Nurses' experiences of the effects of mindfulness training: a qualitative systematic review and meta-synthesis

Abstract

Objectives: To explore the effects and experiences of nurses who have undertaken mindfulness training.

Design: Qualitative meta-synthesis.

Data sources: qualitative literature from seven scientific databases.

Review Methods: The PRISMA flow diagram was used to report the phases of the literature search. The Critical Appraisal Skills Program (CASP) qualitative research checklist, and the Mixed-Methods Appraisal Tool (MMAT) for mixed method studies were used as appraisal framework. Data synthesis was conducted using Thematic synthesis.

Results: 4 qualitative studies and 3 mixed-methods studies were included in the review. Four interpretive themes were generated: 1. Stress conceptualisation and management; 2. Valued aspects of mindfulness training; 3. Self-care awareness and strategies; 4. Challenges of mindfulness training

Conclusion: Conducting mindfulness-based interventions among nursing professionals helps to reduce work-related stress and has positive effects on work and life.

Keywords: Mindfulness, nurses, qualitative review

1. Introduction

The work of nursing personnel involves continuous contact with patients, which can lead to emotional vulnerability (Ruiz‐Fernández et al., 2019). As such, nursing is a high stress occupation (Ghawadra, Abdullah, Choo, & Phang, 2019). Stress from nursing practice can cause a multitude of physical and emotional problems affecting sleep, gastrointestinal symptoms, musculoskeletal pain, anxiety and low mood – often leading to burnout.(Bazazan, Dianat, Rastgoo, & Zandi, 2018; Hollister et al., 2020; Lopes, Vannucchi, Demarzo, Cunha, & Nunes, 2019). These negative feelings such as anxiety, burnout, distress which are work-related emotions can lead to low job satisfaction, work absenteeism, broken relationships and difficulty in focusing (Nguyen et al., 2019; Ruiz‐Fernández et al., 2019). Not only does this have a significant impact on well-being of nurses, but it can also negatively impact on the quality of care received by patients (del Carmen Pérez-Fuentes, Linares, Jurado, Márquez, & Martínez, 2020) and the effectiveness of health care systems (Ghawadra et al., 2019).

Mindfulness has been suggested as a strategy to help nurses – and other health care professionals – manage work related stress and anxiety. Mindfulness means paying attention on purpose, being ‘in the present’ to encourage nonjudgmental and emerging levels of self-awareness (Kabat‐Zinn, 2003). The most common mindfulness practice used is the mindfulness-based stress reduction approach (MBSR) by Jon Kabat-Zinn (Ruiz‐Fernández et al., 2019). In some countries mindfulness training has actually been embedded in medical curricula (Pérula-de Torres et al., 2019). The Canadian Network for Mood and Anxiety Treatments identifies mindfulness-based cognitive therapy (MBCT) as a recognized psychological treatment, citing evidence that MBCT as adjunct to MBSR, can reduce stress and depression among people living with chronic illness (Parikh et al., 2016). The MBSR approach was initially used to reduce chronic pain before being adapted for other physical and mental health conditions (Kabat-Zinn, 1982). Since then, there have been numerous

randomized clinical trials reporting beneficial effects of mindfulness to help a range of clinical conditions (Manotas, Segura, Eraso, Oggins, & McGovern, 2014; Moceri & Cox, 2019) and across various demographic groups (Alsubaie et al., 2017; Eby et al., 2019).

In terms of nurses and health care professionals some studies report on the effects of modified mindfulness-based approaches drawn from either MBSR or MBCT approaches (Lin, He, Yan, Gu, & Xie, 2019). This has led to the development of short programs aimed at health professionals in training type settings (Eby et al., 2019). Several quantitative meta-analysis reviews illustrate the power of mindfulness-based approaches in reducing psychological symptoms such as stress, anxiety, depression, and burnout (Ruiz‐Fernández et al., 2019; Spinelli, Wisener, & Khoury, 2019).

Quantitative research cannot unpack the mechanisms of the mindfulness-based intervention benefits on nurse's work performance or physical health (Lin et al., 2019) as relaxation and stress relief can be very subjective. Equally, the experience of "being present" (the core of mindfulness interventions), requires a more qualitative evaluation (del Carmen Pérez-Fuentes et al., 2020). There is a substantial amount of qualitative research published to evaluate the effects of mindfulness training. A meta-synthesis was undertaken by Morgan, Simpson, and Smith (2015) that highlights health care workers engaging in mindfulness training and reported potential benefits. Their research included studies published between 2001 and 2013. However, there have been several qualitative studies published since 2013, hence the need for our more contemporary review. We would like to add some new knowledge about mindfulness training based on latest literature and our study also differs from and extends Morgan et al.'s (2015) work in several ways. First, we focus on one profession – nursing – to explore the nursing focused experiences of mindfulness training. Second, we identify the valued aspects of the successful interventions (type of intervention, duration of sessions, length of session, setting of the practice and time of practice, facilitator, and possibility of

practice) which is mainly absent from Morgan et al.'s (2015) review. Third, we explore and present the feasibility and acceptance of the mindfulness-based interventions in healthcare and present findings on the longitudinal effects of the most used interventions.

