

Research Article

Pregnant women's emotional well-being and attitudes: cluster analysis of two cohorts in Sweden

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Abstract

Background: The focus on women's emotional well-being during pregnancy has intensified in the past 20 years.

Objective: To identify profiles of pregnant women based on their emotional well-being and assess changes in those profiles over time.

Methods: In a cross-sectional study, 280 women in Sweden were recruited to a continuity project for comparison with a historical cohort of 3061 women recruited two decades ago. Data were collected with a pregnancy-focused questionnaire measuring women's background characteristics and attitudes towards pregnancy and childbirth. Cluster analysis was performed with four validated instruments.

Results: Despite no differences in the women's backgrounds, emotional well-being differed between the cohorts. Separate cluster analyses revealed similar profiles. The 'emotionally healthy' cluster represented low scores for depressive symptoms, worries and fear of birth and high scores for sense of coherence. By contrast, the 'emotionally unhealthy' cluster, comprising 35% of each cohort, represented high scores for depressive symptoms, worries and fear of birth and low scores for coherence. Women belonging to the 'emotionally unhealthy' cluster were more likely to be single, to be born outside Sweden and to have negative attitudes towards childbirth.

Conclusion: Pregnant women in Sweden now and 20 years ago showed similar profiles in terms of emotional well-being, in two clusters differing in background characteristics and attitudes towards childbirth regardless of period. Women's emotional well-being needs to be recognised during pregnancy, because poor emotional health can adversely affect not only pregnant women but also their infants and families.

Keywords: Emotional well-being; Pregnancy; Cluster analysis

Abbreviations: EPDS-Edinburgh Postnatal Depression Scale; CWS-Cambridge Worry Scale; FOB-Fear of birth; SOC-Sense of coherence

Introduction

Several recent reports have highlighted that women are at the greatest risk of developing mental health conditions [1]. For expecting mothers, pregnancy is typically a vulnerable time [2], and although most women enjoy being pregnant and look forward to the birth of their babies, some suffer greatly due to various worries, anxiety, depressive symptoms and fear of birth [2-3]. In particular, worries have been defined as a process, not a psychological state [4]. Although worrying and worries can be useful in navigating new or foreign situations or challenges, worries that do not prompt problem-solving can cause fear and anxiety. During pregnancy, women's worries mainly focus on potential problems with the baby, giving birth and the risk of miscarriage [5-6]. Ultimately, such worries and other factors of women's emotional health during pregnancy influence birth-related decision-making [7], prenatal attachment [8] and the outcome and experience of giving birth [7, 9].

Not only pregnant women but also their families can suffer from the consequences of poor emotional health. Research has shown that women with severe depression face an increased risk of preterm birth, low Apgar scores and stillbirth [10]. The mother-infant relationship can also be altered if the woman suffers from anxiety [11] or depressive symptoms [12]. Beyond that, fear of birth affects around 14% of women worldwide [13], and comorbidities between of fear of birth and lack of emotional well-being have been documented [9, 14].

Developed by Antonovsky [15], the salutogenic model of healthcare focuses on so-called 'generalised resistant resources' and can offer a predictive indication of health [16]. A recent systematic review of 34 scientific papers (170) concluded that women's background factors and psychosocial factors can affect their sense of coherence (SOC), which has been negatively

associated with their psychological lack of well-being [17]. Pregnant women with high SOC were less likely to give birth by caesarean section [18], whereas women with low SOC seem to have more worries and negative attitudes towards birth [16]. Another study showed that women with fear of birth usually presented with low SOC [19]. Ferguson and Davis [16] have also described some differences in attitudes between women with strong or weak SOC. Among them, women with strong SOC more often adopted positive, relaxed, baby-focused attitudes, whereas ones with weak SOC had more negative, worried, labour-focused attitudes. Such results indicate that SOC can provide rich information regarding women's comprehensibility, manageability and meaningfulness.

During the last 20 years, the provision of healthcare services in Sweden has undergone several major changes [20], particularly a shift from inpatient to outpatient services that has decreased the number of hospital beds. In fact, between 1990 and 2005, nearly half of all beds in Sweden's acute care hospitals were eliminated [21], and maternity services were no exception. Smaller labour wards even closed not only due to concerns that too few births might impact safety [22] but also due to financial strain.

