-harm as a result of emotion dysregulation. A comprehensive understanding of the function(s) of self-harm for an individual is a key element of future research, to aid objective decision-making around treatment provision. A triage process that clarifies what self-harm is communicating is being developed through additional questionnaire data, including the topography of behaviour, frequency, medical acuity and method of help-seeking, which will be embedded within the electronic record system. Additional data regarding the function of self-harm will also be included to assess whether there is empirical evidence supporting proposed categories such as emotion regulation and interpersonal functions (see Section 1.4.5). This would also be useful to ascertain the presence of suicidal intent in relation to self-harm to clarify whether there is clinical utility supporting the inclusion of NSSI as a separate category, and defining self-harm in terms of medical need and suicide intent.

Individuals with a history of suicidal behaviours have an increased risk of future suicide (Appleby et al., 1999, Cavanagh et al., 1999), although in clinical practice historical variables are likely to have little predictive validity for determining whether individuals may die by suicide (Franklin et al., 2017). It would perhaps be of greater value to conduct a historical analysis of the process leading to life-threatening behaviours for the CAMS experimental cohort as a means of understanding the biopsychosocial variables that trigger such behaviours, including factors other than mental health difficulties such as relationship breakdown, loss and financial difficulties (Boardman et al., 1999). Such an analysis may be useful for existing models of suicide by enhancing understanding of the specific “drivers” of life-threatening behaviours, including historical knowledge that may inform the individual’s conceptualisation of current and future suicidality.

The current research did not report on “suicide attempts,” as a consistent and universal definition is lacking. Thus, the evidence for suicide attempts as a risk factor for future suicide is unclear, with some research indicating weak predictive validity (Franklin et al., 2017; Ribeiro et al., 2016). Prospective data suggests that suicide attempts using a violent method increases likelihood of future suicide (Probert-Lindström et al., 2020). The methodological challenge of inconsistent definitions for suicidal behaviours across research studies (Prinstein, 2008) will require addressing if this challenge is to be met.

8.6.7 Physical health

Triage data indicated that “physical health/pain issues” were a trigger for suicidality in 4.4% of cases. Further data is needed to ascertain whether this relates to individuals with specific medical health conditions, their appraisal of the impact this places on them, and if factors such as extent of physical pain and comorbid psychiatric disorders increase the risk of suicide (Pompili et al., 2016).

8.6.8 Relationship breakdown/difficulties

Approximately one in seven (13.9%) triages were due to difficulties with relationships, including family, friendships and partners. Further elucidation of the type of relationship and the breakdown issues pertaining to it, how this has resulted in consequential suicidal ideation and/or intent, and its management by the clinical team should be explored.

The impact of Covid-19 has also highlighted the effect of lockdown on relationships (British Psychological Society, 2020; Ivandić et al., 2020). Besides the evidential impact that this may have on suicidality rates, where children and social services are involved, the issue of parental alienation as a burgeoning but reliable mediator for suicide also warrants consideration, given that this may exacerbate risk of life-threatening outcomes (Sher, 2015). Future investigations post Covid-19 lockdown will need to consider such impacts.

8.6.9 Recommendations to inform suicide risk assessment

Anecdotal evidence suggests that clinicians using triage felt supported through access to a real-time hierarchical supervision structure underpinning the objective decision-making process. This suggests that risk management in real-time may be an important component facilitating clinician objectivity whilst ensuring service user acceptability, which is further supported by data indicating a significantly greater number of attended appointments six-months post-triage; an indication that service users will continue to help-seek and engage with services if they require further support. Future research should seek to establish reliability data of the suicide risk triage decision against other validated measures e.g. the BSS, BHS and SIS.

Despite the widespread use of the term, the literature suggests that there is no clear guidance in terms of what a psychosocial assessment might entail. Pitman et al. (2020)

postulated that a valuable process would need to consider the content, therapeutic aspects and effective follow-up care as well as communication style and approach to collaboration. Congruent with findings from qualitative interviews, the CAMS intervention effectively incorporates these processes and is sensitive to service user needs, although the casual impact of this on clinical outcome would need to be established.

The impact of CAMS training on clinician confidence has not previously been explored through interviews with individual clinicians from a range of professional backgrounds. This research aimed to explore the challenges faced by clinicians when assessing suicide risk and how service providers can support through training and supervision to bolster confidence. Further research should seek to determine the impact of CAMS training using a psychometrically valid measure of clinician confidence, as well as assessing the potential impact of specific clinician factors such as profession and years of clinical experience. A bespoke, psychometrically valid measure of clinician confidence when assessing suicide risk is in development within the host organisation.

Research suggests that self-efficacy related to suicide risk assessment may mediate the effect between perceived sufficiency of suicide risk training and anxiety when working with individuals expressing suicidality (Mitchell et al., 2020). Thus, measuring self-efficacy may be important as an adjunct to evaluating acceptability of training programmes. Anecdotal feedback from over 300 clinicians undertaking the “Risk triage training” in the current research was largely positive, although recently-qualified clinicians did not feel as confident with suicidality cases unless they were routinely confronted with such cases, such as those working in the CRHT (Brown et al., 2020). Future research should seek to establish how clinical experience and perceived self-efficacy link to clinical practice when working with suicide risk.

An e-learning training version of the CAMS intervention (e-CAMS) has been evaluated in a trial across five Veterans Affairs health providers (n=215) comparing e-CAMS to standard face-to-face training (Marshall et al., 2014). Surveys of training satisfaction indicated that both training delivery modalities were equally acceptable to clinicians. Irrespective of the type of CAMS training undertaken, clinician focus groups reported barriers to implementation of CAMS in clinical practice. This included time pressures when completing the CAMS intervention alongside other essential paperwork and a lack of familiarity due to infrequent use; the latter being raised by newly-trained participants in the current research. Recommendations from focus groups included providing CAMS training in other service areas and CAMS booster sessions, both of which have been integrated as part of future objectives in the host organisation. It may be useful to explore whether e-CAMS is viable for NHS providers, which may be particularly valuable if issues relating to the Covid-19 pandemic restrict the ability to provide in-person CAMS training.

8.6.10 Recommendations for clinical trials of interventions

Trials of interventions that have not proven effective for reducing self-harm (e.g. McAuliffe et al., 2014) highlight the importance of ensuring that diagnostic clarity is provided when evaluating interventions. Given what is known about the various functions of self-harm (see Section 1.4.5), it is unlikely that an intervention that does not impact on the individual's motivations for these will be an effective treatment. An example is an 18-week DHP intervention with adjunctive outpatient follow-up treatment, that was no more effective for reducing self-harm than OIP (Arnevik et al., 2009), whereas a 14-week emotion regulation group based on DBT's proven efficacy, demonstrated clinical utility (Gratz et al., 2014). Although the latter only included females diagnosed with BPD, it is possible that clinically targeted components of treatment (such as a focus on reasons for self-harm) were key to the development of an effective intervention.

A related issue in the implementation of interventions for self-harm is the focus on symptom reduction associated with psychiatric diagnoses, rather than explicating the function(s) of self-harm as the treatment target. Psychiatric diagnosis can enhance understanding of possible functions, for instance, various motivations for self-harm are embedded within BPD criteria (American Psychiatric Association, 2013), such as fear of abandonment, emotional disturbance and chronic feelings of emptiness. DBT defines a biopsychosocial model that captures a range of possible self-harm functions for individuals with BPD (Brown et al., 2002; Klonsky, 2007; Linehan, 1993; Paris, 2005). It is postulated that this approach contributes to the proven efficacy of DBT (including shortened versions; Linehan et al., 2015; McMain et al., 2017), and hence recommendation for its use in NICE guidance for treating BPD (2009).

The present study did not focus on older adults, and only a small number of participants (n=4) in the current research were assessed through Older Adult mental health services. There is a scarcity of efficacious interventions specifically targeting older adults with suicidality (Lapierre et al., 2011; Zeppegno et al., 2019). The methodology developed within this thesis is being tested within the Older Adult CRHT and will also evaluate the impact of the CAMS intervention for this cohort.

A review of telephone interventions suggested that there are some benefits to non-clinical "caring contact" in terms of reduced repetition of self-harm, particularly for individuals that presented to mental health services for the first time (Kapur, Gunnell, et al., 2013; Vaiva et al., 2006, 2018). It is possible that such interventions enhance the therapeutic alliance (see Section 2.1.4), which is arguably a key component of treatment for suicidality (Rudd et al., 2001). Telephone contact is an integral part of CRHT input in terms of providing follow-up support to individuals. Future research should seek to establish the components of telephone interventions that are deemed most valuable by service users in terms of their impact on individual presentations, specifically what was found to be most helpful.

There is burgeoning evidence supporting the efficacy of digital interventions to reduce suicidality (see Section 3.4). The CAMS intervention has been adapted for virtual delivery during the pandemic i.e. "telepsychotherapy," whilst social distancing measures were in place (Jobes et al., 2020). Future research should seek to establish the efficacy of digital/app interventions with suicidality as a primary outcome, as the impact for pressured CRHT services and greater options for help-seeking are potential advantages.

8.6.11 Impact of Covid-19

Post-hoc analyses of suicide risk triages were compared for the pre- and post-lockdown period, as well as comparisons with the same time periods in the previous year. Although these indicated no significant changes in numbers of suicidality presentations, results should be interpreted with caution due to the cross-sectional nature of the data from which causation cannot be assumed. Tentative data from the NCISH and self-harm monitoring systems in the UK do not indicate an increase in either suicide or self-harm in the UK during the pandemic (John et al., 2020; Kapur et al., 2021), although monthly population-level data of suicide rates in Japan indicate increases for females and children (Tanaka & Okamoto, 2020). Longitudinal follow-up data of triage cases presenting with suicidality as a result of Covid-19 related distress will be explored to ascertain whether the effects of the pandemic are associated with changes to suicide incidence.

8.7 Ethical considerations versus future research direction

Several ethical issues are raised when conducting suicide research, particularly with regards to the potential distress resulting from asking participants about suicidality (Hom et al., 2017). Recruiting individuals experiencing suicidality to research in clinical settings presents further challenges, as the quality of TAU and management of suicide risk can vary considerably between providers. Nevertheless, intervention studies are considered essential in order to prevent suicidal behaviours (Andriessen et al., 2019b). It is proposed that a high-quality baseline TAU that impacts on suicidality is necessary as a first step, if ethically sound “guideline standard” evidenced RCTs of promising interventions are to be promoted.

A further ethical issue relates to assessing mental capacity, for instance, the ability of the individual to make objective decisions may be impaired during periods of heightened emotional arousal, resulting in self-harm (Fuchs, 2007). Such a complex scenario may cause anxiety for clinicians, particularly if the individual that engaged in life-threatening behaviour refuses medical treatment (Ayre et al., 2017). Thus, there may be a risk of death by misadventure for individuals with BPD, as a non-suicide related cause (Temes et al., 2019). Such factors are important when ethics committees consider the recruitment of such clinical cohorts in suicidality and self-harm research. It is argued that a comprehensive assessment of suicidal ideation, intent and the functions of self-harm as well as access to targeted evidence-based interventions such as CAMS, DBT and CT-SP would allow for the safe recruitment of participants to such research.

