Predictors of Depressive Symptoms in Postpartum Women: The Role of Contraceptive Use, Type and Health-Related Factors

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Abstract

Background: The postpartum period is critical for women due to significant bio-psychosocial changes and the consequences of delivery.

Aims: The purpose of this study was to investigate the role of the use of contraceptives and other health-related factors in the risk of developing postpartum depression among women in Jordan.

Materials and methods: A cross-sectional, descriptive-correlational design was used to recruit 803 women using a convenience sample technique from the central district of Jordan. Data were collected on depressive symptoms, contraceptive use and type, and pregnancy health-related factors.

Results: Using binary logistic regression analysis, non-hormonal contraceptives and musculoskeletal pain were significant predictors (p<.05) of the risk of developing depressive symptoms in the sampled women (OR=4.1, 3.8; respectively). For the women in our sample, 24.9% (n=200) developed depressive symptoms. Most of those who felt depressed reported suffering from insomnia (50.0%) and baby blues (13.0%), while loss of appetite was reported by 33.0%. The analysis also showed that 51.0% (n=409) had used at least one method of contraception. Among those using contraceptive methods, 31.0% had only used hormonal contraceptives compared to 69.0% using non-hormonal forms.

Conclusion: Non-hormonal contraceptive use and musculoskeletal pain were found to be significantly associated with the risk of developing postpartum depressive symptoms. Family and reproductive health professionals need to emphasize the bio-psychological aspects of health for pregnant and postpartum women.

Keywords: Depressive symptoms, contraceptive use, postpartum.

Introduction

Women’s health is a core interest for healthcare professionals due to the various confounding factors that interfere with women’s health, including biological, social and psychological factors [1–2]. As women go through the different stages of life, they require attention and a comprehensive plan for reproductive healthcare. In pregnancy, in particular during the postpartum period,
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women are at risk of psychological disturbances such as postpartum depression (PPD), which may be associated with biological factors [3–5]. PPD is a state of psychological disturbance experienced during the first months after delivery, affecting about 10–15% of women worldwide [6]. In Jordan, PPD has been found to affect up to 22% of women [3, 7]. As such, maternal and child health professionals must consider the biopsychosocial consequences of PPD on women and children [3]. Therefore, understanding the connection between development of PPD and certain biological influencers such as medical problems and using certain contraceptive methods (hormonal or non-hormonal) could enable the early detection of PPD, leading to a better prognosis. Pregnancy and birth are critical times when women may be vulnerable to a deterioration in their psychological and physical health [8]. Other factors which contribute to the development of PPD are breastfeeding difficulties, distressing birth experiences, traumatic childbirth, mothering issues, and a lack of independence [9]. Contraceptives are therefore prescribed to facilitate birth spacing and enhance maternal outcomes, and thus lower the psychological burden and decrease vulnerability to PPD [10].

Although the benefits of contraceptives for women of reproductive age (WRA) have been adequately reported in the literature, the connection between hormonal contraceptives and the development of PPD requires further investigation. For example, it has been reported that 12.3% of women use hormonal contraceptives compared to 4.6%, 0.5%, and 0.2% using IUDs, the pill, injections, and implants, respectively [11]. This variation in percentage in favor of hormonal contraceptives use may indicate the need for further exploration of the prevalence of PPD among women using hormonal contraceptives compared to those using non-hormonal ones. Indeed, one study has linked the use of hormonal contraceptives with the development of PPD [12]. The authors asserted that the link is due to the association between levels of estrogens and progesterone and functional changes in certain neurotransmitters, causing neuropsychological effects. In another study, however, it was reported that although antidepressant medications have been prescribed to women using hormonal contraceptives, about 8% developed PPD [13]. One significant factor noted here is the type of hormonal contraceptive. For instance, the use of etonogestrel-containing contraception (implants, ring) showed an increased risk for antidepressant use, while a reduced risk of depression was observed in those using norethindrone-only pills and a levonorgestrel intrauterine system (IUS) [13].

