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Depressive symptoms and experiences of birthing mothers during COVID-19 pandemic

ORIGINAL ARTICLE

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BACKGROUND

It is unclear how the COVID-19 pandemic has affected postnatal women in Norway. We therefore wanted to investigate their depressive symptoms and birthing experiences during the pandemic.

MATERIAL AND METHOD

In April 2021, a total of 3 642 postnatal women participated in an online survey. Depressive symptoms were measured using a short matrix version of the Edinburgh Postnatal Depression Scale (EPDS-4), and standardised questions about the ante-, peri- and post-natal periods were used to record birthing experiences. The questions were the same as those used ten years ago in the Ahus Birth Cohort study, which is the reference population here. The women were also asked questions related to the pandemic and mental health care.

RESULTS

Twenty-nine per cent of the mothers indicated that the pandemic had had a 'large' or 'very large' impact on their mental health. Thirty-two per cent reported high scores for depressive symptoms (EPDS-4 scores ≥ 6), while the corresponding figure in the reference population was 10 %. The proportion of mothers who were dissatisfied with their pregnancy experience was almost the

same in both cohorts, while the proportion that reported poor care in the maternity ward during the pandemic was higher than for the reference population (34 % vs. 13 %). Of those who had mental health problems during the pandemic, 54 % stated that they had not received appropriate help.

INTERPRETATION

One in three postnatal women reported high scores for depressive symptoms during the pandemic. The study revealed significant dissatisfaction with the care provided in maternity wards and inadequate follow-up of the mothers' mental health.

Main findings

The proportion of postnatal women who reported high scores for depressive symptoms was 32 % during the pandemic, compared with 10 % in a reference population ten years earlier.

Thirty-four per cent of the women who gave birth during the pandemic reported receiving poor care in the maternity ward.

Fifty-four per cent of mothers with postnatal mental health problems reported that they did not receive appropriate help.

The COVID-19 pandemic – with lockdowns, infection control measures, rising unemployment and general uncertainty – has impacted on the entire population. Figures from the Norwegian Institute of Public Health suggest an increase in impaired mental health among the general population during the pandemic (1). International studies indicate that pregnant and postnatal women have been a particularly vulnerable group (2). It is unclear to what extent this also applies to Norway, although some clinicians have noted an increase in cases of anxiety among birthing mothers (3).

Ten years ago, the Ahus Birth Cohort study of pregnant and postnatal women was carried out at Akershus University Hospital (4). The main purpose of the study was to investigate how mental health affects childbirth and the infant. The study also included a number of psychometric scales to measure depression and anxiety, in addition to standardised questions about the ante-, peri- and post-natal periods. We have now asked the same questions to women who gave birth during the pandemic (referred to here as the pandemic sample). Although the results from the two samples are not directly comparable, we wish to present descriptive data from the two cohorts.

Method

The pandemic sample

In the last week of April 2021, the Nordic Marcé Society and Landsforeningen 1001 dager conducted an online survey. These organisations work specifically with pregnancy-related mental health. Women who gave birth in the period 12 March 2020 to 12 April 2021 were contacted via a number of websites and organisations, such as the Norwegian Federation of Midwives, the Norwegian Midwife Association, the National Group of Public Health Nurses, the breastfeeding support centre in Norway, various pre-natal courses and child health centres (see Appendix 1). An information leaflet was published with a link to a questionnaire (see Appendix 2) created using the SurveyMonkey tool. The link was shared 185 times on Facebook and Instagram via the aforementioned organisations, and 3 642 women participated. Due to data protection regulations, we have limited access to the identities of those invited to participate and the respondents. The time point for participation in the study varied from two weeks to thirteen months after giving birth.

The Ahus Birth Cohort study (reference population)

The Ahus Birth Cohort study was a large follow-up study in which several questionnaires were sent to pregnant and postnatal women. The target population was women who planned to give birth at Akershus University Hospital in the period from November 2008 to April 2010. A total of 4 662 women were recruited at the routine fetal ultrasound examination at 18 weeks of gestation, which is performed on almost all pregnant women. Questionnaires were then sent in gestation week 32 (Q2) as well as eight weeks (Q3) and two years after the birth (Q4). Of the women who received Q3 eight weeks after giving birth, 2 217 responded (48 % of all women included in the study) (4, 5). The women in the pandemic sample have now been asked the same questions from Q3 in the Ahus Birth Cohort study (see Appendix 3).

