# Prevalence and Factors Associated with Postpartum Depression among Mothers Visiting Immunization Clinic at Birendranagar Municipality, Surkhet, Nepal

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## ABSTRACT

**Background**

Postpartum depression (PPD) is a disabling but treatable mental disorder that represents one of the most common complications of childbearing which can exert a wide range of effect on social, physical and mental health conditions of the mother and baby.

**Objective**

To identify the prevalence and factors associated with postpartum depression among mothers visiting immunization clinic at Birendranagar Municipality, Surkhet in year 2020.

**Method**

This study was a cross-sectional study. A total of 347 postpartum mothers were interviewed for data collection. Validated Nepali version of Edinburg Postnatal Depression Scale (EPDS) was used to identify postpartum depression. These mothers were permanent resident of Birendranagar who had delivered their babies in municipal hospital. Analysis was done using SPSS version 21.0. Chi square test was applied to identify association of postpartum depression with major interest of variables namely parity of mother, sex of a baby and recent planned or unplanned pregnancy. Odds ratio (OR) was calculated with 95% Confidence Interval (CI).

**Result**

The prevalence of postpartum depression was found to be 32.9% (27.9%, 37.8%). Several factors which were significantly associated with postpartum depression were; sex of the baby, history of abortion and recent pregnancy planned or unplanned.

**Conclusion**

Nearly one-third of postpartum mothers had depression. Hence screening of mothers for depression is of prime importance throughout the continuum of care. Likewise, the factors identified for postpartum depression needs to be taken care of well in advance for healthy mother and a baby.


## KEY WORDS

*Mothers, Postpartum depression, Prevalence*

## INTRODUCTION

Mental health problems are a major public health concern for women of reproductive age (15-49 years) in both high and low-income countries. Among women of reproductive age group, about 7% of the global burden of diseases is attributable to mental health problem.[1] Postpartum depression is a disabling but treatable mental disorder that represents one of the most common complications of childbearing.[2]

Postpartum depression (PPD) is included in the American Psychiatric Association's Diagnostic and Statistical Manual of Mental Disorders, fifth edition (DSM-5), as a major depressive episode "with peripartum onset if onset of mood symptoms occurs during pregnancy or within 4 weeks following delivery.[3]

The PPD symptoms can exert a wide range of effect on the social, physical and mental health conditions of the mother and baby.[4] Infants born to mothers with PPD have been shown to have lower cognitive functioning, adverse emotional development, problematic sleep habits, lower preventive health care utilization, behavior problems, higher risk for anxiety, disruptive and affective disorder, decreased breastfeeding and worse nutritional outcomes.[5]

In Nepal, the prevalence of depression among postnatal women in tertiary health care has been estimated to be 12%.[6] Suicides have been found to cause 9.5% of deaths among women of reproductive age in Nepal, being second only to mortality related to pregnancy and childbirth (20%). But fewer than the half of cases are recognized.

There are very limited publications made on the association of PPD with parity of mother, sex of a baby and recent planned or unplanned pregnancy in context to Nepal. Therefore, this study aims to identify the prevalence and factors associated with postpartum depression among mothers visiting immunization clinics at Birendranagar municipality, Surkhet, 2020.

## METHODS

This was a cross-sectional study which was conducted in Birendranagar Municipality, Surkhet and study populations was mothers within 6 to 12 weeks of postpartum period who attended the immunization clinic at various places.

Altogether a sample of 347 postpartum mothers were selected as per their availability and who gave consent to participate.

The sample size was determined by using the statistical formula:

$$n = z^2 \times (P) \times (1-p)/e^2$$

Where,

Z = 1.96, considering 95% confidence interval

p = prevalence of postpartum depression (30%)(1).

q = 1-p (70%)

e = error (0.05) Hence, the sample size was 322

With 10% non-response rate, the total sample size was 356.

The tool used for data collection in this study was a validated Nepalese version of Edinburg Postnatal Depression Scale (EDPS). The cut-off value for categorizing postpartum depression was ≥ 13 score. For Socio demographic profile semi-structured questionnaire were used.

## RESULTS

Based on the cut off points of Edinburgh Postnatal Depression Scale (EPDS) prevalence of postpartum depression was 32.9% (27.9%, 37.8%).

**Table 1.** Prevalence of postpartum depression

| Prevalence of postpartum Depression | n=347 | Percentage (95% CI) |
|---|---|---|
| Depression | 114 | 32.9 (27.9%, 37.8%) |
| No Depression | 233 | 67.1 (62.2%, 72.0%) |

Among 347 respondents interviewed, the mean age was 25 (± 4.43). Slightly more than 32% of respondent belonged to Dalit group and 88.5% of the respondents were from Hindu religion followed by Christian 8.9%. Most of the respondents (90.8%) were literate and 72.6% of the respondents were housewife and 18.2% of the respondents were involved in some form of Business followed by service women (7.2%). 51.3% of the respondents were from the nuclear family and only 48.7% were from joint family. This study also revealed that majority of the respondents (52.4%) had monthly family income between Rs. 21000-30000 followed by 44.4% had monthly income less than 20000 and 3.2% had monthly income more than Rs. 30000.

