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ORIGINAL ARTICLE

Prevalence and Factors Associated with Depressive Symptoms Among Post-Partum Mothers in Dhanusha District of Nepal

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ABSTRACT

Background: Post-partum depression is a common complication in women after childbirth. The objective of this study was to determine the prevalence and factors associated with depressive symptoms among post-partum mothers attending Gynecological/Obstetric ward in Janaki Medical College and Teaching Hospital, *Dhanusha,* Nepal.

Material and Methods: This cross-sectional study was conducted among 330 post-partum mothers after delivery to 12 weeks using systematic random sampling. Mothers were interviewed using a semi-structured questionnaire. The Edinburgh Postnatal Depression Scale (EPDS) was used to screen for depressive symptoms. Chi-square test analysis was used to determine the association of post-partum depressive symptoms with socio-demographic, obstetric and psychosocial factors.

Result: The prevalence of post-partum depressive symptoms among mothers was 15.2%. The factors significantly associated with post-natal depression were ethnicity, age at marriage, number of children, sex of the baby, planned or unplanned pregnancy, infant health problems, family history of depression, unhappy with in-laws, absence of husband during pregnancy, smoking habit of husband and drinking habit of the husband.

Conclusion: About one-fifth of post-partum mothers have depressive symptoms. Obstetric and psychosocial factors were more associated with occurrence of PPD symptoms.

Keywords: EPDS, Depressive symptoms, Postpartum depression, Obstetric factors, Psychosocial factors, Ethnicity

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.The term post-partum depression (PPD) refers to a non-psychotic depressive state that begins in the post-partum period, after child birth (Giri *et al*., 2015). Postpartum depression is the most common complication of childbearing, occurring in 10-15% of women after delivery (O'hara & Swain, 1996).

Approximately, 10-20% of women experience depression either during pregnancy or in the first 12 months post-partum (Patel & Prince, 2010). Maternal depression is increasingly recognized as a worldwide public health issue and can have a negative impact on an

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individual's life which affects work, family and the health and development of the baby. A meta-analysis of 59 studies from North America, Europe, Australia and Japan, found an overall prevalence rate of post-partum depressive symptoms of 13% (O'hara & Swain, 1996). A study conducted in Kathmandu, Nepal showed that about 30% of the mothers had post-partum depressive symptoms. Mothers aged 20 to 29 years were less likely to have depressive symptoms, with a history of pregnancy-induced health problems and subjective feelings of stress compared tomothers aged more than 30 years (Giri *et al*., 2015).

Risk factors found to be significantly associated with postnatal depression were high risk pregnancy, being unhappy with in-laws, low income of the family, mood swings and low mood during pregnancy (Suguna, Naveen, & Surekha, 2015), level of stress during pregnancy, availability of husband support after pregnancy, a prior diagnosis of depression (Lanes, Kuk, & Tamim, 2011), being a housewife, having a caesarian section, low social support, family history of depression, previous history of depression and non-exclusive breastfeeding (Zainal, Kaka, Ng, Jawan, & Singh Gill, 2012).

Although from ancient times it was thought that the problems associated with childbirth were a normal part of being a new mother, recent studies have indicated that postpartum depression is a serious disorder if unrecognized and untreated (Epperson, 1999). It can develop into a more severe condition called postpartum psychosis, which may eventually lead to suicide and/or infanticide (Yip, Chung, & Lee, 1997). Relationship difficulties (particularly marital), disturbed mother-infant interactions including compromised care-giving activities, feeding practices, sleep routines, well child visits, vaccinations, safety practices on child health are the effects related to post-partum depression (Dørheim Ho-Yen, Tschudi Bondevik, Eberhard-Gran, & Bjorvatn, 2006).

In our society, many mothers choose to live with postpartum depression rather than get help because of their inability to recognize it as a depressive disorder or due to their ignorance and lack of provision of relevant health education that should be imparted to them during their pregnancy (Shrestha, Hazrah, & Sagar, 2015). 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, and higher risk for anxiety, disruptive and affective disorder, decreased breastfeeding and worse nutritional outcomes (Grace, Evindar, & Stewart, 2003).

