Identifying the factors associated with depressive symptoms among postpartum mothers in Kathmandu, Nepal

Babu Ram Bhusal a,*, Nisha Bhandari b

a Senior Public Health Officer at Ministry of Health and Population, Government of Nepal, Nepal
b Faculty of Maharajgunj Nursing Campus, Institute of Medicine, Tribhuvan University, Kathmandu, Nepal

ARTICLE INFO

Article history:
Received 23 September 2017
Received in revised form 2 March 2018
Accepted 12 April 2018
Available online 16 April 2018

Keywords:
Edinburgh postnatal depression scale (EPDS)
Nepal
Postpartum depressive symptoms

ABSTRACT

Purpose: This study aimed to identify the factors associated with depressive symptoms among postpartum mothers in Kathmandu, Nepal.

Method: A hospital-based cross-sectional study that included 346 postpartum mothers at 4–14 weeks after delivery was carried out. Validated Nepalese version of Edinburgh Postnatal Depression Scale with cut-off value of ≥12 was used to screen depressive symptoms and structured questionnaires were used to identify the associated factors. Possible factors associated with depressive symptoms were identified by logistic regression analysis.

Result: The mean age of the mothers was 22.75 (SD = 4.51). The prevalence of depressive symptoms among postpartum mothers was 17.1% (95% CI = 15.07–19.12). No significant association existed between postpartum depressive symptoms and socio demographic and economic characteristics. In multivariate analysis, risk factors for postpartum depressive symptoms were identified as follows: women without adequate rest during pregnancy (aOR = 4.023, 95% CI = 1.294–12.501), abortion history (aOR = 3.25, 95% CI = 1.208–9.065), poor relationship with husband (aOR = 1.67, 95% CI = 1.073–8.384), marital dissatisfaction (aOR = 4.053, 95% CI = 2.281–12.819) and stressful life events (aOR = 3.89, 95% CI = 1.504–9.810).

Conclusions: This study aids to draw attention on the incorporation of routine screening for basic support and intervention for identified risk factors in postpartum period. Policies can be formulated to encourage postpartum women to obtain adequate rest during pregnancy, support women with poor partner relationship, reduce marital dissatisfaction, help women adjust with stressful life events, and prevent and manage abortion appropriately. These policies may reduce harmful consequences of postpartum depressive symptoms for women, newborn and their family.

© 2018 Chinese Nursing Association. Production and hosting by Elsevier B.V. This is an open access article under the CC BY-NC-ND license (http://creativecommons.org/licenses/by-nc-nd/4.0/).

1. Introduction

Postpartum depression (PPD), a type of mood disorder, is the most frequently observed morbidity during postpartum period [1]. PPD is the most common childbirth complication [2] which affects 10%–15% of women in high-resource countries [3]. However, the prevalence is also considerably high in developing countries, including India (23%) [4], Pakistan (44%) [5] and Vietnam (33%) [6]. Notably, the prevalence is low in Nepal at 4.9%–19.4% [7–9].

Mostly, the onset of PPD symptoms occurs within six months after delivery [10,11], although they can emerge at any time during the first year of delivery [10]. The PPD symptoms can exert a wide range of effect on the social, physical and mental health conditions of the mother and baby [12]. Addressing PPD symptoms is essential because the feelings associated with PPD symptoms not only affect the health, marriage and families of the mother; they can also be detrimental to the health of the newborn and the entire family [3]. Furthermore, children of depressive mothers exhibit higher cognitive, behavioural and interpersonal problems than those of children of non depressed mothers [13].