Although maternal and reproductive health research in Jordan has been adequately addressed (e.g., [1–5]), the connection between the risk of developing PPD and contraceptive use (hormonal vs. non-hormonal) has not, to our knowledge, been addressed. There are many important factors to consider with this topic, both locally and internally, such as the utilization of healthcare services [14], time to initiate antidepressants in postpartum women [15], gestational weight gain [16], and the history of psychiatric disorders [17]. Therefore, the risk of developing PPD could be due to how intrapartum and postpartum biopsychosocial needs are managed, as well as other personal and health-related factors that could contribute to an increased risk of developing PPD. Reproductive and psychiatric health professionals need to be aware of
connections between the aforementioned factors and the risk of developing PPD, as these can influence healthcare outcomes and risk the wellbeing of women and their children. Although depression and psychiatric disorders are better diagnosed using clinical interview, using a self-report format for depressive symptoms could facilitate decisions on the risk and level of severity of depressive symptoms for further assessment and evaluation. This study explored further this relationship among women in Jordan, with the purpose of investigating the role of the use of contraceptives and other health-related factors on the risk of developing postpartum depression. The specific aims were:

- To identity the risk of developing postpartum depressive symptoms in relation to contraceptive use and type;
- To examine the predictive power of contraceptive use and health-related factors on the risk of developing postpartum depressive symptoms;
- To examine the socio-demographic correlates of postpartum depressive symptoms.

Materials and Methods

Design: This study used a cross-sectional, descriptive-correlational design. Using a self-administered format, data were collected on PPD, contraceptive use, health-related factors, and socio-demographic characteristics.

Sample and Setting: Data were collected from women living in the central district of Jordan. Convenience sampling using door-to-door techniques were used to recruit women. Researchers approached women in their homes and invited them to participate in the study. Women were included if they were aged 18 years or older, could read and write in Arabic, and had had at least one child. They were excluded if they had previously been diagnosed with a mental disorder or cognitive distortion, or were physically incapable of completing or understanding the survey questions; we also excluded women experiencing a grieving phase for the past six months, due to the overlap between depressive symptoms related to grief and postnatal depressive symptoms.

Sample size calculation

Gpower 3.1.10 was used to calculate the required sample size, and the regression analysis indicated a small effect size (.02), power (1-β) of .80, and alpha .05, with at least 811 participants needed. To ensure the adequacy of the sample, 1,100 participants were recruited.

Data collection procedure

Prior to data collection, ethical approval was obtained from the School of Medicine at the University of Jordan. Data were collected using the self-report format at the women’s convenience, and women were given the option of filling in the questionnaire by themselves while the research assistants were present for assistance, as needed. The door-to-door data collection technique was used to ensure maximum participation and sample recruitment. Data were collected by medical students who had received appropriate training on ethical considerations, research skills, and the tools used in the study. Initially, the researchers approached women at home to invite them into the study, and they briefed the women not only on its purpose and significance, but also the fact that their participation would be voluntary. Interested participants were screened for eligibility criteria, and eligible women were provided with a consent form to sign after all their questions had been answered. The consent
form included information related to the title, purpose, and significance of the study. Participants were also assured of the confidentiality of the information. Furthermore, the women were informed that the information would only be used for the purpose of the study, and that they had the right to withdraw at any time without giving a reason. Cultural considerations of the Jordanian community were considered in terms of forming pairs of researchers, one male and one female. A code was assigned to each woman to use if any woman developed serious signs of depression so that she could be easily identified and advised to contact her primary practitioner to ask for psychological evaluation by a specialized professional psychiatrist. All data were kept in a closed cabinet at the School of Medicine at the University of Jordan. Additionally, software data were stored on a password-protected computer. The whole package was presented in Arabic.

**Instrument**

Forms were adapted by the researchers using standard, international guidelines and appropriate literature to assess women at reproductive age for their physical and psychological perinatal wellbeing state [1–5]. First, the literature was reviewed and compared to the purpose of the study. Then, a list of questions was developed by the researchers and validated using appropriate psychometric procedures. The initial forms were evaluated in consideration of content, construct, and face validity by a subject-matter expert, then translated by a professional language editor into Arabic using World Health Organization guidelines on tool development and translation. Following this, a pilot study was conducted on ten women to examine the questions’ cultural appropriateness, clarity of language, and time for completion, as well as the feasibility of accessing women. The final version of the survey was based on the following aims:

1. To assess the depressive symptoms, a four-item scale was used in which the participants were asked to identify if they were suffering from these symptoms (yes [1] versus no [0]). The four questions assessed the depressive symptoms of: baby blues, loss of appetite, and insomnia, among other depressive symptoms. The scale included the main four depressive symptoms indicating risk of PPD, and it was tested for validity and reliability and found to have good internal consistency with Cronbach’s alpha being .79.