2. Methods

A comprehensive review was conducted under the strategy of meta-synthesis. The review steps included (i) problem identification, (ii) literature search, (iii) quality appraisal, (iv) data analysis, and (v) presentation (Adams, Chamberlain, & Giles, 2019; Whittemore & Knafl, 2005).

2.1 Problem identification

To explore the effects and experiences of nurses who have undertaken mindfulness training.

2.2 Literature Search

Seven databases were searched: Pubmed, Cochran Library, Science Direct, EBSCO, Web of Science, Scopus and PsycINFO with published date between January 2014 and December 2019. Cited references were also retrieved from the related article. This literature search was conducted following a PRISMA flow diagram **(Figure 1**). A combination of MeSH and free-text terms “Nurse OR Nursing OR Nurses” AND “mindfulness training OR mindfulness OR MBSR OR MBCT” AND “Qualitative” were used.

A total of initial 1846 studies were found from 7 databases. This dropped to 1311 after duplicates were removed. By reading titles and abstracts, 255 articles were checked for eligibility and relevance to research design. At full text stage, a further 248 papers were removed as they did not meet inclusion criteria (Table 1). This process resulted in a final 7 papers included in the final synthesis.

2.3 Quality Appraisal

Rigor of included studies was assessed using the Critical Appraisal Skills Program(CASP) qualitative research checklist, and the Mixed-Methods Appraisal Tool(MMAT) for mixed method studies (Pluye et al., 2011; "Qualitative research checklist," 2018). The CASP checklist and MMAT checklist consist of several critical appraisal items. Two authors (XW, AL) conduced an initial appraisal separately with discussion to agree a consensus rating undertook by an experienced professor of nursing researcher (MH). This appraisal classified included studies into one of four quality ratings : (i) weak, (ii) adequate, (iii) moderate, or (iv) strong according to Adams et al. (2019) shown in **table 2**.

Seven studies (4 qualitative studies, 3 mixed-method studies) were included in this review (dos Santos et al., 2016; Freeman et al., 2019; Hunter, Snow, & Warriner, 2018; Lynch et al., 2018; Nissim, Malfitano, Coleman, Rodin, & Elliott, 2019; Pan et al., 2019; Slatyer, Craigie, Rees, et al., 2018). Two papers were qualitative descriptive studies (Lynch et al., 2018; Slatyer, Craigie, Rees, et al., 2018), one phenomenology (Nissim et al., 2019) and one grounded theory design (Hunter et al., 2018). The qualitative parts of mixed-method studies are of adequate to strong for embedded designs (Pan et al., 2019), Triangulation design (dos Santos et al., 2016) and Sequential explanatory design (Freeman et al., 2019). Three studies gave full examples of interview questions (dos Santos et al., 2016; Lynch et al., 2018; Pan et al., 2019). Four types of data collection were used: semi-structured interview, unstructured interview, group interview and open-ended questions at the end of a survey. Explicit protocols instructed the data analysis with thematic analysis, interpretive phenomenological analysis, content analysis and analysis methods proposed by Hsieh and Shannon (2005). Most studies failed to describe the researcher relationships to the participants and did not describe how the interview questions were developed.

2.4 Data analysis

Data analysis and synthesis consisted of 4 steps: coding, sorting, synthesizing and theorizing. The first process of data analysis was conducted by the first author and forth author (XW, YZ), began with reading and re-reading the papers. All qualitative data were extracted from the original papers and grouped by identifying topically similar codes. At this stage, subjective categories were generated by sorting. These were then subject to thematic analysis that produced a final set of interpretive themes.

Results

Seven studies (4 qualitative, 3 mixed-methods) were included in the review and are summarized in **table 2.** Details of interventions are shown in **table 3.** The mainstay of data focused on nurses' perception of taking mindfulness-based intervention. Four interpretive themes were generated as follows: Stress conceptualization and management; Valued aspects of mindfulness training; Self-care awareness and strategies; Challenges of mindfulness training with 12 sub-categories (**table 4**).

3.1 Stress conceptualisation and management

Participants found that mindfulness training had been an enjoyable experience, they felt it was rewarding and helped equip them to deal with workplace stress (Freeman et al., 2019; Nissim et al., 2019). Some described "it is great", "it was nice" and "I'm very happy" , helping nurses so that they could help others (dos Santos et al., 2016; Hunter et al., 2018; Nissim et al., 2019). It led to some clinical nurses re-evaluating how they approached stress at work – this was related to how the conceptualized stress and also how they envisaged it within themselves, for example, training helped nurses to "question its [stress] cause" "think of it [stress] in a more 'systematic' way" and take "tension" or "tightness" out of themselves (dos Santos et al., 2016; Hunter et al., 2018; Lynch et al., 2018; Nissim et al., 2019). Nurses summarized some tips and tricks they had learnt from mindfulness-based interventions – such

as breathing techniques and finding ways to make space for themselves in busy days (Hunter et al., 2018; Nissim et al., 2019; Pan et al., 2019): or just pause for a while then went back to work (Hunter et al., 2018):