As shown in table 3, the mean age at marriage was 19.73 with ± SD 3.13. 66% of the respondents reported that age at first delivery was between 20-30 year. 48.7% of the respondents had only one child and 96.3% of the respondents said that their recent pregnancy was planned. 89.3% of the respondents had hospital delivery. This table showed that 53.3% of the new born children were daughter. Vaginal delivery was found to be 71.5% and only 43.6% had complications during pregnancy. 80% of the respondents didn't have miscarriage and almost all of the respondents (99.1%) were not involved in smoking or drinking habit. Around 30% of the postpartum mother had a history of abortion and 69.7% had love marriage. Difficulty in breastfeeding was found to be prevalent among 25.4% of the respondents. Majority of the respondents (56%) belonged to 12 weeks of postpartum period.

**Table 2.** Socio-demographic characteristics of postpartum mothers

| Socio-demographic Characteristics | n=347 | % | Socio-demographic Characteristics | n=347 | % |
|---|---|---|---|---|---|
| **Age** | | | **Ethnicity** | | |
| < 20 years | 19 | 8.4 | Brahmin | 57 | 16.4 |
| 20-30 years | 280 | 80.7 | Chhteri | 101 | 29.7 |
| > 30 years | 38 | 11.0 | Janajati | 64 | 17.9 |
| Mean=25.1, SD ±4.437 | | | Madhesi | 13 | 3.7 |
| | | | Dalit | 112 | 32.3 |
| **Educational Status** | | | **Religion** | | |
| Illiterate | 18 | 5.2 | Hindu | 307 | 88.5 |
| Literate | 329 | 94.8 | Buddhist | 9 | 2.6 |
| Can read and write | 6 | 1.7 | Christian | 31 | 8.9 |
| Primary level | 14 | 4.0 | Muslim | 0 | 0 |
| Secondary level | 113 | 32.6 | Others | 0 | 0 |
| Higher secondary | 114 | 41.5 | **Family type** | | |
| Bachelor and above | 52 | 15 | Nuclear | 178 | 51.3 |
| **Occupation** | | | Joint | 169 | 48.7 |
| Household | 252 | 72.6 | | | |
| Agriculture | 2 | 0.6 | **Family income in Rs** | | |
| Service | 25 | 7.2 | < 20,000 | 154 | 44.4 |
| Business | 63 | 18.2 | 21000-30000 | 182 | 52.4 |
| Others | 5 | 1.4 | > 30,000 | 11 | 3.2 |

**Table 3.** Obstetric characteristics of postpartum mothers

| Obstetric Characteristics | n=347 | % | Obstetric Characteristics | n=347 | % |
|---|---|---|---|---|---|
| **Age at marriage** | | | **Sex of the baby** | | |
| < 20 years | 222 | 64.0 | Male | 162 | 46.7 |
| 20-30 years | 125 | 36.0 | Female | 185 | 53.3 |
| (Mean = 19.73, ± SD = 3.13) | | | | | |
| **Age at first delivery** | | | **Mode of delivery** | | |
| < 20 years | 18 | 5.2 | Vaginal | 112 | 32.3 |
| 20-30 years | 329 | 94.8 | Caesarean section | 96 | 27.7 |
| > 30 years | 6 | 1.7 | Other | 3 | 0.9 |
| (Mean = 21.59, ±SD = 3.669) | | | **Complication during pregnancy** | 54 | 15.6 |
| **Presence of husband during pregnancy and delivery** | | | Miscarriage | 59 | 17.0 |
| Yes | 263 | 75.8 | **Type of Marriage** | | |
| No | 84 | 24.2 | Arranged | 105 | 30.3 |
| | | | Love | 241 | 69.7 |
| **Number of Children** | | | **History of abortion** | 105 | 30.3 |
| 1 | | | **Difficult in breastfeeding** | 88 | 25.4 |
| 2 | 132 | 38.0 | **Period of delivery** | | |
| 3 | 39 | 11.2 | 6 weeks | 50 | 14.4 |
| 4 | 3 | 0.9 | 10 weeks | 101 | 29.1 |
| 5 | 0 | 0 | 12 weeks | 196 | 56.5 |
| 6 | 4 | 1.2 | **Smoking and drinking habit of mother** | 3 | 0.9 |
| **Recent pregnancy** | | | **Place of delivery** | | |
| Planed | 334 | 96.3 | Home | 37 | 10.7 |
| Unplanned | 13 | 3.7 | Hospital | 310 | 89.3 |

As shown in table 4, occupation, family income and family type were not statistically significant with postpartum depression. There was a significant association between recent pregnancy (planned or unplanned) and postpartum depression as shown in table 5. Postpartum mothers having unplanned pregnancy were 3.4 odds to have postpartum depression than planned pregnancy. Postpartum mothers having female as their child were 2.5 odds of having postpartum depression compared to male child.

