Online Journal of Health and Allied Sciences
Peer Reviewed, Open Access, Free Online Journal
Published Quarterly : Mangalore, South India : ISSN 0972-5997
Volume 9, Issue 2; Apr-Jun 2010

Original Article:

A comparative study of frequency of postnatal depression among subjects with normal and caesarean deliveries

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Citation: Sankapithilu GJ, Nagaraj AKM, Bhat SU, Raveesh BN, Nagaraja V. A comparative study of frequency of postnatal depression among subjects with normal and caesarean deliveries. *Online J Health Allied Scs.* 2010;9(2):4
URL: http://www.ojhas.org/issue34/2010-2-4.htm
Open Access Archives: http://cogprints.org/view/subjects/OJHAS.html and http://openmed.nic.in/view/subjects/ojhas.html

Submitted: May 12, 2010; Accepted: Jul 25, 2010; Published: Jul 30, 2010

Abstract:
Background: The prevalence of postnatal depression (PND) is 12-15%. Recent studies are equivocal about the earlier inference that PND is higher among caesarian than normal delivery. Objective: The aim of this study is to investigate the frequency of PND among the Indian women and the association between the mode of delivery and PND. **Material and method:** Fifty subjects each; having delivered normally and by caesarian section was chosen. All the women were within 3 months post delivery and could understand Kannada language. Those who consented were asked to complete the Edinburgh Postnatal Depression Scale (EPDS). Those found to have scores suggestive of depression on EPDS were assessed for depression according to ICD-10. The data was analyzed using paired t test and chi square test. **Result and conclusion:** Among Post caesarean subjects, depression was diagnosed in 20% (n=10) as compared to 16% (n=8) in subjects that delivered normally. However there was no significant difference in the frequency of depression among the two groups. Due to the small sample size the results cannot be generalized.
Key Words: Postnatal depression, EPDS, Caesarian delivery

Introduction:

Depression can be described as feeling sad, blue, unhappy, miserable, or down in the dumps. Most of us feel this way once in a while for brief periods. But true clinical depression is a mood disorder in which feelings of sadness, loss, anger, or frustration interfere with everyday life for an extended time. Depression can be mild, moderate, or severe. Depressive disorders are the major health problems because they occur commonly throughout life, cause considerable suffering, and often signal the beginning of long-term problems. Results from epidemiological studies suggest that there are increased rates of major depression especially for cohorts born since 1945 with earlier age of onset, in adolescence and early adulthood, persistent gender effects for women, and family effects for first-degree relatives.(1) The one-year prevalence of major depression in adults is usually estimated to range between 9% and 14% in the general population. The Global Burden of Disease study predicts that unipolar depression will become the second most important cause of disability on a world-wide basis by the year 2020.(2)

Depression having an onset usually during the first 3 months after delivery is called postnatal depression (PND) or peripartum depression. Major depression in women has a peak onset during the childbearing years.(3) It has been successfully argued that this peak is not simply related to more help-seeking behavior of women or just perceiving life events as more stressful than men.(4) Three different postnatal psychiatric disorders may appear in mothers during the 12 months following delivery, including the maternity blues, puerperal psychosis and postnatal depression. The most common mood disorder associated with childbirth is unipolar major or minor depression occurring at any time during the first postnatal year. PND is second only to caesarean section as the most frequent and serious complication of childbirth.(5) After pregnancy, hormonal changes in a woman's body may trigger symptoms of depression. During pregnancy, the amount of two female hormones, estrogen and progesterone, in a woman's body increases greatly. In the first 24 hours after childbirth, the amount of these hormones rapidly drops back down to their normal non-pregnant levels. This rapid change in hormone levels may lead to depression, just as smaller changes in hormones can affect a woman's mood before she gets her menstrual period. Occasionally, levels of thyroid hormones may also drop after giving birth. Antenatal and community studies suggest that 12 to 15 % of women suffer a non psychotic depressive disorder in the weeks following childbirth.(6) Despite there being no great differences in the frequency of PND worldwide(7), and the identification of PND in several non-western settings, the emphasis towards recognition of PND among the Asian population is inadequate. Evidence from social workers suggests that Asian women are as likely to experience PND as Caucasian women. For immigrant women, changes experienced in lifestyle, difficulties in language and communication, along with the usual stressors like adaptation

to marriage, life with the in-laws and poor child birth experience during delivery can exacerbate the stresses of parenthood. Overall, women are not more likely to get depression in the first year after their babies are born than women of a similar age who have not recently given birth, but the risk of getting depression is much higher than average in the first few weeks after having a baby. In the first five weeks after childbirth, they are three times more likely to get depression than a woman who has not had a baby in the last year.(8)