There are only 3% of all health publications in Nepal which are on mental Health (Luitel *et al*., 2015). However, the studies on PPD especially among rural population are limited as Post-partum depression (PPD) is a neglected area of maternal healthcare in developing countries (Shrestha, Hazrah, & Sagar, 2015). *Dhanusha* is relatively underserved by health facilities: there is approximately one doctor per 23,000 population and one public zonal hospital in Janakpur municipality to serve *Dhanusha* and five other districts (Clarke *et al*., 2014). Five primary healthcare centers and ninety nine health posts provide access to public healthcare in rural areas, but a significant proportion of the population consult private doctors (Clarke *et al*., 2014) . There are currently no public mental health facilities in *Dhanusha,* although private psychiatrists hold monthly clinics in Janakpur, the district municipality. This study therefore sought to evaluate the prevalence of depression and the factors which might influence it in postpartum women in this district, in Nepal.

MATERIAL AND METHODS

Study setting and design

Face to face interview technique was conducted among post-partum mothers using Edinburg Postnatal Depression Scale (EPDS) to identify post-partum depression on mothers attending Out-Patient Department (OPD), Gynecological/ Obstetrics ward and child immunization clinic (the hospital runs a child immunization clinic every day, which provides National Immunization Scheduled vaccine to infants) of Janaki Medical College and Teaching Hospital (JMCTH) from August 2017-Decemeber 2017. The EPDS tool has been validated and used in different cultural settings, including Nepal. The EPDS tool is a ten-item self-reporting scale that measures the intensity of depressive symptoms

experienced within the last 7 days. Each statement is rated on a scale from 0–3 (from "Yes, most of the time", to "no, not at all"), resulting in a total possible score ranging from 0–30. The Janaki Medical College and Teaching Hospital is the largest medical institution located in Mahendranagar municipality, *Dhanusha* and provides maternity services to alarge number of women in *Dhanusha*.

The study design was quantitative descriptive cross sectional design. The study focused on a particular group, post-partum mothers within 12 weeks after delivery irrespective of their age, parity and socio-economic status.

Sample size determination and procedure

The unit of study were individual Post-partum mothers (delivery-12 weeks). Considering prevalence of PPD as 30% by Giri *et al*., 2015 sample size was obtained 330. Systematic sampling technique was applied to select 330 post-partum mothers. Gynecological/Obstetric OPD has a daily patient load of 70-100. A list of post-partum mothers was obtained from the nursing station of Gynecological/Obstetric ward at each OPD visit day, the first patient was selected randomly and then every third patient was interviewed for data collection.

Statistical analysis

The data were entered in Epi data 3.1 and analyzed using the SPSS version 16. Descriptive Statistics (including means, standard deviations, frequencies and percentage) was calculated for the socio-demographic, obstetric and other variables. Scoring of Edinburgh Postnatal Depression Scale was done as per the scoring manual. Chi square test was applied to determine the association of postpartum depression with different variables. P-values of less than 0.05 were considered as an indication of statistical significance.

Ethical consideration

Ethical clearance was obtained from the Ethical Review Board of Nepal Health Research Council (NHRC) before the conduction of the study. Permission letter from Janaki Medical College and Teaching hospital was also secured before data collection. From each of the study subjects verbal and written consent was obtained after discussing the confidentiality, purpose, benefit and possible risks of the study.

Measurement of variables

Outcome variable

The outcome variable of the interest in this study was the occurrence of PPD symptoms based on EPDS. An earlier study has stated that the EPDS could convincingly rule out the depressive symptoms among post-partum mothers when a cut-off point of ≥13 was used (Clarke *et al*., 2014).

Explanatory variables

The explanatory variables investigated were both socio-demographic and maternal factors. Socio-demographic factors included age, ethnicity, occupation, education, and socio-economic status of the family. The Government of Nepal has classified ethnicity into six groups: Dalit, disadvantaged Janajati, disadvantaged non-Dalit Terai caste group, religious minorities, relatively advantaged Janajati and upper caste group. In this study, disadvantaged non-Dalit Terai caste group is given typical name Madhesi. Similarly, educational status of parents was categorized as literate and illiterate. Maternal factors included age at first delivery, number of children, type of delivery, complications during pregnancy, unhappy with in-laws, absence of husband during pregnancy and family history of stress.

