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RELATIONSHIP OF PSYCHOTIC AND PSYCHOLOGICAL FACTORS IN THE DEVELOPMENT OF PRENATAL DEPRESSION

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Annotation

Pregnant and postpartum women are at high risk of depression due to hormonal and biological changes. Prenatal depression has not been studied well enough compared to postpartum depression, and its predictors remain highly controversial. Goal. To assess the prevalence of symptoms of depression during pregnancy and to study factors associated with this condition, including vitamin D, folic acid and vitamin B12. Methods. Data collection was conducted as part of a study in which pregnant women were recruited in the second and third trimester during visits to the antenatal clinic. Data on prenatal depression were collected using the Edinburgh Postpartum Depression Scale (EPDS), with score ≥ 13 considered an indicator of depression. Results. Of the 108 participants in the Kuwait Birth Cohort study, 102 (96.6%) completed EPDS. The prevalence of depressive symptoms was 21.03% (95%CI:18.62–23.59%) and 17.85% (95%CI:15.60–20.28%), as indicated by EPDS ≥ 13 and EPDS ≥ 14, respectively. Conclusion. Approximately one fifth of pregnant women had symptoms of depression, indicating the need to introduce a screening program for depression in pregnant women. In particular, screening efforts should focus on pregnant women with unintended pregnancies, exposure to secondhand smoke at home, and recent stressful life events.

Keywords

depression, pregnancy, vitamin D, folic acid, vitamin B12.

Prenatal depression is a common disease, with 10 to 20% of women experiencing symptoms of depression during pregnancy [1-4]. This is even higher among teenage mothers [2, 5, 6] and those who had a history of depression before pregnancy [7]. Depression during pregnancy is usually ignored, primarily because its symptoms can mimic those of a normal pregnancy [8] and because health care providers tend to focus on the physical aspects of pregnancy health [9]. Significant hormonal changes related to pregnancy, in particular steroid hormones that affect the hypothalamus-pituitary and hypothalamus-pituitary axis are associated with mood disorders, which may explain why women during pregnancy and in the postpartum period are extremely vulnerable to symptoms of depression [10]. Studies have shown that prenatal depression has negative consequences for both mothers and offspring. During pregnancy, depression may increase the risk of preeclampsia [11], failure to obtain optimal prenatal care [12], miscarriage or premature birth [13, 14], inability to provide optimal diet for mother and fetus [12], risky behavior, such as smoking or drug abuse [12], risk of suicide [15], planned caesarean delivery [16], risk of postpartum depression [17, 18], difficulty in establishing a relationship with the child [19, 20], reduced breastfeeding [21] and prolonged sick leave [12, 16]. As for the effect of antenatal depression on offspring, studies have shown that maternal depression during pregnancy can increase the risk of preterm birth [13, 21], low weight in... Regarding the impact of antenatal depression on offspring, studies have shown that maternal depression during pregnancy can

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increase the risk of preterm labor [13, 21], low birth weight [13, 22] and poor cognitive function [23, 24]. Unfortunately, treating depression during pregnancy can also have some side effects because most antidepressants pass through the placenta [25, 26]. Side effects of treatment with antidepressants in offspring include prenatal antidepressant syndrome [27], autism spectrum disorder [28, 29] and attention deficit hyperactivity disorder [29], although these are not confirmed and remain the subject of intense debate [30, 31].

Compared to postpartum depression, prenatal depression received much less attention [32]. Identification of variable risk factors for prenatal depression is a prerequisite for interventions aimed at reducing the burden on mothers and their children. However, there is little evidence of a link between prenatal depression and several potential risk factors, including lack of physical activity [33], obesity before pregnancy [34] and nutritional factors [35,36], indicating the need for high-quality primary studies.

The purpose of this study was to assess the prevalence of symptoms of depression during pregnancy and study their relationship with several potential risk factors, including lack of physical activity, obesity prior to pregnancy and nutritional characteristics, as well as with several dietary biomarkers, such as vitamin D, folic acid and vitamin B12.

Materials and methods. Participants in this study were pregnant women who were recruited in the second or third trimester during prenatal care visits. Prior to registration, written informed consent was obtained from all participants of the study. Data on symptoms of depression were collected using the Edinburgh Postnatal Depression Scale (EPDS) [42], which was tested in our conditions [43]. EPDS is used to screen for depression in women during pregnancy and the postpartum period, but not as a diagnostic tool. It contains 10 points, each of which is rated from 0 to 3, so the total score is between 0 and 30. The higher the score, the higher the level of symptoms of depression. Several cut-off points were used to determine depression, including EPDS 10, EPDS 13 and EPDS 14 scores. In this study, we considered EPDS 13 as a symptom of depression. Blood samples were collected and evaluated in the laboratory of the maternity hospital, where these laboratory tests are conducted regularly with strict adherence to quality control standards. Vitamin B12, folate and 25-hydroxyvitamin D were tested with the Cobas e601 analyzer. The vitamin B12 content in the serum was quantified with the Roche commercial kit (catalogue number 7,212,771,190), while the total folate content in hemolyzed whole blood was measured with the Roche commercial kit (catalogue number 7,559,992,190). Finally, levels of 25-hydroxyvitamin D were determined using the commercial Roche kit (catalogue number 9,038,078,190). Vitamin D status was classified as deficiency/insufficiency (25-hydroxyvitamin D < 75 nmol/l) and sufficiency (25-hydroxyvitamin D 75 nmol/l) using acceptable cut points [4].