8.8 Have the research objectives/methodology been validated?

National guidance rejects the use of actuarial methods of risk assessment, owing to their lack of clinical utility or predictive validity (NICE, 2011; RCPsych, 2010) and evidence indicates that such methods are no more effective than clinician judgement (Quinlivan et al., 2017). Despite this, a vast amount of NHS mental health services still use such tools as part of their suicide risk assessment process, which may be attributable to the lack of evidence-based alternatives and/or perception that such tools are effective, thus providing false reassurance to clinicians (Graney et al., 2020). The approach demonstrated from the results of this thesis included the comprehensive assessment of suicide risk variables through clinician elaboration (Kapur, Steeg, et al., 2013) and highlights that a reliance on actuarial risk assessment methods is not required. Rather, clinicians and service users indicate a preference for the in-depth assessment of suicide risk through triage/the CAMS intervention, and engage with this process. This is supported by meta-analytic findings of the CAMS intervention that indicate several positive outcomes including reduced suicidality, distress and hopelessness, as well as improved satisfaction with treatment (Swift et al., in press). The CAMS intervention, embedded within a systems-level triage model, facilitates decision-making around clinical care for suicidality/self-harm with an emphasis on providing the least-restrictive, evidence-based treatment (Brown et al., 2020; Jobes et al., 2018).

The suicide risk triage model utilised in this research may facilitate the objective decision-making for individuals presenting with self-harm and/or suicidality to ensure access to appropriate interventions based on clinical need, rather than a "one-size-fits-all" approach to treating suicidal risk (Jobes & Chalker, 2019). Jobes (2020b) recommended that the following core components should be incorporated across providers: practices for identifying suicidal risk (including asking directly about suicide), stabilisation planning (such as reducing access to lethal means and providing supportive resources/helpline numbers), delivery of evidence-based, suicide-specific interventions (e.g. CAMS/DBT/CT-SP), careful documentation of sessions with the individual (and consultation around these), as well as follow-up caring contact.

Although Carter et al. (2017) reported that previous suicidal behaviours have poor predictive validity for future suicide, there is evidence to suggest that previous non-fatal self-harm involving lethal methods such as hanging/asphyxiation, carbon dioxide inhalation and traffic-related injuries carry a 4-6 increased risk future suicide, compared with individuals using self-poisoning to harm (Bergen et al., 2012). Of 378 suicides, one third of individuals used the same method as their most recent episode of self-harm. The authors concluded that individuals using highly lethal methods that survive (e.g. hanging) are at increased risk of future suicide using the same method. A four-year study of individuals hospitalised following suicidal behaviour (n=70) measured components of the IMV model and found that only past frequency of suicide attempts and entrapment significantly predicted the occurrence of a future suicide attempt (O'Connor et al., 2013). A further study examining patterns of method lethality of suicidal behaviours over a five-year period (n=1,719) identified two distinct trajectories: 1) individuals using low-moderate lethality methods, that continued to use such methods during follow-up, and 2) individuals initially using high lethality methods, that used lower lethality methods over successive episodes of suicidal behaviours (Witt et al., 2021). Risk of death by suicide was higher in the latter group, which the authors suggested indicated a subgroup of individuals with specific clinical treatment needs. Taken together, these studies suggest that it is important to have an elaborate understanding of an individual's history of suicidal behaviours, particularly where there have been life-threatening behaviours and the individual has survived by chance, to inform the risk of a future confluence of similar variables. Past history of suicidal behaviours is a component of the suicide risk triage model and CAMS intervention, with 83% of CAMS participants (presenting with life-threatening behaviours) reporting a history of previous suicidal behaviours. Hence, collating information regarding historical suicidal behaviours as part of a comprehensive risk assessment process, may elucidate psychological formulations for "death by suicide" decisions and their precipitating variables.

Research suggests that the quality and availability of CRHT provision varies considerably across England, which has been attributed to high caseloads, poor staff retention (Kapur et al., 2016) and lack of availability of resources (Lloyd-Evans et al., 2018), A trial assessing the impact of a service improvement programme including 15 CRHTs in England did not improve patient satisfaction with care (n=371) or reduce staff "burnout" (n=431) despite trends in favour of the intervention in terms of improved staff well-being and positive patient experiences (Lloyd-Evans et al., 2020). The suicide risk triage data suggests that it is efficiently possible to implement a systems-level model including an open-access CRHT that positively impacts on future inpatient admissions, CRHT presentations and service user attendance at appointments.

8.9 Clinical implications: Proposing a spectrum model of self-harm and suicidality

Based on the earlier reviews of literature and research findings outlined in this thesis, a "spectrum model" of self-harm and suicidality is proposed as a tentative framework from which the conceptualisation of suicide risk may be better elucidated. The importance of attempting this (albeit considerable) task, given the vast literature to date has not allowed for the development of a homogeneous approach to suicidality assessment and research, is to highlight that this may well be an essential component if the field is to move forward. As one pertinent example of why such a proposal is required, the earlier criticism of the term "psychosocial assessment", which provides little clarification of what should be considered by the clinician faced with a suicide risk assessment (Pitman et al., 2020), is nevertheless present within NHS policy and published stakeholder guidance (NICE, 2004; RCPsych, 2010).

The model depicted below (Figure 20) is based on anecdotal findings from the triage data (n=2,176), of which 52 cases were assessed as presenting with life-threatening behaviour (CAMS cases) and five additional triage cases resulted in death by suicide. This low incidence of death by suicide (0.2% of all triages) supports the argument that the focus of research should be individual "ideational morbidity" as well as the behavioural consequences of suicidality (Jobes & Joiner, 2019), to impact on the trajectories to death by suicide. A further aim is to provide a testable model that can be empirically validated, by determining the processes that result in the delineation of presentations via triage assessment into the cohorts outlined below.

Figure 20

A proposed spectrum model of self-harm and suicidality

The model outlines the outcome decision components of the suicidality triage process, namely suicidal ideation, self-harm (including NSSI or self-harm alongside suicidal ideation/ intent), and life-threatening behaviours (where without intensive treatment the consequence would most likely be fatal). The depiction of death by suicide is included despite the aforementioned comment regarding its comparatively rare occurrence, as ongoing triage data may allow for further elucidation of the trajectory towards this most undesirable outcome.

The triage assessment of an individual presenting with clinical risk may place them at any point on the spectrum model. For instance, an individual may engage in life-threatening behaviours without ever having self-harmed, whereas another may self-harm for many years without ever engaging in life-threatening behaviours. Thus, the model allows for each episode of suicidality to be triaged, based upon the presentation and mediating variables at that time point.

Consistent with previous literature, lethality (in terms of medical treatment required) and suicidal intent are depicted as two key components that impact on clinician assessment and objective decision-making (Linehan, Comtois, Brown, et al., 2006; Sommers-Flanagan & Sommers-Flanagan, 1995). It is argued that lethality will relate to the actual method used, access to means, as well as the physical consequences of the act (Linehan, Comtois, Brown, et al., 2006). Thus, the model explores the likelihood of life-threatening behaviours by assessing two parameters that are depicted on a spectrum of severity:

- Probability of medical lethality (would not require treatment through to intensive medical treatment necessary), appraised by applying phenomenological evaluation central to medical assessment, diagnosis and treatment
- Suicidal intent severity (no intent through to high intent), determined through an individual’s subjective appraisal and assessed through Socratic questioning i.e. a method that encourages the individual to reflect upon their experiences, help them

gain insight into a particular topic and assign their own meaning to events (Padesky & Beck, 2003). It is acknowledged that this is difficult to quantify, but will be based on an individually unique set of variables including cognitions, personality, motivations, psychological/psychiatric symptoms, culture and value systems (e.g. Beck's "modes," 1996)

In this model, self-harm is understood in terms of the function(s) being communicated by the individual. At the "no intent" end of the spectrum NSSI is observed, which evidence suggests serves both intrapersonal and interpersonal functions (Klonsky et al., 2015; Nock & Prinstein, 2004). An example is the use of NSSI as a means to cope with trauma symptoms such as intrusive thoughts (Smith et al., 2014). At the other end of the spectrum, self-harm in the context of suicide intent may also lead to "life-threatening behaviour", if the objective is death by suicide. The method may be the same as that of previous self-harm (where this is evident) though more lethal outcomes are the individual's intention. In such instances, observations may include the individual no longer help-seeking, and/or more acute or lethal forms of similar self-harm.

It is argued that the distinction between the various forms of self-harm that are made within the triage process, is necessary given all forms do not predict suicide risk (e.g. Franklin et al., 2017). Anecdotal findings based on the triage data support separate categories for "self-harm" and "life-threatening behaviours", with a demonstrable utility for clinicians assessing suicide risk (see Chapter 7). Thus, it is argued that an individual's behaviour becomes life-threatening when they no longer explicitly communicate their distress to others with the desire for abatement of this, and their wish to die becomes the primary objective. In such instances, the two proposed components of life-threatening behaviours are observed (as described in Section 1.4.7) and appraised by the individual, namely:

- Unequivocal intent to die that may include low likelihood of rescue/lack of help-seeking behaviours;
- High lethality of method used/violent methods that is believed will result in death.

The definition of life-threatening behaviours provided by Linehan (2014), which includes NSSI, “deliberate self-harm” and “suicide crisis behaviours”, may require further elucidation based upon clinician feedback and anecdotal triage findings. The aim of the proposed model is to assist the clinician when evaluating risk of suicide, including lethality and intent, and where this may result in life-threatening behaviour. The aim is not to undermine the potential risk associated with NSSI and self-harm, but to elucidate this by focussing on the underlying motivations for such presentations and to provide targeted evidenced interventions for these (Bryan & Rudd, 2006; Jobes, 2020; Jobes & Chalker, 2019). A further goal from the continued validation of such a model is the opportunity for the consistency of definitions within the field (IASP, 2018; Silverman & De Leo, 2016); something that has been highlighted as a need throughout this thesis.

It is recognised that death by misadventure may result following self-harm irrespective of the individual’s perception of its medical lethality, where the impact of undiagnosed medical conditions have a catastrophic effect, including cumulative impact due to previous self-harm, or where there is a lack of awareness of the potential lethality of the method. Although the probability of medical lethality may have increased, it is argued that the primary motivation for self-harm is still a non-suicidal one where any concerns about risk of death are appraised as less pertinent than the outcome the individual is seeking. The severity of self-harm that may lead to death, requires a recognition by the clinician that the individual is still communicating acute distress, and duty of care requires the elucidation of this to allow for optimal treatment.

It is postulated that key theories accounting for the trajectory from suicidal ideation/intent through to behaviours (IPTS, Van Orden et al., 2010; IMV model, O'Connor & Kirtley, 2018), would provide an understanding of the mechanisms to elucidate the change in cognitions and intent towards behavioural enactment (i.e. an "ideation-to-action" framework); a foundational component of the triage process. This would allow exploration of the nature of the transition to life-threatening behaviours, through volitional factors and how this transition differs from the development of suicidality. Klonsky and May (2013) argued that the distinction between these two processes is important in order to identify risk factors for suicidality, and how they may differ from risk factors that influence the progression from suicidality to behaviours.

Despite a need for further validation, the proposed model demonstrates clinical viability based on the findings of this research. However, certain aspects of the model will require elaboration, e.g. it is recognised that suicidal intent and risk of serious injury are not always positively correlated (Brown et al., 2004; Denning et al., 2000). Thus, further research utilising Structural Equation Modelling techniques may provide a methodology to explore how suicidality factors relate to risk appraisal (e.g. NSSI, self-harm, life-threatening behaviours) as has been undertaken with the IMV model (Dhingra et al., 2016).