2. To assess reproductive use and type, a two-item scale was used. There were two sections on the use versus non-use of contraceptive methods (yes [1] versus no [0]), and the type of contraceptive method used, if any. For the purpose of the study, the methods of contraception were classed as hormonal or non-hormonal. The tool was found to be valid and reliable, with Cronbach’s alpha being .83.

In addition, an author-developed profile was used to collect data related to sociodemographic and health-related factors such as age, working status, smoking status, pregnancy-related factors, medical history, and medical conditions during pregnancy (for example complications during pregnancy such as gestational bleeding, diabetes, and hypertension).

**Analysis plan**

IBM-SPSS Windows (version 24.0, Chicago, IL) was used for data analysis and management. Descriptive statistics were used to report the variables of the study in terms of central tendency measures (means and
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medians) and dispersion measures (standard deviation and ranges), and the demographic characteristics of the participants. Both t- and chi-square tests were used to determine the differences between variables and subgroups. To test the prediction power of health-related factors and contraception use and type, binary logistic regression was used. Alpha was set at .05 level of significance.

Results

Demographic characteristics
A total of 1,100 women were approached and 803 agreed to participate, with a response rate of 73.0%. The mean age was 49.98 (SD=13.35), and the age range was 20–95 years. Most participants were not working 73.6% (n=591), and non-smokers 77.2% (n=620). Most of the sample had undergraduate education at 38.4% (n=308), or secondary level at 36.2% (n=291); 5.9% (n=47) were illiterate.

Health-related factors
The analysis (Table 1) showed that 22.8% (n=183) were smokers and 41.2% (n=331) exercised. Regarding medical history, 39.6% (n=318) of the sample had hypertension, 24.9% (n=199) had diabetes mellitus, and 74.1% (n=595) suffered from musculoskeletal pain. Regarding PPD complications, 19.4% (n=156) had suffered gestational anemia, 16.2% (n=130) gestational hypertension, 8.6% (n=69) gestational diabetes mellitus, and 7.7% (n=62) gestational bleeding. Regarding labor, the mean of number of deliveries was 4.12 (SD=2.31), the number of abortions was 0.73 (SD=1.17), and years of spacing 2.37 (SD=1.12).

Contraceptive use
The analysis showed that 51% (n=409) had used at least one method of contraception, compared to 49% (n=394) who reported using none. Among those who had used contraceptive methods, 31% (n=127) had used a hormonal contraceptive, whereas 69% (n=282) had used non-hormonal. The most common methods of contraception were IUDs (n=180, 22.4%) and the pill (n=109, 13.6%), while the least were capsules and injections (n=2, 0.2%).

Depressive symptoms
Regarding those who expressed feeling depressed after delivery, the analysis showed that 24.9% (n=200) developed depressive symptoms compared to 75.1% (n=603) who did not. Most who felt depressed reported that they suffered from insomnia (50%, n=100), 13.0% (n=26) suffered from baby blues, while loss of appetite was reported by 33.0% (n=66); 4% (n=8) had other depressive symptoms.

Predicting depressive symptoms
Using direct binary logistic regression, the models were tested for the predictability of existing depressive symptoms versus none. The model was developed using forward-backward stepwise logistic regression and based on the confirmed statistical results using the omnibus test chi-square model, which measures how well the model performs. Hosmer and Lemeshow chi-square tests the goodness-of-fit of the null hypothesis that the model adequately fits the data, and Nagelkerke $R^2$ is the pseudo r-square indicates the variation explained by the model, and the -2 Log likelihood. The results (Table 2) of comparing the forward LR, backward LR and standardized LR showed that only hormonal contraception and musculoskeletal pain were significantly predictive of the occurrence of depressive symptoms, with OR of 4.5 and 4.3, respectively; all other health-related factors (using contraception, smoking, smoking during pregnancy, history of hypertension, history of
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DM, number of deliveries, number of abortion, years of Spacing, postpartum complication, gestational anemia, gestational HT, gestational DM, gestational bleeding, and practicing exercise) were not. The results showed that the model adequately fitted the data ($\chi^2$ Hosmer Lemeshow = 8.4, df = 8, p = .237). To examine how well the model performs when variables are excluded from the model, the omnibus test was conducted and showed that the most parsimonious (enter) model had performed well because the change in the level of significance was small which indicated that the exclusion of the variables from the model was recommended (model $\chi^2 = 22.58$, df = 15, p .025). The pseudo $R^2$ was computed in the logistic regression through Negelkerke $R^2$ and -2 Log likelihood. The large pseudo R-square statistics indicated that most of the variation in the outcome variable is explained by the model, to a maximum of 1 ($R^2$ Negelkerke = .273; -2 Log Likelihood = 105.5).

