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Care and self-reported outcomes of care experienced by women with mental health problems in pregnancy: Findings from a national survey

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ABSTRACT

Background: mental health problems in pregnancy and the postnatal period are relatively common and, in pregnancy, are associated with an increase in adverse outcome. It is recommended that all women are asked about their emotional and mental health and offered treatment if appropriate.
Objectives: to describe the care received by women self-identifying with mental health problems in pregnancy, and to describe the effects of support, advice and treatment on outcomes in the postnatal period.
Design: this study used cross-sectional survey data collected in 2014 which described women's experience of maternity care.
Setting: England
Participants: a random sample of women who had a live birth in January 2014.
Measurements: the questionnaire asked about sociodemographic characteristics, whether women were asked about emotional and mental health in pregnancy, support and treatment offered, about postnatal wellbeing, and questions relating to attachment to their baby. Descriptive statistics and logistic regression were used to examine the associations between mental health and outcomes taking account of sociodemographic characteristics.
Findings: the survey response rate was 47%. Women with antenatal mental health problems were significantly more worried at the prospect of labour and birth, had lower satisfaction with the experience of birth, worse postnatal mental health, and indications of poorer attachment to their baby. They received substantially more care than other women but they did not always view this positively. Support, advice and treatment for mental health problems had mixed effects.
Conclusions: this study describes the significant additional care provided to women self-identifying with mental health problems in pregnancy, the mixed effects of support, advice and treatment, and the poor perception of staff interaction among women with mental health problems.
Implications for practice: health care professionals may need additional training to effectively support women with mental health problems during the perinatal period.

Introduction

One in five women develop mental health problems during pregnancy or in the year after birth (Chief Medical Officer, 2015), most commonly anxiety and depression (Gavin et al., 2005) which are often co-morbid (Henderson and Redshaw, 2013). Such mental health problems are not normally long-lasting although a small proportion do extend beyond one year (Gavin et al., 2005).

Perinatal mental health problems are associated with an increased incidence of adverse outcome for both mother and baby. For example, there is an increased risk of prematurity and low birth weight in babies of depressed women, especially if the depression is untreated (Grote

Abbreviations: AN, Antenatal; EPDS, Edinburgh Postnatal Depression Scale; HCP, Healthcare professional; IMD, Index of Multiple Deprivation; MH, Mental health; NICE, National Institute for Health and Care Excellence; ONS, Office for National Statistics; PN, Postnatal

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et al., 2010). There is also an increased incidence of attachment difficulties, poor mother-infant relationships and developmental difficulties in children of depressed mothers (Murray et al., 1996; Barker et al., 2012). At the extreme, rates of suicide are higher in women with mental health problems (Lindahl et al., 2005), and mental health problems contributed to almost a quarter of maternal deaths in England between 2011-13 (Knight et al., 2015).

The National Institute for Health and Care Excellence (NICE) recommends that all women are asked in early pregnancy about their emotional and mental health (National Collaborating Centre for Mental Health, 2014) with continuing discussions through pregnancy and in the postnatal period. If mental health problems are detected or disclosed, this can generally be dealt with in primary care in the community, with treatment in secondary care in hospital in more severe cases (National Collaborating Centre for Mental Health, 2014). Effective interventions for mental illness include psychosocial interventions, psychological therapies and psychotropic medication (National Collaborating Centre for Mental Health, 2014).

Non-white women and those living in deprived areas are less likely to be asked about mental health (Redshaw and Henderson, 2016), and women's experience of maternity care when they have mental health problems is patchy reflecting inequities in service provision in this area (NHS England, 2016). In addition, women face stigma which may deter them from seeking help (Chief Medical Officer, 2015), and many lack knowledge of what services are available (Khan, 2015).

The aims of this study, which follows on from one focussing on which women were asked about their emotional and mental health (Redshaw and Henderson, 2016), were (i) to describe care received by women self-identifying with mental health problems in pregnancy, and (ii) to describe the effects of support, advice and treatment on outcomes in the postnatal period.

