

INDIVIDUAL AND CONTEXTUAL FACTORS OF NULLIPARAS' LEVELS OF DEPRESSION, ANXIETY AND FEAR OF CHILDBIRTH IN THE LAST TRIMESTER OF PREGNANCY: INTIMATE PARTNER ATTACHMENT A KEY FACTOR?

INDIVIDUALNI IN KONTEKSTUALNI DEJAVNIKI RAVNI DEPRESIJE, ANKSIOZNOSTI IN STRAHU PRED PORODOM PRVESNIC V ZADNJI TRETJINI NOSEČNOSTI: PARTNERSKA NAVEZANOST KOT KLJUČNI DEJAVNIK?

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ABSTRACT

Keywords:

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Background: Depression, anxiety and fear of childbirth have numerous consequences for women and their developing offspring. Insecure attachment in close adult relationships is considered to be a risk factor for depressive symptoms. This study aims to gain further insight into the risk factors for depressive and anxiety symptoms in nulliparous women during the third trimester of pregnancy regarding the main contextual relations, with an emphasis on partner attachment.

Methods: A group of 325 nulliparas in the third trimester of pregnancy was enrolled in a childbirth preparation program. The following instruments were applied: Experiences in Close Relationships-Revised, the Edinburgh Depression Scale, the Zung Anxiety Scale, and a questionnaire regarding fear of childbirth. Three separate multiple linear regression models were built to explore the associations between demographic, social and attachment variables and mental health functioning.

Results: Highly educated nulliparas and those with a higher level of co-workers' emotional support experienced a lower level of anxiety when other predictors in the model were held constant. Of all the predictors in the model, only attachment anxiety and co-workers' support were statistically significantly associated with the level of depression. Attachment anxiety was significantly associated with all three mental health indicators (level of depression, anxiety and fear of childbirth).

Conclusions: The results suggest that intimate attachment anxiety could be a key contextual factor for mood and anxiety mental health functioning during the third trimester of pregnancy, accessible to change. Our results could facilitate the formulation of interventions for reducing antenatal depressive symptoms.

IZVLEČEK

Ključne besede:

partnerska navezanost, depresija, anksioznost, strah pred porodom, prvesnice

Uvod: Depresija, anksioznost in strah pred porodom imajo številne posledice za nosečnice in razvijajoče se otroke. Ne-varne oblike navezanosti v intimnih partnerskih odnosih predstavljajo dejavnik tveganja za simptome depresije. Namen študije je bil poglobiti razumevanje dejavnikov tveganja za simptome depresije in anksioznosti prvesnic v tretjem trimesečju nosečnosti glede glavnih kontekstualnih odnosov, s poudarkom na partnerskem odnosu.

Metode: V študijo smo vključili 325 prvesnic, ki so obiskale Šolo za starše Ginekološke klinike v Ljubljani, v tretjem trimesečju nosečnosti. Uporabili smo naslednje instrumente: ECR-R (Experience in Close Relationships - Revised), vprašalnik Zung (Zung's Self - rating Anxiety Scale), Edinburško lestvico depresije (Edinburgh Depression Scale EDS) in vprašalnik o strahu pred porodom. S tremi modeli linearne regresije smo analizirali povezave med demografskimi, socialnimi in navezovalnimi spremenljivkami in duševnim zdravjem.

Rezultati: Pri bolj izobraženih prvesnicah in tistih z višjo stopnjo čustvene podpore sodelavcev smo ugotavljali nižjo raven anksioznosti, medtem ko so ostali prediktorji v modelu ostajali konstantni. Od vseh prediktorjev v modelu sta bili le navezovalna anksioznost in čustvena podpora sodelavcev značilno povezani z nivojem depresije. Navezovalna anksioznost je bila pomembno povezana z vsemi tremi kazalci duševnega zdravja (nivojem depresije, anksioznosti in strahom pred porodom).