The binary logistic model showed that hormonal type of contraception has significant negative effect in the model (Odds Ratio = 4.1, p =.031). This means that women who have used non-hormonal contraceptives have higher probability to develop depressive symptom than those who are using hormonal contraception. In other words, women who are using non-hormonal contraceptives are at 4.1 times to develop depressive symptoms than those who are using hormonal contraceptives. On the other hand, the binary logistic model showed that musculoskeletal pain has significant and positive effect in the model (Odds Ratio = 3.8, p =.034). This means that women who suffered musculoskeletal pain have higher probability to develop depressive symptom than those who are not. In other words, women who suffered musculoskeletal pain are at 3.8 times to develop depressive symptoms than those who not.

Differences in depressive symptoms related socio-demographics

Chi square has been used to test if there is significant difference between women who reported depressive symptoms and those who did not in relation to age, marital age, and working status. The analysis (table 3) showed that there is significant difference between women who reported depressive symptoms and those who did not in relation to age (t-test=5.99, p = >0.001). Also, there was a significant difference between women who reported depressive symptoms and those who did not in relation to marital age (t-test= 3.17, p=0.002). However, the analysis showed that there is no significant difference between women who reported depressive symptoms and those who did not in relation to working status (chi square= 0.004, p=0.95).

Regarding differences in type of contraceptive type (hormonal versus non-hormonal) among women in relation to smoking, and medical conditions (hypertension and diabetes mellitus), the analysis (see table 4) showed that there was no significant difference in women who use hormonal and non-hormonal in relation to their smoking status ( p > .05), while significant differences found between those who use hormonal and non-hormonal contraceptives in relation to hypertension and diabetes mellitus (p < .05). The analysis showed those who used non-hormonal contraceptives and do not have the medical condition (hypertension and diabetes) are much more than those who used hormonal and have the medical condition.

Discussion

Women are considered at higher risk to bio-psychosocial disturbances during and after
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delivery. The intrapartum and postpartum periods are considered serious life-threatening periods of life for women due to long-term negative effects, if present, during and after delivery (2-3). This study emphasized these two periods and their psychological effect (depressive symptoms) and its connection to biological and medical complications during and after pregnancy, in particular, the contraceptive use and type and health-related factors. We found that using non-hormonal contraceptive and suffering from musculoskeletal pain at postpartum period did increase the risk to develop postpartum depressive symptoms. While all other health-related factors such as using contraception, smoking, smoking during pregnancy, history of hypertension, history of DM, number of deliveries, number of abortions, years of spacing, postpartum complications, gestational anemia, gestational HT, gestational DM, gestational bleeding, and practicing exercise did not predict PPD symptoms. In other words, using hormonal contraceptive methods lowered the risk of depressive symptoms, while lower musculoskeletal pain was associated with lower risk to PPD symptoms. These results indicate that the type of contraceptive has more significance for women than simply encouraging the use of a method or type of contraception. The results of this study do support the positive role of hormonal contraception in lowering the risk of developing PPD symptoms. Although we have not measured postpartum depression using the clinical format, the expression of feelings of depression and reporting feelings of baby blues, insomnia, and loss of appetite are of the major signs of depression among women in the postpartum phase which indicate a high risk of PPD. While some studies [13, 18–19] have maintained that using hormonal contraception contributes to a lower risk and development of depression, others [20] failed to make the connection between hormones and the development of depression. This study supports the positive effect of using hormonal contraceptives to lower the risk of developing depressive symptoms in the postpartum phase. Such findings have also been sustained in this study, as a lower rate of hormonal contraceptive use was found as the women avoided using hormones for fear of developing cancer and other biological problems [21].