8.10 Conclusions

The scope of this thesis has been to evaluate a novel suicide triage model and CAMS provision within a NHS mental health and social care organisation. However, an appraisal of the literature pertaining to suicide prevention, self-harm policy and strategic direction within the NHS, has highlighted a series of weaknesses. These include the reliance on correlational evidence to inform policy targets, the lack of embedding of potentially valuable theoretical and clinical innovation, and a heterogeneity that appears to diversify rather than elucidate the terminology applied within the literature. Besides an attempt to propose a spectrum model, with the purpose of clarifying this terminology for frontline clinicians working with self-harm and suicide risk presentations, a set of principles agreed across this community of stakeholders is necessary. It is proposed that such standards for the assessment, management and treatment of suicide risk analogous to the Saint Vincent Declaration of 1989, a set of guidelines agreed by participating European countries to improve the care of individuals with diabetes mellitus, would help provide a consistent, co-ordinated approach to suicide prevention in the UK. Such standards could include the following:

- An agreed set of definitions of self-harm and suicidal behaviours, as attempted in the spectrum model
- A clear, consistent approach as to what constitutes “psychosocial assessment” across organisations to support clinicians making objective decisions regarding risk of suicide
- Targeted training in suicide risk assessment as an essential pre-requisite, with the aim of enhancing clinician confidence, rather than training that focuses on the use of risk assessment tools and scales that have a demonstrated lack of clinical utility
- A high-quality set of standards defining NHS TAU to permit the ethically acceptable evaluation of promising interventions through RCTs, thus establishing causality and providing “guideline standard” interventions that are truly “evidence-based”
- A distinct programme of work to allow for the evaluation of theoretical models of suicidal behaviours in clinical settings to further inform assessment, care planning and treatment of suicide risk
- A mandatory root-cause analysis process for all suicide prevention stakeholders within every locality, to support the coroner’s inquest process (as with the NHS serious incident framework) and enhance understanding of the aetiology of suicide

within that organisation. This would include businesses, academic institutions, third sector organisations and charities, who are "invested" in self-harm or suicide prevention.

It is important to consider how RTS systems for suicide (i.e. identification of "suspected" suicides by local police) are integrated within this approach. There are several advantages to RTS including detection of potential suicide clusters that allows for a targeted health and social care response, whilst also providing rapid support for those bereaved ("postvention"; PHE, 2020). It is reported that postvention support results in positive outcomes for bereaved individuals, including reductions in grief symptoms, distress and suicidality (Andriessen, Krysinska, et al., 2019).

Despite these advantages, the terminology utilised by the RTS paradigm of "suspected" suicides, without establishment of legal validity, may lead to a misrepresentation of death by suicide prior to the judicial decision from the coroner. A second concern is that using the word "suicide", albeit "suspected", may potentially lead to the expectation that a suicide has occurred, and the emotionality of this word may shape the community's appraisal of local services. In turn, this can impact on clinician confidence and via litigation corporate risk for health and social care organisations. Of more concern is the possibility that suspected suicides may exacerbate negative appraisals, such as a sense of hopelessness, in the most vulnerable and least likely to help-seek groups e.g. men (Jones et al., 2019), and those directly affected by such an outcome. There is however a useful opportunity for validating the proportion of RTS cases that lead to a judgement of death by suicide following the subsequent coroner's inquest. If, as has been recommended, root-cause analysis is embedded at stakeholder level for all organisations committed to suicide prevention, knowledge of the circumstances prior to death (including help-seeking, or not) may provide a more accurate understanding of the relationship between environmental and social factors, mental health and suicide. It will also allow for organisations to propagate health and social care innovations for those least likely to have accessed support prior to suicide.

A dichotomy exists in terms of a root-cause analysis process for stakeholders working in the field of suicide prevention, between services that undertake such analyses and those that do not. A framework for investigating serious incidents is followed by NHS service providers, including a root-cause analysis to identify any contributing factors to the adverse event and learning opportunities to improve service delivery (NHS England, 2015). It is proposed that such a framework would be useful for all suicide prevention stakeholders to identify causal factors should a suicide occur, to clarify all possible interventions that may reduce such an outcome in the future. Currently, the root-cause analysis process is too limited to benefit if indeed only 28% of cases have contact with NHS services in the 12 months prior to death by suicide (NCISH, 2019). This would require a commitment from stakeholders to train in root-cause analysis to allow for the exploration of additional factors that exist such as environmental, social and life event “triggers” (O’Connor & Nock, 2014). Such a process would aim for a fully comprehensive understanding of the aetiology of suicide to impact on the problem of suicide prevention, given that no single case could be excluded from the root-cause analysis process.

To facilitate such an approach, where all stakeholders commit to engaging in a “joined up” process, a “hub and spoke” model for suicide prevention is proposed, where NHS mental health services act as the “hub”. This would provide an opportunity for local organisations to work alongside NHS services and establish coherent pathways (such as outlined in the triage process). Using a multiagency approach across a locality i.e. through ICSs, may allow for a shared understanding of suicide prevention and aid learning across all organisations involved, including third sector and voluntary providers. It is proposed that a suicide risk triage process for local organisations would provide an efficient “refer-in” pathway should they need support to manage suicide risk that is outside the remit or clinical resources of their services. For example, NCISH (2019) data includes a broad spectrum of services that individuals may present to with suicidality, including substance misuse and learning disability services, which could develop “spoke” relationships with the NHS “hub”. The central tenet in the hub and spoke model would ensure that when an individual reaches a threshold of suicidality, at which point the stakeholder is no longer able to manage the level of risk, they would be able to access specialist mental health services, thus allowing for streamlined referral and discharge processes across the ICS. This will have the potential to improve efficiency of access, whilst ensuring “spoke” services are working within comprehensive and proactive systems of care, rather than on the assumption that individuals do not require additional intervention outside of their organisation.

The triage data evaluation demonstrates the potential for identifying a multiple set of variables leading to self-harm and/or suicidality, where clinicians and service users value the approach and its effectiveness. This can readily be part of the training of personnel within all “spokes”. In combination with the proposed declaration principles outlined earlier, a cohesive programme of work in this area may be accomplished.

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Appendix A: Literature search strategy for suicide, self-harm and suicidality interventions

Search entered into PubMed:

((“suicide”[MeSH Terms] OR “suicid*”[Title/Abstract] OR (“self harm”[Title/Abstract] OR “self injury”[Title/Abstract] OR “parasuicid*” [Title/Abstract] OR “self inflicted violence”[Title/Abstract])) AND (“prevent*”[Title/Abstract] OR “interven*”[Title/Abstract] OR “treat*”[Title/Abstract]) AND (“adult”[All Fields]) AND “psycho*”[All Fields] AND “trial”[Title/Abstract])

This was adapted for the Cochrane and Google Scholar databases.

Appendix B: Life-threatening behaviours as a primary outcome

Study	Location	N	Inclusion criteria	Diagnostic parameters	Experimental procedure	Control procedure	Follow-up	Main findings	Limitations
The Amager project (Hvid et al., 2011)	Norway	133	Aged 12 and over presenting to ED with self-harm	Exclusions: schizophrenia, psychosis, bipolar affective disorder and/or psychotic depression	OPAC: Outreach intervention aiming to make rapid contact with the individual, provide solution-focused counselling, monitor adherence to treatment, with the same clinician where possible	TAU: Recommended to seek follow-up care from their GP who could refer for therapy as required.	Six months	Three suicides in total, significantly lower proportion who repeated a suicide attempt the intervention group (8.7%) than in the control group (21.9%)	Sample size
Brief telephone contact (Vaiva et al., 2006)	France	605	Aged between 18 and 65 years, attempted suicide by deliberate self-poisoning presenting to one of 13 EDs	No exclusions	Telephone contact either at one or three months after discharge from the ED, undertaken by psychiatrists using a psychotherapeutic approach, with the aim of enhancing compliance with treatment	TAU: usually referral back to GP	13 months	No significant differences in terms of deaths attributed to suicide or suicide attempts	30% of participants in intervention group lost to follow-up

Effectiveness of BIC following a suicide attempt (Fleischmann et al., 2008)	Brazil, India, Sri Lanka, Iran, China	1,867	Presenting to ED following a suicide attempt	No exclusions	BIC plus TAU: one follow-up session as soon as possible after discharge from ED, plus an additional nine follow-up sessions (phone calls or visits). Focused on psychoeducation around suicidal behaviours, protective factors and alternative coping strategies	TAU: treatment in ED. No standardised outpatient referral process for psychiatric/ psychology input	18 months	Significantly more suicides in TAU (n=18) compared with BIC plus TAU (n=2) group	Official mortality statistics not available across sites
BIC for suicide attempters (Vijayakumar et al., 2011)	India	680	Aged 12 and over, admitted to general hospital following a suicide attempt	No exclusions	BIC: periodic follow-up post-discharge at week one, two, four, seven and 11 and four, six, 12 and 18 months after discharge, conducted by a psychologist	TAU: depended on hospital but typically did not include psychiatric or psychology assessment	18 months	Significantly greater number of suicides in TAU (n=9) compared with BIC (n=1) group	Only 40% of eligible patients recruited for study; cultural norms around suicide attempts affected data collection
CBT for suicidal behaviour in (Tarrier et al., 2006)	UK	278	First or second inpatient or day patient hospital admission for treatment of psychosis	Inclusion: criteria for schizophrenia or psychotic disorder	CBTp delivered over five weeks to address delusions, hallucinations, abnormal beliefs, identifying triggers, alleviating distress and developing coping strategies	Supportive counselling delivered over five weeks with three “boosters”	18 months	Three suicides (2 in counselling group, 1 in CBT group)	Dropout rate (22% at follow-up)

Assertive outreach after self-harm (Morthorst et al., 2012)	Denmark	43	Aged 12 and over, suicide attempt and admitted to ED	Exclusions: diagnosis of schizophrenia spectrum disorders	Eight to 20 sessions over a six-month period of case management through assertive outreach involving managing suicidal crises, problem-solving and actively supporting participants to attend appointments, in addition to TAU	Routine psychiatric evaluation to ascertain need for further treatment. If not receiving any treatment, patient offered six to eight sessions of CAMS	One year	No significant effect on subsequent suicide attempts or death by suicide	Lack of consistency between medical records and self-report suicide attempt data
Contact letter intervention for suicide prevention (Motto & Bostrom, 2001)	USA	843	Admitted to an acute inpatient wards, with reason for admission relating to depression or suicidality	No diagnostic exclusions	Patients contacted 30 days after discharge to determine whether they were compliant with treatment plan. Non-compliant participants split into a contact and no-contact (control) group. Contact intervention consisted of a series of caring letters to the patient at regular intervals (24 contacts over five years)	No letter contact	15 years	Suicide rate significantly lower in the contact group during treatment years (one and two) but converged from year five onwards	Inclusion criteria of “depressive or suicidal state” not defined

Appendix C: Self-harm interventions tables

Trials of brief psychological interventions

Study	Location	N	Inclusion criteria	Diagnostic parameters	Experimental procedure	Control procedure	Follow-up	Main findings	Limitations
Brief intervention for self-harm (Tapolaa et al., 2010)	Finland	16	Aged 18-65 years, presenting to the ED with self-harm	No exclusions	Intervention group consisted of ACT with components of solution focused therapy, in addition to TAU, delivered over four sessions	TAU included medication, inpatient admission and outpatient treatment with a mental health worker	Six months	Self-harm was significantly reduced for both groups at follow-up	Small homogenous sample limits generalisability; reliance on self-report measures
ASSIP (Gysin-Maillart et al., 2016)	Switzerland	120	Recent suicide attempt admitted to emergency unit of general hospital	Included 63% affective disorder, 44% neurotic and stress-related disorders and 25% substance use disorders. Exclusion: psychotic disorders	ASSIP: three therapy sessions plus personalised letters over 24 months. The first session, focusing on understanding the individual's suicide attempt, took place soon after presentation to the ED. A further two sessions focused	Included a range of treatment including inpatient, day patient and individual outpatient sessions	Two years	80% reduced risk of at least one suicide attempt in the ASSIP group (8.3%, 26.7% of controls)	At 24 months, significant difference in group dropout data ASSIP 7% (n=4), control 22% (n=13).

