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Postpartum Depression: A prospective cohort study in South India

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ABSTRACT

Purpose: To find out the prevalence of postpartum depression and its associated risk factors. Design:A descriptive cross sectional prospective survey with sample of 345 postnatal women. Methods: Women were interviewed in hospital after delivery to collect demographic, marital and obstetrical details and participated in a telephonic structured interview 6 weeks after discharge. Additional data were extracted from the records of the women in the hospital.The instruments used were: Background variables Instrument and Edinburgh Postnatal Depression Scale (EPDS). Descriptive statistics, Chi- square test, Fisher's exact test, odds ratio, and a logistic regression analysis were performed. Findings: 2.9% of the women screened positive for postpartum depression with EDPS. Women's income, unwanted pregnancy for the husband , marital relationship and adverse life events during past one year were significantly associated with PPD at $p < .05$ in univariable analyses. The multivariable analysis identified two predictor variables for depression: unwanted pregnancy for the husband (odds ratio= 0.15, 95% CI = 0.02-0.84 , $p < .03$) and marital relationship (odds ratio= 0.07, 95% CI = 0.01-0.47 , $p < .006$). Conclusions: Mothers who experience unpleasant marital relationship, adverse life events and an unwanted pregnancy, are at increased risk of getting postpartum depression.

Introduction

Childbirth represents for women a time of great vulnerability to become mentally unwell, with postpartum mood disorders representing the most frequent form of maternal morbidity following delivery (Stocky & Lynch, 2000).Postpartum depression is a major public health problem and a thief that steals motherhood. Because child birth is a complex life event associated with numerous bio psychosocial changes, it may trigger psychiatric disorders in women with predisposing genetic or psychosocial vulnerabilities (Gold, 2002).

Mental health disorders in the post partum period have implications for the mother, the newborn and entire family. Such conditions can interfere with attachment to the newborn and family integration, and some may threaten the safety and wellbeing of the mother, the newborn and other children (Lower & Perry, 2007).The effects of postnatal depression on the mother, her marital relationship, and her children make it an important condition to diagnose, treat and prevent (Robinson & Stewart, 2001). Untreated postpartum depression can have adverse long-term effects. For the mother, the episode can be the precursor of chronic recurrent depression. For her children, a mother's ongoing depression can contribute to emotional, behavioral, cognitive and interpersonal problems in later life (Jacobsen, 1999).

Background

A systemic review of the prevalence and incidence of perinatal depression indicated that as many as 19.2% of new mothers experience depression in the first 3 months after delivery,with 14.5% being new episodes of depression(Gavin et al.,2005). The estimates of period prevalence of Post Partum Depression(PPD) in US ranged from 8.5 percent to 11.0 percent at different times during pregnancy and from 6.5 percent to 12.9 percent at different times during the first year postpartum(Gaynes et al.,2005).O'Hara & Swain (1996) in a meta- analysis of 59 studies from North America, Europe, Australasia and Japan (n=12,810 subjects), found an overall prevalence rate of postpartum depression of 13%. This was based on studies that assessed symptoms after at least two weeks postpartum (to avoid confounding of postpartum blues) and used a validated or standardized measure to assess depression.

Women who have suffered from one episode of postpartum-onset major depression (PPMD) experience increased risk for recurrence in the year following another birth. Over 40% of women experiencing a PPD episode may experience a recurrent episode after a subsequent pregnancy(Wisner et al.,2004,).

The postnatal period is well established as an increased time of risk for the development of serious mood disorders. There are three common forms of postpartum affective illness: the blues (baby blues,maternity blues), postpartum (or postnatal) depression and puerperal (postpartum or postnatal) psychosis each of which differs in its prevalence, clinical presentation, and management. Postpartum non-psychotic depression is the most common complication of childbearing affecting approximately 10-15% of women and as such represents a considerable public health problem affecting women and their families (Warner et al., 1996). Ward &Hisley(2011) explain that most post partum women recover from the post partum blues and able to enjoy their newborns and families. However, 8% to 15% of post partum women

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progress to PPD. The recognized risk factors include an undesired/ unplanned pregnancy, a history of depression, recent major life changes, lack of family or social support, financial stress, marital discord, adolescent age and homelessness.