Methods

This study used data collected in a cross-sectional national maternity survey carried out in 2014 (Redshaw and Henderson, 2014). Women who gave birth during a two week period in January 2014 were randomly selected from birth registrations by the Office for National Statistics (ONS). Women were excluded if their baby had died or if the mother was aged less than 16 years. Women were not excluded for mental health reasons. The questionnaire, together with a letter, information leaflet, and contact information in 18 non-English languages, asked women to complete the questionnaire (by phone with the help of an interpreter if necessary, or online) and return it in a Freepost envelope. Ten thousand questionnaire packs were sent out when the babies were 12 weeks of age. Using a tailored reminder system (Dillman, 2007) up to three reminders were sent as required.

Women were asked about events, care and experience of pregnancy, labour and birth and about the postnatal period, and questions about sociodemographic characteristics. They were asked if they had a mental health problem during pregnancy. Specifically, following questions about mental health more generally, women were asked 'If you had a mental health problem during pregnancy, did you receive support, advice and/or treatment' with answer options Yes/No/Does not apply. Thus 'mental health problem' was as understood by respondents rather than being explicitly defined. Women were also asked to complete a checklist of 15 antenatal symptoms including anxiety and depression and to indicate whether they consulted a healthcare professional for this reason.

Outcomes

Outcomes included in the questionnaire included three validated measures:

- The Birth Satisfaction Scale (Revised) (Hollins Martin and Martin, 2014), which has subscales of *Quality of care provision*, *Women's personal attributes*, and *Stress experienced during labour*. It has been demonstrated to be robust, valid and reliable with an overall Cronbach's alpha of 0.79.
- The Oxford Worries About Labour Scale (Redshaw et al., 2009), which has three subscales of *Labour pain and distress*, *Pre-labour uncertainty*, and *Interventions*. It has been shown to have good divergent and discriminant validity with an overall Cronbach's alpha of 0.85.
- The 10 item Edinburgh Postnatal Depression Scale (Cox et al., 1987) is widely used to screen for postnatal depression. It had satisfactory sensitivity and specificity when tested against a diagnostic interview, and was also found to be sensitive to changes in severity over time.

The questionnaire also included a postnatal symptom checklist, questions about postnatal general health and wellbeing, feeling of when the baby first belonged to the mother, and how easy or difficult she was finding caring for her baby.

Analysis

ONS provided information about each woman's age group, country of birth, marital status, and Index of Multiple Deprivation (IMD) (an area based measure) in quintiles, which enabled comparison of responders and non-responders.

A descriptive analysis was carried out using raw percentages to establish how care was modified to help women with mental health problems, to examine outcomes, and to evaluate the impact of advice, support and treatment on outcomes. Logistic regression was used to examine the associations between mental health and outcomes taking account of sociodemographic characteristics. Continuous variables were offset in binary logistic regression because assumptions regarding their use as ordinal variables were violated.

Ethical approval

Ethical approval for the survey was obtained from the NRES committee for Yorkshire and The Humber – Humber Bridge (REC reference 14/YH/0065).

Findings

In total 4578 women responded to the survey (47% response rate after exclusion of undeliverable questionnaires). Of these women, 352 (7.7%) indicated that they had a mental health problem in pregnancy. The sociodemographic characteristics of these women compared to women without an antenatal mental health problem are shown in Table 1. Women aged less than 30 years, ethnic minorities, multiparous women, those living in deprived or difficult circumstances, those with long-standing mental health problems or learning difficulties, and those with health problems affecting the pregnancy or pregnancy specific problems were significantly more likely to report mental health problems in pregnancy. There were no significant differences by indicators of the baby's health such as prematurity, low birthweight or the baby's health at three months.

Outcomes were generally significantly poorer for women with antenatal mental health problems as shown in Table 2. They were significantly more worried at the prospect of labour and birth, and less satisfied with their experience of birth, finding it especially stressful. At one month postpartum, women with antenatal mental health problems were significantly more likely to experience anxiety and depression, and at three months all aspects of mental health were significantly poorer compared to women without antenatal mental health problems. Furthermore, these mothers were significantly more likely to feel that their baby belonged to them 'only recently' or 'not quite yet', they used fewer positive adjectives about their baby, and were twice as likely to consider their baby 'more difficult than average' compared to women without antenatal mental health problems.

Table 1
Sociodemographic characteristics of women with and without mental health problems in pregnancy.