In Sweden, antenatal care is funded by taxes and free of charge to legal residents and asylum seekers [21]. Antenatal care is fairly standardised and boasts a compliance rate of approximately 99%. Usually, the (soon-to-be) parents meet the same midwife for antenatal visits—during a normal pregnancy, from six to nine visits—at an outpatient clinic. The continuity of midwife caregivers in antenatal care in Sweden is fairly high, although it is not common for women to have a known midwife during labour and birth [23].

Given the different features of poor emotional or mental health during pregnancy and their consequences, it is important to thoughtfully investigate not only pregnant women's physical health but also their emotional well-being. Because pregnant women are usually exposed to healthcare services without being ill, healthcare providers have a unique opportunity to identify women in need of additional support. Moreover, because pregnant women are usually active participants in their antenatal care, that period of care is suitable for developing women-centred approaches based upon trustful relationships.

Problem area

Increased focus on women's emotional well-being during pregnancy in the past 20 years has revealed that some pregnant women greatly suffer from various worries, anxiety, depressive symptoms and fear of birth. Because a strong SOC may mediate women's emotional health, the aim of our study was to identify profiles of pregnant women based on their emotional well-being and study changes in those profiles over time.

Material and Methods

Design

Our cross-sectional study involved comparing pregnant women from a rural area in Sweden recruited from 2017 to 2019 with a historical cohort of pregnant women from a national sample recruited in 1999 and 2000.

Setting

The study was conducted at an antenatal clinic in a small town in rural Sweden and in two labour wards 100 to 120 km away from the clinic, because the labour ward in the hospital containing the antenatal clinic closed shortly before the study commenced. For the purposes of the study, we included only data collected during pregnancy.

Participants

Sample

The sample consisted of a cohort of 280 women from a clinical trial in which they received continuity of care during pregnancy and birth from a team of four midwives. Women were eligible for recruitment if they had a due date between 1 August 2017 and 30 June 2019. Information about the project was provided over the telephone when women contacted the antenatal clinic to schedule a visit, and additional information was made available in the clinic's waiting area and on a clinic-affiliated website. Another inclusion criterion was thus the ability to communicate in Swedish by telephone. Each woman was assigned a personal midwife who was responsible for her antenatal and postnatal care. At the same time, all participating women had the opportunity to meet all midwives in the group, because the midwives rotated being on call.

Comparison group

For comparison, data from a historical cohort of 3061 women recruited to a national survey conducted across Sweden from 1999 to 2000 were used [6]. Based on calculations obtained from the Medical Birth Register, those women represented about 66% of approximately 4600 eligible women [24]. In all, 3455 women consented to participate, 3061 of whom (89%) completed the questionnaire.

Data collection

Data were collected with a questionnaire distributed mid-pregnancy. Each woman in the sample received a questionnaire shortly after the ultrasound screening offered to all pregnant women in gestational weeks 17 to 19, whereas each woman in the comparison group had received the questionnaire earlier during pregnancy (mean GW = 16). The questionnaire comprised numerous questions addressing pregnancy, birth and early parenthood, some of which are presented here. Although some modifications were made, most questions between the cohorts were the same. The questionnaire moreover addressed women's socio-demographic and obstetric backgrounds (i.e. age, marital status, country of birth, level of education and parity) and their attitudes about having a known midwife during birth, whether the pregnancy was planned or not, being pregnant, the first weeks with the newborn and their preference regarding mode of birth.

The 16-item Cambridge Worry Scale (CWS) [25] was additionally administered to detect areas underlying women's worries, including about housing, finances, health, work and childbirth, especially about risk of miscarriage, admittance to hospital, giving birth and caring for the infant. Each item was assessed on a scale ranging from 0 to 5, and all 16 items were totalled to form a continuous variable ranging from 0 to 80.

Also administered was the Edinburg Postnatal Depression scale (EPDS) [26]. The EPDS contains 10 questions about depressive symptoms, and women are instructed to refer to their feelings from the previous week. Each item is responded to on a 4-point Likert scale ranging from 0 to 3, and total scores range from 0 to 30.