"Because there are days that we're frantic; you don't have lunch until 3 p.m., and you don't go to the washroom the entire day. And that few seconds where you just stop, and you think, "why am I running around like a headless chicken? I could just take a breath, see how I'm feeling." It just helps. It just grounds me a bit….I think that physical tension builds during the course of a day. And if there's been a problem with a patient or with another staff member, you're absorbing that, that's more tension, and I think that a couple of minutes just taken out to take a breath, you can just feel, that clenched feeling, you just kind of let go of it…I guess I can say that over time it is a healthier way to work."(Nissim et al., 2019)

3.2 Valued aspects of mindfulness training:

One aim of this review was to explore what makes a feasible and successful mindfulness-based intervention – according to the nurses who had experienced it. A description of the positive elements of the training can be seen in **table 3**. Our analysis themed the valued aspects of mindfulness as follows, ***teaching components, facilitators in the intervention, formation of session and organizational acknowledgment.***

Teaching components: Nurses found the core mindfulness practices such as breathing, mediation, the body scan and mindful movement helpful. These techniques allowed them to take time out in their work setting and calm down, for example:

"Rather than take myself off into the drug room and cry. I might just go in and just focus on my breathing." (Hunter et al., 2018) ; "Just doing the breathing helps me to not feel so rushed" (Freeman et al., 2019)

Facilitators in the program: A skilled facilitator was very important and enhanced the nurses' experiences. Facilitators who were seen to have the background knowledge in psychology and physiology were valued – and developed respect with training participants by carving out a space of respect and confidentiality. This was valuable as nurses did not feel they were being pressured to share difficult emotions or experiences:

"The facilitator did a great job trying to make people feel comfortable, and no one felt pressured into divulging when they didn't want to." (Nissim et al., 2019)

Sessions format: The interprofessional format of the course helped communication through team story sharing. Training alongside others also provided encouragement: "If they can do it, I can do it." (Lynch et al., 2018). However, some would have preferred to do the training with other nurses that they did not know; "Doing it with strangers to me would have been more appealing" (Nissim et al., 2019). Nurses also valued the network of supportive colleagues the training provided outside the official training programme:

"As a group I think it has been really good to listen to other people's experiences and they really the same to you and having a bit of collaboration amongst the group. It will be really interesting when the second group do it because there will be twice as many of us having done it." (Lynch et al., 2018)

***Organizational acknowledgment*:** Another important feature of nurses' experiences was the fact that the training validated that work-related stress was an issue. The nurses appreciated that the training reflected that this was being taken seriously by their employer:

"I was glad that there was an acknowledgment on behalf of the department that was prioritizing selfcare. I think it's always been the elephant in the room. Nobody ever talks about it, which is fascinating." (Nissim et al., 2019)

3.3 Self-care awareness and strategies

***Behavior change*:** one of the substantial benefits to the nurses was their recognition of the need to self-care. This can be seen in how nurses discuss changes in their behavior in relation to stress:

"As health care providers, we never put ourselves first... You experience stress all the time, but this helps you make the connection to the effect it has on you and how you can do something for yourself to alleviate that." (Nissim et al., 2019); "I have given myself permission to allocate 30 minutes per day every day to play my piano."(Slatyer, Craigie, Rees, et al., 2018)

This self-care also contains a reflective element – with nurses appraising their past reactions to stress, for example: "actually, you know, I don't really, I don't know why I do this!" (Hunter et al., 2018). These techniques helped them in their daily caring work with patients:

"Because I know sometimes if I am worried about somebody, I will be distracted with the next patient. So I felt this would actually help me recovery as such, so that I will have full attention for the next patient." (Lynch et al., 2018) ; "Okay, well, let that person be safe, let that person be happy." (Nissim et al., 2019)

They become present at work rather than thinking about the past or future. Mindfulness training gave them tools to be present. Several of them built up new connections, relationships and communications with colleagues, patients, and family members:

"What I realized is that we all have our own story, and a very significant story to tell…I think that helped build cohesion, and to realize that we have a thing in common that we share among ourselves." (Nissim et al., 2019); "it's nice to feel that they can come to me for help and support. So yea…they didn't used to do that." (Hunter et al., 2018); "When

mindfulness is used in life, quarrels with my mom are reduced and relationships with her are improved."