RESULT AND DISCUSSION

Socio-demographic characteristics of the post-partum mothers

A total of 330 post-partum mothers were studied. Majority (64.8%) of the respondents in this study were in the age group 20-30 years. The mean age of the respondents was 26.16±5.392. Similarly, majority (74.5%) of the respondents were *Madhesi*. The respondents were dominantly (81.2%) Hindu followed by Muslim (9.1%). Most of the respondents, 60.6%, were literate and 54.5% of the respondents were housewives. About 13.3% of the respondents were involved in agriculture followed by service women 12.7%. And 73.3% of the respondents

were from the nuclear family and only 26.7% were from joint family. This study also revealed that about half (50.9%) of the respondents, had monthly family income less than NRs. 21000 followed by 44.2% with monthly family income NRs 21000 - 50000.

Table 1: Socio-demographic characteristics of the Post-Partum mothers

Variables	Frequency (n=330)	Percentage (%)
Age		
<20 years	44	13.3
20-30 years	214	64.8
>30 years	72	21.8
(Mean = 26.16, ±5.39 years, Age range 17-36 years)		
Ethnicity		
Brahmin	34	10.3
Chhetri	20	6.1
Janajati	30	9.1
Terai/Madhesi	246	74.5
Religion		
Hindu	268	81.2
Buddhist	28	8.5
Muslim	30	9.1
Others	4	1.2
Educational Status		
Illiterate	130	39.4
Literate	200	60.6
Can read and write	36	10.9
Primary level	42	12.7
Secondary level	70	21.2
Higher secondary level	42	12.7
Bachelor and above	10	3.0
Occupation		
Housewife	180	54.5
Agriculture	44	13.3
Service	42	12.7
Business	38	11.5
Others	26	7.9

Obstetric History of post-partum mothers

Among 330 respondents, 53.1% were married between 20-30 years of age, followed by 46.1% of the respondents married before 20 years of age. Majority (70.1%) of the respondents reported that age at first delivery was between 20-30 year and 65.5% respondent's duration of marriage was found to be 1-5 years. Nearly half (45.5%) of the respondents claimed that they had only one child and 80% of the respondents said that their recent pregnancy was planned. Majority of the respondents (85.5%) had delivered at the hospital. Table 2 (B) reveals that 52.7% had male child. Normal delivery was found 63.6% and only 43.6% claimed that they had complications during pregnancy. More than three fourth (80%) of the respondents did not have miscarriage and almost all of the respondents, 98.2%, were not involved in smoking or drinking habit. One third (32.7%) of the respondents had difficulty in breastfeeding.

Table 2(A): Findings related to Obstetric Characteristics

Obstetric Characteristics	Frequency (n=330)	Percentage (%)
Age at marriage		
<20 years	152	46.1
20-30 years	178	53.1
(Mean = 21.32±3.01 years, Age at marriage range 14-30 years)		
Age at first delivery		
<20 years	72	21.8
20-30 years	258	78.2
Duration of marriage		
1-5 years	216	65.5
5-10 years	92	27.9
>10 years	22	6.7
Total number of children		
1	150	45.5
2	114	34.5
3	44	13.3
4	14	4.2
5	2	0.6
6	6	1.8
Recent Pregnancy		
Planned	264	80
Unplanned	66	20
Place of delivery		
Home	48	14.5
Hospital	282	85.5

Table 2(B): Findings related to Obstetric Characteristics

Obstetric Characteristics	Frequency (n=330)	Percentage (%)
Sex of the baby		
Male	174	52.7
Female	154	46.7
Both	2	0.6
Type of delivery		
Normal	210	63.6
Caesarean section	120	36.4
Complications during pregnancy		
Yes	144	43.6
No	186	56.4
Miscarriage		
Yes	66	20
No	264	80
Smoking or drinking habit		
Yes	6	1.8
No	324	98.2
Difficulty in breastfeeding		
Yes	108	32.7
No	222	67.3

Table 3: Findings related to psychosocial history of the post-partum mothers

Other characteristics	Frequency (n=330)	Percentage (%)
Infant health problems		
Yes	100	30.3
No	230	69.7
Family history of depression		
Yes	48	14.5
No	282	85.5
Unhappy with in-laws		
Yes	52	15.8
No	278	84.2
Presence of husband during Pregnancy		
Yes	164	49.7
No	166	50.3
Smoking and drinking habit of the husband		
Smoking habit		
Yes	88	26.7
No	242	73.3
Drinking habit		
Yes	208	63.0
No	122	37.0
Child preference by family		
Male	222	67.3
Female	10	3.0
Both	98	29.7

Psychosocial history of the post-partum mothers

Among 330 respondents, 69.7% of them had no infant health problems. It also showed that only 15.8% of the respondents were unhappy with their in- laws and 85.5% had no family history of depression. While inquired about the smoking & drinking habit of their husband, a majority (73.3%) answered that the husband did not smoke, 63% respondents said that their husband has a drinking habit. It was also found that more than half (67.3%), of the respondents' family preferred male child whereas only 3% preferred female child.

