Research Article

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A prospective epidemiological study on postpartum blues and its associated risk factors

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Abstract

Background: Postpartum blues may be seen very commonly in all the women who delivered babies. A newborn is always a blessing to women but it can be very tough for some women. Postpartum means the period after the delivery of a newborn. A greater number of women will experience postpartum blues during this period. The main purpose of this study was to measure the prevalence and risk factors of postpartum blues among women immediately after delivery.

Materials and methods: We conducted a prospective cross-sectional study to assess the Prevalence and associated risk factors of Postpartum Blues comprising 104 postpartum women on 3rd day of delivery at St. Joseph General Hospital from October 2022 to March 2023. Postpartum Blues was estimated with the Kennerley and Gath Blues questionnaire and a mean score of greater than or equal to 7 was taken as cut-off. Subjects also completed the Edinburgh post-natal depression (EPDS) questionnaire. The socio-demographic and obstetric history was also collected from the subjects.

Statistical consideration: All the raw data was collected, and entered in an Excel sheet 2010 in Windows 10 version, the statistical analysis was done by SPSS software version 29.0.2.0 (20) by chi-square test, Binary logistic regression statistical method for determining the significant P-value.

Results: The prevalence of maternity blues was found to be 32.7%. Body Mass Index (P value = 0.04,), Pregnancy-Induced Hypertension (PIH, P value = 0.03, OD = 4.0001), and Senior Secondary Stage under the level of education (P = 0.05) were considered as major risk factors of PPB with Kennerley and Gath scale, which shows that these factors have a significant association with post-partum blues.
Conclusion: Postnatal Blues is the most prevalent condition in the present scenario yet it is under-diagnosed. Healthcare professionals should strive hard to identify it and prevent its progression to postnatal depression.

Introduction

Postpartum blues is a condition in which a mother experiences low mood and mild depressive symptoms that are transient and self-limited. It is the mildest form of mood disturbance observed in women after delivery. It is also known as baby blues. It is observed in the first 10 days of the postpartum period and it rises to peak level on the 3rd to 5th day after childbirth and it will drop off after the 12th day of the baby's birth. The characteristic features of postpartum blues are mood swings, panic attacks, anxiety, irritability, insomnia, loss of appetite, restlessness, feeling emotional, bursting into tears for no appropriate reason, and depression. It will be converted to postpartum depression if it persists for a prolonged period which needs medical attention.

The Prevalence was estimated to be 10% to 80% (O'hara & Mccabe, 2013). The prevalence of maternity blues across these studies was 39.0% (13.7%– 76%). It was greater in African and European countries than in Asian countries and the United States. Nearly half of the participants experienced a Postnatal prevalence is more than 31.3% reported by Adewuya (2005) in Southwest, Nigeria. The prevalence of maternity blues reported in the 26 studies was 13.7% to 76.0%.

The exact etiology of post-partum blues was unknown and complex factors can lead to the development of post-partum blues. The factors include a history of menstrual cycle-related mood changes or mood changes associated with pregnancy, a history of major depression or dysthymia, a larger number of lifetime pregnancies, or a family history of post-partum depression. low economic status, ethnic or racial background, gravidity status (primiparous vs. multiparous), planned vs unplanned pregnancy, spontaneous pregnancy vs. IVF, type of delivery (vaginal vs. cesarean), family history of mood disorders, or history of postpartum depression in the past and some hormonal changes.

Many researches reveal that reproductive hormones are etiologically important in PPB as they play important roles in emotion processing, arousal, cognition, and motivation and also regulate the system which is associated with depression thyroid function, lactogenic hormones, the hypothalamic–pituitary–adrenal axis, the immune system, and genetic expression.

There is decreased serotonergic activity in all women during the first postpartum week, decreased tryptophan ratio, and a decreased 5-HT content of platelets. There is a significant correlation between Bam paroxetine binding to platelets and blues score. These suggest that differences in serotonin transporter functioning might increase the effect of those changes in serotonergic metabolism thereby increasing the chance for blues. The hormones progesterone and estrogen also contribute to postpartum depression. Estrogen levels fall 100- to 1000-fold during the first 3 to 4 days postpartum, and variations in estrogen levels have an inverse relationship with Monoamine oxidase A (MAO-A) density. Upraised monoamine oxidase levels or decreased serotoninergic activity in the immediate postpartum period are also significant risk characteristics that could predispose a woman to the development of postpartum blues.