	Antenatal mental health problem					
	Yes		No		Total	
	(*N* = 352)		(*N* = 4226)		(*N* = 4578)	
	No.	%	No.	%	No.	%
Maternal age** *(Missing = 78)*						
16–19	10	2.8	91	2.2	101	2.2
20–24	56	15.9	483	11.4	539	11.8
25–29	119	33.8	1111	26.3	1230	26.9
30–34	97	27.6	1491	35.3	1588	34.7
35–39	51	14.5	825	19.5	876	19.1
40+	19	5.4	223	5.3	242	5.3
Total	352	100.0	4224	100.0	4576	100.0
Index of Multiple Deprivation quintile** *(Missing = 1)*						
1	46	13.1	855	20.2	901	19.7
2	45	12.8	822	19.5	867	18.9
3	71	20.2	864	20.4	935	20.4
4	85	24.2	893	21.1	978	21.4
5 (most deprived)	104	29.6	792	18.7	896	19.6
Total	351	100.0	4226	100.0	4577	100.0
Black or minority ethnic group* *(Missing = 150)*	67	20.5	646	15.8	713	16.1
Left full-time education aged < 16 years** *(Missing = 94)*	87	25.4	670	16.2	757	16.9
Single mother** *(Missing = 81)*	84	23.9	507	12.0	591	12.9
Parity** *(Missing = 148)*						
Primiparous	142	42.5	2065	50.4	2207	49.8
Multiparous	192	57.5	2031	49.6	2223	50.2
Long-term health problem complicating pregnancy*** *(Missing = 67)*						
	60	17.2	336	8.1	396	8.8
Pregnancy-specific problem** *(Missing = 104)*	115	33.4	1098	26.6	1213	27.1
Long-standing mental health problem or learning disability** *(Missing = 83)*						
	86	25.3	40	1.0	126	2.8
Baby born preterm *(Missing = 117)*	26	7.7	259	6.3	285	6.4
Baby born at low birthweight *(Missing = 126)*	24	7.1	311	7.6	335	7.5
Baby health problems at 3 months *(Missing = 123)*	49	14.7	552	13.4	601	13.5

* $p < 0.05$.
** $p < 0.01$.
*** $p < 0.001$ in χ^2 test.

This is confirmed in the logistic regressions (Table 3) which are adjusted for sociodemographic factors. Apart from the Birth Satisfaction Scale which was not associated with antenatal mental health, women with poorer antenatal mental health continued to experience poor mental health in the postnatal period and reported a poorer relationship with their baby.

Table 4 describes care and experience of care in pregnancy, labour and birth, and in the postnatal period for women with and without antenatal mental health problems. In pregnancy, women with mental health problems tended to have more antenatal checks, were significantly more likely to see the same, named midwife each time, but there was no difference in the proportion of women who reported always having someone to talk to about sensitive issues, and they rated staff interaction, especially with doctors, more negatively than women without antenatal mental health problems. During labour and birth, women with antenatal mental health problems were significantly more likely to have met at least some of the midwives before, to have a normal birth or a planned caesarean section, but also more likely to report having been left alone at a time when it worried them. They rated staff interaction more poorly than women without antenatal mental health problems, and had less confidence and trust in staff. Despite this, they generally considered their labour and birth to have gone better than expected. Similarly, in the postnatal period, women with antenatal mental health problems had significantly more visits and were more likely to have met the midwives before. Compared to women without antenatal mental health problems, overall satisfaction with maternity care was equally high, but women with antenatal mental health problems were generally less satisfied with information, choice and involvement in decision-making than other women.

Women were asked whether they received support, advice or treatment for a mental health problem in pregnancy. Overall, two-thirds of women who had a mental health problem received advice or support, one-third received treatment, 20% received no help. Table 5 shows the effect on standard outcomes used in a range of perinatal studies (Green et al., 1998; Green et al., 2003) of receiving these different types of help. Women who received any help in pregnancy tended to be more satisfied with their labour and birth and were significantly less likely to feel that their baby belonged to them 'only recently' or 'not quite yet'. They used both significantly more positive and more negative adjectives about their baby and were less likely to

Table 2
Outcomes for women with and without mental health problems.