And,

"In the past, when patients were noisy and couldn't accept the hospitalization cost, I would talk to them all the time. Now I listen to them. I breathe deeply and listen to them all the time. After adjusting my breathing slowly, I talk to them slowly." (Pan et al., 2019)

After taking mindfulness courses, participants spoke about how it helped them approach their care with patients and their families: "I think that it puts more compassion in how I approach each patient, their families, and their health crisis." (Freeman et al., 2019). Also, learning to reflect and take a step back from clinical situations was a skill they developed:

"I can do that tomorrow or I can do that later today or probably have a better way of doing it." (Nissim et al., 2019); "Things don't need to be done so quickly and now. Um, you know, you can, you can take a step back and allow yourself to look at what's happening before you can then, um, address it." (Hunter et al., 2018)

These self-care skills also enabled nurses to undertake techniques outside the work environment: "It's great to do practice of mindfulness movement at home. I feel relaxed and comfortable after practice." (Pan et al., 2019). These skills were particularly useful to manage sleep problems: "I had two nights of insomnia, and then began to pay attention to my breathing, to clear my mind, and I was able to sleep." (dos Santos et al., 2016). And even help learn to relax and sleep which improved their decision making at work (Freeman et al., 2019).

***Emotion management*:** Training also helped nurses to reframe how they managed emotional issues, such as keep emotional stability and accept, face the negative emotions (Pan et al.,

2019); calm down, control personal emotion and find way to deal with matters (Hunter et al., 2018). Participants who used to feel "worthless" built up confidence through participation in a mindfulness-based intervention: "That's what they think but I know what I am, it doesn't hurt." (Slatyer, Craigie, Rees, et al., 2018). The ability that they learnt from mindfulness to reflect and mediate was seen as a valuable tool in managing harmful emotions by nurses:

"You experience stress all the time, but this helps you make the connection to the effect it has on you and how you can do something for yourself." (Nissim et al., 2019); "the time that we just sat, in silence, as well. I really enjoyed that. And just sitting in silence, you never get a chance to do that…and that was peaceful in itself, you know." (Hunter et al., 2018)

3.4 Challenges of taking mindfulness training:

There were also some feelings of guilt when leaving clinical areas to undertake training or just to reflect, this might be a challenge for taking mindfulness courses during workdays (Lynch et al., 2018). We can even see some participants want to be in scenarios consisted of strangers or show their weakness only with someone they trust. Interaction effect would be amplified if showing emotion and vulnerability especially in the formation of a group or in front of colleagues as someone noted "you can't open your soul to your colleagues and then be professional an hour later." (Nissim et al., 2019). This vulnerability in clinical practice – showing signs of stress was negative and almost unprofessional:

"Any expression of emotionality is seen as a weakness. We don't display vulnerability. It's not encouraged, not only with our patients, my goodness. We don't even do it in the department. It's seen as a negative…."(Nissim et al., 2019)

Mindfulness courses take a long time, a commitment to the course, making it a regular habit in daily life seemed difficult and challenging. Some participants said they occasionally lacked

motivation without someone to guide and prompt them (Hunter et al., 2018; Lynch et al., 2018): ‘there is no facilitator at home to guide you which push you give it up’ (Nissim et al., 2019).

3.5 Feasibility and acceptance of mindfulness training:

An unspoken validation, “what you see every day takes its impact” of the mindfulness training and some participants felt “safe” and more “protected” as they attended more sessions (Nissim et al., 2019). Participants taking mindfulness training identifies its usefulness to colleagues and recommend the course, indeed, some of them used the skills they had learnt to help other colleagues deal with stressful clinical situations (Hunter et al., 2018; Slatyer, Craigie, Rees, et al., 2018):

“I’ve just been really supportive and making them do some of the deep breaths…because a patient died on the shift and she was just a grad[uate] so I took her aside and made her, you know and [I said] “it’s nice to feel that way but at the same time you need to still cope”(Slatyer, Craigie, Rees, et al., 2018).

The studies also reported that participating nurses would recommend the training and wanted to share the skills they had learned with colleagues (dos Santos et al., 2016; Hunter et al., 2018; Slatyer, Craigie, Rees, et al., 2018). They also felt that the training was an example of their employer taking care of them and they felt that mindfulness should be an integral part of their clinical work: “be part of working day” and make it “scheduled” (Nissim et al., 2019). So making mindfulness courses easy to acquire and be a part of daily work might develop into a trend for further recommendation.

3. Discussion

There are many variants in mindfulness interventions and successful outcomes are multifaceted. This meta synthesis concurs with other studies, which identify logistic, emotional, and personal factors will impact the experience of mindfulness intervention techniques and strategies. For example: the need for a good facilitator, availability of time to engage in mindfulness activities, mindfulness participants need the ability to relax so they can take part, they need to have commitment to the sessions, and to understand the rationale for the sessions.

Participants stated mindfulness was useful with the benefits of taking on mindfulness courses including personal behavior and emotion changes, both at work and in life generally. Participants learnt to pause and instigate self-care and build new relationships with colleagues, patients, and their families. This is reflected in the wider literature on patients who receive mindfulness training to cope with illnesses and chronic diseases (Reichman and Barton 2018).