PPD symptoms originate not from a single cause, but they likely result from a combination of biochemical, physical and emotional factors. The main biochemical factor causing PPD symptoms is decreased hormonal levels which result in chemical changes in the brain that may trigger mood swings [14]. Several physical and emotional factors are responsible for PPD symptoms; these factors include low socioeconomic status, low education level, extended...
families [15], young age [15,16], conflict with mother-in-law [16,17], marital dissatisfaction [4,5,17], physical and sexual violence [5,16,18–20], unintended pregnancy, being unmarried, insufficient emotional and practical support [16,21], stressful life events [18,21], artificial feeding, sex of the baby [21] and previous and antenatal depression [17,21,22]. A study conducted in Canada recognised the risk factors for PPD, such as maternal health problems, infant difficulty, lack of money for basic needs, frequent conflicts with network members and poor social support [23]. In nearby countries, such as India and Pakistan, economic deprivation, gender of infant [4], marital dissatisfaction [4,3], previous PPD, joint family structure, domestic violence, low socioeconomic status and being housewives are risk factors for PPD [5]. In Nepal, associated factors for postpartum depressive symptoms are as follows: unsound communication with husband [9], husband’s alcoholism, previous depression, smoking and depression during pregnancy [18], polygamy [18,24], food insecurity, caesarean section delivery, perinatal health problems, lack of education of one or both spouses, poor or no antenatal care, not having a son, not staying in parental home during postnatal period and low maternal age [24].

Although PPD is a major health issue for many women from diverse cultures, this condition often remains undiagnosed [13]. The use of screening scales is an easy, simple and cost-effective way to recognise women who are at risk of depression [25]. The Edinburgh Postnatal Depression Scale (EPDS) is the most widely used screening tool in identifying PPD [26–29], and it has been validated and used in many countries, including Nepal. Hence, in our study, we selected EPDS to screen PPD symptoms [26,28–32]. Mothers with increased PPD symptoms are those with score more than the established cut off, i.e. ≥ 12 on EPDS, in our study [32].

Given the implication of postpartum depressive symptoms on the mother and child, knowledge on associated factors is necessary to implement preventive measures and assist health care providers in addressing high-risk groups. Few studies have been conducted to examine PPD symptoms in Nepal, and these studies have been limited to few associated factors. The present study aims to assess the socioeconomic characteristics, as well as family-, violence-, pregnancy- and birth-related factors associated with PPD symptoms among Nepalese women. Adequate rest during pregnancy, intimate partner violence, stressful life events, obstetric complications, history of abortion were additional factors included in this study. Such factors were excluded in previous studies conducted in Nepal.

2. Materials and methods

2.1. Study design

This work is a descriptive cross-sectional study performed in Tribhuvan University Teaching Hospital (TUTH) in Kathmandu, Nepal. The hospital is a tertiary-level referral hospital which covers people of all economic strata throughout the country.

2.2. Sample

The study population included mothers with 4–14 weeks postpartum and who attended an immunisation clinic in TUTH. The onset of PPD symptoms occurs within this period [10,11]. Hence, we selected these women as our study population.

Women whose children died at birth and those suffering from severe medical illness were excluded because physical symptoms, such as insomnia, anorexia, decreased concentration and pain, are similar to PPD symptoms which may create bias in the sample. Women with mental retardation were also excluded because they may interfere with the informed consent and data collection.

The sample size was calculated using the formula \( n = \frac{z^2pq}{d^2} \) for a cross-sectional study, where \( Z = 1.96, P = 0.08 \) (assuming 8% average prevalence of PPD symptoms in Nepal) [7,8], \( q = 1 - P = 0.92 \) and allowable error (\( d \)) = 3% at 5% level of significance. The calculated required sample size was 346, with non-response rate of 10%. The sample was selected by systematic random sampling method. The study population for one-month period was 800 according to the register book maintained in the immunisation clinic. A sampling interval of 2 was calculated by dividing the total study population with the desired sample size, i.e. 346. The first sample was selected by lottery method with simple random sampling. Every second sample was selected from the register book maintained each day in the clinic until the desired sample size was obtained. The mothers waiting for immunisation were also interviewed.

2.3. Data collection

Data were collected by structured face-to-face interview technique with 346 participants from December 2014 to January 2015. The researchers developed the questionnaire for socio-demographic, economic- and family-, pregnancy- and birth-related characteristics. The variables used in socio-demographic conditions were the age of mother, ethnicity, religion, family type, marriage type, education and occupation. The economic status was measured by wealth quintiles; relationship with husband, marital satisfaction, stressful life events in previous year and history of previous depression were the family-related characteristics. The pregnancy- and birth-related characteristics used were adequate rest during pregnancy, number of pregnancies, type of delivery, place of delivery, obstetric complication during pregnancy and delivery and history of abortion.