	Antenatal mental health problem						
	Yes		No		Total		*Missing*[a]
	(*N* = 352)		(*N* = 4226)		(*N* = 4578)		
	No.	%	No.	%	No.	%	
Worries about labour score[b,*] - mean (95% CI)	15.19 (14.40, 15.97)		14.03 (13.82, 14.24)		14.12 (13.92, 14.32)		*493*
Birth Satisfaction Scale[c] - mean (95% CI)							
Stress subscale[**]	4.15 (3.89, 4.42)		4.81 (4.73, 4.88)		4.76 (4.69, 4.83)		*350*
Quality of care subscale	3.41 (3.30, 3.52)		3.49 (3.46, 3.51)		3.48 (3.46, 3.51)		*217*
Total score[**]	7.56 (7.23, 7.89)		8.30 (8.21, 8.39)		8.24 (8.16, 8.33)		*377*
At 1 month postpartum...							
Depression/blues[**]	91	26.3	596	14.2	687	15.2	*46*
Anxiety[**]	76	22.0	451	10.8	527	11.6	*46*
At 3 months postpartum...							
Woman felt well[**]	255	75.7	3715	89.9	3970	88.8	*107*
Depression[**]	67	19.4	229	5.5	296	6.5	*46*
Anxiety[**]	58	16.8	205	4.9	263	5.8	*46*
EPDS > 11[**]	104	35.0	378	9.7	482	11.5	*399*
Postnatal mental health problem[**]	154	43.8	301	7.1	455	9.9	*not known*
When woman felt that the baby belonged[**]							*127*
During pregnancy	154	45.2	2244	54.6	2398	53.9	
Immediately after birth	78	22.9	882	21.5	960	21.6	
First few days	41	12.0	426	10.4	467	10.5	
First few weeks	40	11.7	372	9.1	412	9.3	
Only recently	20	5.9	163	4.0	183	4.1	
Not quite yet	8	2.3	23	0.6	31	0.7	
Total	341	100	4110	100	4451	100	
Number of positive adjectives used about the baby[**]							*74*
1–4	149	42.3	1251	29.6	1400	30.6	
5–6	123	34.9	1640	38.8	1763	38.5	
7 or more	80	22.7	1335	31.6	1415	30.9	
Total	352	100	4226	100	4578	100	
Number of negative adjectives used about the baby[**]							*74*
0	111	31.5	865	20.5	976	21.3	
1	152	43.2	2235	52.9	2387	52.1	
2 or more	89	25.3	1126	26.6	1215	26.5	
Total	352	100	4226	100	4578	100	
Baby considered more or less difficult than average[**]							*121*
More difficult	24	7.1	149	3.6	173	3.9	
Average	170	50.6	2210	53.6	2380	53.4	
Easier	142	42.3	1762	42.8	1904	42.7	
Total	336	100	4121	100	4457	100	

EPDS Edinburgh Postnatal Depression Scale.
[*] $p < 0.05$.
[**] $p < 0.001$ in χ^2 test.
[a] Missing values were high for some variables which were composite scores summed over several questions.
[b] Worries about labour score: list of 10 possible worries scored 1-4 and summed.
[c] Birth Satisfaction Scale (Revised) – 6 statements about labour and birth, 3 relating to stress, 3 to quality of care. A high score indicates greater satisfaction.

feel that their baby was more difficult than average. However, women who reported receiving support or advice tended to have *more* depression and postnatal mental health problems, significantly so for depression at one month, than women who had antenatal mental health problems but did not receive advice or support. This tendency was also apparent for women who received treatment for depression, although this was less pronounced.

It was hypothesised that additional support and advice relating to antenatal mental health may be targeted at women with more severe mental health problems who would also be expected to have worse postnatal mental health. Further analyses therefore included consulting a healthcare professional for antenatal anxiety or depression as a proxy for severity. As shown in Table 6, the inclusion of these variables in binary logistic regression attenuated the associations between advice/support and depression, and advice/support became protective against anxiety at three months, though not depression.

Discussion

Care during pregnancy, labour and birth are critical to women's satisfaction with their experience and can impact their mental health in both the short and long term (Leap et al., 2010). A lack of control and support in labour may be associated with post-traumatic stress type symptoms (Czarnocka and Slade, 2000); conversely, women who

Table 3
Logistic regressions showing effect of antenatal mental health problems on outcomes, adjusted for sociodemographic variables.