					on safety planning and was followed up with letters over 24 months				
Intensive inpatient and community intervention versus routine care (van der Sande et al., 1997)	Netherlands	274	Aged 15 and over, presenting to hospital following a suicide attempt	Excluded if acute psychosis or drug/alcohol dependence	Intensive psychosocial treatment: brief admission (one to four days) to a specialist crisis-intervention unit with the aim of building a therapeutic relationship with the individual, followed by problem-solving aftercare to manage future crises	TAU: included any form of treatment the assessing clinicians thought appropriate. 90% were referred to an outpatient clinic	12 months	No group effect on outcomes	Limited statistical power due to number of participants. Follow-up hospital data unavailable for 9% of participants
Brief alcohol intervention (Crawford et al., 2010)	UK	103	Presenting to ED following an episode of self-harm with alcohol misuse	No exclusions	30 minute assessment of drinking habits and referral for individual counselling sessions or detoxification as deemed necessary	Health information leaflet about the damaging effects of alcohol on health	Six months	No group effects in terms of repeat self-harm when baseline alcohol consumption taken into account	Small sample size (1,400 required from power calculation)

BIC after self-harm (Hassanzadeh et al., 2010)	Iran	632	Presenting to ED following suicide attempt	No exclusions	BIC: one hour psychoeducational session at time of discharge around suicidal behaviours, epidemiology and alternatives. Phone calls or visits at 1,2,4,7,11 weeks and 4 and 6 months	TAU: ED treatment and follow-up six months after discharge	Six months	BIC did not significantly reduce repetition of suicide attempts (24 TAU patients and 30 BIC patients had made another suicide attempt at follow-up)	Unclear whether severity of initial suicide attempt differed between groups; psychiatric diagnoses not reported
Brief psychological intervention (O'Connor et al., 2017)	UK	518	Aged 16 and over, admitted to a specialist hospital acute medical unit for self-harm. At least one previous episode of self-harm	No exclusions	VHS plus TAU. Participants instructed to identify common situations from the VHS that would trigger self-harm and make links with alternative solutions. After two months, participants were sent a blank VHS and encouraged to complete it	TAU: assessment and follow-up including inpatient admission, home treatment, community mental health and referrals to voluntary sector or primary care	Six months	No differences between groups. Post-hoc analyses suggested intervention may be beneficial when previous hospital admission for self-harm	Only recorded hospital-treated self-harm and not self-harm occurring in the community

Trials of cognitive therapies

Study	Location	N	Inclusion criteria	Diagnostic parameters	Experimental procedure	Control procedure	Follow-up	Main findings	Limitations
Cognitive therapy for suicide attempts (Brown et al., 2005)	USA	120	Aged 16 and over, suicide attempt within 48 hours prior to presentation at ED	No exclusions. Majority of participants had diagnosis of MDD (77%)	10 sessions of cognitive therapy specifically designed to prevent suicide attempts – proximal thoughts, images and core beliefs activated prior to the attempt	Enhanced TAU: case manager contacted on a weekly to monthly basis, offered referrals to other services	18 months	Participants in cognitive therapy group 50% less likely to have a suicide attempt in the follow-up period	Urban setting, lack of cultural diversity
Cognitive behavioural intervention for self-harm (Slee et al., 2008)	The Netherlands	90	Aged 15–35 years, with recent self-harm	Excluded if an ‘extended period’ of hospital admission for schizophrenia or for alcohol/drug misuse	TAU plus intervention (CBT designed specifically for prevention of self-harm, delivered in 12 outpatient sessions)	Chosen by patient. Three forms of TAU: medication, therapy and hospital admission	Nine months	Greater reductions in self-harm for intervention group	Specific types of TAU not recorded; withdrawal from intervention arm (17%)
Interventions following a suicide attempt (Wei et al., 2013)	China	239	Presenting to ED following suicide attempt		Cognitive therapy or telephone intervention. CBT involved 10	TAU: suicide attempt interview.	12 months	No differences at follow-up between rates of	High dropout rate at 12 months: 69.5% for Cognitive

					sessions including adaptive ways of dealing with distress and recognising thoughts and behaviours when in stressful situations	No further follow-up		suicide attempts	therapy, 55% for telephone intervention and 64.9% for control group
MACT for recurrent self-harm (Evans et al., 1999)	UK	34	Aged 16-50 years, with histrionic, antisocial, borderline or emotionally unstable personality disorder traits and self-harm in previous 12 months	Excluded if had a diagnosis of organic disorders, substance misuse and/or schizophrenia	MACT: brief intervention lasting between two and six sessions. Cognitive in focus and included problem-solving techniques, managing emotions and relapse prevention.	TAU included in-patient treatment, day hospital care and outpatient treatment	Six months	Rate of self-harm per month lower with MACT but not significantly different to TAU group	Small sample size Short duration of follow-up.
Brief cognitive therapy versus TAU for recurrent self-harm (Tyrer et al., 2003)	UK	480	Presenting to A&E after an episode of self-harm (with at least one other previous episode)	42% of sample had a personality disorder	Up to five sessions of MACT plus two booster sessions over a three month period. MACT is a brief cognitive	TAU: outpatient care	12 months	No significant differences between groups in proportion repeating self-harm	Comparison of therapy duration in both study arms not provided, although authors stated

					therapeutic approach designed to help patients understand their self-harm and find alternative ways of reducing distress, including how to approach crisis situations				that therapeutic time for TAU was much greater than intervention arm
MACT for self-harm in BPD (Weinberg et al., 2006)	USA	30	Female, history of repeat self-harm with at least one episode in the previous month	Inclusion: BPD	MACT (six sessions) as an adjunct to TAU. MACT incorporated elements of DBT, CBT and biblio-therapy including a functional analysis of self-harm, emotion regulation, problem-solving, management of negative thinking, substance misuse and relapse prevention	TAU: not described	Eight months	MACT group had significantly less frequent and severe self-harm at six-month follow-up	Sample size; unsure what effects of concurrent TAU were and whether MACT augmented these effects; self-harm assessed using self-report

CBT plus TAU in the treatment of BPD (Davidson et al., 2006)	UK	106	Aged 18 to 65 years, had received either in-patient psychiatric services or A&E psychiatric assessment or an episode of self-harm in the previous 12 months	Inclusion: BPD	CBT plus TAU: CBT focused on core beliefs that impact on maladaptive behaviours for individuals with Cluster B personality disorders. Up to 30 CBT sessions over one year, lasting up to one hour per session, in addition to TAU	TAU: Variety of inpatient and outpatient services. Usually involved care provided by GP and Community Mental Health Team, which may have included psychological input depending on the site	24 months	Significant reduction in suicidal acts over the two years for CBT plus TAU compared with TAU alone	Variation in therapist competency
Integrated motivational interviewing and CBT as an adjunct to standard care (Barrowclough et al., 2010)	UK	327	Aged 16 and over, in contact with mental health services	Inclusion: diagnosis of non-affective psychotic disorder, substance dependence or both	26 individual therapy sessions over 12 months in two phases: motivation building using motivational interviewing and plan for change using CBT	TAU: range of treatment including medication and outpatient follow-up	24 months	No differences between treatment groups in terms of self-harm	Measure of self-harm reliant on self-report using a brief structured interview

					techniques. Adjunct to standard care				
Group problem solving training for SH (McAuliffe et al., 2014)	Ireland	433	Aged 18-64 years, had engaged in self-harm during the previous three days, recruited from ED or acute psychiatric unit	Excluded if history of psychosis or substance dependent	Problem-solving skills training with TAU. Six weekly two-hour group sessions facilitated by a trained therapist and co-therapist, delivered according to treatment manual and with homework assignments	TAU: acute or outpatient mental health services. If no mental health need, referred to crisis nurse service	Six months	Brief intervention no more effective than TAU for reducing self-harm	Greater drop-out rates for follow-up in control group
Interpersonal problem solving skills training (McLeavey et al., 1994)	Ireland	39	Aged 15-45 years, presenting following self-poisoning, not requiring inpatient treatment	Inclusion: Dysthymia (n=9), dependent personality disorder (n=6), alcohol abuse (n=5), no diagnosis (n=17) or ‘other’ (n=2)	Interpersonal problem-solving skills training for five one-hour weekly sessions. Focused on skills including orientation, problem definition, generating alternatives, decision-making and verification	Brief problem-oriented approach regarded as standard aftercare, with the aim to develop practical solutions to problems	12 months	Greater reduction of repetition of self-poisoning in intervention group	Small sample size Concealment of treatment allocation inadequate according to Cochrane criteria

Outpatient psychotherapy for BPD (Giesen-Bloo et al., 2006)	The Netherlands	88	Aged 18-60 years	Inclusion: BPD. Exclusions: psychotic disorders, bipolar disorder, dissociative identity disorder, antisocial personality disorder	SFT twice weekly for 50 minute sessions over a three-year period. Identifying schema modes and pervasive patterns of thoughts, feelings and behaviours addressed through a range of cognitive, behavioural and experiential techniques	TFP: twice weekly for 50 minute sessions	Three years	SFT improved significantly more than TFP on (para) suicidal behaviour subscale	Self-report measures of suicidal behaviours based on subscale score rather than specific measures

Trials of DBT

Study	Location	N	Inclusion criteria	Diagnostic parameters	Experimental procedure	Control procedure	Follow-up	Main findings	Limitations
Cognitive therapy (DBT) for BPD (Linehan et al., 1991)	USA	44	Female, aged 18-45 years, with at least two self-harm episodes in past five years (at least one in last eight weeks)	Inclusion: BPD	DBT: individual and group therapy for one year	TAU: alternative therapy referral as chosen by patient (n=13 individual psychotherapy)	12 months	DBT group: fewer incidences and less medically severe self-harm	Homogeneous group (female, BPD)
DBT versus TAU for women with BPD (Verheul et al., 2003)	The Netherlands	58	Female, aged 18-70 years	Inclusion: BPD. Exclusions: bipolar disorder or psychotic disorder	12 months of DBT (as described in Linehan's manual, 1993)	Usual treatment (clinical management, no more than two sessions a month)	12 months	Greater reductions in self-harm for DBT group compared with TAU, particularly for those with greater frequency of self-harm historically	Exclusively female sample; high attrition rate (37% DBT, 77% TAU)