Similarly, the intimate partner violence was measured by using a shortened and modified version of the Conflict Tactics Scale as used in Nepal Demographic and Health Survey 2011. The answer ‘yes’ to one or more of the items constitutes the evidence of violence. Seven, two and three items were used to measure physical, sexual and emotional violence, respectively. This approach provides the respondent with multiple opportunities to disclose any experience of violence, but the possibility of underreporting of violence, particularly sexual violence, cannot be entirely ruled out in this study [34]. Privacy and confidentiality were maintained during data collection.

Furthermore, to determine the PPD symptoms, validated Nepali version of EPDS was adopted. The Nepali version of EPDS is acceptable, and it presents good validity with sensitivity of 92, specificity of 95.6, positive predictive value of 77 and negative predictive value of 99.3 [32]. The EPDS is a 10-item self-report questionnaire. Questions 1, 2 and 4 were scored as 0, 1, 2 and 3 according to the increasing severity of the symptoms. Questions 3, 5–10 were reverse, scored as 3, 2, 1 and 0. Total score was calculated by adding each score of the 10 items. The score can range from 0 to 30 [33]. The cut-off score of ≥ 12 was obtained to determine the PPD symptoms [32].

The reliability of the instrument calculated by Cronbach’s \( \alpha \) was 0.742 which is within the acceptable range of reliability [35].

2.4. Ethical consideration

The ethical approval of the study was obtained from the Institutional Review Board of Institute of Medicine in Tribhuvan University. Written approval for the study was obtained from the immunisation clinic and psychiatric department of TUTH. Written informed consent was also obtained from each participant.
2.5. Data analysis

Data were compiled, checked for completeness and entered into EPI-Info version 3.5.1. The entered data were exported to SPSS version 20.

Descriptive analysis was performed on study variables. Association was identified by logistic regression analysis. The PPD symptom was considered the dependent variable, and the socio-demographic, economic, family and intimate partner violence and pregnancy and birth-related characteristics were considered the independent variables. The odds ratio (OR), P values and 95% confidence interval (CI) were calculated to identify the associations. The variables with OR > 1 and P value < 0.05 were the associated risk factors for PPD symptoms.

The significant variables obtained from bivariate analysis were used in multivariate analysis to identify the final associated variables.

3. Result

3.1. Sample characteristics

Table 1 shows the mean age of the mothers, i.e. 22.75 (SD = 4.51). Most of the mothers were non-Dalit caste (93%), and majority were Hindus (85%). Approximately 45% of the participants were from nuclear family. All of the participants were married, and arranged marriage was the most common type of marriage (64.5%). Majority of the participants (30.3%) completed secondary education. Additionally, approximately half (49%) of them reported unpaid work.

A total of 87% of the respondents were in good relationship with their husbands during the study period, whereas 11.8%, 2.3% and 6% of the participants experienced physical, sexual and psychological violence, respectively, at least one time in their lives. About 93% of the participants were satisfied with their marriage, 12% of them reported stressful life events in the previous year, and only 1.7% indicated a previous history of depression.

Among pregnancy- and birth-related characteristics, 92.5% of the mothers obtained adequate rest during pregnancy. Approximately 56% of them experienced multiple pregnancies. Normal delivery was the most common type of delivery (67.6%), and 97.4% was institutional. A total of 18% of the mothers experienced obstetric complications during pregnancy or delivery, and only 10% of the respondents presented a history of abortion.

3.2. Prevalence of depression

The prevalence of PPD symptom was 17.1% (95% CI: 15.07–19.12).

3.3. Factors associated with PPD symptoms in bivariate analysis

Table 2 demonstrates no statistically significant association between PPD symptoms and socio-demographic and economic status. Economic status was analysed by the principle component analysis (PCA) method, in which the status was classified into five quintiles, with the first quintile being the poorest and fifth being the richest. The factors used to assess the economic status in PCA were the availability of productive assets (e.g. livestock), non productive assets (e.g. radio, television, mobile and/or landline phone, bicycle, motorcycle, scooter, car, freezer and computer), household amenities (e.g. toilet, electricity, flooring, roof, cooking fuel and light source) and availability of other assets (e.g. number of rooms and land ownership).