	Odds ratio (95% CI)*
Worry about labour score†	10.35 (1.43, 74.73)
Birth Satisfaction Scale	
Intrapartum stress score†	0.56 (0.36, 0.87)
Intrapartum care score†	1.32 (0.56, 3.06)
Total score†	1.56 (0.21, 11.91)
At 1 month postpartum...	
Depression/blues§	2.43 (1.86, 3.17)
Anxiety§	2.98 (2.24, 3.98)
At 3 months postpartum...	
Mother felt well§	0.39 (0.29, 0.52)
Depression§	4.82 (3.53, 6.58)
Anxiety§	5.01 (3.59, 6.98)
EPDS > 11§	4.99 (3.79, 6.57)
Postnatal mental health problem§	9.57 (7.38, 12.40)
Number of positive adjectives used to describe baby†	0.22 (0.09, 0.55)
Number of negative adjectives used to describe baby†	0.70 (0.54, 0.92)
Mother felt that baby belonged only recently or not quite yet§	2.41 (1.55, 3.75)
Mother felt that baby more difficult than average§	2.31 (1.45, 3.68)

EPDS Edinburgh Postnatal Depression Score.
* Adjusted for parity, maternal age, Black or Minority Ethnic group, single mother, Index of Multiple Deprivation quintile.
† Continuous variable offset.
§ Categorical variable.

reflected positively on their care reported feeling empowered (Leap et al., 2010). Deleterious mental health outcomes may have a concomitant effect on the woman's relationship with her child with potentially damaging effects on child development (Murray et al., 1996; Barker et al., 2012).

This study confirms the recognised associations between sociodemographic factors and mental health (Richardson et al., 2015), between physical and mental health in pregnancy (Schytt and Hildingsson, 2011), and between antenatal and postnatal mental health (Henderson and Redshaw, 2013). This study also describes the significantly increased amount of antenatal care provided to women with mental health problems, women's somewhat negative perceptions of their care, and the mixed effects associated with support, advice and treatment.

In this study, women with self-identified antenatal mental health problems, a substantial proportion of which included anxiety and depression, expressed greater worry at the prospect of labour and birth, were more likely to report being left alone at a time when it worried them during labour and shortly after the birth, perceived their care in more negative terms, and although their experience was often better than expected reflecting their low expectations, they took longer to feel that their baby belonged to them and perceived their baby less positively.

Women who received support or advice for an antenatal mental health problem reported improved relationships with their baby, suggesting that the treatment was successful in improving women's mental health. However, they also experienced *higher* rates of depression and anxiety than women who did not receive support or advice. However, when antenatal consultation for anxiety and depression were included in the logistic regression the associations were no longer statistically significant or even reversed in the case of three months anxiety. This is, to an extent, consistent with previous research which reported that when resources were insufficient, midwives prioritised women with the most serious problems (Edge, 2010).

A consistent finding through this study was that women with antenatal mental health problems were less likely to feel that health professionals, especially doctors, talked to them so that they could understand, listened to them, were respectful, kind or treated them as individuals. They were also less likely to feel involved in decision-making generally. This suggests that although health professionals were attempting to increase their support for these women (e.g. more antenatal visits, seeing the same, named midwife), the women did not perceive the support in particularly positive ways (e.g. not feeling listened to), a consequence perhaps of how equipped health care professionals feel to confidently address perinatal mental health.

Previous research has identified training in perinatal mental health as a particular need. Studies of GPs (Milgrom et al., 2011; Khan, 2015), midwives (Huack et al., 2015; Noonan et al., 2016), and health visitors, who provide care and support to families with young children (Jomeen et al., 2013; Jones et al., 2015), have found that many feel ill-equipped to support women with mental health problems, and that continuous professional development is necessary. Recognition of perinatal mental illness has only recently been recognised as a core competency for both obstetricians and midwives in the UK (Nursing and Midwifery Council, 2009). Mental health has also been noted as a major issue by healthcare professionals more broadly, for example, health professionals consulted for the National Maternity Review indicated that there is a need for more investment in multiprofessional training in the area of perinatal mental health (NHS England, 2016).