It has been shown that major and minor depression, anxiety disorders and adjustment disorder with depressed mood are more prevalent in the first three months postpartum than in age-matched non-childbearing women. Between 40% and 70% of cases of postnatal depression have their onset in the first three months postpartum. PND often persists for many months, with estimates that 25% to 60% of cases remit within three to six months postpartum and a further 15% to 25% will remit within 12 months. A smaller proportion of cases continue for years, with inadequate treatment probably contributing to chronicity.(9)

There appears to be a similar prevalence in western and non-western cultures. However, prevalence estimates are often based on inconsistent timing of assessments and varying methods of diagnosis with small or unrepresentative subject populations. Relying entirely on self-report measures to assess depression in postpartum samples may produce questionable results (higher estimates usually occur with self-report measures than with diagnostic interview schedules). Many women experience significant somatic and cognitive-affective changes following childbirth, but may not be clinically depressed. These changes may be part of normal postpartum adjustment. Health professionals need to be cautious to discriminate between difficult marital and parenting adjustments in the early postnatal period and the symptoms of clinical depression. Thus administering diagnostic interview schedules is a must to confirm the presence of a clinical syndrome of depression detected by rating scales/questionnaires. The table given below has the diagnostic criteria of depression as per the two major diagnostic manuals.

Table 1: Nosological status of depressive disorder (10,11)

ICD-10

Core symptoms

A. Depressed mood
B. Loss of interest and enjoyment
C. Easy fatigability

Accessory symptoms

A. Reduced concentration and attention
B. Reduced self esteem and self confidence
C. Ideas of guilt and unworthiness
D. Bleak and pessimistic views of future
E. Ideas or acts of self harm or suicide
F. Disturbed sleep
G. Diminished appetite

Depression graded according to the presence of core and accessory symptoms:

- Mild depression: 2 core and 2 accessory symptoms
- Moderate depression: 2 core and 3 or more accessory symptoms
- Severe depression: All 3 core and 3 or more accessory symptoms

For depressive episodes of all three grades of severity, a duration of at least 2 weeks is usually required for diagnosis, but shorter periods may be reasonable if symptoms are unusually severe and of rapid onset.

DSM IV TR

Major Depressive Episode

A. Five (or more) of the following symptoms have been present during the same 2-week period and represent a change from previous functioning; at least one of the symptoms is either (1) depressed mood or (2) loss of interest or pleasure.

Note: Do note include symptoms that are clearly due to a general medical condition, or mood-incongruent delusions or hallucinations.

1. Depressed mood most of the day, nearly every day, as indicated by either subjective report (e.g., feels sad or empty) or observation made by others (e.g., appears tearful). Note: In children and adolescents, can be irritable mood.
2. Markedly diminished interest or pleasure in all, or almost all, activities most of the day, nearly every day (as indicated by either subjective account or observation made by others)
3. Significant weight loss when not dieting or weight gain (e.g., a change of more than 5% of body weight in a month), or decrease or increase in appetite nearly every day. Note: In children, consider failure to make expected weight gains.
4. Insomnia or hypersonic nearly every day
5. Psychomotor agitation or retardation nearly every day (observable by others, not merely subjective feelings of restlessness or being slowed down)
6. Fatigue or loss of energy nearly every day
7. Feelings of worthlessness or excessive or inappropriate guilt (which may be delusional) nearly every day (not merely self-reproach or guilt about being sick)
8. Diminished ability to think or concentrate, or indecisiveness, nearly every day (either by subjective account or as observed by others)
9. Recurrent thoughts of death (not just fear of dying), recurrent suicidal ideation without a specific plan, or a suicide attempt or a specific plan for committing suicide

B. The symptoms do not meet criteria for a Mixed Episode.

C. The symptoms cause clinically significant distress or impairment in social, occupational, or other important areas of functioning.

D. The symptoms are not due to the direct physiological effects of a substance (e.g., a drug of abuse, a medication) or a general medical condition (e.g., hypothyroidism).