Women with poor relationship with their husbands exhibited...
two times higher chance to develop PPD symptoms (OR = 2.084, 95% CI = 1.542–3.168) than that of women with good relationship with their husbands. Similarly, increased risk was observed in women experiencing physical (OR = 3.624, 95% CI = 2.852–6.213), psychological (OR = 2.837, 95% CI = 1.017–4.137) and sexual violence (OR = 1.833, 95% CI = 1.212–3.615) among intimate partner violence-related characteristics. Women who were dissatisfied with their marriage were 12 times more likely to develop depressive symptoms than those of women who were satisfied with their marriage (OR = 12.977, 95% CI = 5.237–32.155). In addition, women who experienced stressful life events in previous year (OR = 2.470, 95% CI = 1.170–5.711) were two times more likely to develop PPD symptoms than those who experienced none. No significant association was observed among women with previous history of depression (OR = 2.035, 95% CI = 1.357–4.012).

Table 3 displays the association between the pregnancy- and birth-related characteristics with PPD symptoms. The women without adequate rest during pregnancy were 10 times more likely to develop PPD symptoms than those with adequate rest during pregnancy (OR = 10.307, 95% CI = 4.393–24.185). Similarly, women with multiple pregnancies showed four times higher risk to develop depressive symptoms than those of women with single pregnancy (OR = 4.904, 95% CI = 2.731–9.652). Women with history of abortion (OR = 1.901, 95% CI = 1.071–3.594) were two times more likely to develop depressive symptoms than those of women without such history.

This finding revealed no statistically significant association between PPD symptoms and the type of delivery (OR = 1.351, 95% CI = 0.724–2.521), place of delivery (OR = 1.404, 95% CI = 0.284–6.931) and obstetric complication during pregnancy and delivery (OR = 0.826, 95% CI = 0.409–1.670).

### 3.4. Factors associated with PPD symptoms in multivariate analysis

The significant variables obtained from bivariate analysis were used in multivariate analysis to identify the final variables associated with PPD symptoms.

Table 4 shows that women with no adequate rest during pregnancy were four times more at risk to develop PPD symptoms than those with adequate rest during pregnancy (adjusted OR (aOR) = 4.023, 95% CI = 1.294–12.501). Similarly, women with history of abortion were three times more likely to develop PPD symptoms (aOR = 3.25, 95% CI = 1.208–9.065) than those without such history. The risk to develop PPD symptoms was increased by four times in women with marital dissatisfaction compared with those without marital satisfaction (aOR = 4.053, 95% CI = 2.281–12.819). In addition, women with stressful life events in previous year (aOR = 3.89, 95% CI = 1.504–9.810) and with poor relationship with husband (aOR = 1.67, 95% CI = 1.073–8.384) were more likely to develop PPD symptoms by four times and two times,