Variables

Depressive symptoms

A short matrix version of the Edinburgh Postnatal Depression Scale (EPDS-4, see Figure 1) was used to measure depressive symptoms (6). The scale measures the intensity of depressive symptoms during the preceding seven days. Each answer is ranked on a scale from 0 to 3, and the total score varies from 0 to 12, where a high score indicates probable depression. We used the same threshold value for probable depression that has been used in previous studies (7), i.e. a score of 6 or more. The Norwegian version of the Edinburgh Postnatal Depression Scale has been validated against criteria from the DSM-IV (Diagnostic and Statistical Manual of Mental Disorders) for severe depression (8).

In the past 7 days, have you felt any of the following?

	Yes, most of the time	*Yes, sometimes*	*Not very often*	*No, never*
I have felt sad or miserable	☐	☐	☐	☐
I have been anxious or worried for no good reason	☐	☐	☐	☐
I have been so unhappy that I have had difficulty sleeping	☐	☐	☐	☐
I have blamed myself unnecessarily when things went wrong	☐	☐	☐	☐

Figure 1 Short matrix version of the *Edinburgh Postnatal Depression Scale* (EPDS-4) (6).

Experiences during the ante-, peri- and post-natal periods

The participants were asked 'On the whole, how was your experience of pregnancy?'. There were five response alternatives: 'Very good', 'Good', 'Okay', 'Bad' and 'Very bad'. They were then asked 'How well do you feel that you were taken care of during the birth/in the maternity ward?', with the same five response alternatives.

Other variables

We also asked about sociodemographic and reproductive factors. Previous mental health problems were elucidated through the question 'Prior to your pregnancy, have you had mental health problems that required treatment?', with the following response alternatives: 'No', 'Yes' and 'Yes, have experienced mental health challenges but was not offered treatment'. The women who had given birth during the pandemic were also asked questions related to the pandemic and mental health care (see Appendix 2).

Statistics

The EPDS-4 score is presented as the median and interquartile range for continuous variables, and as the frequency (number and percentage) for categorical variables. Chi-square tests were used to estimate differences in the proportion of women with a high EPDS-4 score (≥ 6) in relation to parity and place of residence. Cronbach's alpha was calculated as a measure of internal consistency. The analyses were performed in the statistics program SPSS, version 27.

Ethics

All information from the pandemic sample is anonymous and cannot be traced back to individuals. The Ahus Birth Cohort study was approved by the data protection officer and the Regional Committees for Medical and Health Research Ethics (S-08013a).

Results

A total of 3 642 women responded to the pandemic survey. Of these, 1 215 (33 %) were from a city (Oslo, Bergen, Trondheim or Stavanger), 1 420 (39 %) were from a medium-sized or small town, and 997 (27 %) were from a village or rural area. Seventy-seven (2 %) of the women had previously been infected with COVID-19.

Table 1 shows selected sociodemographic data from the participants in the pandemic sample and the Ahus Birth Cohort. The proportion of multiparous women was higher in the Ahus cohort compared with the pandemic sample, and a larger proportion was aged 30 years or older. However, more of the pandemic sample had a college or university education compared to the Ahus cohort. The proportion who reported that they had had mental health problems before they were pregnant was almost the same in both populations (23 % in the pandemic sample vs. 26 % in the Ahus cohort).

Table 1

Sociodemographic data for the pandemic sample and the Ahus Birth Cohort study (4).

Variable	Pandemic sample (n = 3 642), number (%)	Ahus Birth Cohort (n = 2 217), number (%)
Parity		
Primiparous women	2 043 (56)	1 105 (50)
Multiparous women	1 597 (44)	1 112 (50)
Data missing	2 (0.06)	
Age		
≤ 24 years	248 (7)	149 (7)
25–29	1 286 (35)	607 (27)
≥ 30	2 104 (58)	1 445 (65)
Data missing	4 (0)	16 (1)
Education level		
Primary/lower secondary	79 (2)	67 (3)
Upper secondary	808 (22)	621 (28)
College/university	2 754 (76)	1 438 (65)
Data missing	1 (0)	91 (4)
Marital status		
Cohabitee/married	3 540 (97)	2 133 (96)
Single	87 (2)	52 (2)

Variable	Pandemic sample (n = 3 642), number (%)	Ahus Birth Cohort (n = 2 217), number (%)
Data missing	15 (0)	32 (1)
Previous mental health problems		
No	2 790 (77)	1 614 (73)
Yes	847 (23)	572 (26)
Data missing	5 (0)	31 (1)