A two-stage survey US National survey (Beck,,Gable,Sakala&Declercq (2011) on post partum depressive symptomatology was conducted among who gave birth in US hospital in 2005.The first stage survey was administered among 1573 women (1373 online,200 telephone interview) to cover experiences, preferences, knowledge and behaviour before pregnancy and in the prenatal, intrapartum and early post partum period. The second stage was follow up survey of stage I participants 6months after their participation in the first stage. II stage sample size was 902 women (859 online,44 telephone).The instruments used in the study were Post partum Depression Screening Scale(PDSS),the Patient Health Questionnaire (PHQ-2) and the Posttraumatic Stress Disorder Symptom Scale -Self Report (PSS-SR).The study revealed that 63% of the women in 1st stage sample screened positive for elevated PPD symptoms with the PDSS and 6months later 42% of the women in the sample screened for elevated PPD symptoms with the PHQ-2.The 2 predictors of elevated posttraumatic stress symptoms and low levels of health promoting behaviours combined to explain 54% of the variance in mothers' post partum depressive symptom scores.

To summarize the published studies in the United States, the range of prevalence rates for elevated postpartum depressive symptoms is 8% to 39% and the significant risk factors for this postpartum mood disorder reported most frequently include low social support, depression history, life stress, prenatal depression, low education and race/ethnicity (Beck et al.,2011).

Morris-Rush,Freda and Bernstein (2003) conducted a screening for PPD in an inner-city population ,USA using EPDS report that 22% (22/121) of the post partum women had a positive screen for PPD.A literature review (Klainin&Arthur,2009) on PPD in Asian cultures involving 64 studies from 17 countries report that the prevalence of PPD in Asian countries ranged from 3.5 to 63.3% and the common risk factors were antenatal depression, unwanted pregnancy,poverty and gender preference.A study conducted by Goyal,Murphy &Cohen (2006) on PPD among immigrant Asian Indian women in USA report that there was a minor depression symptomatology rate of 28% and additional major depressive symptomatology rate of 24%. Findings suggest that Asian Indian women living in United States are just as likely to experience PPD symptomatology as white women.

Sword,et al. have conducted a prospective cohort study to find out the association of mode of delivery with postpartum depression at 6weeks among 2560 women in 11 hospitals in Ontario,Canada.74% (n=1897) participated in a structured telephone interview 6 weeks after discharge using EDPS.A score of ≥ 12 on the EDPS was used as a measure of the PPD.The study found that mode of delivery was not independently associated with postpartum depression and did not factor into the main effects model. The multivariate analysis identified 11 predictor variables for depression, which includes, young maternal age, maternal hospital readmission, non-initiation of breast feeding, post partum health, urinary incontinence, multiparity, low physical and mental health functioning ,low subjective social status, high number of unmet learning need in the hospital, and low social support,

A study by Dubey et al (2012) on prevalence and associated risk factors for PPD in women attending a tertiary hospital,Delhi,India reports that 6% of women were at risk of PPD. Thirty one out of 506 women scored ≥ 10 on the EPDS. Birth of female child, nuclear family structure and poor marital relationship were found to have a statistically significant correlation with peripartum depression.Anuradha and Sebanti (2011) conducted a study on evaluation of PPD in a tertiary hospital in Kolkata among 6000 women on 4th – 7th day postpartum period using Edinburgh Postnatal Depression Scale (EPDS).Mothers who scored 13 and above were diagnosed as having PPD.The study found that the incidence of PPD was 25%. The PPD was significantly associated with poor socioeconomic group, literacy, type of family/family structure, past history of psychiatric illness, history of domestic abuse, obstetric and outcome.

Patel,Rodrigues,&DeSouza(2002) have investigated the effect of risk factors especially gender and poverty on the occurrence and outcome of PPD 270 mothers in Goa,India.The occurrence of PPD was estimated using scores on the Edinburgh Postnatal Depression Scale (EDPS) at 6-8 weeks of delivery and women who scored 12 or more were considered to have postnatal depression.PPD was detected in 59 (23%) of the mothers at 6-8weeks after child birth. Economic deprivation and poor marital relationships were important risk factors for the occurrence and chronicity of depression. The gender of the infant was a determinant of postnatal depression and it modified the effect of other risk factors, such as marital violence and hunger.