Another instrument that we administered was the 13-item Sense of Coherence (SOC) scale developed by Antonovsky [27], which we used as a proxy for personality and women's resourcefulness. The 13 items are assessed on numeric scales ranging from 1 to 7 and thereafter summed to give a total score. The total sum ranges from 13 to 91.

Last, fear of birth (FOB) was assessed with the question 'How do you feel when thinking about labour and birth?' to be answered on a 5-point Likert scale ranging from 1 ('very positive') to 5 ('very negative'). The question was previously used in a study on fear of birth [28].

Analysis

Statistical analysis was conducted using SPSS for Windows version 25 (Chicago, IL, USA). In this article, descriptive statistics are used to present the data. A series of t tests were performed to compare mean scores of the scales. Once CWS, EPDS, SOC and FOB were transformed into z scores, a Kappa-means cluster analysis forcing a two-cluster solution was conducted on those z scores for each cohort. Although three-cluster and four-cluster solutions were also examined, the two-cluster solution afforded the most interpretable, meaningful description. Each cluster was labelled according to the grouping of its items. Odds ratios with 95% confidence intervals (CI) were calculated for the different explanatory variables [29].

Ethical approval

The study was approved by the regional ethics committee dnr 2017/120-31 and from the national ethics committee, dnr 98-358. All women signed a consent form before participation.

Results

In all, 280 women in the sample completed the questionnaire and were compared with the national historical cohort of 3061 women. **Table 1** shows that no differences emerged in the women's socio-demographic background or parity.

Table 2 shows some statistically significant mean differences in EPDS, CWS and SOC. Women in the sample earned lower scores for depressive symptoms and worries than in the historical cohort and had higher SOC. No difference surfaced in fear of birth.

Results from cluster analysis revealed similar patterns, namely with two clusters in each cohort, as shown in **Figures 1 and 2**. Women in the first cluster demonstrated a pattern described as being 'emotionally healthy'; they exhibited lower levels of worries, depressive symptoms and fear of birth and higher levels of SOC than women in the other cluster. Meanwhile, the second cluster demonstrated the inverse pattern, one labelled

'emotionally unhealthy'; it comprised women with higher levels of fear of birth, worries and depressive symptoms and lower levels of SOC. Approximately 35% of each cohort belonged to the 'emotionally unhealthy' cluster.

Table 3 compares the different groups of women in the two clusters from the cohorts. First, when comparing clusters from the study sample, the analysis showed that single women and women born outside Sweden were at the greatest risk of belonging to the 'emotionally unhealthy' cluster. Similar trends also emerged in the historical cohort, in which younger age, lower level of education and primiparity, together with being single and born outside Sweden, increased the risk of being classified in the 'emotionally unhealthy' cluster.

In the next step, the two 'emotionally healthy' clusters were compared. The only difference between them was a higher proportion of younger women in the sample. Last, when the two 'emotionally unhealthy' clusters were compared, no statistically significant differences arose.

Table 4 presents results regarding women's pregnancy and birth-related attitudes. Most women had a planned pregnancy and generally positive attitudes about being pregnant and about the first weeks with a newborn. Few women (4%–12%) preferred to have a caesarean section, and continuity with a known midwife at birth was generally assessed as being highly important.

Between the clusters, women in the 'emotionally unhealthy' cluster deviated from ones in the 'emotionally healthy' cluster in both cohorts regarding attitudes towards pregnancy and newborns. Furthermore, women in the 'emotionally unhealthy' cluster in the historical cohort reported fewer planned pregnancies and were more likely to assess the importance of having a known midwife at birth more highly than women in the 'emotionally healthy' cluster.

When women from the two 'emotionally healthy' clusters were compared, the sole difference was the higher likelihood of women in the sample to assess continuity in midwives as being important. The comparison of the two 'emotionally unhealthy' clusters revealed that women in the sample were less likely to demonstrate positive attitudes towards being pregnant and the initial period with their newborns. By contrast, women in the sample belonging to the 'emotionally unhealthy' cluster showed the greatest probability of assessing continuity with a known midwife as being important.

Discussion

Among the study's major findings, pregnant women's background characteristics were similar across the 20-year period, and the cluster analysis revealed a similar pattern in each cohort—that is, the sample and the historical cohort (i.e. comparison group). The two clusters were labelled 'emotionally healthy' and 'emotionally unhealthy' based on scales measuring depressive symptoms, worries, sense of coherence and fear of birth. Women's attitudes towards birth did not change much over time but were less positive attitudes among women in the 'emotionally unhealthy' clusters than in the 'emotionally healthy' clusters.

