



Edinburgh Postnatal Depression Scale Guided Assessment of Postpartum Depression Level and Formulation of Structured Educational Module for Postnatal Mothers: A Hospital-Based Cross-Sectional Study

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ABSTRACT

Postpartum depression (PPD) is a concerning mental health issue among postnatal mothers that adversely affects the well-being of the mother, mother-newborn bonding, and child development. Despite its high prevalence, in many healthcare setups, the early screening, identification and awareness of PPD remain inadequate, especially in developing countries. The screening tools, such as the Edinburgh postnatal depression scale (EPDS), are widely used and play a pivotal role in early identification of the depressive symptoms of PPD during the postnatal period.

The objective of the current study was to assess the postpartum depression level among the postnatal mothers using the EPDS, along with examining its association with the selected socio-demographic variables and to develop a structured educational module to enhance awareness and preventive practices related to it.

It is a hospital-based descriptive cross-sectional study. This study was conducted among the 100 postnatal mothers from a tertiary healthcare center in India, and they were selected via a convenience sampling technique. Data were collected through a structured socio-demographic questionnaire and standardized EPDS scale. Descriptive statistics were used for demographics and depression levels, and a chi-square test was used to find out the association between postpartum depression and selected demographic variables at a significance level of $p < 0.05$. The study results showed that 33% of the postnatal mothers had no or minimal depression, 58% had mild, 5% had moderate and 4% had severe depression. This study also revealed a statistically significant association between maternal age and postpartum depression level ($\chi^2=23.83$, $p < 0.05$). The study concluded that postpartum depressions are common among postnatal mothers, especially in the early postpartum period. Routine screening through EPDS and implementation of the structured educational module are essential to enhance early identification, awareness and prevention of postpartum depression.

Keywords: Postpartum depression, Postnatal mothers, Edinburgh postnatal depression scale, Structured educational module.

INTRODUCTION

The postnatal period is a very important transitional phase for a woman with major physiological, psychological and social changes. Although childbirth is often counted as a joyful event, some women experience an emotional disturbance starting from transient mood fluctuations to severe depressive disorder. Out of these, the postpartum depression (PPD) is a common and serious maternal mental health issue that adversely affects maternal normal functioning, mother-newborn bonding and child development. Postpartum depression is marked by the symptoms of persistent sadness, feelings of worthlessness, sleep disturbances, and loss of interest in daily activities manifested within weeks or months following childbirth. PPD requires clinical attention and failure to identify and manage PPD on time may result in psychological morbidity of the mother and developmental impact on the child.[1]

PPD affects 8.9-10% of women in high-income countries and 17.8 to 19.7% in low- and middle-income countries. In Canada, 2019 data showed that 23% of new mothers experienced PPD or anxiety after birth. In the United Kingdom, 1 in 10 new postpartum mothers experienced PPD. In India (2021), around 22% of mothers suffer from PPD. State-wise, in Bihar, it is 23%, in Karnataka, PPD prevalence is 11%, and in Assam, the PPD prevalence is 26%.[2,3]

Despite its high prevalence, routine screening for PPD is often neglected in most of the clinical settings, particularly in resource-constrained healthcare systems. The Edinburgh postnatal depression scale (EPDS) is a widely validated screening tool used to identify women at risk for PPD. Understanding the severity and high prevalence of PPD and its association with socio-demographic factors is essential to designing targeted preventive strategies. A structured educational module can play a pivotal role in enhancing awareness

and reducing stigma. Early identification and proper education regarding PPD can prevent the worsening of depressive symptoms and promote positive maternal and child health outcomes. The present study aimed to assess the PPD among postnatal mothers using EPDS, examine its association with selected socio-demographic variables, and develop a structured educational module to support awareness and preventive practices.[4]

AIM OF THE STUDY

To assess the postpartum depression level among postnatal mothers using the Edinburgh Postnatal Depression Scale and to develop a structured educational module to promote awareness and preventive practices in a hospital-based setting.

Objectives

- To assess the postpartum depression level among postnatal mothers using the Edinburgh Postnatal Depression Scale.
- To examine the association between the postpartum depression level and selected socio-demographic variables among postnatal mothers.
- To formulate a structured educational module to support awareness and preventive practices related to postpartum depression.

Research variables

In this study, the research variable was the postpartum depression level among the postnatal mothers.

Assumption

In this study, it was assumed that postnatal mothers may have postpartum depression during the first week after childbirth.