This is particularly important in healthcare settings, which are often regarded as 'highly stressful' - an aspect that has been recognized as highly prevalent in nursing – often due to the close and continuous relationships nurses develop with their patients (Martínez-Iñigo, Bermejo-Pablos, & Totterdell, 2018). It has also been reported that nursing is stressful partly because there is no time allowed for reflection and the development of mental coping mechanisms (Morgan et al., 2015; Ruiz‐Fernández et al., 2019) and mindfulness activities can address that if available.

Good leaders have a duty to recognize when staff are under pressure – and introduce interventions and time to address this. By integrating mindfulness into daily work schedules, nursing staff may feel more comfortable in discussing and sharing their conceptions of stressful situations and thus, receive support from colleagues making the team more effective.

Four papers suggested a range of techniques to enable staff to discuss their perceptions of stressful situations, acknowledge their feelings and develop positive strategies. The 'red stick' was identified as means to alert others to stress or so they could avoid being exhausted (Nissim et al., 2019), Eby's study acknowledged the need to be flexible in the delivery of sessions (Eby et al., 2019) and two other studies identified the need to include the whole team within flexible and relevant courses (Lynch et al., 2018; Nissim et al., 2019).

The length and delivery of programs is a contentious issue, perhaps because of the multi-faceted, qualitative, and subjective nature of outcomes. The meta-analysis by (Ruiz‐Fernández et al., 2019) found that shorter and modified mindfulness interventions were more suited to clinical settings. When compared to traditional MBSR, they had better individual outcomes. However, traditional MBSR requires 8 weekly classes with 2-2.5 hour sessions (Ghawadra et al., 2019). It could be argued that such a time commitment alongside busy clinical schedules would impact outcomes and be impracticable. However, Ruiz-Fernandez's (2019) findings were contested by Lomas et al, who found well-established shorter MBSR also resulted in positive outcomes (Lomas, Medina, Ivtzan, Rupprecht, & Eiroa-Orosa, 2019).

This information supports the need for appropriately structured and informed provision which is supported in the clinical setting – with mindfulness interventions managed by a good facilitator. However, hiring specifically trained and experienced facilitators may be a barrier for implementation and uptake of training, because of additional cost implications (Spinelli et al., 2019). Organizations therefore need to facilitate staff time and fund interventions – but would require evidence to support efficacy.

The evidence to date suggests effective mindfulness interventions can relieve stress and improve caregiving practice (Gauthier, Meyer, Grefe, & Gold, 2015; Nguyen et al., 2019). In

Canada, for example, MBCT is considered as a first line psychological treatment (Lo et al., 2018; Lomas et al., 2019; Parikh et al., 2016). Additionally, 30% of American medical schools have integrated 'mindfulness' in their curricula (Pérula-de Torres et al., 2019). This evidence originates from studies in patient groups with chronic diseases – who positively evaluated mindfulness interventions (Reichmann & Bartman, 2018; Watanabe et al., 2019; Doull, O'Connor, Tugwell, Wells, & Welch, 2017). There are also studies that show mindfulness interventions can reduce clinical errors and improve job satisfaction amongst nurses (Spinelli et al., 2019). However, participants need to take part, be present and immerse themselves into the intervention for it to be most effective – which may not always be possible because of clinical demands and commitments.

With the appropriate time commitments and financial support, there is also the issues of feasibility and acceptance of mindfulness amongst participants. Clinicians have significant work and home demands (Ghawadra et al., 2019; Health & Executive, 2016). Many high pressure environments encourage nurses "work like a 'headless chicken', with limited time to drink or go to washroom – as Hunter suggests – they must consistently be "go go go" (Hunter et al., 2018). Such demands and work-related stress are reported in many reviews (Lomas et al., 2019) and asking busy clinicians to slow down and commit to mindfulness may be problematic – with some feeling guilty, leaving colleagues to take on the clinical duties. Therefore, management buy-in and support is essential when planning to integrate mindfulness into an organization and clinical setting.

McConville, McAleer, & Hahne, (2017) suggest integrating mindfulness into the student nurse curriculum. However, the reports and evidence to support efficacy remain contentious and some quantitative studies find the intervention has no significant effects on physical

health, work performance or change in clinical skills amongst students (Nguyen et al., 2019; Spinelli et al., 2019). The problem may lie in the number of intrinsic and extrinsic variables which may be associated with a mindfulness intervention (Slatyer, Craigie, Heritage, Davis, & Rees, 2018; Zaheer, 2017).

This meta synthesis identified that the nurses who took part were satisfied with mindfulness interventions – they tended to accept the training and found some areas beneficial. Although challenges such as night shifts, long hours, tight deadlines, lack of managerial support made it difficult for them to spare the time for courses. Thus, it may be presumed that mindfulness interventions have some capacity to improve outcomes for nurses. However, nurses must be able to accept the intervention and give the process time. The intervention should be delivered by experienced and qualified facilitators and the practice should be started early in the clinical curriculum, so it embeds into a 'habit' (Pan et al., 2019; Slatyer, Craigie, Heritage, et al., 2018). The different forms of mindfulness interventions must also be quantified and evaluated (Demarzo et al., 2017). Equally, nurses must evaluate how they feel personally about taking part in mindfulness.