Gokaleand AmitVaja(2013) have carried out screening for PPD using EPDS at Government Medical College & Sir Takhtsinghji Hospital, Bhavnagar,Gujarat State,India. Around 200 patients were screened on the first day postnatal. These 200 women were requested to come back again at 6th post natal day and on 6thpostnatal week for rescreening. Out of 200,108 were screened on 6thday while 62 were screened on 6th week post natal. Cut off points 12 was suggested for PPD. The study revealed that the prevalence of depression was 11% at 1 day post partum, 7.4% at 6 day post partum, 3.2% at 6 week post partum. The factors significantly associated with post partum depression were birth of a female child, prim parity, history of miscarriage, negative feelings during pregnancy, past history of psychiatric illness.

Prost et al. (2012) have conducted a study among 5801 mothers around 6 weeks after delivery distress in Jharkhand and Orissa states, India using the Kessler-10 item scale to reveal the predictors of maternal psychological.The study found that 11.5% (95% CI: 10.7–12.3) of mothers had symptoms of distress (K10 score > 15). High maternal age, low asset ownership, health problems in the antepartum, delivery or postpartum periods, caesarean section, an unwanted pregnancy for the mother, small perceived infant size and a stillbirth or neonatal death were all independently associated with an increased risk of distress. The loss of an infant or an unwanted pregnancy increased the risk of distress considerably (AORs: 7.06 95% CI: 5.51–9.04 and 1.49, 95% CI: 1.12–1.97, respectively).

A study (Chandran,Tharyan,Muliyil& Abraham,2002) was conducted on PPD in rural areas of Tamil Nadu,India among 356 postpartum women during 6-12 weeks after delivery. The study found that the incidence of PPD was 11%. Low income, birth of a daughter when a son was desired, relationship difficulties with mother in law and parents,

adverse life events during pregnancy and lack of physical help were risk factors for the onset of PPD.

Research studies have consistently shown that the following risk factors are strong predictors of postpartum depression: depression or anxiety during pregnancy, stressful recent life events, poor social support and a previous history of depression. Moderate predictors of postpartum depression are childcare stress, low self-esteem, maternal neuroticism and difficult infant temperament. Small predictors include obstetric and pregnancy complications, negative cognitive attributions, single marital status, poor relationship with partner, and lower socioeconomic status including income. No relationship was found for ethnicity, maternal age, level of education, parity, or gender of child (in Western societies) (Stewart, Robertson, Dennis, Grace,& Wallington, 2003).

Muzik,Marcus,Heringhausen,& Flynn,2009 state that the postpartum depression screening with the EDPS or simple screening questions should be a priority for post partum follow– up visits to prevent the consequences of the PPD.If postpartum depression is to be prevented by clinical or public health intervention, its risk factors need to be reliably identified (Warner et al., 1996).

Primary prevention can best be accomplished through a preconception planning session in which a woman is assessed for risk factors for vulnerability to depression; interventions are recommended to target the identified risk factors. Early detection through systemic screening can promote secondary and tertiary prevention. Early identification, screening, prevention, and treatment of PPD are vital for improving overall outcomes for the mother and infant, as well as for decreasing mortality and morbidity.It is crucial for nurses to understand and know about the risk factors,signs and symptoms,prevention,and use and interpretation of screening tools and to make appropriate referrals.

The purpose of this study was to assess the prevalence of PPD and its associated risk factors in a cohort of women in South India.