Conceptual Framework

The study was based on the conceptual framework of Peplau's interpersonal relationship theory, developed by Hildegard E. Peplau

in 1952. In this theory, the relationship between healthcare provider and patient acts as a foundation for effective communications and care and it particularly helps in supporting and interaction between healthcare providers and patients for a better mental health outcome (Fig. 1).[5]

Peplau's theory outlines four phases in the interpersonal relationship: Orientation, identification, exploitation and resolution.

Application to the Study

The study is based on the four different phases of Peplau's interpersonal relationship between researcher and postpartum mothers:

Orientation Phase

In this phase, the researcher meets the postpartum mothers first and explains the purpose of the study and obtain inform consent if agreed to participate. The goal of this phase is to build trust and professional bonds, where the mother introduces herself and paves the foundation for future interactions.

Identification Phase

In this phase, the researcher identifies and measures the postnatal depression level using tools such as the EPDS. Here, the mother was supported to express her thoughts, feelings and symptoms. Through this mutual sharing, the therapeutic relationship was strengthened and both the mother and the researcher moved towards a common goal.

Exploitation Phase

In this phase, the researcher assesses the level of knowledge of the mother and provides guidance through the structured educational module regarding postpartum depression. Here, the mother follows the given instructions and utilizes the resources provided. This is the most active phase, where the mother gets the most benefits through guidance and builds trust and cooperation.

Resolution Phase

This is the final phase, where the researcher and mother relationship comes to a conclusion. The researcher distributes the structured educational module to the mothers. The mother finally applies that knowledge to her daily life. The support process is completed and the mothers are now more independent.

MATERIALS AND METHODS

Study Design

This study employed a descriptive cross-sectional research design to assess the postpartum depression level at a single point in time from a specific population of postnatal mothers.

Study Setting

The study was conducted at postnatal wards at Bidhannagar subdivision hospital under North 24 Parganas, West Bengal, India, a tertiary health care center that provided an appropriate environment and adequate access to the target population.

Target Population

All postnatal mothers who had recently given birth in the North 24 Parganas district, West Bengal, India.

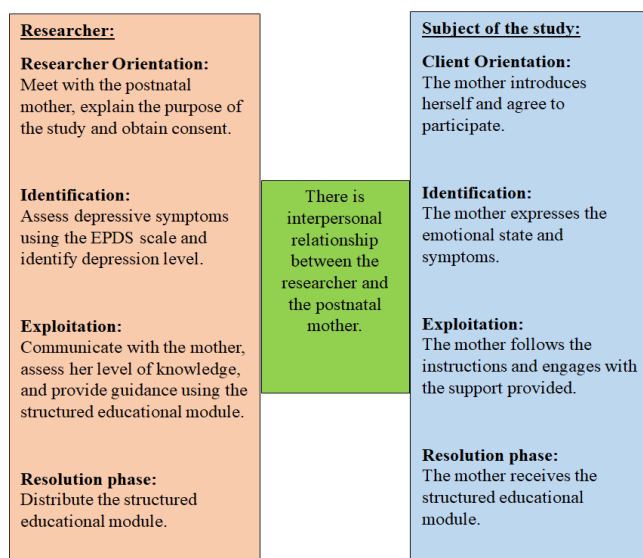


Figure 1: Conceptual framework based on Peplau's interpersonal relationship theory

Accessible Population

All postnatal mothers seeking care at Bidhannagar sub-divisional hospital, North 24 Parganas district, West Bengal, India.

Sample

Sample Size and Sampling Technique

A total of 100 postnatal mothers who had fulfilled the sampling criteria were selected by the convenience sampling technique.

Sampling Criteria

Inclusion Criteria

The study included the postnatal mothers who were available at the time of data collection and willing to participate.

- Postnatal mothers who stayed for a minimum 7 days.
- Postnatal mothers who can read and write and also understand English and Bengali.

Exclusion Criteria

- Postnatal mothers who were not willing to participate in the study.
- Postnatal mothers with a known history of psychiatric illness prior to pregnancy.
- Postnatal mothers with severe obstetric or medical complications.

Research Variables

In this study, the research variable was the postpartum depression level.

Research Hypotheses

The study tested the following hypothesis at a 0.05 level of significance:

H_1

There is a statistically significant association between the level of postpartum depression among postnatal mothers and selected socio-demographic variables.

Null Hypothesis

The following null hypothesis was tested at a 0.05 level of significance.

H_0

There is no statistically significant association between the level of postpartum depression among postnatal mothers and selected socio-demographic variables.