### Table 2

| Variables                        | Depression Number (%) | OR   | 95% CI          | P     |
|----------------------------------|-----------------------|------|-----------------|-------|
| **Race/Ethnicity**               |                       |      |                 |       |
| Dalit                            | 6 (10.2)              | 1.798| 0.677–4.772     | 0.239 |
| Non-Dalit                        | 53 (89.8)             | 1    |                 |       |
| **Religion**                     |                       |      |                 |       |
| Hindu                            | 53 (89.8)             | 1.686| 0.685–4.152     | 0.256 |
| Non-Hindu                        | 6 (10.2)              | 1    |                 |       |
| **Type of marriage**             |                       |      |                 |       |
| Love                             | 40 (67.8)             | 1.196| 0.659–2.173     | 0.556 |
| Arranged                         | 19 (32.2)             | 1    |                 |       |
| **Education**                    |                       |      |                 |       |
| Non formal                       | 5 (8.5)               | 1    |                 |       |
| Formal                           | 54 (91.5)             | 1.952| 0.221–2.958     | 0.221 |
| **Occupation**                   |                       |      |                 |       |
| Unpaid work                      | 30 (50.8)             | 1    |                 |       |
| Paid work                        | 29 (49.2)             | 1.086| 0.620–1.902     | 0.772 |
| **Wealth category**              |                       |      |                 |       |
| Lower                            | 30 (50.8)             | 1    |                 |       |
| Upper                            | 29 (49.2)             | 1    |                 |       |
| **Relationship with husband**    |                       |      |                 |       |
| Good                             | 32 (54.2)             | 2.084| 1.542–3.168     | 0.001*|
| Poor                             | 27 (45.8)             | 1    |                 |       |
| **Physical violence**            |                       |      |                 |       |
| No                               | 36 (61)               | 1    |                 |       |
| Yes                              | 23 (39)               | 3.624| 2.852–6.213     | 0.001*|
| **Psychological Violence**       |                       |      |                 |       |
| No                               | 43 (72.9)             | 1    |                 |       |
| Yes                              | 16 (27.1)             | 2.837| 1.017–4.137     | 0.001*|
| **Sexual Violence**              |                       |      |                 |       |
| No                               | 53 (89.8)             | 1    |                 |       |
| Yes                              | 6 (10.2)              | 1.833| 1.212–3.615     | 0.001*|
| **Marital Satisfaction**         |                       |      |                 |       |
| No                               | 16 (27.1)             | 1    |                 |       |
| Yes                              | 43 (72.9)             | 1.297| 5.237–32.155    | 0.001*|
| **Stressful life events in previous year** |               |      |                 |       |
| No                               | 45 (76.3)             | 1    |                 |       |
| Yes                              | 14 (23.7)             | 2.470| 1.170–5.711     | 0.004*|
| **History of previous depression** |                 |      |                 |       |
| No                               | 53 (89.8)             | 1    |                 |       |
| Yes                              | 6 (10.2)              | 2.035| 1.357–4.012     | 0.999 |

Note: OR: Odds ratio, CI: Confidence interval, Significance: P < 0.05, 1 – Reference category, * – Significant.
respectively, than those of women who experienced no such events. The factors, which were significant in bivariate analysis but not in multivariate analysis, were multiple pregnancies (aOR = 0.254, 95% CI = 0.139–2.919), physical violence (aOR = 0.840, 95% CI = 0.673–3.342), psychological violence (aOR = 1.149, 95% CI = 0.467–4.111) and sexual violence (aOR = 0.251, 95% CI = 0.172–1.632).

4. Discussion

The present study showed no significant association between PPD symptoms and sociodemographic variables, such as caste/ethnicity, religion, type of marriage, education, occupation and economic condition. The finding was consistent with that of Jossefson et al. [36] who reported no relation between PPD symptoms and sociodemographic factors. Nevertheless, the present study found a significant association with the place of delivery. Most of the participants were attended institutional delivery (96%) which may be due to the provision of better access to health education and adoption of healthy living condition. Similarly, half of the participants were in the upper wealth category, which may also be the reason for insignificant result.

Given the considerably few participants with previous history of depression and complication during pregnancy, no significant association was found with depressive symptoms in bivariate and multivariate analyses. However, Saleh and Turkapur [39] found that past psychiatric history and previous history of depressive symptoms and difficult labour are regarded as predictors of PPD. Delivery type was also found insignificant in both bivariate and multivariate analyses. However, the study conducted by Clarke in Nepal explored many psychological distresses in women who delivered via caesarean section [24]. In the present study, no significant association was found with the place of delivery. Most of the participants (96%) indicated institutional delivery, which may be the reason for the insignificant result.

In bivariate analysis, a significant association was observed with physical, sexual and psychological violence, whereas the association was insignificant in multivariate analysis. Similar finding was obtained from a prospective cohort study conducted in Recife, Brazil in 2006; this study showed that women who reported physical and sexual violence are likely to experience PPD, but this association is reduced with adjusted confounding factors [19]. This result was also consistent with those of other studies [15,18,20,39].