Methods

The study was conducted using a descriptive cross sectional prospective survey. Women were recruited from the postnatal units of a government tertiary hospital in Pondicherry,India. These women were the residents of Pondicherry, and from the rural areas of neighbouring state, Tamil Nadu.The inclusion criteria for women to participate in the study were: All mothers irrespective of mode of delivery and given birth to singleton term newborns at JIPMER (Jawaharlal Institute of Postgraduate Medical Education) hospital, Pondicherry ; competent to give consent ; and can be contacted by telephone during 6 – 8 week of postpartum period. Women were ineligible to participate if they have history of psychiatric illness including the past history of psychotic depression, pregnancy associated and postpartum complications, unable to communicate in Tamil or English language or if their infant is ill and/or required admission to a neonatal intensive care.

A convenient sample of 352 postpartum women was selected against the estimated sample size 300.352 women interviewed to complete the questionnaire with baseline characteristics and 98% (n =345) participated in a structured telephone interview at 6-8 weeks after discharge. Seven women did not attend the telephone calls.

Ethical Considerations

Theresearch proposal was approved by the Institute Research Advisory Committee and the Ethical permission was obtained by the InstituteEthical Committee of JIPMER.We made efforts to refer women with severe depression to JIPMER hospital.

Data Collection

The study group consisted of women who were admitted in the postnatal wards of JIPMER hospital and were followed up at 6-8 weeks postpartum. The data was collected during the January – December 2014. A sample of 352 women who met the criteria were recruited using purposive sampling technique and were interviewed in the postnatal units to collect data regarding demographic characteristics, marital and obstetrical history like age,religion, education, income of the mother, education ,and occupation of the husband, total family income,domicile,type of family, woman's age at marriage, type of marriage,method of marriage, marital relationship for the past one year, parity, previous abortions and miscarriages, total number of children, mode of present delivery, gender of the newborn, wanted/unwanted pregnancy by the spouse, attempted for abortion, son preference by the spouse,and family, received regular antenatal check up, alcohol use by the husband, abuse by the partner , social support, adverse life events in the past one year and breast feeding .These variables were selected on the basis of literature review and clinical knowledge.Additional data were extracted from the records of the women in the hospital.

At 6-8 weeks, following hospital discharge, study participants were contacted to complete a structured telephone interview. The interview incorporated the Edinburgh Postnatal Depression Scale (EDPS) to detect postpartum depression . A score of ≥ 9 on the EDPS was used as a measure PPD, a widely used screening questionnaire for the detection of postnatal depression. EDPS consists of 10 items and each item is scored on a 4-point scale (from 0 - 3), with a total score ranging from 0 to 30. The EDPS was translated into Tamil language and back translation was done. The reliability was estimated and α coefficient value was 0.85.Additionally, during the telephonic interview, women were asked about the type of infant feeding i.e. excusive breast feeding given or not.

Analysis

The occurrence of PPD was estimated by using the scores on the Edinburgh Postnatal Depression Scale at 6-8 weeks after delivery.Women who scored 9 or more were considered to have postnatal depression.The researcher felt that the most of the women were giving socially desirable response in terms of verbally reporting negative emotions and were reluctant to disclose depressive symptoms. Hence, a cut-off of 9 was fixed for this study.

Bivariate analysis associations (Fisher's exact test &chi-square) between background variables and PPD were considered to be the risk factors of PPD . Variables that were significantly ($p \leq .05$) associated with PPD were entered into multivariate logistic regression analysis.The results are expressed as odds ratio (OR), corresponding two-sided 95% confidence intervals and associated p values. All data analyse were performed using SPSS statistical software version 17.

Results

Characteristics of the Study Participants

A total of 345 participants were included in the analyses. Table 1 and 2 present the sample characteristics. Majority of the participants were Hindus by religion; most of the women (66.5%) were below the age 25years andthe majority (78.3%) of their husbands'age was between 25 and 35years; 47.5% and 50.7% of the women and their husbands had educated up to secondary education respectively.

Table 1.DemographicVariables of the Postnatal Mothers (N= 345).