Prevalence of Post-partum Depression

Based on the cut-off points of Edinburgh Postnatal Depression Scale (EPDS) (≥13), 15.2 percent of the total

Table 4: Prevalence of post-partum Depression

Prevalence of Post-partum Depression	Frequency (n= 330)	Percentage (%)
Depression	50	15.2
No depression	280	84.8

Table 5: Association between demographic characteristics and Post-partum Depression

Characteristics	Post- partum Depression				P- value*
	Yes		No		
	N	%	N	%	
Age					
<20 years	6	13.6	38	86.4	0.075
20-30 years	24	11.2	190	88.8	
>30 years	20	27.8	52	72.2	
Ethnicity					
Brahmin	0	0	34	100	0.004*
Chhetri	10	50	10	50	
Janajati	2	6.7	28	93.3	
Terai/Madhesi	38	15.4	208	84.6	
Education					
Literate	16	12.3	114	87.7	0.411
Illiterate	34	17	166	83	
Religion					
Hindu	48	17.9	220	82.1	0.066
Buddhist	2	7.1	26	92.9	
Muslim	0	0	30	100	
Others	0	0	6	100	
Occupation					
Housewife	18	10	162	90	0.106
Agriculture	8	18.2	36	81.8	
Service	14	33.3	28	66.7	
Business	8	21.1	30	78.9	
Others	2	7.7	24	92.3	

Table 6: Association between Obstetric characteristics and Post-partum Depression

Characteristics	Post- partum Depression				P- value*
	Yes		No		
	N	%	N	%	
Age at Marriage					
<20 years	10	6.6	142	93.4	0.005*
20-30 years	40	22.5	138	77.5	
Total number of children					
1	18	12	132	88	0.008*
2	26	22.8	88	77.2	
3	0	0	44	100	
4	4	28.6	10	71.4	
5	2	100	0	0	
6	0	0	6	100	
Recent pregnancy					
Planned	30	11.4	234	88.6	
Unplanned	20	30.3	46	69.7	
Sex of the Baby					
Son	8	4.6	166	95.4	0.00005*
Daughter	40	26.0	114	74.0	
Both	2	100	0	0	
Type of Delivery					
Vaginal	26	12.4	184	87.6	0.189
Caesarean Section	24	20	96	80	

respondents had post-partum depression whereas 84.8 percent did not have depressive symptoms.

Factors associated with socio-demographic characteristics and post-partum depression

There was no association between depression and age (p=0.075), education level (p=0.411), Religion (p=0.066), occupation (p= 0.106), family type (p= 0.513) and monthly family income (p= 0.440). However, this study found a strong association between ethnicity and post-partum depression (p= 0.004) among mothers attending Janaki Medical college and Teaching hospital, *Dhanusha*, Janakpur.

Association between Obstetric factors and Post-partum Depression

Significant association between age at marriage and post-partum depression was found (p= 0.005). Similarly, a strong association was found between total number of children and post - partum depression (p= 0.008). Planned or unplanned pregnancy was observed to have significant association with post-partum depression (p= 0.007). Similarly, a strong association was found between sex of the baby and post-partum depression (p<0.001). Other obstetric factors like age at first delivery, duration of marriage, place of the delivery, type of delivery, complications during pregnancy, smoking and drinking habit and difficulty in breast feeding were found to have no significant association with post-partum depression.

Association between psychosocial history and Post- partum Depression

There was no association between child preference by family and post- partum depression in mother (p= 0.187). However, there was a strong association between infant health problems (p= 0.002), family history of depression (p=<0.001), unhappy with in-laws (p<0.001), presence of husband during pregnancy (p= 0.001), smoking habit of husband (p<0.001) and drinking habit of husband (p=0.001) with post-partum depression.