Development and Description of Tools

The final draft of the tool was prepared considering the suggestions of validators. The research instrument comprises of 02 sections, each designed to collect specific types of data from postnatal mothers.

Tool 1: Socio-demographic Proforma

Part 1: Demographic Data

Demographic data consisted of nine items to obtain information regarding: Age, religion, educational level, residence, occupation of postnatal mother and husband, family income, types of family, and previous knowledge about postnatal depression.

Part 2: Personal Information

Personal information consisted of six items to obtain information regarding: Mode of delivery, complication, previous history of neonatal loss, number of children, number of days after childbirth, and previous history of postnatal depression.

Tool 2: Standardized Tool - EPDS Scale

The standardized tool, EPDS, was used to assess postnatal depression. It consisted of 10 statements identifying the level of postpartum depression among postnatal mothers. Mothers are instructed to select one option for each question that they feel in the past 07 days.

Scoring System

The EPDS employed a specific scoring methodology:

- Questions 1, 2, & 4 (without an asterisk) are scored 0, 1, 2, or 3, with the top box scored as 0 and the bottom box scored as 3.
- Questions 3, 5-10 (marked with an asterisk) are reverse scored, with the top box scored as 3 and the bottom box scored as 0.

Interpretation of EPDS Scores

Interpretation of depression level based on the EPDS scores (Table 1):

Clinical Scoring Guide

Score range for clinical importance and clinical decision-making:

Score (0-9)

Presence of short coursed distressing symptoms with less effect on daily functioning.

Score (10-12)

Presence of discomforting distress symptoms, requiring repetition of EPDS in 2 weeks and progress monitoring. Repeat score above 12 may require referral.

Score (13 and above)

Need further assessment and management as the depression level may be high. Need psychiatrist/psychologist referral.

Reliability of the Tool

The Edinburgh Postnatal Depression Scale is a standard tool and its reliability was established in the original study by Cox et al. (1987), where the scale showed good internal consistency with a Cronbach's alpha of 0.87.

Validity of the Tool

Content validity of tools was established by submitting to four experts from obstetrical & gynecological nursing and three physicians of the obstetrics & gynecological department. Based on the suggestion from the experts, necessary changes were made.

Table 1: Classification of the depression level among the postpartum mothers based on EPDS scores

Score range	Depression level
0-6	No or minimal depression
7-13	Mild depression
14-19	Moderate depression
20-30	Severe depression

Development of a Structured Educational Module

The structured educational module on PPD was developed based on the extensive literature review, including Journals, books and online databases. The module outline was prepared based on the clear learning objectives and organised contents. Presentable, clear, organized content was assessed through a criteria checklist for its practical usefulness.

Content validity was checked through expert review from psychiatry, obstetrics and gynecology, and community health nursing.

Ethical Clearance

Ethical clearance was obtained from the Institutional Ethics Committee and formal administrative permission was obtained from the selected healthcare settings. Informed consents were collected from the participants and their anonymity was maintained.

Summary of Pilot Study

A pilot study was conducted with 20 postnatal mothers at Ranaghat sub-divisional hospital, Satigachha, West Bengal, India, to collect the socio-demographic data and postpartum depression level. The findings showed that 15% had no or minimal depression, 45% had mild, 25% had moderate, and 15% had severe depression. No significant association between postpartum depression level and demographic variables.

Plan for Data Analysis

The data was collected, organized, analysed and interpreted. For descriptive statistics: Frequency, percentage, mean, and standard deviation were used for socio-demographics and PPD levels. For inferential statistics, the chi-square (χ^2) test was used to check the association between PPD level and selected socio-demographic variables. Statistical significance was set at $p < 0.05$.

RESULTS

The data were organized, tabulated, interpreted and presented as follows. Description of the socio-demographic variables of the postnatal mothers is as follows.

Table 2 shows the demographic details of the 100 postnatal mothers. It showed that the majority of postnatal mothers were aged between 18 to 21 years (38%) and 22 to 25 years (29%). The majority of the mothers were Hindu (74%) and had a primary level of education (48%), followed by 22% had higher secondary education. A greater proportion resided in rural areas (63%), and nearly all were housewives (97%). Most of the husbands were daily wager (59%). Over half of the families (56%) reported a monthly income of ₹10,001 to 15,000 and 68% belonged to joint families. The majority (91%) had no prior information regarding postnatal depression. Only 9% had prior information; among those, family and friends were the most common source (45%).