Table 1: Background of the participants

| | Study sample n=280 n (%) | Historical cohort n=3061 | Odds Ratio (95% CI) |
|---------------------------|--------------------------------|-----------------------------|------------------------|
| Age groups | | | |
| 25 years | 47 (16.8) | 465 (15.2) | 1.14 (0.82-1.60) |
| 25-35 years | 188 (67.1) | 2137 (69.8) | 1.0 Ref. |
| 35 years | 45 (16.1) | 459 (15.0) | 1.14 (0.79-1.56) |
| Marital status | | | |
| Living with a partner | 261 (93.2) | 2888 (94.8) | 1.0 Ref. |
| Not living with a partner | 19 (6.8) | 159 (5.2) | 1.32 (0.80-2.16) |
| Country of birth | | | |
| Sweden | 249 (88.9) | 2760 (90.1) | 1.0 Ref. |
| Other country | 31 (11.1) | 300 (9.9) | 1.14 (0.77-1.69) |
| Level of education | | | |
| High school or lower | 178 (67.4) | 1882 (61.9) | 1.07 (0.83-1.38) |
| University education | 102 (36.4) | 1154 (38.1) | 1.0 Ref. |
| Parity | | | |
| Primiparas | 118 (42.1) | 1302 (42.5) | 0.98 (0.76-1.26) |
| Multiparas | 162 (57.9) | 1759 (57.5) | 1.0 Ref. |

Table 2: Mean differences in scales measuring emotional well-being

| | Study sample n=280 | Historical cohort n=3061 | t-test p-value |
|-----------------------------------|-----------------------|-----------------------------|-------------------|
| Edinburgh Depression Scale | | | |
| Mean (SD) | 7.00 (5.12) | 8.77 (4.04) | 0.000 |
| Min-Max | 0-26 | 0-26 | |
| Cambridge Worry Scale | | | |
| Mean (SD) | 13.99 (9.26) | 16.08 (9.59) | 0.001 |
| Min-Max | 0-49 | 0-69 | |
| Sense of Coherence | | | |
| Mean (SD) | 74.11 (11.75) | 68.74 (9.26) | 0.001 |
| Min-Max | 32-91 | 15-91 | |
| Fear of birth | | | |
| Mean (SD) | 2.66 (0.87) | 2.56 (0.97) | 0.085 |
| Min-Max | 1-5 | 1-5 | |

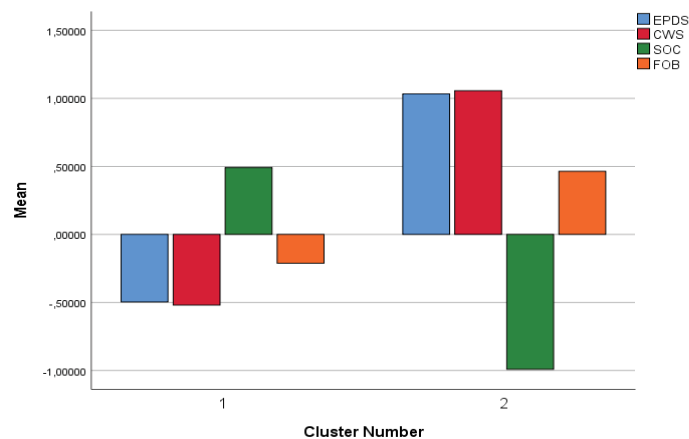


Figure 1: Clusters identified from z-score transformed responses to four instruments measuring emotional wellbeing (study sample)