Zaključek: Rezultati nakazujejo, da je anksioznost v partnerskem navezovanju lahko ključni kontekstualni dejavnik za nastanek anksioznih in depresivnih simptomov in delovanje duševnega zdravja v tretjem trimesečju, ki je hkrati dostopen za modifikacijo. Naši rezultati bi lahko pripomogli k oblikovanju intervencij za zmanjševanje depresivnih simptomov pred porodom.

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1 INTRODUCTION

Mental health in the peripartum period is highly important for women and their developing offspring. While most studies focus on postpartum depression (PPD), in recent years it has been established that anxiety and depressive disorders in pregnancy represent risk factors for PPD (1). It is well established that 50% of PPD (mood and anxiety disorders) actually begins prior to delivery, and antepartum depression has even shown a higher prevalence than PPD in some studies (2, 3). Many women with peripartum depression suffer from comorbid anxiety and some studies have shown anxiety disorders during pregnancy to be a stronger predictor of PPD than depression (4, 5). Although a previous mood episode is the strongest risk factor for PPD, for a significant proportion of women PPD is the first mood episode in their lives (6). Therefore, identifying risk factors for mental health symptoms in first-time mothers is highly important. As several authors have noted, evidence on where to focus screening is still lacking (7).

Stress, anxiety, and depression during pregnancy are associated with alterations in foetal and infant neurobehavioral development (8-10) and with parenting stress (11), but often go unrecognized (12).

Fear of childbirth in relation to important mental health indicators in pregnancy has not been given much research attention. The presence of anxiety and depression during pregnancy increases the prevalence of fear of childbirth, which may then have a predictive value for PPD (13). However, Storksen has found that the majority of women suffering from fear of childbirth have neither anxiety nor depression (14).

A first pregnancy is to some extent a life transition and a period of increased emotional vulnerability (15). An intimate relationship and partner attachment represent an important part of the emotional experience in nulliparas (16). It has been observed that prototypical attachment patterns are similar in parents and children (17). However, it has been demonstrated that caregivers' capacity for attachment security is primarily under substantial environmental influence and limited genetic influence (18). An insecure attachment style in adults is thought to be based on less optimal experiences with early caregiving (19), despite many other multifactorial influences that can also affect the quality of bonding (20).

Insecure attachment in close adult relationships is considered to be a risk factor for depressive symptoms (21). However, relatively little research attention has been paid to the role of attachment during pregnancy itself. Some researchers have conceptualized the transition to parenthood as a general life stressor that activates

the attachment system. Predominant insecure schemas during pregnancy predispose some women to depressed and anxious states (22). A recent review concluded that pregnant women with insecure attachment styles are at a greater risk of PPD (23, 24). In a longitudinal study, Bifulco found that preoccupied and fearful adult attachment types significantly predicted the onset of PPD (22). However, whether maternal attachment styles influence the risk of postpartum symptoms directly or via covariation with other risk factors has not yet been explained (25).

The perceived social support within a social network can facilitate expectant first-time mothers' experiences of security related to childbirth and parenting (26). Maternal employment and strong social support, particularly non-partner support, are believed to be independently associated with fewer depressive symptoms (27). A supportive environment and feeling appreciated at work have been found to be important factors in working throughout pregnancy, and the working environment might have a favourable effect on women's health resources (28).

The aim of our study was to gain further insight into the risk factors for depressive and anxiety symptoms in nulliparous women during the third trimester of pregnancy regarding the main demographic and important contextual and relational factors.

We hypothesized that for nulliparous women in the third trimester of pregnancy there would be a significant prediction of levels of anxiety (H1), depression (H2) and fear of childbirth (H3) scores by prediction variables (nulliparas' chosen individual and contextual factors).