The negative perception of health professionals by women with antenatal mental health problems has been reported previously from other surveys (Henderson and Redshaw, 2013; Redshaw and Henderson, 2013; Redshaw et al., 2013). It is possible that women with mental health problems are more inclined to be critical of their care. It is also probable that they have greater needs which health professionals find it difficult to meet in an under-resourced service, particularly in relation to time constraints, referral and support (Noonan et al., 2016). In addition, some midwives may have negative attitudes to women with mental health problems which could affect professional behaviour through negative stereotyping (Noonan et al., 2016).

The significance of effective care provision for perinatal mental health, both at a structural and individual level is highlighted by the Centre for Mental Health who have summarised the costs of perinatal mental health problems. They estimated that these amount to about £10,000 per birth for society as a whole, 72% of which relates to the adverse impact on the child (Bauer et al., 2014). This compares to an additional £400 per birth to rectify the current patchy provision (Bauer et al., 2014).

This study is limited by the 47% response rate and the under-representation of women who were young, single, born outside the UK and living in areas of deprivation. However, the questionnaires were well completed with missing values generally less than 3%. Many of the outcome variables were from validated instruments, supplemented by the health checklists. This study also benefitted from being a large population-based sample with significant numbers of women from disadvantaged groups.

Conclusions

This study has confirmed the associations between sociodemographic factors and mental health problems, between physical and mental health problems, and between antenatal and postnatal mental health. Women with self-reported mental health problems in pregnancy receive significant additional care, however the effects of support, advice and treatment are mixed. Women with mental health problems had a poorer perception of staff interaction. These findings are significant in highlighting the importance of training in mental health issues for health care professionals, as well as the significance of appropriate support provided via effective care pathways.

Table 4
Care factors associated with presence of antenatal mental health problems.

	Antenatal mental health problem						
	Yes		No		Total		*Missing*[a]
	No.	%	No.	%	No.	%	
Pregnancy							
13 or more checks	75	23.9	774	19.4	849	19.7	*265*
Same midwife seen at each visit***	154	44.6	1441	34.8	1595	35.6	*95*
Had a named midwife***	259	83.0	2825	73.0	3084	73.7	*394*
Staff interactions in pregnancy...							
Midwives always...							
talked so could understand**	291	84.8	3757	90.0	4048	89.6	*62*
listened	265	77.3	3345	80.4	3610	80.2	*76*
were respectful	305	88.7	3744	89.9	4049	89.8	*69*
were kind	289	84.8	3656	87.8	3945	87.5	*71*
treated women as individuals*	262	77.3	3409	82.1	3671	81.8	*89*
Drs always...							
talked so could understand***	247	73.5	3183	81.4	3430	80.8	*333*
listened***	233	68.5	3016	77.5	3249	76.8	*348*
respectful**	272	80.0	3355	86.1	3627	85.6	*343*
kind**	261	77.0	3228	83.1	3489	82.6	*354*
treated women as individuals***	240	71.9	3090	79.9	3330	79.3	*377*
Involved in decision-making in pregnancy	228	68.9	3003	73.5	3231	73.1	*48*
Always had someone to talk to about sensitive issues	163	47.5	1916	46.3	2079	46.4	*100*
Hospital admission in pregnancy	75	21.3	734	17.4	809	17.7	*not known*
Labour and birth							
Had met all/some midwives before***	69	23.2	511	14.2	580	14.9	*680*
Mode of delivery**							*83*
Normal	213	65.7	2429	60.7	2642	61.1	
Instrumental	31	9.6	634	15.9	665	15.4	
Planned caesarean	43	13.3	420	10.5	463	10.7	
Caesarean due to unforeseen problems	37	11.4	518	13.0	555	12.8	
Always had confidence and trust in staff	267	78.5	3397	81.5	3664	81.2	*68*
Left alone and worried***							*78*
Not at all	259	75.3	3420	82.3	3679	81.8	
Yes, during labour	51	14.8	421	10.1	472	10.5	
Yes, shortly after birth	14	4.1	224	5.4	238	5.3	
Both in labour and after birth	20	5.8	91	2.2	111	2.5	
Staff interaction during labour and birth...							
Midwives always...							
talked so could understand**	291	85.3	3763	90.3	4054	89.9	*71*
listened	268	78.6	3406	82.0	3674	81.7	*81*
respectful	294	86.0	3713	89.2	4007	88.9	*73*
kind	293	86.2	3701	88.9	3994	88.7	*75*
treated women as individuals*	278	82.5	3603	87.0	3881	86.6	*98*
Drs always...							
talked so could understand	242	80.7	2973	84.7	3215	84.4	*769*
listened	236	79.2	2885	82.6	3121	82.4	*789*
respectful	256	85.6	3075	87.8	3331	87.6	*777*
kind	249	84.1	2999	85.8	3248	85.6	*785*
treated women as individuals*	228	78.4	2901	83.6	3129	83.2	*818*
Labour better/worse than expected*							*77*
Worse	78	22.7	1076	25.9	1154	25.6	
As expected	92	26.7	1290	31.0	1382	30.7	
Better	174	50.6	1791	43.1	1965	43.7	
Postnatal care							
5 or more postnatal visits**	147	41.8	1392	32.9	1539	33.6	*70*
Had met all/some of the MWs before*	224	65.7	2414	59.1	2638	59.6	*149*
Baby aged 15 or more days at last visit	156	48.6	1799	45.6	1955	45.9	*316*
Overall							
Satisfied with antenatal care	299	88.2	3672	88.1	3971	88.1	*71*
Satisfied with care during labour and birth	289	86.0	3698	88.8	3987	88.6	*79*
Satisfied with postnatal care	266	79.4	3212	77.2	3478	77.3	*81*
Definitely given information about choices*	218	65.5	2940	71.0	3158	70.6	*104*
Definitely involved in decision-making***	208	63.2	2993	72.4	3201	71.7	*116*
Definitely given enough information	224	68.5	3024	73.2	3248	72.8	*118*
Definitely given information at the right time	219	67.2	2944	71.4	3163	71.0	*126*
Definitely able to have a trusting relationship with health professional	194	60.1	2280	55.2	2474	55.6	*126*