DBT for BPD and drug dependence (Linehan et al., 1999)	USA	28	Female, aged 18-45 years	Inclusion: BPD and substance use disorder	DBT plus "attachment" strategies to improve therapeutic alliance and engage patients that dropped out of therapy, total abstinence from drugs and replacement medication where dependence	TAU: alternative substance abuse and/or mental health programs in the community, or continuation with current therapist for psychotherapy	16 months	Both groups significantly reduced parasuicide but not significantly different between groups	Small sample size; dropout rates (45% for DBT and 81% for TAU)
DBT for BPD with and without substance abuse (van den Bosch et al., 2005)	The Netherlands	58	Female, aged 18-65 years	Inclusion: BPD. Exclusions: bipolar or psychotic disorder	52 weeks of DBT according to the treatment manual (Linehan, 1993)	TAU (ongoing outpatient treatment from original referral source)	18 months	DBT group had significantly lower levels of self-harm at end of treatment than TAU group (12 months) that was sustained six months later (18 months)	Low levels of self-harm at baseline and highly skewed distribution of all outcome measures
DBT compared with general psychiatric	Canada	180	Aged 18-60 years, at least	Inclusion: BPD	DBT based on Linehan (1993) manual	General psychiatric management consisting of case	12 months	Both groups significantly reduced	Self-harm measured using self-

management for BPD (McMain et al., 2009)			two episode of self-harm in past five years with at least one in three months			management, psychodynamic psychotherapy and pharmacotherapy		frequency and severity of self-harm but no significant differences between groups. Results sustained at two-year follow-up	report and not validated; study sample predominantly female (86.1%)
DBT for women with BPD (Carter et al., 2010)	Australia	73	Female, aged 18-65 years, with a history of self-harm including at least three episode in the previous 12 months	Inclusion: BPD. Exclusions: schizophrenia, bipolar affective disorder, psychotic depression	Modified DBT: main components of Linehan et al. (1991) model. Main difference was that telephone access was on a rota rather than with the individual therapist	TAU: six-month waiting list condition for DBT	Six months	Although both groups showed reductions in self-harm, no significant differences between groups	Inclusion criteria (female only)
DBT compared with therapy by experts (Linehan, Comtois, Murray, et al., 2006)	USA	101	Female, aged 18-45 years, with at least two self-harm episodes in past five years	Inclusion: BPD	DBT	Community treatment by experts: matched on gender, level of training and years of clinical experience to DBT therapists	Two years	Participants in DBT group half as likely to make a suicide attempt and had lower medical risk than control group	Heterogeneity of TAU; dropout rate for controls (28.6%) compared with DBT group (11.5%)

DBT for self-harm (Priebe et al., 2012)	England	80	Aged 16 and over, five days or more with self-harm in the year prior to treatment	Inclusion: diagnosis of at least one personality disorder	12 months of DBT according to treatment manual (Linehan, 1993)	TAU: range of treatments such as psychotherapy, counselling, community mental health input, care from GP, support groups	12 months	For every two months spent in DBT, risk of self-harm reduced by 9% relative to TAU	Treatment adherence an issue; outcome assessors not blind to treatment allocation
Comparing three types of DBT (Linehan et al., 2015)	USA	99	Female, aged 18-60 years, with at least two suicide attempts and/or NSSI in last five years (with one in the past eight weeks)	Inclusion: BPD	Three types of DBT: Standard DBT, group skills training only and individual therapy only	No control	Two years	All three treatment groups showed similar reductions in suicidal behaviours	Nearly a third (26 of 99) lost to follow-up
Brief DBT for BPD (McMain et al., 2017)	Canada	84	Aged 18-60 years, two self-harm episode in the past five years	Inclusion: BPD. Exclusion: psychotic disorder, bipolar disorder	DBT skills training: original DBT approach by Linehan (1993) adapted to a 20-week	Waiting list control: TAU involving medication management or other psychosocial treatment (offered	Three months	Although both groups reduced frequency of self-harm, greater reductions were observed	No follow-up after end of treatment period; control group could access a

					curriculum with weekly two-hour group sessions. Participants encouraged to have a therapist or another individual from care network for crisis support	intervention at the end of study follow-up period)		for the experimental group	range of treatments during waiting list period; allowed additional treatments in DBT group which may have confounded results
DBT-PE for women with BPD and PTSD (Harned et al., 2014)	USA	38	Female, aged 18-60 years, with recent self-harm including at least one episode in the past eight weeks	Inclusion: BPD and PTSD. Exclusions: psychotic disorder and bipolar disorder	DBT-PE: participants received one year of DBT plus at least one session of DBT-PE. Main components of PE therapy latter include in vivo and imaginal exposure of trauma-related experiences processing of the emotional experience	DBT: one year of standard DBT treatment including individual psychotherapy, group skills training, phone consultation	One year o	DBT-PE was associated with reduced likelihood of suicide attempts (2.4 times less likely) and self-harm (1.5 times less likely) than DBT only group	Small sample size and dropout (71.4% completed DBT and 66.7% DBT-PE)

Trials of group therapies

Study	Location	N	Inclusion criteria	Diagnostic parameters	Experimental procedure	Control procedure	Follow-up	Main findings	Limitations
Adjunctive ERGT for women with BPD (Gratz et al., 2014)	USA	61	Female, aged 18-60 years, history of repeat self-harm with at least one episode in the last six months	Inclusions: BPD (or subthreshold meeting criteria for three or four symptoms). Exclusions: psychotic disorder, bipolar I disorder and substance dependence (past month)	ERGT: 14-week group including awareness, understanding and acceptance of emotions, engaging in goal-directed behaviours and reducing impulsivity	Wait-list control (received intervention 14 weeks later)	Nine months	Significant effects of ERGT on reducing self-harm which were maintained at nine-month follow-up	Specific cohort of women with BPD; no control group in follow-up period so unknown whether effects of ERGT led to treatment gains over time
PST for self-harm (Hatcher et al., 2011)	New Zealand	1,094	Aged 16 and over, presenting to hospital following self-harm	No exclusions but could not be receiving DBT for BPD	Nine sessions of PST plus TAU including problem orientation, understanding motivation for self-harm, alternative solutions and forming an action plan	TAU: psychiatry or psychology input and recommendation to attend other services e.g. substance misuse treatment	One year	No significant group differences. For those with a history of self-harm, PST group were less likely to repeat self-harm (13.5%) compared with 22.1% TAU)	Self-harm measured using self-report; no diagnostic information

Group training for suicidal patients (van Beek et al., 2009)	The Netherlands	150	Aged 18-65 years, presenting with suicidal ideation	No psychiatric disorders excluded, but acute manic or psychotic state and those who seek treatment primarily because of drug dependence were not included	Future Oriented Cognitive Training (FOGT) provided over 10 weekly sessions combining cognitive therapy, problem-solving therapy and positive future thinking to decrease suicidality and hopelessness. Provided in addition to TAU.	TAU: regular psychological treatment and ongoing medication when prescribed	12 months	Additional effect of the training on suicidal ideation was not statistically significant (although both groups reduced SI)	High dropout rates; 40% did not attend 7 or more sessions

Trials of psychodynamic interventions

Study	Location	N	Inclusion criteria	Diagnostic parameters	Experimental procedure	Control procedure	Follow-up	Main findings	Limitations
Partial hospitalisation for BPD (Bateman & Fonagy, 1999)	UK	38	Aged 16-65 years	Inclusion: BPD. Exclusions: schizophrenia, bipolar disorder, substance misuse, or "mental impairment"	Partially hospitalised group consisting of individual psychoanalytic psychotherapy once a week and group analytic psychotherapy three times a week	Standard psychiatric care (control) group including outpatient and community follow-up, review with a psychiatrist (usually twice a month) and inpatient admission as required	End of treatment (maximum of 18 months)	Patients who were partially hospitalised showed a statistically significant decrease on self-harm measures	Small sample size; Assessors not blind during follow-up
Outpatient MBT (Bateman & Fonagy, 2009)	UK	134	Aged 18-65 years, with a suicide attempt or life-threatening self-harm within previous six months	Inclusion: BPD. Exclusions: psychotic/bipolar disorder	18 months MBT as consisting of weekly group and individual psychotherapy	Structured clinical management delivered by non-specialist practitioners. Included individual and group sessions, as well as psychiatric review every three months	18 months	Greater reduction in frequency of self-harm for MBT compared with control group	Risk of bias as authors developed the intervention; longer term follow-up needed

DHP compared with OIP for personality disorders (Arnevik et al., 2009)	Norway	114	Personality disorder	Exclusions: schizotypal personality disorder, antisocial personality disorder, ongoing alcohol or drug dependence, psychotic disorders, bipolar I disorder	DHP: 18 weeks of day hospital treatment including psychodynamic and cognitive-behavioural group therapy, followed by weekly outpatient group and individual therapy	OIP: treated according to preference of therapist, mostly using psychodynamic/ psychoanalytic treatment modalities	Eight months	Although there was a decline in self-harm across both groups, no differences were observed between two groups in terms of self-harm	Low number of patients reported self-harm events at baseline(n=16) which was too small to test for statistical significance; relied on self-report data
Psychodynamic psychotherapy for BPD and alcohol use disorder (Gregory et al., 2008)	USA	30	Aged 18 to 45 years	Diagnosis of BPD with alcohol abuse or dependence. Exclusions: schizophrenia or schizoaffective disorder	DDP: adapted version of psychodynamic psychotherapy for challenging BPD cases. Weekly individual sessions over 12 to 18 months with focus on linking emotional/interpersonal experiences to develop a verbal/symbolic narrative	TAU: included a range of treatment such as medication management, individual psychotherapy, alcohol counselling and case management.	12 months	DDP group significantly reduced parasuicide whereas TAU did not	Measure for self-harm (Lifetime Parasuicide Count; Linehan & Comtois, 1994) did not have published reliability/validity data; small sample size

TFP for BPD (Doering et al., 2010)	Germany	104	Female, aged 18-45 years	Inclusion: BPD. Exclusions: antisocial personality disorder, substance dependence in previous six months, schizophrenia, bipolar disorder	Bi-weekly TFP 50 minute sessions focusing on dysfunctional early relationships	Treatment by experienced community psychotherapists using predominantly psychoanalysis or behavioural therapy	12 months	Neither group showed significant changes in self-harm	High dropout rate in both groups resulting in final data for 68% of participants

Trials of outpatient interventions designed to improve compliance with treatment

Study	Location	N	Inclusion criteria	Diagnostic parameters	Experimental procedure	Control procedure	Follow-up	Main findings	Limitations
Intensive intervention after a suicide attempt (Allard et al., 1992)	Canada	126	Presenting to ED following a suicide attempt	No exclusions	Intensive follow-up of 18 sessions with a social worker/psychiatrist including at least one home visit, including psychotherapy, medication reviews and psychosocial interventions as needed. Measures to improve attendance including reminders	TAU: home treatment	Two years	Rate of repetition between groups was not significantly different (35% in experimental and 30% in control group), with a higher repetition rate for those completing the intervention	Only one third of intervention group completed treatment; losses to follow-up were 15-17%
Outpatient aftercare following self-harm (van Heeringen et al., 1995)	Belgium	516	Aged 15 and over, presenting to A&E following self-harm	No exclusions	Patients referred for outpatient treatment. Non-compliant participants in experimental group i.e. that did not attend outpatient treatment appointment, were visited at home by a community nurse to assess reasons for non-compliance	TAU: no home visit if not compliant with outpatient treatment	12 months	Nearly significant lower rate of self-harm repetition in experimental cohort compared with TAU (p=0.058)	Self-report data for self-harm; follow-up data not available for 25% of participants