In this study, the prevalence of post-partum depression was 15.2% which is slightly higher than that reported in a study done among Rajbansi women in Nepal where the prevalence of PPD was 12.27% (Subba, 2013). Similarly, a study conducted in T.U Teaching Hospital (TUTH) among 100 post-partum mothers

Table 7: Association between psychosocial history and Post-partum Depression

Characteristics	Post-Partum Depression				
	Yes		No		
	N	%	N	%	P-Value
Infant Health Problem					
Yes	28	28	72	72	0.002*
No	22	9.6	208	90.4	
Family History of Depression					
Yes	26	54.2	22	45.8	0.0001*
No	24	8.5	258	91.8	
Unhappy with in-laws					
Yes	22	42.3	30	57.7	0.0002*
No	28	10.1	250	89.9	
Present of Husband during Pregnancy					
Yes	10	6.1	154	93.9	0.001*
No	40	24.1	126	75.9	
Smoking Habit of Husband					
Yes	36	40.9	52	59.1	0.0001*
No	14	5.8	228	94.2	
Drinking Habit of Husband					
Yes	46	22.1	162	77.9	0.001*
No	4	3.3	118	96.7	
Child Preference by Family					
Son	40	18	182	82	0.187
Daughter	0	0	10	100	
Both	10	10.2	88	89.8	

revealed 12% prevalence of post-partum depression (Regmi, Sligl, Carter, Grut, & Seear, 2002).

On the contrary, in a recent study conducted in Dhulikhel hospital among 100 post-partum mothers, the overall prevalence of depressive symptoms (defined as EPDS=>13) was 29% (Kunwar, Corey, Sharma, & Risal, 2015) and a cross-sectional study conducted in the Immunization clinic of Maternity Hospital in Kathmandu among 346 women showed the prevalence of post-partum depression as 30% (Giri *et al*., 2015).

In the present study, there was no association between post-partum depression and socio-demographic characteristics of the respondents like age, religion, educational status, occupation, family type and monthly income (Upadhayay et al., 2017). This is similar to the observations reported in a study in Dhulikhel Hospital in which there was no significant association of postpartum depression with socio demographic factors like age, occupation, religion, education, or economic conditions (Kunwar *et al*., 2015).

However, in our study, a significant association was found between post-partum depression and ethnicity. On the contrary, no significant association between ethnicity and post-partum depression was found in a study conducted in Dhulikhel Hospital (Kunwar *et al*., 2015).

Among the obstetric factors - significant association was observed between age at marriage and post-partum depression whereas age at marriage, age at first pregnancy, duration of marriage, sex of the baby, total number of child, type of delivery, place of delivery, complications during pregnancy, miscarriage, smoking or drinking habit and difficulty in breastfeedinghave no significant association with PPD (Shah et al., 2016).

Total number of children also had significant association with post-partum depression in our study. Similarly, sex of the child had strong association with post-partum depression. Recent pregnancy (Planned or unplanned) was also an important factor that was strongly associated with post-partum depression in our study. In contrast, in a cross-sectional study conducted in Dhulikhel Hospital, there was no association between planned

pregnancy and post-partum depression (p value 0.216) (Kunwar *et al.*, 2015). A cross-sectional study conducted in Central Vietnam showed a significant association between breastfeeding problems and post-partum depression (Murray et al., 2015) but in our study no significant association was observed between difficulty in breast-feeding and post-partum depression.

In our study, a significant association was found between Infant health problems and post-partum depression. This is in line with the study carried out at Dhulikhel Hospital where there was a strong association between infant health problems and post-partum depression (Kunwar *et al.*, 2015).

Significant association was observed between family history of depression and PPD & unhappy with in-laws and PPD in our study. This is in agreement with a study conducted at a rural maternity hospital near Bangalore in which significant association was found between PPD and family history of depression as well asunhappy with in-laws (Suguna *et al.*, 2015) despite the differences in racial background.

Presence of husband during pregnancy was significantly associated with PPD in our study. Smoking habit and drinking habit of husband also had significant association with PPD in our study. This is in contrast with the study conducted among Rajbansi women in which they documented an association between PPDand smoking habit but not drinking habit (Sabba, 2013).

According to a study conducted in Tangxia Community, Guangzhou, China, mothers delivering female babies are more likely to be affected with PPD in contrast with mothers with male babies. Preference of boys over girls is also common in Nepal but no significant association was observed between PPD and Child preference by family. (Deng, Xiong, Jiang, Luo, & Chen, 2014).

CONCLUSIONS AND RECOMMENDATIONS

The prevalence of PPD was high in this study and was higher than those from other ethnic groups in Nepal. Obstetric and psychosocial factors were associated with PPD. Prenatal and postnatal counseling service and support to the mothers should be designed, especially focusing on vulnerable groups.

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