* $p < 0.05$.
** $p < 0.01$.
*** $p < 0.001$ in χ^2 test.
[a] Missing values were high for variables which did not apply to all women e.g. not all women saw a doctor.

Table 5
Effect of advice/support, treatment on outcomes in women who had antenatal mental health problems (N = 352).

	Received support and/or advice?				**Received treatment?**				**Received some help**[a]		**Received no help**[a]	
	Yes (n = 231)		No (n = 82)		Yes (n = 119)		No (n = 144)		(n = 282)		(n = 70)	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Birth Satisfaction Scale[b] - mean (95% CI)												
Stress subscale	4.32 (3.99, 4.64)		3.67 (3.11, 4.22)		4.22 (3.75, 4.69)		3.90 (3.49, 4.32)		4.30 (4.01, 4.59)		3.52 (2.91, 4.13)	
Quality of care subscale	3.48 (3.35, 3.60)		3.22 (2.92, 3.52)		3.53 (3.36, 3.69)		3.25 (3.04, 3.45)		3.47 (3.36, 3.59)		3.14 (2.78, 3.48)	
Total score	7.81 (7.41, 8.21)		6.85 (6.13, 7.57)		7.74 (7.18, 8.30)		7.14 (6.60, 7.67)		7.77 (7.41, 8.12)		6.61 (5.80, 7.42)	
Worries about labour score[c]	15.0 (14.0,15.9)		15.6 (13.7, 17.5)		14.3 (13.0, 15.7)		15.7 (14.6, 16.9)		16.2 (14.2, 18.2)		15.0 (14.1, 15.8)	
At 1 month postpartum...												
Woman felt well	178	78.1	48	67.7	90	79.0	96	71.1	42	68.9	21.3	77.2
Depression/blues	72	31.4	12	15.2**	31	26.7	34	23.9	80	28.8	11	16.2*
Anxiety	53	23.1	16	20.3	25	21.6	37	26.1	61	21.9	15	22.1
At 3 months postpartum...												
Depression	49	21.4	14	17.7	23	19.8	26	18.3	54	19.4	13	19.1
Anxiety	38	16.6	17	21.5	20	17.2	32	22.5	42	15.1	16	23.5
EPDS > 11	79	37.6	17	30.4	38	37.3	42	35.3	89	36.0	15	30.0
PN MH problem	107	46.3	34	41.5	59	49.6	66	45.8	126	44.7	28	40.0
When woman felt that the baby belonged												
During pregnancy	115	50.4	29	37.7	58	50.0	59	42.8	130	47.3	24	36.4
Immediately after birth	43	18.9	22	28.6	25	21.6	33	23.9	59	21.5	19	28.8
First few days	27	11.8	6	7.8	15	12.9	11	8.0	36	13.1	5	7.6
First few weeks	27	11.8	10	13.0	11	9.5	20	14.5	31	11.3	9	13.6
Only recently	13	5.7	5	6.5	5	4.3	10	7.2	15	5.5	5	7.6
Not quite yet	3	1.3	5	6.5*	2	1.7	5	3.6	4	1.5	4	6.1
Number of positive adjectives used about the baby												
1–4	72	31.2	53	64.6	41	34.5	67	46.5	105	37.2	44	62.9
5–6	95	41.1	16	19.5	48	40.3	44	30.6	108	38.3	15	21.4
7 or more	64	27.7	13	15.9***	30	25.2	33	22.9	69	24.5	11	15.7**
Number of negative adjectives used about the baby												