Lifestyle and medical history have been adequately addressed in the literature in connecting medical problems with various forms of psychological disturbances [2–3]. This study only supports a connection between the development of depressive symptoms and musculoskeletal pain. Women who suffered this pain had a four-fold risk of developing depressive symptoms than those who did not. We also noted that musculoskeletal pain was prevalent (> 65%) among the women sampled, indicating the serious and significant contribution to the deterioration of physical psychological functions in their earlier postpartum stages. Such findings support those of [22], in which almost one third of women who complained of lower back pain and other forms of musculoskeletal pain developed antenatal depressive symptoms.

Another significant finding in our study was the connection between depressive symptoms and age, marital age, and working status. We found that older women and those who married later had lower rates of depressive symptoms than younger women who married earlier. Furthermore, a high prevalence of depressive symptoms was found among non-working women. The results
support previous reports that age and working status are considered a significant contributor to the development of depressive symptoms among postpartum women [1–5]. It is also worth adding that there were no significant differences between those who used hormonal contraceptives in relation to smoking, while those with hypertension and diabetes mellitus were significantly different in terms of the selection of hormonal contraception.

One limitation of this study is related to using the self-reported format of data collection, since depression and other psychological issues are better evaluated using unstructured, clinical evaluation approaches. Another limitation is the sample size and type of sampling, as a larger and more representative sample including more maternal-related information would be more informative.

Conclusion

This study supports a negative connection between hormonal contraceptives, musculoskeletal pain, and the development of depressive symptoms among postpartum women. The study has implications for family medicine and reproductive health professionals caring for women in the intrapartum and postpartum periods. Health professionals need to encourage the use of hormonal contraceptives and observe closely the psychological consequences at postpartum. Depression, stress, eating, and physical complaints need to be assessed and evaluated in the first few weeks and upon each postpartum visit. Assessment of musculoskeletal pain and level of functionality must be integrated into routine postpartum visits, to address preventive and treatment measures. Special care has to be provided to younger women and psychosocial rehabilitation and counseling should be available to women in the postpartum period for the early detection of depressive symptoms. Further studies should explore the role of medication and other forms of biological and treatment plans on the biopsychosocial wellbeing of women and their children in the antenatal and postpartum periods.
### Table 1: Health-related factors (n=803)

<table>
<thead>
<tr>
<th>Variable</th>
<th>n</th>
<th>(%)</th>
<th>M (SD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gestational hypertension</td>
<td>Yes</td>
<td>130</td>
<td>16.2</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>673</td>
<td>83.8</td>
</tr>
<tr>
<td>Gestational DM</td>
<td>Yes</td>
<td>69</td>
<td>8.6</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>734</td>
<td>91.4</td>
</tr>
<tr>
<td>Gestational bleeding</td>
<td>Yes</td>
<td>62</td>
<td>7.7</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>741</td>
<td>92.3</td>
</tr>
<tr>
<td>Gestational anemia</td>
<td>Yes</td>
<td>156</td>
<td>19.4</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>647</td>
<td>80.6</td>
</tr>
<tr>
<td>Musculoskeletal pain</td>
<td>Yes</td>
<td>595</td>
<td>74.141</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>208</td>
<td>25.9</td>
</tr>
<tr>
<td>Smoking</td>
<td>Yes</td>
<td>183</td>
<td>22.8</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>620</td>
<td>77.2</td>
</tr>
<tr>
<td>Exercise</td>
<td>Yes</td>
<td>331</td>
<td>41.2</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>472</td>
<td>58.8</td>
</tr>
<tr>
<td>Postpartum complication</td>
<td>Yes</td>
<td>383</td>
<td>52.3</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>420</td>
<td>47.7</td>
</tr>
<tr>
<td>History of hypertension</td>
<td>Yes</td>
<td>318</td>
<td>39.6</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>485</td>
<td>60.4</td>
</tr>
<tr>
<td>History of DM</td>
<td>Yes</td>
<td>199</td>
<td>24.8</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>604</td>
<td>75.2</td>
</tr>
</tbody>
</table>

- No. of deliveries: 4.12 (2.31)
- No. of abortions: 0.73 (1.17)
- Years of spacing: 2.37 (1.12)