The reported risk factors that are responsible for postpartum blues include Age, lack of husbands' support, poor economic insecurity and poor maternal care during childhood, Type of labor, complications during pregnancy, and education.

Aim:

The study aims to assess the epidemiology of postpartum blues and its associated risk factors in postpartum women.

Objectives of the study:-

⟩ To measure the Prevalence of postpartum blues
⟩ To assess the risk factors of postpartum blues
⟩ To determine the correlation between post-partum blues & its risk factors

Inclusion criteria:

⟩ Women with age between 18 and 35.
⟩ Women who underwent Lower Segment Caesarean Section and Vaginal delivery.
⟩ Women with known cases of Hypertension, Diabetes mellitus, and Thyroid disorders, Urinary Tract Infection.
⟩ Women who gave premature birth.
⟩ Women who deliver the deceased baby

Exclusion criteria:

⟩ Women with a history of depression.
⟩ Subjects who are not willing to participate in the study.

Study Methodology and procedure:

The study is an observational and cross-sectional study conducted in the St. Joseph's General Hospital, Guntur from October 2022 to March 2023. This study is being performed to assess the prevalence, & associated risk factors related to postpartum blues. As per our study period, 104 samples were taken Patients who visited the Gynecology department of St. Joseph's General Hospital and who met the study criteria were enrolled in the study.

The information will be collected from the women from the second day of delivery to 2 weeks after delivery. Subjects should agree to participate in the study and those who accepted will be explained the study procedure and consent was

taken from the subjects. Relevant data such as demographic details, past medication and medical history, disease history, diagnosis, drug name, dose, route, frequency, duration of therapy, laboratory data, and allergy status were collected from the medical records of the patient and by patient interview where ever required were collected and documented. The socio-demographic history of subjects includes age, body mass index, parity, marital status, menstrual history, occupation, education status, food habits, and physical activity. The obstetric history includes the sex of the baby, mode of delivery, and PIC.

Edinburg Postpartum Depression Scale, Kennerley's and Gath Maternity Blues Scales are used in this study to screen the level of blues in postpartum women.

All the raw data was collected, and entered in Excel sheet 2010 in Windows 10 version statistical analysis was done by SPSS software using the chi-square test and Binary Logistic regression analysis. Kennerley and Gath's questionnaire is a validated standardized self-reported questionnaire being used for the diagnosis of postpartum Blues. It comprises 28 questions which are noted as less than usual, as usual and more than usual. Less than usual is considered as 1, as usual is considered as 0, and more than usual is considered as 2. Mean the total score. It is applied within the first 10 days of postpartum and it shows peak scores at day 3 to day 5. In the course of our study, this Kennerly and Gath questionnaire was included on the 3rd day of postpartum and the mean score of 7 was taken as cut off and the value greater than or equal to 7 was considered as positive for postpartum blues. Edinburgh postnatal depression scale questionnaire contains 10 questions each score from zero to 3. A score less than 8 was labeled as depression not likely while 9 to 11 was considered as depression possible which is taken as positive for Blues. The subjects who scored greater than 13 were excluded from the study as it comes under postnatal depression.

Statistical analysis:

✓ All the raw data was collected, and entered in Excel sheet 2010 in WINDOWS 10, the statistical analysis was done by SPSS software version 29.0.0.0 (241).

✓ To test the associated risk factors related to the postpartum blues, chi-square test, and Binary Logistic Regression Analysis were used to determine the significant p-value and also to know the odds ratio.

Results

1. Descriptive Statistics

As per our research study, Over a period of 6 months,104 samples were collected and analyzed to detect the prevalence of postpartum blues and its associated risk factors by using Kennerley's andGathscale and Edinburgh Postnatal Depression Scale.