Trials of case management interventions

Study	Location	N	Inclusion criteria	Diagnostic parameters	Experimental procedure	Control procedure	Follow-up	Main findings	Limitations
Nurse-led case management (Clarke et al., 2002)	UK	467	Aged 16 and over, presenting to ED following self-harm	Presentations resulting from substance misuse, no other exclusions	Additional case management intervention including comprehensive assessment of need, individualised care package, arranging appointments and long-term, flexible support	TAU: medical and psychiatric assessment/ treatment as required	12 months	No significant differences between groups in terms of readmission rates for self-harm	Readmission rate in TAU lower than predicted, suggesting a larger sample size was needed
Assertive case management for self-harm (Kawanishi et al., 2014)	Japan	914	Aged 20 and over, admitted to ED following-self harm, (with suicidal intent)	Inclusion: Diagnosable Axis I disorder	Assertive case management including: face-to-face or telephone contact with participants in ED and after discharge, gathering information about treatment status and barriers to treatment, providing psychoeducation and referring to external services as needed	Enhanced TAU: case manager gave information about local health and social care resources and visits at six months, 18 months and annually	Up to five years	No significant differences between groups. Post-hoc analyses suggested that intervention was effective for reducing repetition of attempts at six months but not later follow-up	May not be representative of individuals that self-harm given other motives other than suicidal intent

Trials of GP interventions

Study	Location	N	Inclusion criteria	Diagnostic parameters	Experimental procedure	Control procedure	Follow-up	Main findings	Limitations
GP intervention to prevent self-harm (Bennewith et al., 2002)	UK	1,932	Aged 16 and over, presenting to A&E following self-harm	No specific exclusions, unless self-harm was in response to a psychotic delusion or hallucination	GP intervention: letter from GP sent to patient inviting them to attend a consultation. GP also provided with guidelines on assessing and managing self-harm to use within consultations	TAU: usual care from GP	12 months	No significant differences between groups in terms of repeat self-harm at follow-up	Delay between incident of self-harm and information sent to GPs in the intervention group; relying on GP records for self-harm

Trials of postcard interventions

Study	Location	N	Inclusion criteria	Diagnostic parameters	Experimental procedure	Control procedure	Follow-up	Main findings	Limitations
Postcard intervention for hospital-treated self-poisoning (Carter et al., 2007)	Australia	772	Aged 16 and over, presenting to regional toxicology unit	No exclusions	Postcards plus TAU: Eight postcards sent at months 1,2,3,4,6,8,10 and 12 months after discharge from unit, using format developed by Motto and Bostrom (2001)	TAU: psychiatric assessment and decision regarding follow-up treatment (including inpatient admission if required)	24 months	No significant differences between groups in terms of proportion repeating self-poisoning, although rate of repetition was significantly reduced in postcard group compared with TAU alone	Focused specifically on self-poisoning and did not include other forms of self-harm; skewed data for a small proportion of participants (less than 25%) that repeated self-poisoning during the follow-up
Postcard intervention for repeat self-harm (Beautrais et al., 2010)	New Zealand	327	Aged 16 and over, presenting to	No exclusions	Postcard intervention plus TAU: six postcards over a 12-month period based	TAU: treatment through mental	12 months	No significant differences between	Uneven distribution of history of self-harm in

			psychiatric ED following self-harm		on Carter et al. (2007) format	health services including crisis assessment, inpatient and community services		groups in terms of repetition of self-harm	previous 12 months at baseline, which was lower in the intervention group; study underpowered as terminated early (700 required)
Postcard intervention for suicidal behaviours (Hassanian-Moghaddam et al., 2011)	Persia	2,300	Aged 12 and over, admitted to hospital following self-poisoning	No exclusions	Postcards plus TAU using Carter et al. (2007) intervention (plus a ninth postcard sent on the participant's birthday)	TAU: described as "generally poor" due to lack of availability of community mental health services or psychiatric beds	12 months	Significant reduction in suicide attempts and suicidality	Poor quality of TAU; self-report nature (and validity) of outcome measures
Evaluating a package of care following self-harm (Hatcher et al., 2015)	New Zealand	1,474	Aged 17 and over, presenting to hospital following self-harm	No exclusions	Care package consisted of six elements: 1) patient support for up to two weeks after discharge from hospital; 2) postcard contact for one year; 3) PST; 4)	TAU: referral to a range of treatment including psychiatric or psychological	12 months	No significant differences between groups for number of people re-presenting	Fewer patients than needed for statistical power were recruited (440 per group); issues with intervention engagement e.g. only 43% of

					encouraging GP attendance for physical health including a free voucher for GP appointment; 5) risk management strategy and 6) cultural assessment	assessment and intervention, substance misuse services and crisis teams		with self-harm	participants attended three or more PST sessions
Crisis coping cards with case management (Wang et al., 2016)	China	64	Aged 18 and over, referred for case management services from medical/non-medical organisations	No exclusions	Crisis card intervention plus TAU: six weeks of crisis card training sessions including developing awareness of suicidality, coping strategies (emotion regulation) and distraction techniques, supportive resources in times of crisis and a 24-hour crisis telephone line	TAU: case management delivered for up to three months including psychiatric evaluation, suicide risk assessment, psychological support and referral to other services as needed e.g. community mental health services	Three months	Five TAU participants compared with zero TAU plus crisis card participants attempted suicide	Small sample size; lack of follow-up after the intervention ended

Appendix D: Suicidality interventions

Trials of cognitive therapies

Study	Location	N	Inclusion criteria	Diagnostic parameters	Experimental procedure	Control procedure	Follow-up	Main findings	Limitations
Cognitive behavioural problem solving for suicide attempts (Salkovskis et al., 1990)	UK	20	Aged 16-65 years, presenting to A&E following attempted suicide (with at least two previous historical attempts)	Exclusion: psychosis	Problem-solving intervention: up to five sessions each lasting one hour, included identifying problems, priorities for problem-solving, generating solutions, developing goals and implementing strategies to achieve these goals.	TAU	12 months	Significantly reduced suicidality at follow-up for problem-solving group compared with controls	Small sample size; unclear what TAU involved
CBT for self-harm (Raj et al., 2001)	India	40	Aged 16-50 years, first or second suicide attempt through self-poisoning	Inclusion: anxiety, depression or adjustment disorder. Exclusions: bipolar affective disorder, psychosis,	CBT: incorporating a range of techniques over 10 sessions (spanning two to three months). These included guided discovery, cognitive restructuring, activity scheduling,	TAU: routine medical treatment and the option to have therapy, although patient had to initiate	Three months	Significant reductions in suicidality for experimental compared with control group	No follow-up beyond treatment; previous psychological intervention exclude which may exclude high-risk cohorts

				dysthymia, eating disorder, obsessive compulsive disorder, substance dependence disorders or any type of personality disorder	behavioural activation and homework activities. Additional elements to improve treatment compliance	contact with therapist		
Comparing CBT, PST and TAU (Stewart et al., 2009)	Australia	32	Aged 18 and over, recent suicide attempt	Excluded if psychotic illness	CBT or PST. CBT: activity planning, goal setting and relaxation, and cognitive techniques such as cognitive restructuring and thought challenging. PST: learning and adopting alternative solutions to suicide, based on D'Zurilla and Goldfried (1971)	TAU: community follow-up by the Acute Care Team including telephone calls, home visits, psychiatry appointments, linking with social network and GP	Post-treatment for experimental groups, two months for TAU	Both intervention groups demonstrated significant reductions in suicidal ideation, whereas TAU did not	Small sample size and short follow-up; differences in clinical diagnoses across groups a possible confounder

MACT with a therapeutic assessment augmentation for BPD (Morey et al., 2010)	USA	16	Aged 20-53 years, referred from local mental health agencies, presenting with suicidality	Inclusion: BPD	Six sessions of MACT (see Tyrer et al., 2003)	In addition to MACT, the first two sessions included an individualised, collaborative assessment including specific treatment goals and enhancing client motivation	Post-treatment	Both groups decreased significantly in terms of suicidality	13 of 16 were female; small sample size; four MACT and five MACT plus therapeutic assessment did not complete treatment
Feasibility trial MACT for self-harm for individuals with BPD and substance misuse (Davidson et al., 2014)	UK	20	Aged 18-65 years, referred by Liaison Psychiatry team	Inclusion: at least one personality disorder and substance misuse	MACT: brief, six session therapy focusing understanding self-harm and finding more adaptive ways to manage distress	TAU: referral to a community mental health team and inpatient treatment as required	Three months	MACT group had significantly lower scores of suicidal ideation at follow-up	Small, convenience sample; short follow-up period; follow-up only available for 15 participants (11 MACT, 4 TAU)

Substance use and comorbid suicide risk (Morley et al., 2013)	Australia	185	Aged 18-65 years, suicidal behaviours (suicide attempt in the last three months and current suicidality) with comorbid substance misuse	Exclusions: psychotic disorder	OCB plus TAU: eight individual therapy sessions utilising cognitive and behavioural principles focusing on reducing substance use, as well as depressive symptoms and suicidality (e.g. identifying relevant cognitions associated with previous suicide attempts, triggers/stressors associated with increased suicidality)	TAU: standard care available through substance misuse treatment site e.g. case management, pharmacotherapy and recommendation to follow-u with GP for mental health treatment	Six months	Only two participants reported suicide attempts at follow-up, thus could not be analysed. No significant group differences in terms of suicidality	Clinical heterogeneity; 60% attrition rate
CBTp in an outpatient service (Peters et al., 2010)	UK	74	Aged 18-65 years, at least one persistent/distressing positive symptom of psychosis	Exclusions: primary diagnosis of substance use or organic disorder	CBTp delivered by non-expert therapists (CBT therapists but not CBTp trained) over six months, weekly or bi-weekly depending on patient preference. Focus on distress rather than	Waitlist control including a delayed therapy group received TAU whilst waiting which usually	Three months	Significantly reduced odds of suicidality in the combined therapy group (experimental plus delayed therapy) at	Recruitment dependent on referrals to psychological therapies clinic therefore included participants that were motivated to attend/engage;

					symptoms, with an emphasis on therapeutic relationship and engagement.	included medication and input from community mental health team.		end of therapy compared to waitlist control	outcome assessors not blinded to treatment condition
Cognitive behavioural prevention of suicide in psychosis (Tarrier et al., 2014)	UK	49	Aged 18-65 years, previous self-harm (with suicidal intent) or presenting with suicidality. Could not currently be receiving psychological treatment	Inclusion: schizophrenia and psychotic disorders. Exclusions: bipolar depression or substance-induced psychosis	Novel intervention (CBSPp) designed to reduce suicidality/self-harm with suicidal intent for individuals with schizophrenia spectrum disorders. Delivered over 24 sessions (twice weekly over 12 weeks) in addition to TAU	TAU not stated	Six months	Significant reductions in suicidality for intervention plus TAU group, compared with TAU alone.	Small sample size; high attrition (n=8 dropped out of intervention, n=6 dropped out TAU); exclusion of serious suicidal intent therefore cannot necessarily be generalised to high risk cohorts
Suicidality among patients with first episode psychosis (Nordentoft et al., 2002)	Denmark	341	Aged 18-45 years	Inclusion: psychotic disorders	Integrated treatment comprised of assertive outreach from MDT, antipsychotic medication, social skills training,	TAU: community treatment and antipsychotic medication	12 months	No significant differences between groups in terms of suicidality or suicide attempts at	Self-report, dichotomous answers to suicidality questions ‘not present’ and ‘present at least once’

					family psychoeducation			follow-up, although both groups significantly reduced suicidality	
Individual CBT for patients with mood disorders and suicidal ideation (Sinniah et al., 2017)	Malaysia	69	Aged 18-75, no previous CBT or another psychological intervention	Inclusion: unipolar mood disorders	CBT plus TAU: CBT sessions were two hours weekly, twice a week for eight weeks. Included orientation to CBT, identifying dysfunctional thoughts and behaviours related to depression and learning CBT techniques to challenge dysfunctional cognitions	TAU: follow-up appointment with psychiatrist but no psychotherapy	Six months	Significant reductions in suicide ideation. Intervention was significantly more effective than TAU alone	Medication potential confounding factor; small sample size
CBT plus exercise (Abdollahi et al., 2017)	Iran	70	Referred to psychology clinic, exercising less than three times a week	Inclusion: mild to moderate depression Exclusions: severe depression, bipolar disorder,	CBT group programme plus exercise. Main goals were to identify negative thinking patterns and develop more adaptive behaviours.	CBT group programme only	Post-treatment	CBT plus exercise was more effective for reducing suicidal ideation	No follow-up data so unclear if findings persisted over time