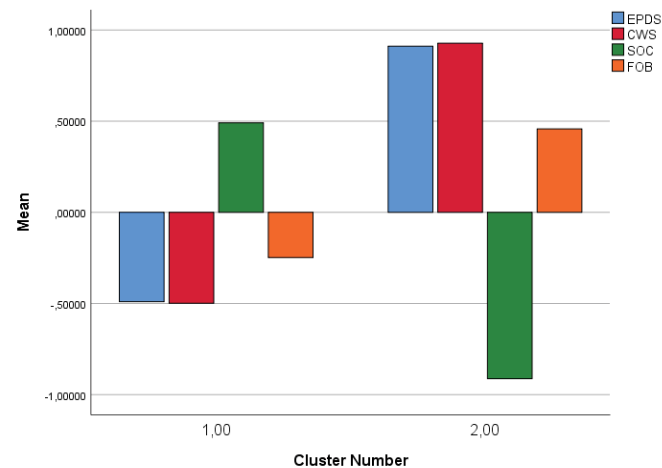


Figure 2: Clusters identified from z-score transformed responses to four instruments measuring emotional wellbeing (historical cohort)

Table 3: Women's background in relation to cluster belonging

| | Study sample | | Historical sample | | B vs A | D vs C | A vs C | B vs D |
|---------------------------|--------------|--------------|-------------------|--------------|--------------------|---------------------|-------------------|------------------|
| | A. Cluster 1 | B. Cluster 2 | C. Cluster 1 | D. Cluster 2 | | | | |
| | n=179 | n=96 | n=1980 | n=1067 | | | | |
| | n (%) | n (%) | n (%) | n (%) | | | | |
| Age groups | | | | | | | | |
| 25 years | 31 (17.3) | 13 (15.6) | 230 (11.6) | 234 (21.9) | 0.80 (0.49-1.32) | 2.17 (1.77-2.66)*** | 1.65 (1.01-2.52)* | 0.55 (0.30-1.02) |
| 25-35 years | 118 (65.9) | 68 (70.8) | 1451 (73.3) | 678 (63.5) | 1.0 Ref. | 1.0 Ref. | 1.0 Ref. | 1.0 Ref. |
| 35 years | 30 (16.8) | 15 (15.6) | 299 (15.1) | 155 (14.5) | 0.86 (0.43-1.72) | 1.10 (0.89-1.37) | 1.23 (0.81-1.87) | 0.96 (0.53-1.73) |
| Marital status | | | | | | | | |
| Living with a partner | 172 (96.1) | 85 (88.5) | 1918 (97.2) | 958 (90.3) | 1.0 Ref. | 1.0 Ref. | 1.0 Ref. | 1.0 Ref. |
| Not living with a partner | 7 (3.8) | 11 (11.5) | 55 (2.8) | 103 (9.7) | 3.18 (1.19-8.4)* | 3.74 (2.67-5.24)*** | 1.41 (0.63-3.16) | 1.20 (0.62-2.32) |
| Country of birth | | | | | | | | |
| Sweden | 168 (93.9) | 80 (85.3) | 1839 (93.4) | 892 (84.4) | 1.0 Ref. | 1.0 Ref. | 1.0 Ref. | 1.0 Ref. |
| Other country | 11 (6.1) | 16 (16.7) | 131 (6.6) | 165 (15.6) | 3.05 (1.35-6.88)** | 2.59 (2.03-3.31)*** | 0.91 (0.48-1.73) | 1.08 (0.61-1.89) |
| Level of education | | | | | | | | |
| High school or lower | 111 (62.0) | 63 (64.9) | 1178 (59.9) | 695 (65.9) | 1.13 (0.67-1.90) | 1.29 (1.10-1.50)*** | 1.09 (0.79-1.50) | 0.96 (0.62-1.48) |
| University education | 68 (38.0) | 34 (35.1) | 790 (40.1) | 360 (34.1) | 1.0 Ref. | 1.0 Ref. | 1.0 Ref. | 1.0 Ref. |
| Parity | | | | | | | | |
| Primiparas | 72 (40.2) | 43 (44.8) | 810 (40.9) | 488 (45.7) | 1.20 (0.73-1.99) | 1.21 (1.04-1.41)* | 0.97 (0.71-1.32) | 0.98 (0.64-1.49) |
| Multiparas | 107 (59.8) | 53 (55.2) | 1170 (59.1) | 579 (54.3) | 1.0 Ref. | 1.0 Ref. | 1.0 Ref. | 1.0 Ref. |