Postpartum mothers having history of abortion had 2.7 odds of postpartum depression compared to mothers having no history of abortion.

Mode of delivery, complications during pregnancy and difficulty in breast feeding had no association with postpartum depression. Mothers having complication during pregnancy had 1.4 odds of having postpartum depression however it was not significantly different. Age at marriage, age at first delivery and parity were not statistically significant with postpartum depression.

## DISCUSSION

In this study, the prevalence of Postpartum depression was found to be 32.9% which is slightly higher than in a cross-sectional community based study which was conducted among 95 postpartum women of Godavari municipality Lalitpur, out of which 19% women suffered from depression.[7] As this study did not control for confounding probably the estimation could have been overestimated or underestimated and also COVID pandemic may have influenced the estimate. However a study conducted among 34 postpartum mothers attending a child immunization clinic at a maternity hospital in Kathmandu, Nepal was found to have prevalence of postpartum depression to be 30%.[8]

Our findings were also supported by a cross-sectional study conducted among Chinese women during the COVID pandemic, which revealed 30.0% PPD.[9] However, our finding was higher than those of a study conducted in a tertiary care center in Ankara, Turkey, during the COVID-19 pandemic among 223 postpartum mothers within 48 hours of birth, which discovered that 14% of postpartum mothers were at risk of postpartum depression.[10]

**Table 4.** Association between socio-demographic characteristics and postpartum depression

| Characteristic | Postpartum Depression | | | | | |
|---|---|---|---|---|---|---|
| | Yes | | No | | P value | OR (95 % CI) |
| | N | % | N | % | | |
| **Age** | | | | | | |
| < 20 Years | 12 | 41.4 | 17 | 58.6 | | 1 |
| 20-30 Years | 90 | 32.1 | 190 | 67.9 | 0.65 | 0.7 (0.3-1.5) |
| > 30 years | 12 | 31.6 | 26 | 68.4 | | 0.6 (0.2-1.6) |
| **Ethnicity** | | | | | | |
| Brahmin | 26 | 45.6 | 31 | 54.3 | | 0.5(0.1-1.7) |
| Chhetri | 31 | 30.6 | 70 | 69.3 | | 0.3(0.1-1.0) |
| Janjati | 16 | 25.0 | 48 | 75.0 | 0.20 | 0.2(0.1-0.7) |
| Dalit | 33 | 29.4 | 79 | 70.5 | | 0.3(0.1-1.0) |
| Madhesi | 8 | 61.5 | 5 | 38.4 | | 1 |
| **Religion** | | | | | | |
| Hindu | 107 | 34.9 | 200 | 65.1 | | 1.8(0.7-4.3) |
| Buddhist | 0 | 0 | 9 | 100 | 0.06 | - |
| Christian | 7 | 22.6 | 24 | 77.4 | | 1 |
| **Occupation** | | | | | | |
| Housewife | 88 | 34.9 | 200 | 65.1 | | 0.7(0.1-4.3) |
| Agriculture | 2 | 100 | 0 | 0 | | - |
| Service | 5 | 20.0 | 20 | 80.0 | 0.10 | 0.4(0.1-3.1) |
| Business | 17 | 27.0 | 46 | 73.0 | | 0.5(0.1-3.2) |
| Others | 2 | 40.0 | 3 | 60.0 | | 1 |
| **Family Type** | | | | | | |
| Nuclear | 57 | 32.0 | 121 | 68.0 | 0.81 | 1 |
| Joint | 57 | 33.7 | 112 | 66.3 | | 1.1(0.7-1.7) |
| **Family Income (Rs.)** | | | | | | |
| < 21,000 | 60 | 39.0 | 94 | 61.0 | | 1 |
| 21000-30000 | 51 | 28.0 | 131 | 72.0 | 0.11 | 0.6(0.4-0.9) |
| > 30000 | 3 | 27.3 | 8 | 72.2 | | 0.6(0.1-2.3) |