				schizoaffective disorder	Exercise sessions scheduled three times a week for 12 weeks				
Impact of depression treatments on suicidality (Weitz et al., 2014)	The Netherlands	293	Recruited from psychiatric/mental health services or self-referral with depression and suicidality	Major depressive episode; excluded if they had additional psychiatric disorders such as psychotic disorder (other diagnostic exclusions not specified)	Three experimental conditions: 1) CBT, 2) Interpersonal Therapy (IPT), 3) imipramine plus clinical management 1 and 2: delivered according to treatment manuals of each therapy. 3: Clinical management included management of medication and side effects, while reviewing a patient's clinical status. All treatments lasted 16 weeks	Placebo plus clinical management	18 months	Suicidal ideation from baseline to post-treatment reduced in all conditions with moderate effect size	Suicidal ideation measured using a single item on each measure; only included individuals with mild to moderate suicidality
Pilot trial of MBCT for recurrent depression	UK	28	Aged 18-65 years, not participating in individual	Inclusion: MDD lasting at least two years.	MBCT plus TAU: group sessions over an eight week period. Focus of intervention was	TAU: continuation of medication and input	Post-treatment	Both groups reduced suicidality but no significant	Small sample size; subjective bias as used self-report

(Barnhofer et al., 2009)			or group therapy	Exclusions: mania/hypomania, psychosis, obsessive-compulsive disorder, eating disorder, substance abuse	mindfulness training with additional components relevant to suicidality i.e. crisis plans, cognitive techniques to address suicidality and hopelessness	from mental health services		differences between groups	measure of suicidality
MBCT for individuals with depression (Barnhofer et al., 2015)	UK	194	Aged 18-70 years, with a history of at least three previous episodes of depression.	Exclusions were a history of schizophrenia, schizoaffective disorder, bipolar disorder, current abuse of alcohol or other substances, organic mental disorder.	MBCT aims to help individuals recognise maladaptive thinking patterns through mindfulness training. Two hour sessions delivered weekly over eight weeks, in addition to TAU	Two control groups. Active control plus TAU: Cognitive psychoeducation (CPE), including all elements of MBCT except meditation practice. TAU: included medication and psychotherapy	Six weeks	Significant reductions in MBCT group but not either control group	Lack of follow-up post-treatment; Participants with severe depressive symptoms excluded from analyses

ACT for suicidal ideation (Ducasse et al., 2018)	France	40	Aged 18-65 years, suicidal behaviour disorder according to DSM-V	Exclusions: schizophrenia, substance use disorder, a current manic or hypo-manic episode	Seven week ACT as an adjunct to TAU. Two hour session each week focusing on a different skill which was provided as a written summary to participants at the end of each session to practice at home, as well as behavioural commitment exercises	Relaxation group using Progressive Relaxation Training. Also involved a written summary of skills to practice at home. Plus TAU	Three months after therapy completion	ACT participant had significantly greater rate of change in terms of suicidal ideation score pre to post treatment. Rate of change not significant for either group at three month follow-up	Short follow-up; exclusion of alcohol use disorder may limit generalisability
Visit and active treatment compared with TAU (Mousavi et al., 2017)	Iran	60	Patients presenting to ED following a suicide attempt	No exclusions	10 face-to-face visits and six phone calls over 12-months. Elements of cognitive therapy, ACT techniques, distraction techniques and referral to psychologist/social worker (medication as needed)	TAU: patients presenting with suicidality were recommended to refer to the psychiatry emergency unit	12 months	Significant difference between number of patients in experimental (n=7) and control (n=19) groups that had suicidal thoughts at follow-up	Measure developed by author and does not have established psychometric validity; unclear exactly how suicidal ideation was assessed

Trials of DBT

Study	Location	N	Inclusion criteria	Diagnostic parameters	Experimental procedure	Control procedure	Follow-up	Main findings	Limitations
Problem-solving skills group for inpatients with personality disorders (Springer et al., 1996)	USA	31	Admitted to psychiatric unit of a university hospital	Inclusion: personality disorder. Exclusions: schizophrenia, chronic psychosis, mania, eating disorder	Problem-solving skills group adapted from Linehan et al. (1991) model for an inpatient setting (shortened version). Included 10 sessions lasting 45 minutes, five of which focused on emotion regulation, four on interpersonal effectiveness and one on distress tolerance	Wellness and Lifestyles discussion group: forum to discuss topics important to participants including recreation, health and fitness, families, hobbies and current events	At point of discharge (average length of hospitalisation was 13.3 days for experimental group and 11.9 days for controls)	Both groups significantly reduced suicidality at discharge but there were no significant between group differences	Sample size
AP for BPD (Andreoli et al., 2016)	Switzerland	170	Aged 18–60 years, presenting with self-harm requiring medical intervention	Inclusion: MDD and BPD. Exclusions: psychotic disorder, bipolar I disorder, severe substance dependence	AP: incorporating elements of cognitive and psychodynamic therapy with a focus on difficulties in romantic relationships. Two experimental groups: 1) AP by psychotherapists, 2) AP by nurses	TAU: intensive community treatment. In first two weeks, as many nurse visits as required and bi-weekly visits thereafter	Three months	Participants receiving either form of AP significantly reduced suicidality compared with TAU	Unclear what measure was used to determine suicidality score; poor treatment retention in TAU (11 of 30 dropped out)

Interventions for suicidal individuals not engaged in treatment (Ward-Ciesielski et al., 2017)	USA	93	Aged 18 and over, presenting to a university outpatient clinic, reporting suicidal ideation in the past week	No exclusion but in the first seven months of the trial, participants were excluded if they had received mental health treatment in the previous 12 months.	Brief DBT was a single session lasting 45-60 minutes covering five DBT skills: mindfulness, mindfulness of current emotions, opposite-to-emotion action, pacing breathing and changing body chemistry (e.g. ice to face, intense exercise, progressive muscle relaxation)	Relaxation training was a single session lasting 45-60 minutes. Based on principles of supportive therapy including building up resources to deal with stressors	12 weeks post intervention	Both groups significantly reduced suicidal ideation however there were no significant differences between groups	Two interventions were very similar so difficult to detect differences; all study therapist were DBT-trained; target sample size needed for statistical power not obtained
Comparison of three treatments for BPD (Clarkin et al., 2007)	USA	90	Aged 18-50 years, recruited from the community	Diagnosis of BPD. Exclusions: comorbid psychotic disorders, bipolar I disorder, delusional disorder, active substance dependence	1) DBT: with weekly individual sessions and skills group with the aim of developing emotion regulation skills; 2) TFP: individual sessions focusing on the relationship between patient and therapist. Pharmacological treatment as required	Supportive treatment: one session per week with additional sessions as required providing advice on difficulties often encountered by people with BPD	One year	DBT and TFP associated with significant reductions in suicidality	No follow-up beyond one-year treatment period

Trials of brief psychological interventions

Study	Location	N	Inclusion criteria	Diagnostic parameters	Experimental procedure	Control procedure	Follow-up	Main findings	Limitations
Brief psychological intervention after self-harm (Guthrie et al., 2001)	UK	119	Aged 18-65 years, presenting to ED with self-harm, not requiring inpatient psychiatric treatment	No exclusions	Brief psychological intervention: four 50 minute sessions of psychodynamic interpersonal therapy within one week of ED presentation where possible, focused on resolving interpersonal difficulties that increase psychological distress	TAU: typically involved psychiatric assessment in the ED and patient recommended to follow-up with their GP	Six months	Significant reductions of suicidality for intervention compared with control group	Retrospective self-report measure of self-harm; raters not blind to intervention at follow-up
Brief psychological intervention following self-harm (Armitage et al., 2016)	Kuala Lumpur	226	Admitted to hospital following an episode of self-harm	No exclusions	Two conditions. 1) VHS implementation intention condition: consisting of critical situations that may trigger self-harm and solutions to avoid self-harm 2) Self-generated implementation intention condition: implementation intention instructions but without guidance	Volitional help sheet but without instructions to form implementation intentions	Three months	Both experimental groups associated with lower levels of suicidality and self-harm, but effect more pronounced when supported by volitional help sheet (Group 1)	Outcome measure self-report and did not distinguish between suicidal thoughts and behaviours

Trials of PST

Study	Location	N	Inclusion criteria	Diagnostic parameters	Experimental procedure	Control procedure	Follow-up	Main findings	Limitations
Group problem-solving therapy pilot (Bannan, 2010)	Ireland	18	Aged 18-65 years, presenting to A&E and assessed by psychiatrist following self-poisoning, at least one previous episode of self-poisoning in previous 12 months	No exclusions	Group PST over eight 2.5 hour sessions divided into two phases: 1) analysis of the problem 2) analysis of the solutions	TAU: individual therapy	Two months	Both groups showed a reduction in suicidality, no differences between groups	Small sample size; all patients in psychiatric treatment; short follow-up
Brief psychological intervention after self-harm (Husain et al., 2014)	Pakistan	221	Aged 16-64 years, attending medical units of three university hospital following self-harm, not requiring inpatient treatment	Exclusions: substance misuse, substance dependence, schizophrenia, bipolar disorder	C-MAP plus TAU. C-MAP was delivered over six sessions and included evaluation of self-harm, crisis skills, problem-solving, recognising negative thought patterns and relapse prevention. Phrases and scenarios were adapted for cultural context	TAU: local medical, psychiatric and primary care services providing routine care (patients not routinely referred for psychiatric or psychological treatment)	Six months	Significant reduction of suicidal ideation in C-MAP compared with TAU group	Suicidality not assessed beyond end of treatment; unclear whether intervention effects were due to nonspecific factors e.g. increased psychological input

Other trials

Study	Location	N	Inclusion criteria	Diagnostic parameters	Experimental procedure	Control procedure	Follow-up	Main findings	Limitations
General hospital admission for "parasuicide" (Waterhouse & Platt, 1990)	UK	77	Presentation to hospital following "parasuicide" without need for immediate medical or psychiatric treatment	No exclusions	Hospital admission: admission was recommended for a minimum of 12 hours (median 17 hours). No referral to other agencies	Discharge home	16 weeks	No differences between suicidality or repeat self-harm in follow-up between groups	Incomplete data at follow-up (only available for 52 out of 77)
Physical exercise for high-risk suicide patients (Sturm et al., 2012)	Austria	20	Aged 18 and over, at least one previous suicide attempt	No exclusions	Nine-week monitored hiking program. Three hikes offered each week, each hike lasted two to three hours	Nothing additional to usual pharmacological or psychotherapeutic input (nine weeks)	24 weeks	Sig decrease in suicide ideation and hopelessness during the hiking phase	Pilot study with small sample; volunteer sample; three participants dropped out of Group Two
Follow-up by GP's after self-poisoning (Grimholt et al., 2015)	Norway	176	Aged 18-75 years, admitted to general hospital after deliberate self-poisoning	Exclusions: psychotic disorders	GP intervention: six month follow-up starting with an appointment within one week of hospital discharge. Monthly follow-	TAU: psychiatric evaluation before hospital discharge and referral to other services including	Six months	No significant effect of the interaction on suicidality compared with TAU	Self-report measure for suicidality; exclusion of higher risk cohorts (referred to

	ups in the first three months and two consultations in the last three months focusing on the reason for self-poisoning, presenting problems, suicidal thoughts and treatment needs.	psychiatric outpatient clinic, GP, family counselling and substance misuse.		psychiatric wards)

Appendix E: Literature search strategy for telephone interventions.