Results of the study. Of the 108 study participants, 102 (96.6%) completed EPDS. Mean (SD) age was 31.46 (5.28) years. Most women were housewives (52.91%) and reported a lack of some monthly income (54.99%). Median (IQR) EPDS score was 6 (11), while 14 (1.31%) pregnant women thought about harming themselves (chose answers different from "never" in paragraph 10 of the EPDS). Among those who filled out the EPDS, 25 (21.03%; 95%DI: 18.62-23.59%) had symptoms of depression determined by the EPDS scale 13, which was significantly higher in non-Kuwaiti mothers compared to Kuwaiti mothers (22.77% versus 15.42%; p = 0.012). The prevalence of depression symptoms, as determined by EPDS 14, was 17.85% (95%DI: 15.60-20.28%).

The prevalence of symptoms of depression during pregnancy was 21% (EPDS 13), and in the EPDS 14 - 18%, which is comparable to the data obtained in Oman (24%) [7].

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In a single-factor analysis, it was found that several factors in the first conceptual area of the stress process model [5] are related to prenatal depression.

In a multi-factor analysis, women who wanted to become pregnant were less likely to have depressive symptoms, which is similar to reports from other studies that showed unplanned pregnancy [5, 6] or unintended pregnancy [3] are a significant predictor of prenatal depression. The presence of a stressful life event during pregnancy was significantly associated with depressive symptoms in our study, which is similar to the conclusion of a systematic review of literature, which showed that stressful life events are a significant predictor of depressive symptoms in pregnant women [63]. Similarly, passive smoking at home was positively associated with depressive symptoms in our environment, which is similar to reports from other conditions [8, 64]. A recent literature review on this issue concluded that passive smoking is associated with a significant increase in the chances of prenatal depression [65]. These results are very valuable for identifying pregnant women at risk of prenatal depression in our environment.

We have not found evidence of a relationship between the BMI self-assessment before pregnancy and symptoms of depression during pregnancy. Studies investigating the relationship between BMI before pregnancy and prenatal or post-natal depression have shown contradictory results. It has been suggested that the lack of link between pre-pregnancy obesity and prenatal depression can be explained by the fact that women during pregnancy may view high body mass as a positive sign of normal pregnancy [68, 69]. Women are more likely to think that way in the second or third trimester, which may explain our conclusions. Unfortunately, none of the reviews stratifies the analysis by trimester, despite the fact that the link may weaken in the second or third trimester. However, the BMI before pregnancy was significantly associated with symptoms of depression when we used the EPDS 14 score as a cut-off point. The role of nutrition in the development of depression in general and during pregnancy has received much attention. The theoretical probability that can explain how several nutrients may influence the synthesis or regulation of some neurotransmitters, hence regulating mood, has been presented in the literature [7]. This has created a strong motivation to demonstrate the impact of nutrition on depression through epidemiological studies, especially during pregnancy, a period when nutritional needs are significantly increased. In general, the evidence for a relationship between diet and depression is limited and inconsistent [5, 6].

One of the main strengths of our research is the measurement of several biological biomarkers of food, such as vitamin B12, vitamin D and folate. As mentioned above, we have not found a relationship between folate and symptoms of depression during pregnancy in single-factor or multi-factor analysis, which is consistent with the recent review, in which it is concluded that there is no link between folic acid intervention and the EDPS score during and after pregnancy [5]. Our findings showed that low levels of vitamin B12 are associated with symptoms of depression in single-factor and multi-factor analysis. Despite biological plausibility, which may explain the influence of vitamin B12 on mental health, epidemiological studies in general do not confirm a link between vitamin B12 and prenatal depression.

Vitamin D was not significantly associated with symptoms of depression during pregnancy in our study. In fact, numerous reviews over the last decade have consistently called for better research on this topic [8]. One of the main shortcomings of observational studies on this issue is the lack of adjustment between vitamin D and prenatal depression according to the season in which blood samples were taken. This study has several strengths, including large sample sizes and the use of EPDS, a proven tool that has been widely used to measure symptoms of depression in numerous studies.

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Conclusions. Finally, it should be noted that about one fifth of pregnant women had symptoms of depression based on EPDS, which suggests the need to introduce a screening program for depression among pregnant women. Pregnant women with positive screening should be tested for diagnosis and referred to evidence-based mental health services if necessary. Pregnant women with unwanted pregnancies, passive smoking at home and stressful life events should be referred to the prenatal depression screening program. Finally, further studies are recommended to investigate the influence of lifestyle factors such as physical activity and diet on the risk of prenatal depression.

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