Subject Characteristics	N	Minimum	Maximum	Mean	Std. Deviation
Age	34	20	35	24.97	4.16
BMI(Kg/m2)	34	18.9	40.4	26.882	4.7407
KG	34	7	21	11.971	3.8355
EPDS	34	4	12	9.88	1.552
Valid N (listwise)	34				

This table shows that out of 34 positive members, the average Mean age value is 24.97 years the mean BMI Value is 26.8 Kg/m2 and the average scores of 11.9 and 9.8 were observed for Kennerley's and Gath scale and Edinburgh Postnatal Depression Scale respectively

2. CHI-Square statistics

CHARACTERISTICS	w.r.t. to Kennerley's and Gath Scale	w.r.t to Edinburg postnatal depression scale
	chi-square (χ2) p-value (Level of significance)	chi-square (χ2) p-value (Level of significance)
Age	0.942	0.752
BMI	**<0.01**	**0.003**
Pregnancy Induced Complications	**0.016**	**0.029**
Mode of Delivery	0.632	0.364
Sex of the Baby	0.126	0.184
Level of Education	0.475	0.848

➢ Table 5.2 depicts that there is a significant difference between BMI and Postpartum blues having a p-value of <0.01 w.r.t.to the K&G Scale and a p-value of 0.003 w.r.t. to the EPDS Scale.

➢ There is also a significant difference between Pregnancy-induced Complications and postpartum blues having p-values of 0.016 and 0.029 w.r.t. to K&G and EPDS Scale respectively.

➢ This shows that there is an association between BMI and pregnancy-induced complications with Postpartum blues.

➢ There is no significant difference between Age, Mode of delivery, Sex of the baby, Level of education, and postpartum blues because they have p-values of >0.05.

3. Frequencies and percentages

CHARACTERISTICS	w.r.t to Kennerley's and Gath Scale				w.r.t to Edinburgh Postnatal Depression Scale			
	POSITIVE		NEGATIVE		POSSIBLE		NOT LIKELY	
	n	%	n	%	n	%	n	%
Age Group								
18-26 years	25	32.90%	51	67.10%	22	28.90%	54	71.10%
27-35 years	9	32.10%	19	67.90%	9	32.10%	19	67.90%
BMI Group								
<18.5 – Underweight	0	0.00%	1	100.00%	0	0.00%	1	100.00%
18.5-24.9 – Normal weight	0	0.00%	28	100%	1	3.60%	27	96.40%
25-29.9 – Overweight	23	50.00%	23	50.00%	22	47.80%	24	52.20%
30-34.9 – Class I Obesity	9	40.90%	13	59.10%	7	31.80%	15	68.20%
35-39.9 – Class II Obesity	2	33.30%	4	66.70%	1	16.70%	5	83.30%
>40 – Class III Obesity	0	0.00%	1	100.00%	0	0.00%	1	100%
Pregnancy Induced Complications								
Nil	17	28.80%	42	71.20%	15	25.40%	44	74.60%
PIH	7	63.60%	4	36.40%	6	54.50%	5	45.50%
Hypothyroidism	2	22.20%	7	77.80%	0	0.00%	9	100.00%
PIH+ Hypothyroidism	3	75.00%	1	25.00%	3	75.00%	1	25.00%
UTI	3	16.70%	15	83.30%	4	22.20%	14	77.80%
UTI + PIH	2	100.00%	0	0.00%	2	100.00%	0	0.00%
PIH + UTI + Hypothyroidism	0	0.00%	1	100.00%	1	100.00%	0	0.00%
Mode of Delivery								
Normal	11	29.70%	26	70.30%	9	24.30%	28	75.70%
LSCS	23	34.30%	44	65.70%	22	32.80%	45	67.20%
Sex of the Baby								
Male	20	40.00%	30	60.00%	18	36.00%	32	64.00%
Female	14	25.90%	40	74.10%	13	24.10%	41	75.90%
Level of Education								
Secondary stage (6th-10th class)	8	25.00%	24	75.00%	8	25.00%	24	75.00%
Senior secondary stage (Intermediate)	5	45.50%	6	54.50%	4	36.40%	7	63.60%
Undergraduate stage (Any degree)	16	32.00%	34	68.00%	15	30.00%	35	70.00%
Post-graduate stage (PG)	5	45.50%	6	54.40%	4	36.40%	7	63.60%
TOTAL PREVALENCE (N=104)	**32.7%(n=34)**		**67.3%(n=70)**		**29.8%(n=31)**		**70.2%(n=73)**	

The above table represents the frequencies and percentages of the risk factors of postpartum women and it also depicts the prevalence of postpartum blues concerning with K&G Scale EPDS Scale