0	53	22.9	43	52.4	29	24.4	53	36.8	76	27.0	35	50.0
1	115	49.8	23	28.0	61	51.3	52	36.1	133	47.2	19	27.1
2 or more	63	27.3	16	19.5***	29	24.4	39	27.1*	73	25.9	16	22.9**
Baby considered more or less difficult than average												
More difficult	14	6.3	6	8.0	9	7.8	10	7.3	18	6.6	6	9.2
Average	113	50.4	36	48.0	63	54.8	66	48.2	139	51.3	31	47.7
Easier	97	43.3	33	44.0	43	37.4	61	44.5	114	42.1	28	43.1

* $p < 0.05$.
** $p < 0.01$.
*** $p < 0.001$ in χ^2 test.
[a] 'help' may be support, advice and/or treatment.
[b] Birth Satisfaction Scale (Revised) – 6 statements about labour and birth, 3 relating to stress, 3 to quality of care. A high score indicates greater satisfaction.
[c] Worries about labour score: list of 10 possible worries scored 1-4 and summed. EPDS Edinburgh Postnatal Depression Scale; PN MH postnatal mental health

Table 6
Logistic regressions showing effect of advice/support on outcomes in women with antenatal mental health problems.

N = 352	Odds ratios (95% confidence interval)		
	Unadjusted	Adjusted for sociodemographic factors*	Adjusted for sociodemographic factors + saw HCP about AN anxiety and/or depression
At 1 month postpartum...			
Depression	2.56 (1.30, 5.03)	2.16 (1.05, 4.48)	1.99 (0.95, 4.15)
Anxiety	1.19 (0.63, 2.22)	0.96 (0.49, 1.87)	0.84 (0.42, 1.67)
At 3 months postpartum...			
Depression	1.26 (0.65, 2.44)	1.07 (0.53, 2.17)	0.94 (0.46, 1.95)
Anxiety	0.73 (0.38, 1.38)	0.53 (0.26, 1.05)	0.44 (0.21, 0.92)
EPDS > 11	1.38 (0.73, 2.61)	1.57 (0.79, 3.14)	1.10 (0.53, 2.28)
PN MH problem	1.22 (0.73, 2.03)	1.34 (0.75, 2.39)	1.06 (0.58, 1.94)

AN antenatal; PN postnatal; MH mental health; HCP health care professional; EPDS Edinburgh Postnatal Depression Scale.
* Adjusted for parity, maternal age, Black or Minority Ethnic group, single mother, Index of Multiple Deprivation quintile.

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Conflict of interest

The authors declare that they have no conflict of interest.

Ethics approval and consent to participate

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Clinical trial registry and registration number

Not applicable.

Appendix A. Supporting information

Supplementary data associated with this article can be found in the online version at doi:10.1016/j.midw.2017.10.020.

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