Overall, the sample predominantly comprised young, rural, economically moderate postnatal mothers with limited awareness of postnatal depression.

Table 3 shows the personal information of the 100 postnatal mothers. It showed that more than half of the postnatal mothers (54%) had undergone normal vaginal delivery, while 46% delivered by cesarean section. The majority (96%) experienced no delivery complications.

Table 2: Distribution of the demographic data of the socio-demographic variables of the postnatal mothers

S. No.	Variable	Category	Frequency (f)	Percentage (%)
1	Age (in years)	Below 18 years	0	0
		18–21 years	38	38
		22–25 years	29	29
		26–29 years	17	17
		30–34 years	14	14
		Above 35 years	2	2
2	Religion	Hindu	74	74
		Muslim	26	26
		Christian	0	0
		Other	0	0
3	Educational level	No formal education	1	1
		Primary education	48	48
		Middle school	0	0
		Higher secondary	22	22
		Graduation	17	17
		Post-graduation	12	12
4	Residence	Urban	37	37
		Rural	63	63
5	Occupation of mother	Housewife	97	97
		Private employee	2	2
		Government employee	1	1
		Daily wager	0	0
		Others	0	0
6	Occupation of husband	Private employee	36	36
		Government employee	5	5
		Daily wager	59	59
		Others	0	0%
7	Family income (₹/ month)	Below 5,000	4	4%
		5,001-10,000	19	19%
		10,001-15,000	56	56%
		More than 15,000	21	21%

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8	Type of family	Joint family	68	68%
		Nuclear family	32	32%
		Extended family	0	0%
		Others	0	0%
9	Do you have any previous information regarding postnatal depression	Yes	9	9%
		No	91	91%
10	If yes, then Source of Information (n=9)	Magazines/Books/Journals	1	11%
		Health personnel	2	22%
		Radio/Television	0	0%
		Family & friends	4	45%
		Others	2	22%

(N=100)

Nearly all participants (99%) had no previous history of neonatal loss. Most mothers (67%) had one child, 32% had two children, and only 1% had more than two children. A large proportion (87%) were within seven days postpartum at the time of data collection. None of the participants reported a previous history of depression.

Overall, the findings indicate a predominantly early postpartum mothers with low obstetric risk and no reported prior depressive history.

Figure 2 shows the distribution of postpartum depression levels among the 100 postnatal mothers based on EPDS scores. This study revealed that the majority of postnatal mothers (58%) experienced mild depression (score range 7–13). Approximately one-third of the participants (33%) had no or minimal depressive symptoms (score range 0–6). A smaller proportion exhibited moderate depression (5%) with scores between 14 and 19, while severe depression (score range 20-30) was observed in 4% of the mothers.

Overall, the findings indicate that postpartum depressive symptoms were common in the study population, predominantly

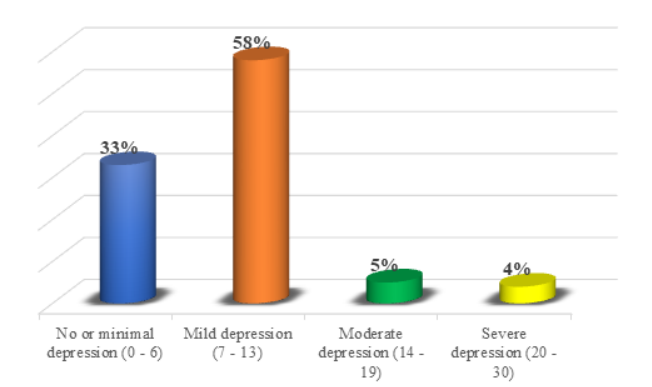


Figure 2: Bar diagram of the distribution of postpartum depression levels among the postnatal mothers

at a mild level, with a total 9% of mothers demonstrating moderate to severe depression warranting further clinical evaluation and intervention.

Table-4 showed the association between the level of postpartum depression and selected demographic variables of the 100 postnatal mothers using the chi-square test. A statistically significant association was observed between age of the postnatal mothers and level of postpartum depression ($\chi^2 = 23.83$, $df = 12$, $p < 0.05$), indicating that depressive symptoms varied significantly across the age groups. However, no significant association was found between postpartum depression levels and other demographic variables.

Overall, this study showed that only the mother’s age was linked to postpartum depression.