The prevalence of women with probable depression (defined as an EPDS-4 score of 6 or higher) was 1 164 out of 3 642 (32 %) in the pandemic sample compared with 225 out of 2 217 (10 %) in the Ahus Birth Cohort (see Table 2). Among those who gave birth during the pandemic, the prevalence of probable depression was similar among primiparous and multiparous women (33 % vs. 31 %) (chi-square = 0.8; p = 0.363). We found a similar result in the Ahus Birth Cohort study (11 % vs. 10 %) (chi-square = 1.2; p = 0.269). In the pandemic sample, there was no significant difference in EPDS-4 scores between those living in cities (32 %), medium-sized or small towns (33 %) and rural areas (31 %) (chi-square = 0.8; p = 0.409). However, the prevalence of women with a high depression score was lower among those who had a college or university education (30 %) compared with those whose highest level of education was upper secondary school (40 %) or primary/lower secondary (49 %) (chi-square = 38.8; p = 0.000). Internal consistency, measured with Cronbach's alpha, was 0.80 for EPDS-4 in the Ahus Birth Cohort and 0.86 in the pandemic sample. These results satisfy the requirements for acceptable reliability (9).

Table 2

Depressive symptoms (EPDS-4 score) (6) among women in the pandemic sample and the Ahus Birth Cohort (4).

	Pandemic sample (n = 3 642)	Ahus Birth Cohort (n = 2 217)
EPDS-4 score, median (interquartile range)	4 (1–6)	2 (0–4)
Proportion above the threshold value (EPDS-4 score ≥ 6)	32 %	10 %

Of the 3 642 women in the pandemic sample, 1 066 (29 %) indicated that the pandemic had had a 'large' or 'very large' impact on their mental health. From the sample, 645 (18 %) reported that they had needed to talk to a psychologist or GP about their mental health, while 1 207 (33 %) stated that they had considered doing so occasionally. A total of 1 099 (30 %) indicated that they

had not been asked about their mental health by healthcare personnel. Of the 2 158 who had experienced mental health problems during the pandemic, 650 (30 %) reported that they needed more help than they had received, and 528 (24 %) had not received any help at all.

In the pandemic sample of 3 642 women, 920 (25 %) stated that infection control measures had prevented them from having their partner or a companion with them during some parts of labour. A total of 141 (4 %) gave birth without a partner or companion being present. Thirty-five per cent indicated that the pandemic situation had impacted on the duration of their hospital stay.

The proportion of women who reported a bad or very bad pregnancy experience was almost the same in the pandemic sample (543 out of 3 642, 15 %) and the Ahus Birth Cohort study (342 out of 2 217, 15 %) (see Table 3). In the pandemic sample, a larger proportion reported poor care during labour (398 out of 3 642 (11 %) vs. 129 out of 2 217 (6 %) in the Ahus Birth Cohort) and poor postnatal care in the maternity ward (1 257 out of 3 642 (34 %) vs. 279 out of 2 217 (13 %)).

Table 3

Women who reported a bad pregnancy experience and poor maternity care at the hospital (see Appendices 2 and 3 at tidsskriftet.no) in the pandemic sample and in the Ahus Birth Cohort (4).

	Pandemic sample (n = 3 642), number (%)	Ahus Birth Cohort (n = 2 217), number (%)
Bad/very bad pregnancy experience	543 (15)	342 (15)
Poor/very poor care during labour	398 (11)	129 (6)
Poor/very poor postnatal care in the maternity ward	1 257 (34)	279 (13)

Discussion

One in three postnatal women had a high EPDS-4 score, which is three times higher than ten years earlier. Our findings reveal considerable dissatisfaction with the care in the maternity ward among mothers during the pandemic and inadequate follow-up of their mental health after discharge.

The results of this study concur with findings from a Canadian meta-analysis of 46 studies with a total of 47 677 participants who were pregnant during the pandemic (2). The prevalence of probable depression was estimated at 26 %, i.e. more than twice as high as pre-pandemic levels (10, 11). By way of comparison, the prevalence was measured at 11 % in a study based on data

from the Norwegian Mother, Father and Child Cohort Study (MoBa) in the period 1999–2008 (7). In June 2020, a multinational study on perinatal mental health was conducted during the pandemic (12). The results indicated a prevalence of probable depression of 15 % among the Norwegian participants in the study, while the corresponding figure was 42 % for the United Kingdom. In June 2020, the pandemic had only been going for a few months, and most people in Norway thought it was over, while the United Kingdom had a significantly higher infection rate and was in lockdown. It cannot therefore be ruled out that the reference point may have had an impact on the relatively lower incidence in Norway than in the United Kingdom. In their study, depression was not measured in the same way as in our study, which makes it difficult to directly compare the two datasets.

Probable depression was defined in our study as a total score of 6 or more in EPDS-4. EPDS-4 is a screening tool that indicates depression, and is not a diagnostic tool. The Edinburgh Postnatal Depression Scale has a high level of sensitivity, but somewhat lower specificity, which may mean that false positives can occur, i.e. non-depressed women can be categorised as depressed. This means that the prevalence of depression is lower than the prevalence of women with a score above the threshold value (8). The scale is the most commonly used instrument internationally to screen for postnatal depression (13).