Note: OR: Odds ratio, CI: Confidence Interval, Significance: P < 0.05, 1 = Reference category, * = Significant.
to any form of violence may affect mental health and impair access to health services, the adoption of healthy behaviour and the support from family and society, as well as result in feeling of loneliness, low self-esteem and depressive symptoms. By contrast, Budathoki [9] found no statistically significant relationship between different forms of violence and PPD symptoms. Given the few numbers of participants who experienced different forms of violence, the result may be insignificant with depressive symptoms in multivariate analysis.

Significant association was detected with multiparity in bivariate analysis, but it was insignificant in multivariate analysis. Ho-Yeen and Saleh identified multiparity as a predictor for PPD symptoms [18,21]. In our study, as expected in Nepalese context, more than half of the participants had more than one child which may be the reason for the insignificant result.

Multivariate analysis identified poor relationship with husband as a predictor of PPD symptoms in the present study, and this finding was consistent with those in other studies [4–6,9,17,40,41]. This result may also be affected with the support that they received from their spouse and family and that they had no one to talk and ask for help. They may also experience difficulty in discussing their problems and changes experienced during postpartum period with their husbands. Suppression of women’s feelings and emotions may aggravate the depressive symptoms. Furthermore, emotional support enhances self-esteem and helps build confidence during the most challenging period.

Among the pregnancy- and birth-related characteristics, the women without adequate rest during pregnancy presented higher risk of developing PPD symptoms than those of women with adequate rest during pregnancy and delivery. This result was consistent with that of Saleh et al. [21]. Inadequate rest may inhibit cognitive functioning necessary for new parents to understand their infant’s health problems and their participation in care taking. Adequate rest enhances interaction with family members and other relatives. Thus, emotional support may decrease the chance of depression. Women, who are highly engaged in household works may lead to considerable social and family troubles. In Nepalese culture, women should maintain the family within their assigned role. They are responsible for child caring and rearing, and husbands are not supposed to share the workload of child care. Nepalese women also assume multiple roles of taking care of household duties and their in-laws.

In the present study, PPD symptoms were found significant with stressful life events in previous year; this result was comparable to that of Ho-Yeen et al. [18,39,42]. Stressful life events may decrease the capacity to tolerate any change in life. Delivery and postnatal period is a completely new and challenging situation that can aggravate the mood swing and may play a role in the development of depressive symptoms. Stressful life events also cause negative feelings in patients with increased feeling of hopelessness and helplessness with increasing depressive episode.

This study identified several factors associated with postnatal depressive symptoms and provided insights into the causes of PPD symptoms in Nepal. This study has not yet been recognised as a valid public health problem in the country, as evidenced by the scarce research activity in this subject. The study findings illustrated that family-, pregnancy- and birth-related factors, such as adequate rest during pregnancy and delivery, abortion history, marital dissatisfaction, stressful life events in previous year and relationship with husband, are independent factors associated with PPD symptoms. The identified associated factors of PPD symptoms that are modifiable can be targeted for screening and intervention as a preventive measure.

Authorship

BRB worked on the design of the work, literature review, data collection, analysis and interpretation, drafting and finalisation of the article. NB carried out the literature review, data collection and critical input in drafting the manuscript.

Conflicts of interest

The authors declare no competing interest.

Acknowledgement

The authors deeply acknowledge all the staff members of Tribhuvan University Teaching Hospital for their support and cooperation. The authors also express gratitude to the participants.

Appendix A. Supplementary data

Supplementary data related to this article can be found at https://doi.org/10.1016/j.jiijns.2018.04.011.