Structured Educational Module on Postpartum Depression

Postpartum depression is a common mental health condition after childbirth. This affects maternal emotion, psychology and social well-being and also may affect the mother-child bonding and family functions. To prevent any complications, early identification and appropriate intervention is very essential.

Definition

Postpartum depression is a mood disorder that develops within the first few weeks to one year after childbirth, characterized by persistent sadness, anxiety, fatigue, and loss of interest in daily activities.[6]

Causes and Risk Factors[7]

PPD is multifactorial and may result from:

- *Biological factors*
Hormonal changes (oestrogen and progesterone), thyroid dysfunction.
- *Psychological factors*
History of depression, low self-esteem, anxiety.
- *Social factors*
Poor family support, marital conflict, financial stress.
- *Obstetric factors*
Complicated delivery, unplanned pregnancy, neonatal illness.
- *Signs and Symptoms*⁸
 - Common symptoms include
 - Persistent sadness or low mood.
 - Excessive crying.
 - Sleep disturbances (insomnia or hypersomnia).
 - Loss of appetite.
 - Feelings of guilt or worthlessness.
 - Fatigue and lack of energy.
 - Difficulty bonding with the baby.
 - Thoughts of self-harm (in severe cases).

Assessment and Screening

PPD can be assessed using standardized tools such as the Edinburgh Postnatal Depression Scale. Early screening during postnatal visits enables timely identification of mothers at risk.

Cont

Table 3: Distribution of the personal information details of socio-demographic variables of the postnatal mothers

Sl. No.	Variables	Categories	Frequency (f)	Percentage (%)
1	Mode of delivery	Normal vaginal delivery	54	54
		Abnormal vaginal delivery	0	0
		Caesarean section	46	46
2	Delivery complication	Yes	4	4
		No	96	96
3	Previous history of neonatal loss	Yes	1	1
		No	99	99
4	Number of children	1	67	67
		2	32	32
		Above 2	1	1
5	The number of days after childbirth	< 7 days	87	87
		> 7 days	13	13
6	Previous history of depression	Yes	0	0
		No	100	100

(N = 100)

Prevention Strategies

- Preventive strategies are
- Antenatal education regarding emotional changes.
- Strengthening support from family and partner.
- Stress management techniques.
- Counselling during pregnancy and postpartum period.
- Awareness programs in community and hospital settings.

Management

Management of postpartum depression depends on severity:

- *Mild cases*
Counselling, psychoeducation, support groups.
- *Moderate cases*
Structured psychotherapy (e.g., Cognitive Behavioural Therapy).
- *Severe cases*
 - Psychiatric referral, medication if indicated.
 - Family involvement and regular follow-up are crucial.

Role of Nurses and Health Professionals

- Routine screening using standardised tool such as EPDS.
- Providing emotional support and counselling.
- Educating mothers and families.
- Early referral to mental health services.
- Reducing stigma related to maternal mental health.

Conclusion

Postpartum depression is one of the major significant health concerns among the postnatal mothers, requiring early identification, structured education and supportive interventions. A comprehensive structured educational module on postpartum depression empowers mothers and their families, promote maternal mental health and enhance maternal and child health.

DISCUSSION

The present study assessed the level of postpartum depression among the 100 postnatal mothers admitted at a selected tertiary care hospital in West Bengal, India, and examined its association with selected socio-demographic variables. The findings revealed that 33% of mothers had no or minimal depression, 58% had mild, 5% had moderate and 4% had severe depression. These findings indicate that nearly two-thirds of postnatal mothers experienced some degree of depressive symptoms during their early postpartum period.

The predominance of mild depressive symptoms (58%) aligns with findings from Surati et al. (2024), who reported the prevalence of postpartum depression of 50.01% in the study population. Another meta-analysis conducted by Fish-Williamson and Hahn-Holbrook (2023) that included data from 46 countries showed the global prevalence of PPD of 19.18%.

Across different studies, a notable regional variation of postpartum depression was found. A study conducted by George et al. (2022) reported a prevalence of 11% in South Karnataka, while another study conducted by Lanjewar et al. (2021) observed 22% prevalence in Pune, Maharashtra.[12,13] The prevalence of 23.9% was documented by Raghavan et al. (2021) in Bihar, indicating a substantial burden in eastern India.[14] In southern metropolitan settings, Maharajan et al. (2021) reported 14% prevalence in Chennai.[15] In western India, Parikh et al. (2018) reported 20.4% prevalence in Ahmedabad.[16] Furthermore, Upadhyay et al. (2017) highlighted regional differences, with the highest prevalence in the southern region (26%), followed by the eastern and south-western regions (23%), western region (21%), and the lowest in the northern region (15%), demonstrating considerable geographical variability in postpartum depression across India.[17]

The present study also showed a statistically significant association between maternal age and postpartum depression level ($\chi^2 = 23.83$, $p < 0.05$). Younger mothers demonstrated higher vulnerability to depressive symptoms.