Background Variable	n	%
Wives' Religion		
Hindu	321	93.0
Christian	10	2.9
Muslim	14	4.1
Women's Age (in years)		
15-20	38	11.0
21-25	195	56.5
26-30	99	28.7
31-35	12	3.5
< 35	1	0.3
Husbands' Age (in yrs)		
15-20	-	-
21-25	43	12.5
26-30	172	49.9
31-35	98	28.4
< 35	32	9.3
Women's ' Education		
Illiterate	13	3.8
Primary	12	3.5
Secondary	164	47.5
Higher Secondary	88	25.5
College	68	19.5
Husbands' Education		
Illiterate	26	7.5
Primary	18	5.2
Secondary	175	50.7
Higher Secondary	44	12.8
College	82	23.8
Women's Occupation		
House wife	288	83.5
Unskilled	24	7.0
Skilled	8	2.3
Professional	15	4.3
Business	-	-
Agriculture	10	2.9
Husbands' Occupation		
Daily Labourers	161	46.6
Skilled	95	27.5
Professional	32	9.3
Business	19	5.5
Agriculture	38	10.7
Mother's Income(Rs./month)		
≤ 2000	30	8.7
2001-4000	12	3.5
4001-6000	4	1.2
6001-8000	2	0.6
8001-10000	2	0.6
Above 10000	7	2.0
Nil	288	83.5
Total Family Income(Rs./month)		
≤ 2000	87	25.2
2001-4000	74	21.4
4001-6000	74	21.4
6001-8000	28	8.1
8001-10000	26	7.5
Above 10000	56	16.2
Domicile		
Rural	259	75.1
Urban	86	24.9
Type of Family		
Nuclear	93	27.0
Joint	252	73.0
Women's Age at Marriage(in years)		
≤ 20	153	44.3
21-25	161	46.7
26-30	29	8.4
Above 35	2	0.6
Number of Children		
One	184	53.3
Two	132	38.3
Three	27	7.8
Four	2	0.6

Table 2. Bivariate Analysis of risk factors associated with Post Partum Depression (N=345).

Variable	n	%	PPD		p- value (Fisher's exact test)	Unadjusted Odds Ratio	95% Confidence Interval
			Yes	No			
Mothers' Age (in years)							
≤ 25	232	67.2	7	225	1.000		
>25	113	32.8	3	110		1.14	0.28-4.49
Husbands' Age (in yrs)							
≤ 30							
>30	215	62.3	5	210			
	130	37.7	5	125	.512	0.59	0.16-2.09
Wives' Religion							
Hindu	321	93	10	311	1.000		
Non- Hindu	24	27	0	24		0.96	0.95-0.98
Mothers' Education							
Up to Secondary	189	54.8	7	182			
Above Secondary	156	45.2	3	153	.521	1.96	0.49-7.7
Husbands' Education							
Up to Secondary	219	63.5	8	211			
Above Secondary	126	36.5	2	124	.337	2.35	0.49-11.24
Mothers' Occupation							
Home Maker	288	83.5	6	282			
Employed	57	16.5	4	53	.065	0.28	0.07-1.03
Husbands' Occupation							
Daily Labourers	161	46.7	5	156			
Skilled/Professional	127	36.8	4	123			
Self Employed	57	16.5	1	56	.853[a]		
Women's Income(Rs./month)							
Receiving Income	57	16.5	5	52			
Nil Income	288	83.5	5	283	.014	5.44	1.52-19.46
Total Family Income (Rs./month)							
≤ 4000	159	46.1	3	156			
>4000	186	53.9	7	179	.352	0.49	0.12-1.93
Domicile							
Rural	259	75.1	8	151	1.000		
Urban	86	24.9	2	84		1.33	0.27-6.42
Type of Family							
Nuclear	93	27	3	90			
Joint	252	73	7	245	.773	1.16	0.29-4.60
Mothers' Age at Marriage(in years)							
≤ 20	153	44.3	5	148			
>20	192	55.7	5	187	.755	1.26	0.35-4.44
Type of Marriage							
Consanguineous	73	21.2	2	71	1.000		
Non consanguineous	272	78.8	8	264		0.93	0.19-4.47
Method of Marriage							
Arranged by the Parents	310	89.9	8	302			
Not Arranged by Parents	35	10.1	2	33	.269	0.43	0.08-2.14
Number of Children							
≤ 2	316	91.6	8	302			
>2	29	8.4	2	27	.202	0.35	0.07-1.73
Parity							
Primi Parity	184	53.3	3	181			
Multi Parity	161	46.7	7	154	.198	0.365	0.09-1.43
Type of Delivery							
Vaginal Delivery	293	84.9	7	286			
LSCS	52	15.1	3	49	.179	0.400	0.10-1.59
Sex of the New Born							
Male	186	53.9	7	180			
Female	159	46.1	3	155	.758	1.292	0.35-4.66
Acceptance of the Pregnancy by the Mother							
Wanted	333	96.5	9	324			
Unwanted	12	3.5	1	11	.301	0.306	0.03-2.62
Acceptance of the Pregnancy by the Husband							
Wanted	333	94.8	7	320			
Unwanted	12	5.2	3	15	.011	0.109	0.02- 0.46