References

[1] Robertson E, Celasun N, Stewart DE. Risk factors for postpartum depression. 2003.
[2] Wisner KL, Parry BL, Piontek CM. Postpartum depression. N Engl J Med 2002;347(3):194–9.
[3] TaW Northumberland. Postnatal Depression: a self help guide. Northumberland: Tyne and Wear (NHS Trust); 2006. p. 2003.
[4] Patel VDN, Rodrigues M, DeSouza N. Gender, poverty, and postnatal depression: a study of mothers in Goa. Indi., Am J Psychiatr 2002;159:43–7.
[5] Khooharo YMT, Das C, Majeed N, Majeed N, Choudhry AM. Associated risk factors for postpartum depression presenting at a teaching hospital. ANNALS 2009;16(2):87–90.
[6] O'Hara MW, Swain AM. Rates and risk of postpartum depression—a meta-analysis. Int Rev Psychiatr 1996;8:37–54.
[7] Regmi SSW, Carter D, Gruit W, Seear M. A controlled study of postpartum depression among Nepalese women: validation of the Edinburgh Postpartum Depression Scale in Kathmandu. Trop Med Int Health 2002;7(4):378–82.
[8] Derheim SK. Depression and sleep in the postnatal period.A study in Nepal and Norway. Dissertation for the degree philosophiae doctor (PhD) at University of Bergen. Norway March, 2009.
[9] Budathoki NDM, Bhusal S, Ojha H, Pandey S, Basket S. Violence against women by their husband and postpartum depression. J Nepal Health Res Counc 2012;10(22):176–80.
[10] Department hp. Postnatal depression. first ed. Ireland: Health service Executive; 2009 vol. 2011. 9 p.
[11] Rahman A, Bunn J, Lovel H, Creed F. Maternal depression increases infant risk of diarrhoeal illness—a cohort study. Arch Dis Child 2007;92(1):24–8.
[12] Postnatal depression: clinical knowledge summaries nhs. 2010.
[13] Stewart DE, Robertson E, Dennis C, Grace SL, Wallington T. Postpartum depression: literature review of risk factors and interventions. 2003.
[14] Health MoM. Postpartum depression facts: National Institute of Health.
[15] Muneer A, Minhas FA, Niazuddin ATD, Mujeeb F, Usmani. Frequency and associated factors for postnatal depression. J College of Phys, Surgeons of Pakistan 2009;19(4):236–9.
[16] Fisher J de Mello MC, Patel V, Rahman A, TranT Holton S, Holmes W. Prevalence and determinants of common perinatal mental disorders in women in low- and lower-middle-income countries: a systematic review. Bull World Health Organ 2012.90. https://doi.org/10.2471/BLT.11.091850. 139–149G.
[17] Lee Dominic TS, Yip Alexander SK, Tony VS, Chung Leung And Tony KH. Ethnoepidemiology of postnatal depression Prospective multivariate study of
sociocultural risk factors in a Chinese population in Hong Kong. BJpJ 2004;184:34–40. https://doi.org/10.1192/bj.2004.3462.

[18] Ho-Yen SDGC, Eberhard-Gran M, Bjervatn B. Factors associated with depressive symptoms among postnatal women in Nepal. Acta Obstet Gynecol Scand 2007;86(3):1186–92.

[19] Silva EP, Ludermir AB, Araujo TVB, Valongueiro SA. Frequency and pattern of intimate partner violence before, during and after pregnancy. Rev Saude Publica 2011;45(6).

[20] Ludermir AB, Lewis G, Valongueiro SA, Araujo TVB, Araya R. Violence against women by their intimate partner during pregnancy and postnatal depression: a prospective cohort study. Lancet 2010;376:903–10.

[21] Saleh ES, El-Bahei W, El-Hadidy MA, Zayed A. Predictors of postpartum depression in a sample of Egyptian women. Neuropsychiatr Dis Treat 2013;9:15–24. https://doi.org/10.2147/NDT.S37156.

[22] Leigh B and Milgrom J. Risk factors for antenatal depression, postnatal depression and parenting stress. BMC Psychiatry 2008;8:24 DOI: 10.1186/1471-244X-8-24.

[23] Seguin L, Potvin L, St-Denis M, Loiselle J. Depressive symptoms in the late postpartum among low socioeconomic status women, vol. 26; 1999. p. 157–63. 3.

[24] Clarke K, Saville N, Shrestha B, Costello A, King M, Manandhar D, Osrin D, Frost A. Predictors of psychological distress among postnatal mothers in rural Nepal: a cross-sectional community-based study. J Affect Disord 2014;156:76–86. https://doi.org/10.1016/j.jad.2013.11.018.

[25] Cox JL, Chapman G, Murray D, Jones P. Validation of the Edinburgh postnatal depression scale (EPDS) in non-postnatal women. J Affect Disord 1996;39(3):185–9.