2 MATERIALS AND METHODS

2.1 Study Sample

The participants consisted of a sample of 325 nulliparous women in the third trimester of pregnancy (>28 weeks of pregnancy). All participants were 18 years of age or older and recruited sequentially from parenting classes offered by the University Medical Centre (UMC) Ljubljana's Division of Gynaecology and Obstetrics from March to September 2014. The inclusion criteria were: first pregnancy, third trimester of pregnancy, at least 18 years of age. We used no other exclusion criteria. The demographic characteristics of the sample are listed in Table 1.

Table 1. Characteristics of nulliparas (results shown as frequency and percentages if not indicated differently).

	n=325
Mean age \pm SD	30.8 \pm 4.3
Mean years of education (n=321)	16.1 \pm 2.4
Mean weeks of pregnancy (n=324)	30.8 \pm 3.5)
Planned pregnancy (n=324)	270 (83.3)
Multigenerational household (n=323)	62 (19.2)
High emotional support from partner	295 (90.8)*
High support from parents (n=323)	248 (76.8)**
High support from friends	224 (68.9)***
High support from co-workers (n=310)	141 (45.5)****
Mean attachment avoidance score (n=294)	33.4 \pm 12.9
Mean attachment anxiety score (n=285)	32.4 \pm 13.6
Mean anxiety score (n=296)	33.7 \pm 5.9
Mean depression score (n=310)	6.1 \pm 4.2

* weak to moderate support 9.2%, strong support 19.1%, very strong support 71.7%

** weak to moderate support 23.1%, strong support 30.2%, very strong support 46.2%

*** weak to moderate support 31.1%, strong support 36.0%, very strong support 32.9%

**** weak to moderate support 52.0%, strong support 24.0%, very strong support 19.4%

2.2 Procedure

The study was conducted as a collaboration between obstetricians from UMC Ljubljana's Division of Gynaecology and Obstetrics and psychiatrists from the University Psychiatric Hospital Ljubljana. It was approved by the Republic of Slovenia National Medical Ethics Committee (NMEC) (protocol No. 92/12/13). All the study participants were given verbal and written explanations of the study and their informed consent was obtained prior to their participation in the study. The study was based on a convenience sample.

The questionnaires were administered during parenting classes from March 2014 to September 2014. The classes are run by midwives and include lectures by a paediatrician, an anaesthesiologist, a dentist, psychologists, and other specialists. The classes are open to pregnant women in their third trimester and are mostly attended by women in their first pregnancy; their partners are welcome to attend. Each class consists of 10 meetings over three weeks. The topics are preparation for labour, birth, and postnatal care of the baby.

The participants completed a structured questionnaire in their third trimester of pregnancy. Each participant was given an anonymous questionnaire with a code, which was saved together with their personal information for the possibility of further research. During the recruitment

period, the midwives and participant doctors invited 696 Slovenian-speaking, Caucasian pregnant women who attended the classes to participate. Written informed consent to participate was signed by 387 (55.6%) of the women. We excluded 38 of the participating women who were in their second or subsequent pregnancies, while another 24 were excluded due to missing data.

2.3 Measures/Instruments

2.3.1 Partner Attachment

Experiences in Close Relationships-Revised (ECR-R) (29): the ECR-R is a 36-item self-report measure used to assess adult romantic attachment on a 7-point scale ranging from 1 (strongly disagree) to 7 (strongly agree). The scale consists of two 18-item subscales: anxiety (fear of rejection and abandonment) and avoidance (discomfort with closeness and discomfort with depending on others). For our sample, internal consistency was $\alpha=0.84$ both for the Avoidance and the Anxiety scale.

2.3.2 Depressive Symptoms

The Edinburgh Depression Scale (EDS) (30): The EDS is a self-report questionnaire consisting of 10 items with four ordered response categories scored from 0 to 3. When used as a screening instrument, the cut-off scores of 12/13 usually designate major depression, whereas scores from 9 to 11 indicate mild depression levels in need of further assessment (31); Cronbach $\alpha=0.83$.