4. Binary logistic regression model to predict risk Factors W.R.TK & G Scale

CHARACTERISTICS	p-value	Odds ratio (95%CI)
Age		
18-26 years	0.708	1.261
27-35 years		
BMI		
<18.5 – Underweight		
18.5-24.9 – Normal weight		
25-29.9 – Overweight	**0.04**	0.402
30-34.9 – Class I Obesity		
35-39.9 – Class II Obesity		
>40 – Class III Obesity		
Pregnancy Induced Complications		
Nil	0.106	-
PIH	**0.03**	0.152
Hypothyroidism	0.718	1.405
PIH+Hypothyroidism	0.063	0.08
UTI	0.175	2.76
UTI + PIH	0.999	0
PIH + UTI + Hypothyroidism	1	659161164.7
Mode of Delivery		
Normal		
LSCS	0.470	1.605
Sex of the Baby		
Male	0.807	
Female		2.62
Level of Education		
Secondary stage (6th-10th class)	0.136	-
Senior secondary stage (Intermediate)	**0.05**	0.15
Undergraduate stage (Any degree)	0.098	0.344
Post-graduate stage (PG)	0.052	0.145

o The above table shows there is a significant difference between the BMI and postpartum blues with the p-value of 0.04 especially in the 3rd stage of BMI Classification i.e., Overweight patients. This reveals that there is a high chance of observing postpartum blues in the case of overweight patients.

o There is a significant difference between the PIC with the postpartum blues having a p-value of 0.030, particularly for the Pregnancy Induced Hypertension followed by level of education mainly in the case of the Senior Secondary stage having the p-values of 0.050 concerning the K&G Scale.

o Women who had the complication of hypertension during pregnancy have a high risk of experiencing the postpartum blues.

o The women who had studied intermediate have more chance to get the postpartum blues.

o If the odds ratio>1 indicates that there is a greater risk of experiencing postpartum blues i.e., Age (OR=1.261), especially in the age group of 18-26 years, women who had PIH (OR=1.405), PIH+ UTI+ Hypothyroidism (OR=659161164.651), women, who delivered the baby through LSCS (OR=1.605), women who had female baby (OR=2.620).

o This table shows the p-values and odds ratio concerning the Kennerley and Gath scale.

5. Binary Logistic Regression Model to predict risk factors w.r.t EPDS Scale

CHARACTERISTICS	EDINBURGHPOSTNATALDEPRESSION SCALE	
	P-value	Odd's ratio
Age		
18-26 years	0.911	0.934
27-35 years		
BMI		
<18.5– Under weight		
18.5-24.9–Normal weight		
25-29.9– Over weight	0.162	1.513
30-34.9– Class I Obesity		
35-39.9– Class II Obesity		
>40– Class III Obesity		
Pregnancy Induced Complications		
Nil	0.368	-
PIH	0.073	4.001
Hypothyroidism	0.999	0.000
PIH+Hypothyroidism	0.077	9.795
UTI	0.559	0.673
UTI+ PIH	0.999	5564904148.534
PIH +UTI+Hypothyroidism	1.000	5085018273.8920
Mode of Delivery		
Normal		
LSCS	0.775	0.835
Sex of the Baby		
Male		
Female	0.106	0.419
Level of Education		
Secondary stage (6th-10th class)	0.692	-
Senior secondary stage (Intermediate)	0.350	2.333
Undergraduate stage (Any degree)	0.333	1.834
Post-graduate stage (PG)	0.330	2.516

The above table shows there is no significant difference between any of the risk factors mentioned in our study with the postpartum blues concerning the EPDS Scale.
Odds ratio>1 represents the greater risk of experiencing PPB.

Discussion

The main aim of this study is to assess the prevalence and associated risk factors of postpartum blues. Postpartum Blues is self-limited. Generally, postpartum Blues will mostly develop on 3rd day after delivery. However, in this study, postpartum blues were significantly observed on the 3rd day to the 5th day after delivery.

Many postpartum women experience postpartum Blues but they tend to hide the symptoms owing to social deprivation, and lack of physical and emotional support.

As Postpartum Blues is a self-limited condition, appropriate education regarding the condition and family support will help to resolve the postpartum blues quickly. As per the review of the literature, the prevalence rates of postpartum Blues range from 30 to 80%.