Variable	n	%	PPD		p- value (Fisher's exact test)	Unadjusted Odds Ratio	95% Confidence Interval
			Yes	No			
Attemptedto Abort the Pregnancy							
Yes	13	3.8	1	12			
No	332	96.2	9	323	.322	2.99	0.35-25.54
History of Miscarriage /Stillbirth							
Yes	75	21.7	2	73			
No	270	78.3	8	262	1.000	0.897	0.18-4.31
Had Regular Antenatal Check up							
Yes	339	98.3	10	329			
No	6	1.7	0	6	1.000	0.971	0.95-0.98
Son preference by the Mother	51	14.8	0	51			
Wanted son, delivered daughter	66	19.1	2	64			
Wanted son, delivered son							
No Son Preference	228	66.1	8	220	.401[a]		
Son preference by the Father							
Wanted son, delivered	52	15.1	2	50			
Daughter	75	21.7	4	71			
Wanted son, delivered son	218	63.2	4	214			
No Son Preference					.270[a]		
Family Pressure for Male Child							
Yes	27	7.8	2	25			
No	318	92.2	8	310	.180	0.300	0.62-15.38
Marital Relationship (past1year)							
Harmonious	336	97.4	7	329			
Disharmonious	9	2.6	3	6	.001	0.043	0.009- 0.206
Alcohol Use by the Husband							
Yes	119	34.5	4	115			
No	226	65.5	6	220	.742	1.275	0.35-4.61
Abuse by the Husband (Past1 yr) (Physical/Psychological/Verbal)							
Yes							
No	119	34.5	2	25			
	226	65.5	8	310	.180	3.10	0.62-15.38
Adverse Life Events (Past 1 Yr)							
Yes	94	27.2	6	88			
No	251	72.8	4	247	.028	4.210	1.16-15.26
Family/Social Support							
Yes	309	89.6	7	302			
No	36	10.4	3	33	.075	0.255	0.06- 1.03
Breast Feeding Given							
Yes	342	99.1	10	332	1.000		
No	3	0.9	0	3		0.971	0.95- 0.98

[a] chi-square test

By occupation, 88.5% of the women were home makers and not receiving income;66.6% of their husbands were daily labourers.46% had total family incomes ≤ Rs.4000/ month. Majority (75.1%) of them were from rural areas; 73 % of them lived in extended or joint families. 44.3%of the women's age at marriage was 20 and less than 20; 21.2% had consanguineous marriage.

Majority (89.9%) of the women's marriages were arranged by the parents. Majority of them (91.6%) had total children up to 2. 15.1 % of the women were delivered by Caesarean section; 53% of them delivered male child. 3.5% and 5.2% of the women and their husbands respectively considered their last pregnancy as unwanted and 3.8%of them had failure to abort the last pregnancy.33.9% and 36.8% of the women and their husbands wanted son respectively . 65.5% of the women expressed that their husband do not consume alcohol at all; Abuse by the husbands were experienced by the 34.5% of the women and 2.6% of them expressed that their marital relationship was not harmonious for the past one year.27.2% of the women experienced adverse life events during the past one year ; 89.6% of the women expressed that they have good family and social support.