2.3.3 Anxiety

The Zung Anxiety Scale (32) consists of 20 items that test the participants' autonomic, motor, cognitive and other anxiety symptoms. For each item, the participants choose one of the following answers: a little of the time, some of the time, good part of the time, most of the time; Cronbach $\alpha=0.76$.

2.3.4 Fear of Childbirth

Fear of childbirth: a 6-item scale was constructed, three items describing different aspects of fear regarding childbirth connected with the mother's fear for herself. The items were rated on a 5-point scale from 1 (not at all) to 5 (very much). Exploratory factor analysis showed all six items loaded substantially (0.37-0.79) on a single factor. The validity of the questionnaire was assessed further by investigating correlations between general questions on a fear of childbirth (also measured on a 5-point scale) and questions describing specific fears associated with childbirth. Correlation coefficients varied between 0.24 and 0.64 and were all highly statistically significant ($p<0.001$). The strongest correlation existed between fear of pain during child delivery and general assessment of fear of childbirth. A single score as an average of six items

was calculated. There was a moderate and statistically significant correlation between the calculated score and a single item measuring general fear of childbirth ($r=0.65$; $p<0.001$). Furthermore, there was a statistically significant difference in mean score value between women that declared they feared childbirth and others ($p<0.001$). The mean (SD) score for those that stated they were afraid of childbirth was 2.7 (0.8) and 2.1 (0.8) for others. The scale exhibited high measurement reliability (Cronbach $\alpha=0.82$).

2.3.5 Sociodemographic and Pregnancy Information

A question battery designed by the research team included maternal age, years of education (education level), partnership status, work status, planned/unplanned pregnancy, living arrangement (shared household with elder generation/own household), how much emotional support from the partner, parents, friends, co-workers they were receiving.

2.4 Statistical Analysis

Three separate multiple linear regression models were built to explore the associations between demographic, social and attachment variables and mental health functioning in the third trimester of pregnancy. The latter was measured by the Zung anxiety score, the Edinburgh depression score and the fear of childbirth score. In each regression model, one indicator of mental health functioning was included as a dependent variable. The correlations among the three indicators of mental health were the following: fear of childbirth-anxiety ($r=0.37$; $p<0.001$) fear of childbirth-depression ($r=0.36$; $p<0.001$) and depression-anxiety ($r=0.66$; $p<0.001$).

Independent variables in each model were: maternal age; years of education; planned pregnancy (yes/no); shared household with elder generation (yes/no); emotional support from partner, parents, friends and co-workers (weak to moderate=almost none to moderate support/strong=strong and very strong support); attachment avoidance and attachment anxiety. There was no threat of multicollinearity as the highest variance inflation factor was 1.96.

Out of 325 women, 216 (66%) were included in multiple regression models due to missing data. No statistically significant differences in any of the continuous or categorical variables between missing and non-missing cases were found.

P-values <0.05 (two-tailed) were valued as statistically significant.

Data was analysed using SPSS version 24 for Windows.

3 RESULTS

3.1 Descriptive Data

Characteristics of nulliparas that were used in multiple linear regression models are summarized in Table 1.

Almost all of the participating women were married (97.2%) and employed (76.9% employed, 9.2% unemployed and 8.6% students).

3.2 Multiple Regression Models

The results of the three multiple regression models are summarized in Table 2. Highly educated nulliparas and those with a higher level of co-workers' emotional support experienced a lower level of anxiety during the last trimester of pregnancy, when other predictors in the model were held constant. On the other hand, nulliparas that lived in multigenerational households or had a higher level of attachment anxiety experienced a higher level of anxiety.

Of all the predictors in the model, only attachment anxiety and co-workers' support were statistically significantly associated with the level of depression. The level of depression was higher when nulliparas experienced higher attachment anxiety ($p<0.001$) and received weaker co-workers' emotional support ($p=0.04$).