*p<0.05, **p<0.01, ***p<0.001

Table 4: Women's pregnancy and birth attitudes in relation to cluster belonging

| | Study sample | | Historical sample | | B vs A | D vs C | A vs C | B vs D |
|---|--------------|--------------|-------------------|--------------|----------------------|---------------------|---------------------|----------------------|
| | A. Cluster 1 | B. Cluster 2 | C. Cluster 1 | D. Cluster 2 | | | | |
| | n=179 | n=96 | n=1980 | n=1067 | Odds Ratio | Odds Ratio | Odds Ratio | Odds Ratio |
| | n (%) | n (%) | n (%) | n (%) | (95% CI) | (95% CI) | (95% CI) | (95% CI) |
| Planned pregnancy | | | | | | | | |
| Yes | 175 (97.8) | 89 (92.7) | 1853 (96.6) | 923 (92.7) | 1.0 Ref. | 1.0 Ref. | 1.0 Ref. | 1.0 Ref. |
| No | 4 (2.2) | 7 (7.3) | 66 (3.4) | 102 (10.0) | 3.44 (0.98-12.06) | 3.10 (2.25-4.27)*** | 0.64 (0.23-1.78) | 0.71 (0.32-1.57) |
| Attitudes about being pregnant | | | | | | | | |
| Positive | 170 (95.0) | 64 (66.7) | 1903 (96.3) | 865 (81.1) | 1.0 Ref. | 1.0 Ref. | 1.0 Ref. | 1.0 Ref. |
| Less than positive | 9 (5.0) | 32 (32.3) | 73 (3.7) | 201 (18.9) | 9.44 (4.27-20.85)*** | 6.05 (4.58-8.01)*** | 1.39 (0.68-2.84) | 2.15 (1.37-3.37)** |
| Attitudes about the first weeks with a newborn | | | | | | | | |
| Positive | 166 (92.7) | 67 (70.5) | 1768 (89.9) | 842 (79.8) | 1.0 Ref. | 1.0 Ref. | 1.0 Ref. | 1.0 Ref. |
| Less than positive | 13 (7.3) | 28 (29.5) | 199 (10.1) | 213 (20.2) | 5.33 (2.60-10.42)*** | 2.24 (1.82-2.77)*** | 0.69 (0.38-1.24) | 3.71 (2.33-5.91)*** |
| Birth preference | | | | | | | | |
| Vaginal birth | 166 (96.0) | 80 (90.4) | 1841 (94.1) | 916 (87.7) | 1.0 Ref. | 1.0 Ref. | 1.0 Ref. | 1.0 Ref. |
| Caesarean section | 7 (4.0) | 8 (9.1) | 116 (5.9) | 128 (12.3) | 2.37 (0.83-6.76) | 2.21 (1.70-2.88) | 0.66 (0.30-1.45) | 0.71 (0.33-1.51) |
| Importance of having a known midwife at birth | | | | | | | | |
| Important/ very important | 135 (75.4) | 82 (85.4) | 1026 (52.1) | 652 (61.5) | 1.0 Ref. | 1.0 Ref. | 1.0 Ref. | 1.0 Ref. |
| Less important/unimportant | 44 (24.6) | 14 (14.6) | 944 (47.9) | 409 (38.5) | 1.90 (0.98-3.69) | 1.73 (1.48-2.01)*** | 2.82 (1.98-4.01)*** | 9.33 (5.22-16.67)*** |

=p<0.01, *=p<0.001

Comparing the mean scores of each instrument revealed statistically significant differences between the cohorts except concerning fear of birth. Such differences are possibly due to the slightly different times during pregnancy when data were collected from each cohort, for worries and anxiety are more

common earlier during pregnancy when the risk of miscarriage is higher. The women in the sample had already experienced that period—they completed the questionnaire during gestational weeks 19 and 20 approximately—whereas the historical cohort, in providing data during gestational week 16 on average, had

not. Although our investigation into mean scores could focus only on the variables measured, cluster analysis allowed creating individual profiles for each woman. Furthermore, the clusters were based on validated instruments [25-28] that could be used to identify important conditions during pregnancy, some of which are interrelated. For example, comorbidity exists between mental illness and fear of birth. In a study conducted in Norway, 8.9% of the 1642 women who responded to a questionnaire during gestational week 32 exhibited symptoms of depression, while 8.8% had symptoms of anxiety. In that study, both depression and fear of birth occurred among 32% of women, while 12% of women had symptoms of anxiety combined with fear of birth. Women who had symptoms of both anxiety and depression were more likely to also suffer from fear of birth [30]. Those associations were further recognised in a systematic review of 21 scientific papers on the causes and outcomes of fear of birth. Among the review's findings, stress, anxiety and depressive symptoms, together with lack of social support, were associated with fear of birth [9].