Table 4: Association between postpartum depression level and selected demographic variables of the postnatal mothers

Demographic variable	Depression Level				χ^2	df
	No/Minimal	Mild	Moderate	Severe		
Age (years)						
Below 18	00	00	00	00	23.83*	12
18–21	14	22	02	00		
22–25	11	19	01	00		
26–29	04	08	00	00		
30–34	03	09	01	01		
Above 35	00	01	01	00		
Religion						
					0.182^{NS}	3
Hindu	23	44	04	03		
Muslim	09	15	01	01		
Christian	00	00	00	00		
Other	00	00	00	00		
Educational level						
					11.84^{NS}	12
No formal education	00	01	00	00		
Primary education	13	29	04	02		
Middle school	00	00	00	00		
Higher secondary	10	11	01	00		
Graduation	06	11	00	00		
Post graduation	03	07	00	00		
Occupation of mother						
					2.89^{NS}	6
Homemaker	32	55	05	04		
Private employee	00	03	00	00		
Govt. employee	00	01	00	00		
Daily wager	00	00	00	00		
Others	00	00	00	00		
Occupation of husband						
					4.698^{NS}	9
Private employee	12	22	00	02		
Govt. employee	01	04	00	00		
Daily wager	19	33	05	02		
Others	00	00	00	00		
Family income (₹/month)						
					14.53^{NS}	9
Below 5000	03	00	01	00		
5001–10,000	08	11	01	00		
10,001–15,000	18	31	03	00		
>15,000	03	17	00	01		

Cont...

Number of children					3.26 ^{NS}	6
1	19	42	04	02		
2	13	16	01	02		
Above 2	00	01	00	00		
Days after childbirth					1.27 ^{NS}	
<7 days	28	51	05	03		3
>7 days	04	08	00	01		

(N = 100)

This finding is consistent with the study conducted by Bhakta et al (2024), who also reported an association between maternal age and postpartum depression.[18] Younger mothers experience more psychological stress due to limited adaptive capacities, economic dependencies, unplanned pregnancy and adjustment challenges. Conversely, few studies also reported an inconsistent association between maternal age and postpartum depression, suggesting that the age may be an indirect marker influenced by parity, educational and social factors.

The present study result showed that there was no statistical association between postpartum depression and religion, education level, occupation of the mother, occupation of the husband, family income, number of children and postnatal duration. In contrast, a study conducted by Gebregziabher et al. (2010) identified low socioeconomic status and poor social support as significant predictors. [19] According to Dubey et al. (2021), lower educational status of mother and family income have a statistically significant association with postpartum depression.[20]

Another important finding showed that 91% of the mothers had no prior information regarding postpartum depression. A similar knowledge gap was reported by Wang et al. (2023).[21]

Therefore, the development and distribution of the structured educational module in the present study is well justified. Educational module has proven efficacy in enhancing early identification of the symptoms, reducing stigma and promoting timely intervention. A study conducted by Top et al. (2016) supported that structured education provided by the nurses improves the postpartum depression risk.[22]

The study was grounded on Peplau’s interpersonal relationship theory, which emphasizes therapeutic nurse-patient interaction. The findings support this framework, as early identification, empathy, and structured education may mitigate progression to severe depression.

Delimitation

The study samples were taken from a single tertiary healthcare centre and the postnatal duration was short.

CONCLUSION

The study identified that the postnatal mothers had higher depressive symptoms, with 58% had mild depression and a total 9% had moderate to severe depression levels. Along with that, maternal age showed a significant association with postpartum depression. The study also highlighted that even in the early postpartum period, a

significant proportion of mothers experience depressive symptoms. Among those mothers, the majority had no prior knowledge of postpartum depression. Routine screening through standardized tools such as EPDS and structured educational module are very essential to promote early identification, awareness and prevention of depressive symptoms and thus strongly recommended to integrate them in routine postnatal care.

Recommendations

Routine screening of PPD through standardised tool and structured educational modules is recommended to improve early identification and awareness. Further multi-center studies with larger samples and interventional studies evaluating nurse-led postnatal counseling are recommended.

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