### Table 2: Results of binary logistic regression (n=483)

<table>
<thead>
<tr>
<th>Predictor</th>
<th>β</th>
<th>SE</th>
<th>Wald</th>
<th>p-value</th>
<th>OR</th>
<th>95% CI for OR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hormonal contraception</td>
<td>1.404</td>
<td>.653</td>
<td>4.637</td>
<td>.031</td>
<td>4.072</td>
<td>1.133 - 14.639</td>
</tr>
<tr>
<td>Smoking status</td>
<td>.071</td>
<td>.758</td>
<td>.009</td>
<td>.926</td>
<td>1.073</td>
<td>.243 - 4.743</td>
</tr>
<tr>
<td>Smoking while pregnant</td>
<td>.189</td>
<td>.598</td>
<td>.100</td>
<td>.752</td>
<td>1.208</td>
<td>.374 - 3.898</td>
</tr>
<tr>
<td>Hx. Hypertension</td>
<td>.014</td>
<td>.523</td>
<td>.001</td>
<td>.979</td>
<td>1.014</td>
<td>.364 - 2.827</td>
</tr>
<tr>
<td>Hx. DM</td>
<td>-.226</td>
<td>.580</td>
<td>.152</td>
<td>.697</td>
<td>.798</td>
<td>.256 - 2.487</td>
</tr>
<tr>
<td>No of deliveries</td>
<td>-.104</td>
<td>.110</td>
<td>.895</td>
<td>.344</td>
<td>.902</td>
<td>.727 - 1.118</td>
</tr>
<tr>
<td>No of abortions</td>
<td>.337</td>
<td>.203</td>
<td>.275</td>
<td>.097</td>
<td>1.401</td>
<td>.941 - 2.085</td>
</tr>
<tr>
<td>Years of spacing</td>
<td>-.010</td>
<td>.226</td>
<td>.002</td>
<td>.963</td>
<td>.990</td>
<td>.635 - 1.542</td>
</tr>
<tr>
<td>Postpartum complications</td>
<td>.456</td>
<td>2.361</td>
<td>.037</td>
<td>.847</td>
<td>1.577</td>
<td>.015 - 161.314</td>
</tr>
<tr>
<td>Gestational anemia</td>
<td>-2.414</td>
<td>2.370</td>
<td>1.037</td>
<td>.309</td>
<td>.089</td>
<td>.001 - 9.316</td>
</tr>
<tr>
<td>Gestational HT</td>
<td>-1.148</td>
<td>2.350</td>
<td>.239</td>
<td>.625</td>
<td>.317</td>
<td>.003 - 31.730</td>
</tr>
<tr>
<td>Gestational DM</td>
<td>21.3</td>
<td>14480.5</td>
<td>.000</td>
<td>.999</td>
<td>.000</td>
<td>.000 - .000</td>
</tr>
<tr>
<td>Gestational vaginal bleeding</td>
<td>- .944</td>
<td>2.474</td>
<td>.146</td>
<td>.703</td>
<td>.389</td>
<td>.003 - 49.655</td>
</tr>
<tr>
<td>Practicing exercise</td>
<td>.076</td>
<td>.533</td>
<td>.020</td>
<td>.887</td>
<td>1.079</td>
<td>.379 - 3.070</td>
</tr>
</tbody>
</table>

- Chi-square model: 22.58, df= 15, p = .025
- χ² Hosmer Lemeshow: 8.4, df = 8, p = .397
- -2 log likelihood: 105.5
- Cox and Snell $R^2$: .192
- Nagelkerke $R^2$: .273
### Table 3: Differences in depressive symptoms related to socio-demographics (n=803)

<table>
<thead>
<tr>
<th>Variables</th>
<th>Depressive symptoms</th>
<th>N</th>
<th>M</th>
<th>SD</th>
<th>t-test</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>Yes</td>
<td>207</td>
<td>45.3</td>
<td>13.7</td>
<td>5.99</td>
<td>&lt; .001</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>596</td>
<td>51.6</td>
<td>12.9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Marriage age</td>
<td>Yes</td>
<td>207</td>
<td>20.93</td>
<td>4.01</td>
<td>3.17</td>
<td>0.002</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>587</td>
<td>22.08</td>
<td>4.65</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Table 4: Differences in health-related factors related to contraceptive type (hormonal versus non-hormonal) (n=803)