The evidence presented in this meta synthesis revealed mainly positive outcomes on mindfulness interventions, but it must be noted that participants offering feedback had already chosen to take part in the intervention. Thus, positive intrinsic bias through self-selection participation may be an issue when evaluating outcomes in mindfulness interventions (Lomas et al., 2019). Two conflicting statements perhaps illustrate this in context - "Mindfulness movement is most useful to me." – conflicted by "The least helpful practice is mindfulness movement. I always forgot to practice it." Thus, personality traits and individual choice must be considered when suggesting this type of intervention (Feng, Zhao, Kang, Fang, & Ping, 2017; Yao et al., 2018).

4.1 Implications for Nursing Education

There are several implications for nurse education that stem from our review – particularly as mindfulness does seem to have positive effects. Introducing the techniques and philosophy in nursing preparation programmes would equip students with the skills as they entered practice. Post registration education could provide mindfulness training for clinical staff, Post registration nursing management modules could also stress the benefits of mindfulness for clinicians and explore strategies to introduce it into clinical settings. Finally, nursing needs to add to the pedagogical evidence around mindfulness base by further evaluating the impact of mindfulness on nursing practice to strengthen the case for its value to the profession. This research should focus both on nurse outcomes – stress, intention to leave etc. but also patient care focused outcomes.

4.2 Limitations

The qualitative nature of included studies meant many had small sample sizes and all participants had volunteered for interviews. Thus, a potential for intrinsic bias must be raised. The frequency and types of interventions varied across studies, meaning we cannot generalize or form opinions on which type of intervention is best.

4. Conclusion

Our meta-synthesis revealed that mindfulness training was positively evaluated by those clinical nurses who had chosen to participate in the interventions. Many participants were able to re-conceptualize stress and find ways to manage better in stressful environments. The meta synthesis revealed a range of mindfulness training and intervention strategies. However, there were intrinsic problems – namely, how to make time for training and education and on how nurses ‘accept’ the intervention. Participants across all studies mentioned how mindfulness was a vehicle for the development of positive self-care skills. However, it also

revealed the challenges in training. Allocating time and resources is difficult in a busy clinical environment. The length, nature and type of mindfulness intervention training varies across all studies and this diversity means measurements of efficacy are difficult to quantify.

The final theme of our review raised the feasibility and acceptance of mindfulness training, and an intrinsic bias across many evaluative studies. Those nurses who chose to participate, overall, found it useful. However, there are no studies evaluating those nurses who would not accept a mindfulness training intervention. It could be argued therefore, that the nurses who undertake mindfulness training, already hold a presupposition that it is beneficial. The outcomes of studies remain extremely subjective. More work maybe needed to persuade sceptics of the value of mindfulness – evidence of its efficacy and acceptability is a key way of doing this.

Conflict of Interests

The authors declare that they have no conflict of interest.

References

Adams, A. M. N., Chamberlain, D., & Giles, T. M. (2019). The perceived and experienced role of the nurse unit manager in supporting the wellbeing of intensive care unit nurses: an integrative literature review. *Australian Critical Care, 32*(4), 319-329.

Alsubaie, M., Abbott, R., Dunn, B., Dickens, C., Keil, T. F., Henley, W., & Kuyken, W. (2017). Mechanisms of action in mindfulness-based cognitive therapy (MBCT) and mindfulness-based stress reduction (MBSR) in people with physical and/or psychological conditions: a systematic review. *Clinical Psychology Review, 55*, 74-91.

Bazazan, A., Dianat, I., Rastgoo, L., & Zandi, H. (2018). Relationships between dimensions of fatigue and psychological distress among public hospital nurses. *Health promotion perspectives, 8*(3), 195-199.

del Carmen Pérez-Fuentes, M., Linares, J. J. G., Jurado, M. d. M. M., Márquez, M. d. M. S., & Martínez, Á. M. (2020). The mediating role of cognitive and affective empathy in the relationship of mindfulness with engagement in nursing. *BMC Public Health, 20*(1), 1-10.

Demarzo, M., Montero-Marin, J., Puebla-Guedea, M., Navarro-Gil, M., Herrera-Mercadal, P., Moreno-González, S., . . . Garcia-Campayo, J. (2017). Efficacy of 8-and 4-session mindfulness-based interventions in a non-clinical population: A controlled study. *Frontiers in psychology, 8*, 1343.

dos Santos, T. M., Kozasa, E. H., Carmagnani, I. S., Tanaka, L. H., Lacerda, S. S., & Nogueira-Martins, L. A. (2016). Positive effects of a stress reduction program based on mindfulness meditation in Brazilian nursing professionals: Qualitative and quantitative evaluation. *Explore, 12*(2), 90-99.