[26] Teissedre F, Chabrol H. A study of the Edinburgh Postnatal Depression Scale (EPDS) on 859 mothers: detection of mothers at risk for postpartum depression. Encephale 2004 Jul-Aug;30(4):376–81.

[27] Guedenen Y, Fer dman J, Guelfi JD, Kumar RC. The Edinburgh Postnatal Depression Scale (EPDS) and the detection of major depressive disorders in northern Viet Nam: community prevalence and health care use. Bull World Health Organ 2010;88:737–45. https://doi.org/10.2471/BLT.09.067066.

[28] Fisher J, Tran T, La BT, Kriitmaa K, Rosenthal D, Tran T. Common peri-natal mental disorders in northern Viet Nam: community prevalence and health care use. Bull World Health Organ 2010;88:737–45. https://doi.org/10.2471/BLT.09.067066.

[29] Toreki A, Ando B, Dudas RB, Dweik D, Janka Z, Kozinszky Z, Kereszturi A. Validation of the Edinburgh Postnatal Depression Scale as a screening tool for postpartum depression in a clinical sample in Hungary. Midwifery 2014;30(8):911–8. https://doi.org/10.1016/j.midw.2014.02.00.

[30] O’Donovan M, Tadic I, Lakic D, Nordeng H, Lupattelli A, Tasic L. Translation and factor analysis of structural models of Edinburgh Postnatal Depression Scale in Serbian pregnant and postpartum women – web-based study, vol. 28; 2015. p. e331–5. 3.

[31] Bhusal BR, Bhandari N, Chapagai M, Gavidia T. Validating the Edinburgh postnatal depression scale as a screening tool for postpartum depression in Kathmandu. Nepal. Int J Ment Health Syst 2016;10:71. https://doi.org/10.1186/s13033-016-0102-6.

[32] Cox JL, Holden JM, Sagovsky R. Detection of postnatal depression: development of the 10-item Edinburgh postnatal depression scale. 150: Br J Psychiatry 1987;782–6.

[33] Ministry of Health and Population. Nepal demographic and health Survey 2011: new era Kathmandu, ICF international calverton. Maryland, U.S.A 2011: 260.

[34] Tavakol M, Dennick R. Making sense of Chronbach’s alpha. Int J Med Educ 2012;2:53–5. https://doi.org/10.5116/ijme.4485.8472. ISSN: 2042-6372.

[35] Josefsson A, Angelsson L, Berg C, Ekstrom CM, Gunnervik C, Nordin C, Sydso G. Obstetric, somatic, and demographic risk factors for postpartum depressive symptoms. Obstet Gynecol 2002;99(2):223–8.

[36] Goyal D, Gay C, Lee KA. How much does low socioeconomic status increase the risk of prenatal and postpartum depressive symptoms in first time mothers? Wom Health Issues 2010;20(2):96–104. https://doi.org/10.1016/j.whi.2009.11.003.

[37] Alvarenga P, Frizzo GB. Stressful life events and Women’s mental health during pregnancy and postpartum period, stressful life events and Women’s mental health. Paulínská, Paldéa jan-apr 2017:27(No. 66):1–9. https://doi.org/10.1590/1982-43277662017077.

[38] Turkcapar AF, Kadioglu N, Asian E, Tunc S, Zayıfoglu M, Mollahamamoglu L. Sociodemographic and clinical features of postpartum depression among Turkish women: a prospective study. BMC Pregnancy Childbirth 2015;15:108. https://doi.org/10.1186/s12884-015-0532-1.

[39] Van Vo T, Htoa TKD, Hoang TD. Postpartum depressive symptoms and associated factors in married women: a cross-sectional study in danang city, Vietnam. Front. Public Health 2017;5:93. https://doi.org/10.3389/fpubh.2017.00093.

[40] Jafarpour M, Esfandyari M, Mokhtarsahi Sh, Hoseini F. The effect of stressful life events on postpartum. Journal of Kermanshah University of Medical Sciences 2014;10(4). Depression. https://doi.org/10.22110/jkums.v10i4.507.