<table>
<thead>
<tr>
<th>Subject Characteristics</th>
<th>Hormonal use</th>
<th>Chi-Square</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>YES</td>
<td>NO</td>
<td></td>
</tr>
<tr>
<td></td>
<td>n (%)</td>
<td>n (%)</td>
<td></td>
</tr>
<tr>
<td>Smoking</td>
<td>Yes</td>
<td>27 (27.8)</td>
<td>70 (72.2)</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>93 (28.2)</td>
<td>237 (71.8)</td>
</tr>
<tr>
<td>Hypertension</td>
<td>Yes</td>
<td>56 (34.6)</td>
<td>106 (65.4)</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>64 (24.2)</td>
<td>201 (75.8)</td>
</tr>
<tr>
<td>Diabetes mellitus</td>
<td>Yes</td>
<td>39 (36.4)</td>
<td>68 (63.6)</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>81 (25.3)</td>
<td>239 (74.7)</td>
</tr>
</tbody>
</table>
Depressive Symptoms in Postpartum Women


The survey*

1. Age:
2. Weight: ..........kg
3. Height: ...........cm
4. Age when you got married: ..............year
5. Your level of education:
   1. Illiterate  2. Below high school  3. High school  4. College or above
6. Your husband’s level of education:
   1. Illiterate  2. Below high school  3. High school  4. College or above
7. Do you work? 1. Yes 2. No
8. What was your age at your first delivery? .............
9. If you have more than one baby, how long is the spacing period? ...........year
10. Do you/ were you using contraceptive methods? 1. Yes 2. No
11. If you answer question 10 as yes, then what contraceptive methods are you /have you used?
12. Have you developed depressive symptoms?  1. Yes 2. No
13. What symptoms have you developed?
14. How long these symptoms lasted?...............weeks
15. Do you smoke? 1. Yes 2. No
16. If yes, how many cigarettes do you smoke per day? ............
17. Have you smoked during pregnancy? 1. Yes 2. No
18. At what age did you start smoking? .................year
19. Do you have hypertension? 1. Yes 2. No
20. Do you have diabetes mellitus? 1. Yes 2. No
21. What is your number of deliveries? ..................
22. What is your number of abortions? .................times
23. What is your number of years of spacing? ................
24. Did you suffer from or diagnosed with anemia? 1. Yes 2. No
25. Did you suffer from or diagnosed with hypertension? 1. Yes 2. No
26. Did you suffer from or diagnosed with gestational DM? 1. Yes 2. No
27. Did you suffer from or diagnosed with gestational bleeding? 1. Yes 2. No
28. Did you suffer from or diagnosed with musculoskeletal pains? 1. Yes 2. No
29. Do you practice regular exercise? 1. Yes 2. No
30. What is your preferred sport that you practice?
31. What do you usually do when exposed to joint pain?
   a. Taking medications such as sedatives
   b. Applying ice packs
   c. Consult my doctor
   d. Physical therapy exercises to strengthen muscles at home or in specialized centers
   e. Getting more relaxing and comforting time
   f. Nothing

*Consider that researchers used different format during data collection that includes instructions and skipping options
References


are overweight or obese. Journal of midwifery & women’s health. 2018 Mar;63(2):178-84.


Depressive Symptoms in Postpartum Women

Mentioned in the postpartum period by the symptoms of depression:

Meditations: The period after birth is a crucial phase, due to the psychological and biological changes after childbirth, and the woman's body adjusts to these changes.

Objective: The objective of the study is to explore the use of contraception and some health factors, and their effect on the risk of postpartum depression among Jordanian women.

Method and tools: The study used a cross-sectional design to collect data from (803) women using the stratified random sampling technique from the central region in Jordan. Data were collected on symptoms of depression, contraceptive use, and related health factors.

Results: Using the regression analysis, the results showed that non-hormonal contraception and muscle pain were strong indicators of depression among women (p < 0.05), with a relative risk of 4.1 for non-hormonal contraception, and 3.8 for muscle pain. Of the (200) women, 24% reported symptoms of depression after childbirth, and 25% reported symptoms of depression after labor. Of the (409) women, 51% reported symptoms of depression after childbirth, and 69% reported symptoms of non-hormonal contraception. The study concluded that non-hormonal contraception and muscle pain are strong indicators of depression in Jordanian women after childbirth.

Keywords: depression symptoms, contraception, postpartum period.