Doull, M., O'Connor, A. M., Tugwell, P., Wells, G. A., & Welch, V. (2017). Peer support strategies for improving the health and well‐being of individuals with chronic diseases. *The Cochrane database of systematic reviews, 2017*(6).

Eby, L. T., Allen, T. D., Conley, K. M., Williamson, R. L., Henderson, T. G., & Mancini, V. S. (2019). Mindfulness-based training interventions for employees: A qualitative review of the literature. *Human Resource Management Review, 29*(2), 156-178.

Feng, X.-j., Zhao, D., Kang, X.-f., Fang, Y.-y., & Ping, L. (2017). Relation of mindfulness to personality traits and psychological distress among oncology nurses. *Chinese Mental Health Journal, 31*(12), 983-987.

Freeman, R. C., Sukuan, N., Tota, N. M., Bell, S. M., Harris, A. G., & Wang, H.-L. (2019). Promoting Spiritual Healing by Stress Reduction Through Meditation for Employees at a Veterans Hospital: A CDC Framework–Based Program Evaluation. *Workplace health & safety*, 2165079919874795. doi:10.1177/2165079919874795

Gauthier, T., Meyer, R. M., Grefe, D., & Gold, J. I. (2015). An on-the-job mindfulness-based intervention for pediatric ICU nurses: a pilot. *Journal of pediatric nursing, 30*(2), 402-409.

Ghawadra, S. F., Abdullah, K. L., Choo, W. Y., & Phang, C. K. (2019). Mindfulness‐based stress reduction for psychological distress among nurses: A systematic review. *Journal of clinical nursing, 28*(21-22), 3747-3758.

Health, & Executive, S. (2016). Work related stress, anxiety and depression statistics in Great Britain 2016. In: Author London.

Hollister, E. B., Cain, K. C., Shulman, R. J., Jarrett, M. E., Burr, R. L., Ko, C., . . . Heitkemper, M. M. (2020). Relationships of microbiome markers with extraintestinal, psychological distress and gastrointestinal symptoms, and quality of life in women with irritable bowel syndrome. *Journal of clinical gastroenterology, 54*(2), 175-183.

Hsieh, H.-F., & Shannon, S. E. (2005). Three approaches to qualitative content analysis. *Qualitative health research, 15*(9), 1277-1288.

Hunter, L., Snow, S., & Warriner, S. (2018). Being there and reconnecting: Midwives' perceptions of the impact of Mindfulness training on their practice. *Journal of clinical nursing, 27*(5-6), 1227-1238.

Kabat-Zinn, J. (1982). An outpatient program in behavioral medicine for chronic pain patients based on the practice of mindfulness meditation: Theoretical considerations and preliminary results. *General Hospital Psychiatry, 4*(1), 33-47. doi:https://doi.org/10.1016/0163-8343(82)90026-3

Kabat‐Zinn, J. (2003). Mindfulness‐based interventions in context: past, present, and future. *Clinical psychology: Science and practice, 10*(2), 144-156.

Lin, L., He, G., Yan, J., Gu, C., & Xie, J. (2019). The effects of a modified mindfulness-based stress reduction program for nurses: A randomized controlled trial. *Workplace health & safety, 67*(3), 111-122.

Lo, K., Waterland, J., Todd, P., Gupta, T., Bearman, M., Hassed, C., & Keating, J. L. (2018). Group interventions to promote mental health in health professional education: a systematic review and meta-analysis of randomised controlled trials. *Advances in Health Sciences Education, 23*(2), 413-447. doi:10.1007/s10459-017-9770-5

Lomas, T., Medina, J. C., Ivtzan, I., Rupprecht, S., & Eiroa-Orosa, F. J. (2019). Mindfulness-based interventions in the workplace: An inclusive systematic review and meta-analysis of their impact upon wellbeing. *The Journal of Positive Psychology, 14*(5), 625-640.

Lopes, S. A., Vannucchi, B. P., Demarzo, M., Cunha, Â. G. J., & Nunes, M. d. P. T. (2019). Effectiveness of a mindfulness-based intervention in the management of musculoskeletal pain in nursing workers. *Pain Management Nursing, 20*(1), 32-38.

Lynch, J., Prihodova, L., Dunne, P. J., O'Leary, C., Breen, R., Carroll, Á., . . . White, B. (2018). Mantra meditation programme for emergency department staff: a qualitative study. *BMJ open, 8*(9), e020685.

Manotas, M., Segura, C., Eraso, M., Oggins, J., & McGovern, K. (2014). Association of brief mindfulness training with reductions in perceived stress and distress in Colombian health care professionals. *International Journal of Stress Management, 21*(2), 207.

Martínez-Iñigo, D., Bermejo-Pablos, C., & Totterdell, P. (2018). The boomerang effect: How nurses' regulation of patients' affect associates with their own emotional exhaustion and affective experiences. *International Journal of Stress Management, 25*(1), 1.

McConville, J., McAleer, R., & Hahne, A. (2017). Mindfulness training for health profession students—the effect of mindfulness training on psychological well-being, learning and clinical performance of health professional students: a systematic review of randomized and non-randomized controlled trials. *Explore, 13*(1), 26-45.