According to our study, 104 subjects had completed the self-semi-structured proforma followed by questionnaires of Kennerly & Gath and EPDS scales. Kennerley and Gath's scale is a validated tool as mentioned in the findings of (Eleftheria Ntaouti et.al., 2018). In this study, the prevalence rate was found to be 32.7%. Compared with the study conducted by (Dr.Abdullah et. al, 2016), the prevalence rate was higher in this study. The prevalence rate was higher in other studies (Narasimhaiah G Manjunath et.al., 2011;Temitopeomoladun Okunola et.al.,2021) than that of our study as there is a difference in the sample size.

Usually unintended pregnancy, mode of delivery, health of the baby, economic status, level of education, age, multiparity, gender of the baby, premature births, stillbirths, a n d lack of husband support, influence the development of postpartum Blues. Interestingly, the religious and spiritual level has a negative impact on postpartum Blues. In this study, we have considered the age, body mass index, mode of delivery, gender of baby, pregnancy-induced complications, and level of education as risk factors for postpartum Blues and assessed the results from this data.

We have categorized all the risk factors into groups based on the appropriate assessment. Among the 2 groups of age, the subjects bearing the age group of 18 to 26 years (N= 25, 32.9%) havea high prevalence of postpartum Blues as reported in the findings of (Dr.Abdulrahuman et.al., 2016).This is because of teenage pregnancy who are usually unaware of child care.

According to body mass index data, the subjects who have a body mass index of 25 to 29.9 kg/m2 (overweight N= 23, 50%), are particularly experiencing postpartum Blues than normal and underweight subjects. Overweight patients usually have the risk of developing diabetes mellitus, and hypertension which are the major complications of pregnancy that may develop anxiety in the subjects.

As we considered pregnancy-induced complications as a risk factor for postpartum Blues, pregnancy-induced hypertension (N= 7, 63.6%) has a major positive impact on postpartum Blues because pregnancy-induced hypertension can be a causative factor for eclampsia, which is a life-threatening condition and results in retardation of baby growth. So In such conditions, the surgeon prefers to perform the lower segment cesarean section before the estimated delivery date. According to the findings reported by (Dr.Abdulrahuman et.al., 2016),the subjects who underwent lower segments cesarean section are more frequently experiencing postpartum Blues when compared to subjects who underwent full-term normal vaginal delivery as depicted in our study (N= 23, 34.3%)

Usually, the surgeon advises lower segment cesarean section in conditions like pregnancy-induced complications, abnormal presentation of the baby, and in the case of mothers who cannot deliver the baby through the vaginal route. The abnormal presentation of a baby at the time of delivery and the pain developed during the LSCS can trigger the stress in the mother leading to postpartum blues.

Surprisingly, the women who delivered a male baby (N= 20,40%) had highly experienced postpartum Blues when compared to the women who delivered a female baby.

We categorized the level of education into 4 stages. Secondary stage (6th to 10th class), senior secondary stage (intermediate), undergraduate (any degree) and postgraduate. Among these groups, the subjects of the senior secondary stage had a greater prevalence of postpartum blues. Our findings are comparable to the reports from previous researchers (Sandro Gerlia.et.,2019; Dini Kurniawati. D, et. al., 2022;) reported that education status is one of the major risk factors for PPB.

Going through puerperal complications can also be stressful; it makes a lot of women tearful. This groupofwomenmay also have some psychological symptoms therefore increasing the probability of experiencing postnatal blues. In accordance with the study reports of (Temitopeomoladun Okunola., et.al.,2021), which is similar to our study Puerperal complications act as a risk factor for PPB. From our study, we concluded that women who have hypertension during pregnancy were at a greater risk of experiencing the Postpartum blues.

Our study has a few limitations. 1) A smaller sample size to predict the majority of risk factors contributing to PPB. 2) The response may be varied as we collected the data only from the 3rd to 6th day of delivery and the postpartum women were not followed up for further complications.

Conclusion

From this study, the prevalence of postpartum Blues was found to be 32.7%. The major risk factors that are responsible for the occurrence of postpartum Blues were BMI (overweight - 25 to 29.9 kg/m2), Pregnancy Induced Hypertension, and Level of education (senior secondary stage).

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