((“suicide”[MeSH Termsj] OR “suicid*”[Title/Abstract] OR (“self harm”[Title/Abstract] OR “self injury”[Title/Abstract] OR “parasuicid*” [Title/Abstract] OR “self inflicted violence”[Title/Abstract])) AND (“mobile”[All Fields] OR “smartphone”[All Fields] OR “cell phone”[All Fields] OR “phone”[All Fields] OR “mhealth”[All Fields] OR "m-health"[All Fields])

Appendix F: Telephone contact interventions.

Study	Location	N	Inclusion criteria	Diagnostic parameters	Experimental procedure	Control procedure	Follow-up	Primary outcome measures	Main findings	Limitations
Prevention of non-fatal self-harm (Morgan et al., 1993)	England	212	No previous history of self-harm	No exclusions. Depressive disorders most prevalent (28% in experimental group, 23% in control)	Green card: indicated that help was available should the individual have further difficulties, encouraging them to seek help at the earliest opportunity provided that self-harm had not occurred. This was in the form of telephone or in-person (at A&E) access to trainee psychiatrists,.	TAU: included options ranging from referral back to primary care to psychiatric inpatient admission	12 months	Self-harm data from medical records and psychiatric notes	Reduction of self-harm in experimental group, not significant. Trend towards greater use of hospital services in control group	Restricted only to those that presented with self-harm for the first time
Crisis telephone contact for self-harm (Evans et al., 1999)	England	827	Admitted to general hospital following self-harm	No exclusions,	24/7 helpline for telephone support from psychiatrist up to six months after the index event, in addition to TAU. If the psychiatrist was unavailable, encouraged to seek help through the usual crisis options	Not stated	Six months	Self-harm repetition rate from A&E data, regardless of whether this resulted in hospital admission	Intervention had no significant effect on self-harm repetition rate	Repetition of self-harm underestimated true figure due to use of outcome measure

Therapeutic contact following self-harm (Kapur, Gunnell, et al., 2013)	England	66	Aged 18 and over; presenting to ED with self-harm	No exclusions other than individuals experiencing psychotic relapse	Contact intervention: developed based on feedback from service users and providers. Information leaflet provided initially with a list of local and national numbers for supported. This was followed by two phone calls within the first two and weeks and letters at one, two, four, six, eight and 12 months including a general statement of concern which was adapted if needed to individual circumstances	TAU: mental health liaison nursing team conducting specialist assessments and out-of-hours care	12 months	Self-harm resulting in hospital attendance	The 12-month repeat rate for individuals in the intervention group was 34.4% v. 12.5% for TAU	Under half of eligible participants randomised; self-harm that did not result in hospital attendance not measured
Brief intervention and phone calls (Amadéo et al., 2015)	French Polynesia	200	Presenting to ED with self-harm (regardless of suicidal intent)	No exclusions; half of participants in each group had a diagnosis of mood disorder	BIC plus TAU: one psychoeducation session and nine follow-up phone calls over 18 months. Phone calls asked whether the individual had repeated suicidal behaviour and whether they felt they needed any additional support.	TAU: inpatient hospitalisation followed by outpatient care or no follow-up	18 months	Number of suicides (coroner records) and non-fatal suicidal behaviours (self-report and hospital data)	No significant differences between the two groups in terms of suicidal behaviour	Drop-out rate problematic; difficulties collecting follow-up data from participants

The Emergency Department Safety Assessment and Follow-Up Evaluation study (Miller et al., 2017)	USA	1,376	Presenting to the ED within one week of suicidal ideation or attempt	No exclusions	Suicide risk screening from an ED physician, received discharge resources and follow-up telephone calls for one year following ED visit. Telephone calls used the Coping Long Term with Active Suicide Program protocol, which is a combination of case management, psychotherapy and involvement from support network	TAU: usual care depending on study site	One year	Suicide attempt	Intervention participants had lower incidence and repetition of suicide attempts	Sequential design meant that time effects could have produced differences across phases of intervention delivery
Brief contact interventions (Vaiva et al., 2018)	France	1,040	Aged 18 or over, presenting to the ED within seven days of self-harm with suicidal intent	No exclusions	First episode of self-harm: crisis card with a 24/7 telephone number History of self-harm: phone call between 10 and 21 days after the self-harm presentation. Intervention for this group split into three arms: 1) if contactable but no longer suicidal and adhering to treatment plan, no	Dependent on hospital but typically included post-crisis appointments and referral to outpatient services, and in most cases back to GP	14 months	Proportion repeating self-harm (cross-validated through self-report, medical records and information from healthcare professionals)	No significant differences between groups for numbers repeating self-harm at six months.	Not clear how this would generalise to individuals with a greater lifetime history of self-harm

					further follow-up apart from TAU 2) if could not be reached after three attempts, sent personalised postcards signed by the assessing clinician at months two, three, four and five 3) if contactable and not adhering to treatment plan, sent postcards as above and offered an emergency consultation within 24 hours if ongoing suicidality/distress					
Telephone contact after a suicide attempt (Cedereke et al., 2002)	Sweden	216	Patients treated in general hospital after a suicide attempt	No exclusions; predominantly mood disorders (49% experimental group, 36% control group)	Two telephone interventions in addition to TAU. Telephone calls aimed to enhance treatment compliance or encourage individuals that had disengaged to attend for treatment.	TAU: including psychiatric treatment, community mental health input and GP/primary care contact	12 months	Suicidal behaviours (through semi-structured interviews at follow-up)	No differences between groups in terms of suicidal behaviour at follow-up	Intervention did not start until one month after index attempt at which point two individuals had already died by suicide
Brief telephone	France	605	Aged between 18	No exclusions; diagnostic	Telephone contact either at one or three months after discharge	TAU: usually referral	13 months	Suicide and suicide attempts	No significant difference	30% of participants randomised

contact (Vaiva et al., 2006)			and 65 years; attempted suicide by deliberate self-poisoning	breakdown not reported	from the ED. Calls were undertaken by psychiatrists with experience of managing suicide risk using a psychotherapeutic approach. Aim was to review recommended treatment or make adjustments depending on level of risk, with the aim of enhancing compliance with treatment.	back to GP		(self-report, validated through ED records)	s between groups in terms of deaths attributed to suicide or further suicide attempts	to telephone interventions could not be contacted
Organisation of a suitable monitoring for suicide attempters program (Mouaffak et al., 2015)	France	320	Aged 18 or over, admitted to the ED		Telephone call at two weeks, one month and three months post-discharge to assess psychological state and suicide risk as well as adherence to treatment, plus TAU	TAU: medical treatment for self-harm as required, assessment of suicide risk and treatment plan	12 months	Repeat self-harm (obtained either through self-report or informant)	No significant differences between groups (14% in each group repeated self-harm)	Outcome data relied on self-report (informants in some cases) hence subject to recall bias

Appendix G: Participant Information Sheet for the research

Study title: Impact of the Collaborative Assessment and Management of Suicidality (CAMS) framework

Lead researcher: Sophie Brown, Research Associate, is conducting the study as part of a PhD Program at the University of Hull.

Background: Thousands of people each year report feeling suicidal. The rate of suicide in England remains high. Better clinical tools are needed to help people when they feel suicidal. Previous research suggests that the CAMS framework may benefit people that report suicidality. The main research question is whether the CAMS framework improves outcomes for people that feel highly suicidal.

What is CAMS: CAMS is a framework (not a therapy) that is used with people that feel suicidal. The focus of CAMS assessment is to understand what is making that person feel suicidal. This can be different for everyone. It helps clinicians appreciate the person's individual struggle so that they can provide the right treatment for you.

What is involved: CAMS involves filling out forms at different stages of your care. This will always include a CAMS assessment. It may also include further CAMS forms during and at the end of treatment. You will not be asked to complete any forms outside of your sessions.

Some participants will be contacted over the next 2 years to take part in interviews about CAMS. Interviews will last up to 1 hour and will be audio-recorded. They will take place at Harrison House, Grimsby. You will be asked to attend the interview at a time that suits you. Interview times will be available Monday-Friday 9am-5pm. Questions may include:

- What did you find helpful about the CAMS?
- Have you learned anything during CAMS that may help you in the future?

If you do not wish to be contacted for an interview, please tick here: ☐

How will your data be used: The information you give us will be used to see whether CAMS helps service users. Your name will be replaced with a number. This is so that you cannot be identified.

Interviews will be recorded. Some of what you say may be used in research papers. Your name will not be used. Any quotes used will be anonymous. The actual recording will be destroyed.

Benefits: It is hoped that the research findings will help improve the future care of people that feel suicidal.

Risks: During the CAMS and interviews, we may discuss something that you find upsetting. You will always be supported by trained mental health staff. If this is during an interview, we will stop the interview and offer you support. All participants will be offered a debriefing after the interview.

You can remove your data from the study at any time until the point of data analysis. This will not affect the type of care you receive. Please tell a member of staff who can inform the research team. If you are no longer under the care of mental health services, please use the contact information at the bottom of this page.

Funding: NAViGO CiC in partnership with Hull University.

Ethical approval: This study has been approved by the Faculty of Health Sciences Ethics Committee at the University of Hull.

Further information: For any further information regarding this study, please contact: Sophie Brown, Research Associate Email: S.Brown@2017.hull.ac.uk

Telephone: 01472 252366

If you have any complaints about this research study, please contact the project supervisor from the University of Hull:

Dr Frances Burbidge Telephone: 01482 466953

If you have any concerns about your mental health, please contact your GP or our 24/7 support service:

Single Point of Access (NAViGO) Telephone: 01472 256256

For free help and advice about difficult issues, please call:

Samaritans Telephone: 116 123

Appendix H: Participant Information Sheet for interviews

Study title: Impact of the CAMS framework

What's involved?

An interview lasting up to 1 hour that will be audio-recorded. This will take place at Harrison House, Grimsby. You will be contacted to arrange a time that suits you to attend the interview. Interview times will be available Monday-Friday 9am-5pm.

You will be asked about your experience using the CAMS framework. Questions may include:

- Can you tell me about your experiences working with suicidal patients?
- What did you find helpful about the CAMS?

What are the possible benefits of taking part?

It is hoped that the research findings will help us improve future care services for people feeling suicidal. We also want to improve the CAMS process for clinicians.

What are the possible risks of taking part?

We do not anticipate any risks of participation. You can stop the interview at any time. If any of the interview content is upsetting, we will ensure that you are offered debriefing.

What will happen to the results of this study?

The interview will be recorded. Some of what you say may be used in research papers. No names will be used. Any quotes used will be anonymous. The actual recording will be destroyed.

Who is organising this study?

NAViGO in partnership with University of Hull. Sophie Brown, Research Associate, is conducting the study as part of a PhD Program at the University.

Has this study had ethical approval?

This study has been approved by the Faculty of Health Sciences Ethics Committee at the University of Hull.
For any questions, please contact Sophie Brown, Research Associate on 01472 252366.

If you have any concerns about this research, please contact the project supervisor at University of Hull: Dr Frances Burbidge (01482 466953).