Moceri, J., & Cox, P. H. (2019). Mindfulness-Based Practice to Reduce Blood Pressure and Stress in Priests. *The Journal for Nurse Practitioners, 15*(6), e115-e117.

Morgan, P., Simpson, J., & Smith, A. (2015). Health care workers' experiences of mindfulness training: a qualitative review. *Mindfulness, 6*(4), 744-758.

Nguyen, M. C., Gabbe, S. G., Kemper, K. J., Mahan, J. D., Cheavens, J. S., & Moffatt-Bruce, S. D. (2019). Training on mind-body skills: Feasibility and effects on physician mindfulness, compassion, and associated effects on stress, burnout, and clinical outcomes. *The Journal of Positive Psychology*, 1-14.

Nissim, R., Malfitano, C., Coleman, M., Rodin, G., & Elliott, M. (2019). A qualitative study of a compassion, presence, and resilience training for oncology interprofessional teams. *Journal of Holistic Nursing, 37*(1), 30-44.

Pan, C., Wang, H., Chen, M., Cai, Y., Xiao, C., Tang, Q., & Koniak-Griffin, D. (2019). Mindfulness-Based Intervention For Nurses In AIDS Care In China: A Pilot Study. *Neuropsychiatric Disease and Treatment, 15*, 3131.

Parikh, S. V., Quilty, L. C., Ravitz, P., Rosenbluth, M., Pavlova, B., Grigoriadis, S., . . . Uher, R. (2016). Canadian Network for Mood and Anxiety Treatments (CANMAT) 2016 Clinical Guidelines for the Management of Adults with Major Depressive Disorder: Section 2. Psychological Treatments. *The Canadian Journal of Psychiatry, 61*(9), 524-539. doi:10.1177/0706743716659418

Pérula-de Torres, L.-A., Atalaya, J. C. V.-M., García-Campayo, J., Roldán-Villalobos, A., Magallón-Botaya, R., Bartolomé-Moreno, C., . . . Valverde-Bolívar, F. J. (2019). Controlled clinical trial comparing the effectiveness of a mindfulness and self-compassion 4-session programme versus an 8-session programme to reduce work stress and burnout in family and community medicine physicians and nurses: MINDUUDD study protocol. *BMC family practice, 20*(1), 24.

Pluye, P., Robers, E., Cargo, M., Bartlett, G., O'cathain, A., Griffiths, F., . . . Robert, E. (2011). Proposal: A mixed methods appraisal tool for systematic mixed studies reviews.

Qualitative research checklist. (2018). Retrieved from https://casp-uk.net/casp-tools-checklists/

Reichmann, J. P., & Bartman, K. R. (2018). An integrative review of peer support for patients undergoing major limb amputation. *Journal of Vascular Nursing, 36*(1), 34-39.

Ruiz‐Fernández, M. D., Ortíz‐Amo, R., Ortega‐Galán, Á. M., Ibáñez‐Masero, O., Rodríguez‐Salvador, M. d. M., & Ramos‐Pichardo, J. D. (2019). Mindfulness therapies on health professionals. *International journal of mental health nursing, 29*(2):127-140.

Slatyer, S., Craigie, M., Heritage, B., Davis, S., & Rees, C. (2018). Evaluating the Effectiveness of a Brief Mindful Self-Care and Resiliency (MSCR) intervention for nurses: a controlled trial. *Mindfulness, 9*(2), 534-546.

Slatyer, S., Craigie, M., Rees, C., Davis, S., Dolan, T., & Hegney, D. (2018). Nurse experience of participation in a mindfulness-based self-care and resiliency intervention. *Mindfulness, 9*(2), 610-617.

Spinelli, C., Wisener, M., & Khoury, B. (2019). Mindfulness training for healthcare professionals and trainees: A meta-analysis of randomized controlled trials. *Journal of psychosomatic research, 120*:29-38.

Watanabe, N., Horikoshi, M., Shinmei, I., Oe, Y., Narisawa, T., Kumachi, M., . . . Furukawa, T. A. (2019). Brief mindfulness-based stress management program for a better mental

state in working populations-Happy Nurse Project: A randomized controlled trial☆☆. *Journal of affective disorders, 251*, 186-194.

Whittemore, R., & Knafl, K. (2005). The integrative review: updated methodology. *Journal of Advanced Nursing, 52*(5), 546-553. doi:10.1111/j.1365-2648.2005.03621.x

Yao, Y., Zhao, S., Gao, X., An, Z., Wang, S., Li, H., . . . Dong, Z. (2018). General self-efficacy modifies the effect of stress on burnout in nurses with different personality types. *BMC health services research, 18*(1), 667.

Zaheer, S. A. (2017). Understanding the Impact of Safety Climate, Teamwork Climate, and Mindful Organizing on Safety Outcomes at a Large Community Hospital-A Mixed-Methods Study.