In studies based on voluntary participation, there is a risk of self-selection based on the degree of dissatisfaction (14). However, both the pandemic sample and the Ahus Birth Cohort sample were based on voluntary participation, which suggests that the risk of such self-selection is present in both samples. In the Ahus Birth Cohort, participants were recruited from a limited geographical area. Sociodemographic and reproductive characteristics nevertheless concur with data from the Norwegian Medical Birth Registry (15), which indicates that the Ahus Birth Cohort data are reasonably representative. The questionnaire in the Ahus Birth Cohort was distributed by post, while in the pandemic sample it was distributed nationally via social media and websites. Recruitment via social media does not necessarily lead to a selection bias. Previous studies suggest that recruitment via, for example, Facebook can provide representative samples on a par with traditional collection methods (16).

Several factors contradict the idea that the pandemic sample is more highly selected in terms of dissatisfaction and mental illness than the Ahus Birth Cohort sample. First, the proportion who were dissatisfied with their pregnancy experience was the same in both surveys. Second, about the same number of participants indicated pre-pregnancy mental health problems. There were more primiparous women in the pandemic sample than in the Ahus Birth Cohort, which may have had an impact on the results, as the risk of probable postnatal depression is somewhat higher among primiparous women (18). However, we found no significant difference in EPDS-4 scores with respect to parity. In the pandemic sample, a larger proportion of women had a college or university education than in the Ahus Birth Cohort. Since those with a higher education had a lower depression score, it is possible that the incidence of depressive symptoms in the pandemic sample is slightly underestimated. The disparities between education levels may be due to the fact that more people in this age group take higher education nowadays than was the case ten years ago (17).

Depressive symptoms were measured eight to ten weeks after childbirth in the Ahus Birth Cohort, while in the pandemic sample they could be measured up to thirteen months after childbirth. Some mothers in the pandemic sample thus completed the questionnaire just weeks after giving birth, while for others a significantly longer period of time would have passed between the birth and the reporting of current depressive symptoms. However, the risk of recall bias should be the same for all participants since they were only asked about depressive symptoms in 'the last seven days'. Nevertheless, there is a risk that the prevalence of depressive symptoms may be somewhat underestimated in the pandemic sample since most studies indicate that the risk of depression is highest during the first eight to ten weeks after childbirth, and then gradually decreases (18). Despite differences in recruitment and collection methods in the two samples, we believe it is important to report the findings.

Our findings reveal inadequate follow-up of postnatal mental health. However, it is not certain whether this is due to the pandemic alone or whether the pandemic exacerbated existing weaknesses in the mental health service provision and made follow-up even more challenging. A number of Norwegian studies suggest that the proportion of women with symptoms of postnatal depression may have been gradually increasing since the early 2000s (19). A new review article also suggests that follow-up of postnatal mental health was already inadequate prior to the pandemic (20). National Norwegian guidelines recommend that healthcare professionals ask pregnant women about their mental health (13). Our results reveal that almost a third were not asked about this.

The women in our study were significantly more dissatisfied with their stay in the maternity ward than the participants in the Ahus Birth Cohort study. It is conceivable that young women's expectations of care have changed over the course of ten years. Nevertheless, there is no doubt that the pandemic has impacted on hospital conditions, as the staff have had to spend time and resources on complying with infection control requirements. The strict visiting arrangements during the pandemic meant that partners were often sent home or had to wait outside until the birth was actually underway. Few partners have been able to be present in the maternity ward, which has meant a loss of important emotional support for the mothers. The staff have had to take over the partner's role, which may have led to extra stress for both the staff and the mothers. The proportion of infants receiving formula milk in maternity wards has increased during the pandemic (21), which may be due to the reduction in resources for helping mothers to initiate breastfeeding. One in three women in our study reported that their hospital stay was cut short due to the pandemic. The already short period in hospital (19) has thus become even shorter (22), and after discharge many women have spent their time in isolation.

Lack of follow-up during the ante-, peri- and post-natal periods is serious in terms of the woman's physical and mental health as well as from a broader societal perspective. It is a paradox that pregnant women receive close follow-up when it comes to physical aspects of their health, such as blood pressure, weight gain, glucosuria, etc., but are not systematically asked about their mental health despite it being well-documented that poor mental health can have just as serious consequences as poor physical health (23). The Norwegian

government recently appointed a committee to propose specific measures to avert a mental health crisis in the wake of the pandemic (24). A total of 31 measures were outlined. Despite the fact that the pandemic has been very stressful for pregnant and postnatal women, it appears that the committee has forgotten about this vulnerable group.

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