Attachment anxiety played an important role also in experiencing fear of childbirth. Women with higher attachment anxiety were more afraid of childbirth. Interestingly, women that had planned their pregnancy also experienced a greater fear of childbirth in comparison to women with an unplanned pregnancy.

Table 2. Association between demographic, social and attachment variables and mental-health functioning during the last trimester of pregnancy.

	Anxiety score Std. B (p-value)	Depression score Std. B (p-value)	Fear of childbirth Std. B (p-value)
Age	-0.08 (0.166)	-0.04 (0.509)	-0.02 (0.727)
Years of education	-0.21 (<0.001)	-0.10 (0.091)	-0.05 (0.389)
Weeks of pregnancy	0.03 (0.586)	-0.08 (0.194)	-0.03 (0.664)
Planned pregnancy	-0.06 (0.347)	0.06 (0.374)	0.19 (0.005)
Multigenerational household	0.12 (0.038)	0.08 (0.172)	0.10 (0.100)
High emotional support from partner	0.05 (0.416)	0.02 (0.805)	0.12 (0.093)
High emotional support from parents	0.04 (0.481)	-0.04 (0.477)	0.06 (0.354)
High emotional support from friends	-0.11 (0.100)	-0.03 (0.708)	-0.02 (0.780)
High emotional support from co-workers	-0.21 (0.002)	-0.14 (0.044)	-0.11 (0.117)
Intimate attachment avoidance	-0.05 (0.552)	-0.01 (0.884)	0.10 (0.209)
Intimate attachment anxiety	0.40 (<0.001)	0.45 (<0.001)	0.32 (<0.001)

4 DISCUSSION

We explored various individual and contextual-relational factors that could confer increased risk for depressive and anxiety symptoms in nulliparous women during the third trimester of pregnancy. Of all the predictors in the regression models, only attachment anxiety is associated with all three mental health indicators (level of depression, anxiety and fear of childbirth). The results suggest that intimate attachment anxiety could be a key contextual factor toward mood and anxiety mental-health functioning during the third trimester of pregnancy. Regarding emotional support from important social relations, only co-workers' emotional support was significantly associated with levels of depression and anxiety, as the participating women evaluated co-workers' emotional support as low to moderate in 52% of cases (contrary to other types of emotional support).

The results of our study confirm previous evidence that mood symptoms in pregnancy have a complex and multi-factorial aetiology. Studies have shown antenatal depression and anxiety to be more prevalent in women with a lower level of education (33, 34), which is in line with the results of our study. Namely, highly educated first-time pregnant women experienced significantly lower levels of anxiety.

Previous studies have also shown antenatal anxiety and depression to be more prevalent in unemployed women (3, 35). A vast majority of the participants in our study were employed. Our study showed that their mood level also depended on how well they could manage their relationships with co-workers and whether they experienced their pregnancy as a problem at work. Based on this, we could consider the cognitive dissonance of nulliparous women who wanted an active role in their

career/work, which is a particularly novel aspect. For highly educated women from our study, their career/work during pregnancy might be especially important for their mood level (which should be considered in clinical work). A recent meta-analysis found that the prevalence of perinatal depression is twice as high in women with an unintended pregnancy (36). However, in our sample the association between unplanned pregnancy and anxiety and depression levels was not significant. Interestingly, women who had planned their pregnancy reported a greater fear of childbirth. For the women in our sample, a way of understanding the role of planned or unplanned pregnancy regarding the fear of childbirth may be in the sense that not planning a pregnancy can mean a woman feels less of a need to control life situations or that she can go along with such situations to a greater extent, which can of course be either positive or negative depending on the context. According to our results, this element may also be linked to a woman's being more inclined to the new experience of childbirth.

Studies have found a lack of support, especially partner support, to be associated with antenatal depression and anxiety and perceived support and marital satisfaction to be beneficial for maternal mental health during pregnancy (5, 37). Our study showed higher anxiety scores in women who lived in a common household with their parents. The quality of attachment and a woman's relationship with her parents is an important risk factor for depression and anxiety during pregnancy (35). The absence of women's own positive caregiving experience can produce distressing feelings for first-time pregnant women who are developing their own maternal identity.