Prevalence of Postpartum Depression

A total of 345 were interviewedusing EDPS Tamil language translated questionnaire at 6 – 8 weeks after childbirth through telephone.The prevalence of postpartum depression was 2.9% among the women with no previous depression (Figure.1).10 out of 345 postnatal women had a positive score (PPD ≤ 9) and the sample's mean PPD score was 3.54 ± 2.39 (Range of scores = 0-22).

Prevalence of Post Partum Depression

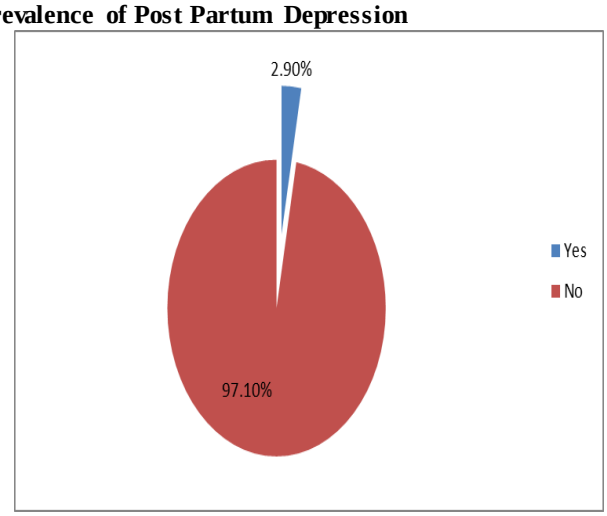

Figure1. Prevalence of post partum depression (N = 345)

Risk Factors of Postpartum Depression

Table 1 reports the results of univariable analyses (Fisher's exact test & chi-square) exploring the association of potential risk factors with PPD . Of the variables examined,women's income (odds ratio= 5.44 ,CI= 1.52-19.46, p< . 014),unwanted pregnancy for the husband (odds ratio= 0.10 ,CI= 0.02-0.46, p<.011), marital relationship (odds ratio= 0..04 ,CI= 0.009-0.206, p<.001)and adverse life events(odds ratio= 4.21 ,CI= 1.16-15.26, p<.028) during past one year were significantly associated with PPD at p < .05 in univariable analyses. In multivariable analysis (Table 3), unwanted pregnancy for the husband (odds ratio= 0.15,95%CI=0.02-0.84 ,p < .03) and marital relationship (odds ratio= 0.07, 95% CI =0.01-0.47 , p < .006) remained significantly associated with PPD.

Table 3. Predictors of Postpartum Depression (N = 345; Logistic Regression Analysis).

Predictors	B	SE	Wald (df=1)	p	Odds ratio	95% Confidence Interval
Incomeof the women	1.09	0.73	2.25	.133	2.992	0.71-12.50
Unwanted pregnancy for theHusband	-1.85	0.86	4.66	.031	0.156	0.02- 0.84
Adverse Life Events	0.85	0.73	1.35	.245	2.348	0.55- 9.91
Marital Relationship	-2.59	0.94	7.56	.006	0.074	0.01- 0.47
Constant	5.28	2.71	3.78	.052		

Discussion

Our baseline characteristics of the postnatal women portray that a highly rural ,below the age of 30 ,homemakers by occupation, literate population with low socioeconomic status, living in extended families and nearly half of them got married before the age of 20.

The purpose ofthe current study was to find the prevalence of PPD and its associated risk factors among the postnatal women. Thestudy results showed that the prevalence of Postpartum Depression (PPD) was 2.9% at 6-8 weeks postnatal period with the mean score of 3.54(SD-2.39).This finding is similar (Prevalence = 3.2%) to that reported in the study conducted in Gujarat state, India by Gokale&AmitVaja(2009) which also used EDPS, but with a cut off score of 12 rather than 9.Dubey et al (2012) report that 6% of women were at risk of PPD in a study conducted in Delhi, India, who also used EDPS, with a cut off score of 10.A literature review (Klainin&Arthur,2009) on PPD in Asian cultures involving 64 studies from 17 countries report that the prevalence of PPD in Asian countries ranged from 3.5 to 63.3%.