E. The symptoms are not better accounted for by Bereavement, i.e., after the loss of a loved one, the symptoms persist for longer than 2 months or are characterized by marked functional impairment, morbid preoccupation with worthlessness, suicidal ideation, psychotic symptoms, or psychomotor retardation.

Postnatal depression is the most common complication of childbearing.(7) In this context the EPDS (Edinburg postnatal depression scale) was developed by Cox and his co-workers to screen specifically for PND in a community sample and concentrate on psychic aspects of PND.(12)

Many aspects of postpartum depression have been studied (biochemical effects, socioeconomic effects, etc.), but little has been done to study the relationship between actual birth experience and the incidence and degree of postpartum depression. There has, however, been one study indicating that postpartum depression is more prevalent among women who have had caesarian births than women who have had normal vaginal deliveries. These researchers have found that the increased rates of postpartum depression among caesarean subjects compared to those who underwent a normal delivery were significant. The researchers also found that among the caesarean subjects, those who had general anesthesia (a significant intervention) displayed higher depression rates than those who were given an epidural (the milder intervention). A non-significant finding revealed that the depressive illness of caesarean patients started sooner after birth than the control group. (13) However the recent evidence in this regard is equivocal.(25-28)

The aim of this study is to investigate the frequency of PND in Indian women getting delivered in a tertiary hospital and the association between the mode of delivery and postnatal depression.

Materials and Methods:

The study sample was taken from the pediatric out-patient department of the tertiary hospital by name Cheluvamba hospital, which is a teaching hospital attached to the Mysore Medical College and Research Institute, located at Mysore, Karnataka. Sample was collected during Oct 2009 to Feb 2010. This public hospital renders health services to women within both the rural and urban areas of Mysore and adjoining districts.

This is a cross sectional hospital based study where in the patients were chosen by purposive sampling technique. Patients with co-morbid physical and psychiatric illnesses were excluded. All the women were within three months post delivery and could understand Kannada. The informed consent was taken prior to their participation in the study. Women who did not know Kannada were not included.

A total of 100 subjects were selected, of which 50 women delivered by normal delivery and 50 by caesarean section. The subjects were selected from the pediatric OPD when they came for the first monthly follow up of their children. After obtaining the informed consent, the socio- demographic data was collected initially from the subjects. Then each of them were provided with the Kannada version of the EPDS and allowed to fill guiding them wherever they had queries. For illiterates, the author assisted in filling the questionnaire by vernacular translation. A cut-off score of more than 12 was considered for the presence of depression. Those who scored more than 12 on EPDS were interviewed by a psychiatrist as per the criteria of ICD 10 to diagnose depression. The psychiatrist was blind to the EPDS score. The assessments on EPDS and ICD 10 for those subjects were done on the same day.

The Edinburgh postnatal depression scale: The EPDS was originally developed to assist health professionals to screen community samples of postnatal mothers for depressive symptoms following childbirth, after a validation study on 84 postpartal women. It is a ten item questionnaire, each item scored on a severity scale of 0 to 3, giving a total score ranging from 0 to 30. It is recommended to rate the presence of each symptom during the last 7 days. It is easy to complete and found to be acceptable among child bearing women. The cut-off score approved in many of the validation studies is 12-13. It has a sensitivity of 86%, specificity and positive predictive value (PPV) of 78% at this cutoff score. If the cut-off is lowered to 9–10, the EPDS has 100% specificity and sensitivity of 76%. (14)

The scale is a reliable reflection of women's mood at the time of completion, and a useful indicator of those who may be suffering from depression. A score of over 12 indicates the likelihood of depression, but does not provide a measure of severity; as some women who scored over 18 met DSM-II criteria for minor depression; and others scoring 14 to 16 met the criteria for major depression. Therefore, EPDS scores should not be interpreted as indicating diagnosis in either clinical settings or for research purposes. The EPDS does not predict postnatal depression. The optimal score threshold of 12.5 has been confirmed in subsequent studies.(15) However, one study reported that with the recommended cut-off level of 13, three women who had major depression for at least a year were not detected. False negative scores are a serious problem in clinical practice, and clinical judgment must always take precedence over scores on a self report scale. One study recommended a cut-off of 14–15 in screening for major depression, as all cases of RDC major depression were detected at this level. The selection of a cut-off score depends upon the purpose of the assessment and a lower threshold may be useful for community screening to identify all possible cases of depression.(16)

The original EPDS scale was used to create a unique completely translated version of the scale in kannada by the author who is competent in speaking, reading and writing Kannada. This Kannada translation was given to a linguist who was blind to the English version of EPDS and asked to back translate it to English. The translated version was completely similar to the English version of the original EPDS.