Living in a common household with parents can also generate more anxiety, especially in case there is a relatively new partner system, owing to a greater need

for adjustments. However, it could also provide more safety of a different type (e.g. instrumental support). It is possible for women who choose to live in such a context to be primarily more prone to a higher level of anxiety. Considering that in Slovenia (as in southern and eastern countries of the EU) multi-generational households were found to be a more common phenomenon than in most EU countries (38), it seems that multigenerational issues should be acknowledged in mental-health prevention of nulliparas.

However, it is the anxiety in partner-relationship attachment that seems to most universally differentiate mental-health functioning, regardless of the subtype of attachment style involved, which is in line with a recent study by Clout (39). In line with our study, Robakis found a highly significant correlation between antenatal depressive symptoms and attachment insecurity (24). Monk indicated that partner attachment makes a unique contribution when accounting for the risk of PPD beyond depression during pregnancy (40). Our study included a low-risk group of highly-educated nulliparas yet, even in our protected sample, partner-attachment anxiety was associated with higher levels of depressive and anxiety symptoms. This leads to the idea that it is important, especially for experts who deal with nulliparas' mental health, to understand nulliparas in view of these elements, which have so far not been linked in interviews.

5 LIMITATIONS

This study has some limitations. Most of the participating women in our study were highly educated first-time pregnant women living in an urban environment with seemingly protective psychosocial determinants (marital status, employment, a tendency for a secure attachment), which might not be representative of the Slovenian population and the results should probably not be generalized. Possible reasons for these limitations are the use of a university hospital for the study and the inclusion of Slovenian-speaking women only. However, even in this "protected" sample, attachment (style) modulated the mental health indicators.

When compared to other nulliparas who gave birth in UMC Ljubljana's Division of Gynaecology and Obstetrics in the year 2014, the women in our sample were more educated and slightly older. The mean years of education in our sample amounted to 16 years (higher education-university level), while 37.3% of nulliparas that gave birth in 2014 had 16 years of education (university level). The mean age of nulliparas that gave birth in 2014 was 29.35, compared to 30.9 years in our sample; 97.2% of women in our sample were married or living in a partner relationship, compared to 95.2% of nulliparas in 2014.

Our diagnostic assessment focused on mood symptoms, not disorders, and we limited psychometric assessment to the third trimester of pregnancy.

6 CONCLUSIONS

The results of this study show that intimate attachment anxiety in first-time pregnant women is likely to be associated with depressive and anxiety symptoms and experiencing fear of childbirth during the third trimester of pregnancy.

Our data provides new insights into the field of risk and protective factors for the mental health of women in their first pregnancy. Gaining knowledge of risk factors that influence the mental health of first-time pregnant women is also important for clinical work (assessment) and prevention in a time when non-pharmacological interventions are of ever greater importance. Additionally, intimate attachment could be more easily addressed and processed than other types of nulliparas' social relations because of the motivation of soon-to-be-parents. Investigators have even described positive results from interventions intended to alter attachment style (41).

In conclusion, besides the nature of partner attachment style, we should focus on primiparas' perception of the impact of their pregnancy on work relationships. Addressing eventual pregnancy discrimination in workplaces can be an especially complex issue that reaches far from clinical medical/psychological counselling interventions (42). However, incorporating questions about work relations into pregnancy questionnaires might also improve the recognition of vulnerable women.

Further studies of large, population-based samples of nulliparous women should be performed in order to replicate the results. We are also planning further research to conduct a long-term follow up.

CONFLICTS OF INTEREST

The authors declare that no conflicts of interest exist.

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ETHICAL APPROVAL

Received from the Republic of Slovenia National Medical Ethics Committee (NMEC) (protocol No. 92/12/13).

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