**Table 5.** Association between obstetric characteristics and postpartum depression

| Characteristic | Postpartum Depression | | | | | |
|---|---|---|---|---|---|---|
| | Yes | No | Yes | No | P value | OR (95 % CI) |
| | N | % | N | % | | |
| **Age at Marriage** | | | | | | |
| < 20 years | 72 | 32.4 | 150 | 67.6 | 0.82 | 1 |
| 20-30 years | 42 | 33.6 | 83 | 66.4 | | 1.0 (0.6-1.7) |
| **Age at first Delivery** | | | | | | |
| < 20 years | 47 | 41.6 | 66 | 58.4 | 0.12 | 1 |
| > 20 years | 67 | 28.6 | 167 | 71.4 | | 0.6 (0.4-1.0) |
| **Total number of children** | | | | | | |
| 1 | 56 | 33.1 | 113 | 66.9 | 0.93 | 1 |
| 2 | 45 | 34.1 | 87 | 65.9 | | 1.04 (0.6-1.7) |
| ≥ 3 | 13 | 25.6 | 29 | 74.4 | | 0.9 (0.4-1.9) |
| **Total no. of male child** | | | | | | |
| 0 | 46 | 50.0 | 46 | 50.0 | <0.001 | 1 |
| 1 | 43 | 23.9 | 137 | 76.1 | | 0.3(0.2-0.5) |
| ≥ 2 | 6 | 14.6 | 38 | 85.4 | | 0.1(0.1-0.4) |
| **Total no. of female child** | | | | | | |
| 0 | 16 | 27.1 | 43 | 72.9 | 0.04 | 1 |
| 1 | 67 | 36.8 | 115 | 63.2 | | 1.6(0.8-3.0) |
| 2 | 25 | 52.1 | 23 | 47.9 | | 2.9(1.3-6.5) |
| 3 | 6 | 75.0 | 2 | 25.0 | | 8.1(1.5-44.3) |
| **Recent pregnancy** | | | | | | |
| Planned | 106 | 31.7 | 228 | 68.3 | 0.03 | 1 |
| Unplanned | 8 | 61.5 | 5 | 38.5 | | 3.4(1.1-10.6) |
| **Place of Delivery** | | | | | | |
| Home | 9 | 24.3 | 28 | 75.1 | 0.27 | 1 |
| Hospital | 105 | 33.9 | 205 | 66.1 | | 1.6(0.7-3.5) |
| **Sex of the baby** | | | | | | |
| Male | 36 | 22.2 | 126 | 77.8 | 0.001 | 1 |
| Female | 78 | 42.2 | 107 | 57.8 | | 2.5 (1.6-4.1) |
| **Mode of Delivery** | | | | | | |
| Vaginal | 88 | 35.5 | 160 | 64.5 | 0.13 | 1.5(0.9-2.5) |
| Caesarean section | 26 | 27.1 | 70 | 72.9 | | 1 |

As found in this study, the odds of postpartum depression among women who ever had abortion were 2.7 times than those who had no abortion history. This report was supported by the study conducted among the women of northwest Ethiopia and Gujrat.[11,12]

Our study suggested that postpartum mother who had unplanned pregnancy were 3.4 times odds of having depressive symptoms compared to planned pregnancy. This finding was very similar to the finding of study conducted among postpartum mothers of Eastern Nepal and Lao People's Democratic Republic.[13,14]

A report which evaluated the psychological impact of quarantine measures on immediate postpartum women in the north-eastern part of Italy, which was strongly affected by the pandemic reported a 26% of EPDS scores higher than 12. They compared the EPDS scores during the pandemic with the previous results of the control group who gave birth before the pandemic and they reported a significant worsening in depressive symptom.[15]

A hospital-based analytical cross-sectional study was conducted among 415 randomly selected postpartum mothers attending the child immunization clinic at Narayani hospital showed a significant association of postpartum depression with the family income, presence of husband during the pregnancy and whether the recent pregnancy was planned or unplanned which was somewhat similar to the associated factors of this study.[16]

One of the major reasons behind the high prevalence of PPD i.e. 32.9% in this study might be due to the other factors such as pandemic situation of COVID-19 and fear produced by this to access the health services, economic hardship, loneliness and post-traumatic stress due to COVID-19.[17]

There were few limitations in this study. The sampling technique was based on the availability of the research participant in the clinic who gave consent for data collection. Association between several independent and dependent variables may have either been overestimated or underestimated due to the confounding effect. Level of postpartum depression was estimated only among mothers between 6-12 weeks of giving birth. As this study was a cross sectional type the temporality of the association could not be established.

## CONCLUSION

The prevalence of the postpartum depression among mothers of Birendranagar municipality was quite high (32.9%). This study showed significant association with sex of the baby, planned or unplanned pregnancy and history of abortion. Therefore the study highlights the importance of routine screening for the depression in primary health care center and timely referral to the appropriate health care services for adequate counseling, treatment and care.

## ACKNOWLEDGEMENT

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