Statistical analysis : The statistical analysis was performed using SPSS version 11.0 for windows. Descriptive statistics were applied to obtain means and frequencies of socioeconomic and clinical data of the sample. The clinical data as well as the scores on EPDS were evenly matching across the two study groups. Hence paired t test was used for comparative statistics of scores on EPDS. To analyze the level of significance in frequency of depression across the two groups, chi-square test was used.

Results:

This is a hospital based cross sectional study, in which we compared 50 women each having delivered normally and by caesarian section method. The groups were evenly matched with respect to clinical variables like age, weight, height and blood pressure as well as years of education. This has been summarized in the Table 2.

Table 2: Physiological Variables

Items	Mean ± Standard deviation	t value	P value
Age			
Normal(N=50)	24.30 ±3.82	1.13	0.26
Caesarian(N=50)	23.46±3.59		
Systolic BP (mm of Hg)			
Normal(N=50)	118.80±10.10	-4.83	0.63
Caesarian(N=50)	119.88±12.16		
Diastolic BP (mm of Hg)			
Normal(N=50)	76.24±8.02	-4.43	0.65
Caesarian(N=50)	77.12±11.54		
Weight in kg			
Normal(N=50)	58.72±7.67	-0.45	0.64
Caesarian(N=50)	59.36±6.19		
Years of education			
Normal(N=50)	7.44±5.05	0.62	0.53
Caesarian(N=50)	6.72±5.96		
Height in cm			
Normal(N=50)	147.98±7.18	-0.54	0.58
Caesarian(N=50)	148.78±7.43		

Majority of the women (51%) were within the age group of 21- 25 years. Most of them were house wives (45%), thirty percent of them were laborers and two percent were students. Majority of them (53%) belonged to the lower middle class. Sixty percent of the women lived in the extended family set up, rest of them in the nuclear family. Eleven percent was illiterates. Majority of the women (83%) belonged to the rural and suburban areas of Mysore, Chamarajnagar and Mandya districts in Karnataka. The above demographic variables did not vary significantly across the two study groups.

The mean EPDS scores of the total sample (N=100) was 10.03± 5.89. Individual mean scores of each of the items in the EPDS as well as the total score, with respect to both normal and caesarian section has been summarized in the table 3. The comparison of the scores between the two modes of delivery showed that women with caesarian delivery had higher rates of postnatal depression than normal delivery, though it was not statistically significant. Among the mean values of individual items in the EPDS, the item which assesses how the person reacts to everyday problems (item6) significantly varied (p=0.01) across the two groups, favoring normal delivery as shown in Table 3.

Table 3: Scores on EPDS across the two groups

Items		Mean ±SD	t value	P value
EPDS1	Normal(N=50)	1.22±1.09	-0.19	0.84
	Caesarian(N=50)	1.26±0.94		
EPDS2	Normal(N=50)	1.22±1.21	-0.18	0.85
	Caesarian(N=50)	1.18±0.94		
EPDS3	Normal(N=50)	0.82±0.84	-1.06	0.28
	Caesarian(N=50)	1.02±1.02		
EPDS4	Normal(N=50)	1.22±1.03	-0.57	0.56
	Caesarian(N=50)	1.34±1.04		
EPDS5	Normal(N=50)	1.00±0.94	-1.28	0.20
	Caesarian(N=50)	1.24±0.91		
EPDS6	Normal(N=50)	0.64±0.85	-2.61	0.01
	Caesarian(N=50)	1.10±0.90		
EPDS7	Normal(N=50)	0.74±0.82	-0.98	0.32
	Caesarian(N=50)	0.90±0.78		
EPDS8	Normal(N=50)	0.76±0.79	-1.20	0.23
	Caesarian(N=50)	0.96±0.85		
EPDS9	Normal(N=50)	0.94±0.84	-0.37	0.70
	Caesarian(N=50)	0.88±0.74		
EPDS10	Normal(N=50)	0.68±0.84	-0.26	0.79
	Caesarian(N=50)	0.72±0.64		
EPDS (Total)	Normal(N=50)	9.26±6.38	-1.31	0.19
	Caesarian(N=50)	10.80±5.31		

EPDS detected depression in 30% of the subjects at a cutoff score of 13. (Score of up to 12 was considered as normal). In that, (n=13) 26% of the women who delivered normally were detected to have depression as compared to (n=17) 34% in women delivering by caesarian section. On evaluation of these 30% subjects by ICD-10, 18% of them were found to have syndromal depression. This is represented in the bar diagram below.