The comparisons within the entire sample revealed that being single and being born outside Sweden were factors responsible for differences in both cohorts. Similar findings have previously been reported, including that being single is associated with depressive symptoms [31-32] and fear of birth [32]. Likewise, studies have shown that foreign-born women living in Sweden are at greater risk of exhibiting depressive symptoms [33] and fear of birth [34] and risk of being exposed to severe complications during labour and birth [35].

When comparing the 'emotionally healthy' clusters, the sole difference was that younger women were slightly overrepresented in the sample, possibly because rural women tend to give birth at earlier ages than the general population [36]. No differences emerged in background characteristics between the two 'emotionally unhealthy' clusters, which suggests that the characteristics of women in the more vulnerable group did not change over time. Another explanation for the difference, or lack thereof, could relate to the study's power, for the sample was quite small compared to the historical cohort.

Women's attitudes towards pregnancy and birth were also quite similar over time. Women in the 'emotionally unhealthy' clusters were more likely to have less positive attitudes towards being pregnant and having a newborn. The only difference between the two 'emotionally healthy' clusters concerned the importance of continuity in midwives. In the sample, each woman received continuity of care from the same midwife (or group of midwives) due to the nature of the project; thus, their more positive attitudes towards continuity than the historical cohort recruited 20 years ago, when models of continuity were largely unavailable in Sweden, are not surprising. The arguably more important finding is the exceptionally high likelihood of assessing continuity from a known midwife to be important if in the 'emotionally unhealthy' clusters. Research has shown that continuity of midwifery care benefits women and infants alike [37], and having continuity when suffering from fear of birth is even more important, given findings that women who received

care by a known midwife had a better birth experience [38] and were more often 'cured', so to speak, of their fear upon receiving continuity of care [39].

The study's inclusion of scales measuring only depressive symptoms, worries, fear of birth and sense of coherence was chiefly for pragmatic reasons, particularly that midwives in antenatal care in many clinics use a screening procedure for fear of birth and depressive symptoms. Other psychological measures such as fear of injection and blood, performance-based self-esteem and pain catastrophising have been identified as reasons for fear of birth [40]; however, such measures are rarely used in screening during midwife-led antenatal care. The included instruments in our study (i.e. EPDS, CWS, FOB and SOC) are all fairly short and could have increased the likelihood of identifying women in need of additional support. Having instruments available online or sent home to women prior to their scheduled visits might expand these opportunities. According to Austin et al (2013), 'Irrespective of whether an instrument is a perfect test, midwives and doctors who adopt psychosocial screening tools are more likely to detect concerns and identify a number of risk factors than providers who give standard care'.

Methodological considerations

This study has several limitations. For one, its observational design limits the generalizability of the results, and the difference in periods has to be considered, even if the results of cluster analysis revealed similarities between the groups. Other important factors that have changed over time also warrant attention. For another, our analysis was not subject to adjustment for confounding factors. Still another was the fairly small sample due to the limited study period. Nevertheless, no background differences surfaced between the cohorts, which helped to minimise misrepresentation. Due to the inclusion criteria, the proportion of foreign-born women was approximately 10% in each cohort; nevertheless, the lack of participants from non-Swedish-speaking countries in both cohorts might have caused the underrepresentation of women with less emotional well-being. Thus, more research on non-Swedish-speaking women's emotional health and well-being during pregnancy remains necessary. Building on the information in the clusters, pregnant women's emotional behaviour, and subsequently birth outcome could be further studied.

Conclusion

Our study revealed similar profiles of pregnant women today and 20 years ago in terms of emotional well-being and attitudes toward pregnancy and birth. Women with the 'emotionally unhealthy' profile exhibited higher levels of depressive symptoms, worries and fear of birth and lower SOC than women with the 'emotionally healthy' profile, as well as were more likely to be single, be born outside Sweden and have more negative attitudes towards birth. It is important to recognise women's emotional well-being during pregnancy, because poor mental health can have negative consequences not only for the women themselves but also for their infants and families.

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