However,a study conducted by Chandran,Tharyan, Muliyil& Abraham (2002) in the rural areas of Tamil Nadu,India report that incidence of PPD was 11% ;A study in Kolkatta, India (Anuradha and Sebanti,2011) found that the incidence of PPD was 25%;Patel,Rodrigues,&DeSouza(2002) report that PPD was detected among 23% of the mothers at 6-8weeks after child birth using EDPS ; Prost et al report that 11.5% of mothers had symptoms of distress (K10 score > 15) in Northern India.

The possible explanation for the relatively low prevalence of postpartum depression found in this study could be that some social characteristics in these communities are protective against maternal psychological distress. 89.6% of them expressed that they have good family and social support. In South India, especially in Pondicherry and Tamil Nadu states, women are sent to their mothers' houses during their pregnancy mostly at 7th month of gestation and their health is well taken care by their parents till the 3rd month after child birth. Another possible reason for the low score may be, as explained earlier, the responses of the subjects may not always have been accurate because of a tendency to answer in a socially desirable way.

Regarding the risk factors, this study replicated the role of established risk factors, such as women's income, acceptance of the pregnancy by the husband,marital relationship and adverse life eventson PPD through bivariate analysis(Patel,Rodrigues,& DeSouza,2002; Dennis,Janssen& Singer ; Klainin& Arthur,2009 ;Stewart et al.,2003).

In the present study,just two factors, unwanted pregnancy for the husband and marital relationship were found to be statistically significant in the multivariate analysis. The mean PPD score was significantly high among the postnatal women with history of unpleasant marital relationship (6.22) than the women with pleasant marital relationship (3.44). Similarly, there was a significant difference on the mean PPD score between the women whose husbands' acceptance as wanted (3.44) and unwanted pregnancy(4.78).These two predictorvariables of PPD in our study have been reported in studies of risk factors for PPD conducted in different parts of the world (Patel,Rodrigues,& DeSouza,2002;Beck,Gable,Sakala, & Declercq,2011;Dubey et al.,2012; Chandran,Tharyan, Muliyil& Abraham,2002).Prost et al report that the loss of an infant or an unwanted pregnancy for the mother increased the risk of distress considerably.

Some notable variables like maternal age, level of education , total family income, number of children, women's age at marriage,parity,mode of delivery, gender of the newborn, son preference, breast feeding, type of family , marital violence were not significantly related to PPD in our study.

Clinical Implications

A multifactorial approach, which combines the contributions of the psychological,psychosocial, and biological factors, is likely to be most beneficial as it recognizes various etiological factors and individual variations (Dennis, C.L. , 2003).

Health care providers need to become cognizant of the potential for postpartum depression and become skilled in the detection of this mood disorder. Nurses in the hospitals, and primary health centres and community health workers shouldbe trained in identification of risk factors, signs, and symptoms, proper referrals during pregnancy and proper counsellingfor all women. Health care providers should emphasize to women that getting enough sleep, eating a healthy diet, exercising, and managing stress are critical not only for their physical health but also for their mental health.

Conclusion

Mothers who experience unpleasant marital relationship, adverse life events and an unwanted pregnancy, are at increased risk of getting postpartum depression. We suggest that the mental health care must be integrated at all levels of health care system especially, with public health rural health system to reach the underserved population.

The nurse can play an important role in assisting women and their partners with postpartum adjustment. Nurses need to educate themselves about this disorder to facilitate early recognition of signs and symptoms of it, which, in turn, would make early treatment possible, thus supporting recovery. Discuss factors that may increase a woman's vulnerability to assess during the postpartum period, so couples can understand and respond to those problems if they occur.Furthermore, greater knowledge could contribute to providing more effective and compassionate care to these women. In conclusion, evidence to date suggests promising interventions that, taken together and targeted to specific risk factors, may help reduce the risks of postpartum depression.

Limitations

This study had three main limitations: we did not collect data on a number of factors known to influence the risk of postpartum depression, such as antepartum depression, or a mother's past birth history, including the sex of her previous children, relationship with in-laws , child care stress and were therefore unable to quantify their importance as predictors of postpartum distress. Secondly, family/social support was by a dichotomy question with yes or No option which may not be accurate. Finally, samples were selected by non – probability sampling method.

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