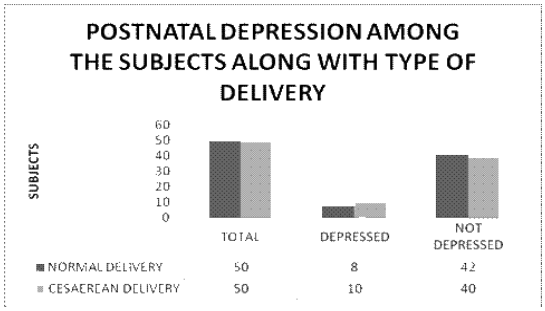

Fig 1: Proportion of depressed and non-depressed patients

Further, among the two groups, 16% of those who delivered normally were depressed as compared to 20% by caesarian delivery. On comparing the two groups using the chi-square test, it was found that they did not differ significantly (p=0.738).

Discussion:

The present investigation was undertaken to study whether there is any difference in the frequency of postnatal depression for different modes of delivery. The available recent literature is equivocal regarding the postnatal complications after cesarean delivery.(17,18) Thus the study was carried out on a hypothesis generated based on the available literature. Out of a sample size of 100 obtained by purposive sampling technique, 18% was found to be depressed in this cross-sectional study. This corresponds to the world-wide prevalence rate of 12-15% found commonly in many of the community surveys of postnatal depression.(19-23) however some of the studies have demonstrated PND in up to 60%.(24) Further, on comparison of the two study groups, 16% of those who delivered by normal delivery were found to have depression as compared to 20% among the subjects of cesarean delivery. Though the latter developed depression slightly more than the former, there was no statistical significance. The authors did not come across a similar cross-sectional comparative study of modes of delivery for PND. However there are studies that have compared quality of life in women after normal vaginal delivery and cesarean section.(17,25-27) These recent studies infer that there is no significant advantage of one mode of delivery over the other for mental health related quality of life. But the physical health related quality of life was better with normal vaginal delivery. In one study, mothers in normal delivery group reported a better health related quality of life and slightly scored higher (better) on the SF-36 questionnaire. However the authors of that study note that the low sample size (n=100) limit their results to be generalized.(17) The recent evidence from a meta-analysis study also does not support significant differences in postpartum depression between women who have normal vaginal delivery or caesarean section.(28) Our study also supports this finding.

This is a cross-sectional study where subjects were recruited by purposive sampling technique. The subjects were assessed one month after delivery. Most of the studies in this area are prospective ones where assessments were made at two or three times during early post-partum.(17,22,23,29) The advantage with cross-sectional study is that there is no attrition. Further, the incidence of PND being more common during the first three months following delivery, the time period of assessment is crucial. Prospective studies are useful in assessing the speed of recovery from depression, which may vary for different modes of delivery. However our aim was to know whether the rates of PND differed for different modes of delivery and hence single assessment a month after delivery was preferred.

Many studies have looked into the biological and psycho-social etiological factors for PND. The most accepted biological factors are the sudden change in reproductive hormonal levels, past and family history of depressive disorder.(5,6,30-32) Most common psycho-social factors, especially in Indian set up are gender bias (preference to male child), violence against women, economic deprivation and poor social support.(22) However we did not emphasize on such factors in our study. A study observed that adverse psychological impact was more severe with emergency caesarian section than with elective ones.(13) We did not look into such an effect in our study. Though our study has reported rates of depression similar to other studies, and also supports other studies in having no significant difference in the rates of psychological morbidity for different modes of delivery, our sample size is small. Thus we cannot generalize the results of this study.

Acknowledgements:
The authors wish to graciously thank Prof. Lancy D'souza, Department of Psychology, University of Mysore for statistical analysis of the data. We are also grateful to Dr Krishnamurthy, Prof. of pediatrics and Medical Superintendent, Cheluvambha hospital, Mysore for his permission to do the project at Cheluvambha hospital. Our sincere thanks to Dr. Raj Gopal and Dr. Narendra Kumar, faculty of the Dept of Psychiatry, Mysore Medical college and Research Institute, Mysore for the review of the manuscript.

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