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EVALUATION OF THE IMPACT OF EDUCATIONAL INTERVENTION ON POSTPARTUM DEPRESSION AMONG MOTHERS IN MANGALURU: A RANDOMIZED CONTROL TRIAL

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ABSTRACT

Postpartum depression (PPD) is psychological effects that occur after the birth of a child. PPD has significant negative impact on the physical, emotional and intellectual development of the child if left untreated, which can lead to future long-term complications, causes mother to develop obsessive-compulsive disorder and anxiety. The aim of this study was to investigate the risk factors, knowledge and attitude of mothers in the postpartum period from 6 weeks to 12 months. The study was conducted in Dakshina Kannada during the 6-month period. Mothers met inclusion criteria were screened for postpartum depression using the Edinburgh Postnatal DepressionScale (EPDS) and assessed for risk factors toward PPD and were analysed using prevalidated questionnaires and scored. Total of 131 mothers met inclusion criteria were screened for symptoms of depression, the prevalence of PPD was found to be 116 (83.54%), further divided into two groups (case and control), and only case group (58) received intervention using PIL and control group (58) served for comparison to evaluate the impact effect of the intervention. Predisposing factors contributing to postpartum depression were: too little time with the husband (63.35%), financial problems (52%), social habits (28.2%), challenges to follow food restrictions (58%), guilt about not being a perfect mother (53.4%), household responsibilities (77%), and sleep disturbances (71.7%). Upon comparison case group with control, EPDS scores toward PPD improved significantly in the case group after intervention. Thus, early diagnosis, appropriate health education using PIL, timely care and management

on PPD can show a positive response, significant changes in depression, attitude, and knowledge among mothers.

KEYWORDS: Postpartum depression, Mother, EPDS, Knowledge, Attitude.

INTRODUCTION

The postnatal period poses an increased risk of developing serious mood disorders, including three common forms: baby blues, postpartum depression (PPD), and postpartum psychosis. These disorders differ in prevalence, clinical presentation, and treatment. PPD is a nonpsychotic depressive episode that begins within the first 4 to 6 weeks and can persist up to 1 year after childbirth.[1] Many women experience symptoms from hormonal changes after delivery, such as stress, isolation, sleep deprivation, and fatigue, which usually fade within weeks. However, postpartum depression (PPD) persists, requiring consultation, counselling, and therapy. PPD involves prolonged sadness, anxiety, fatigue, anger, guilt, hopelessness, loss of interest, crying, obsessive thoughts, and insomnia. Hormonal and physical changes during pregnancy can predispose women to PPD.[2]

Women with PPD tend to discontinue breastfeeding which might result in insufficient maternal-infant interaction. Further, this can hinder the cognitive development of the child.[3] Therefore, it is important to identify associated factors for PPD and to diagnose PPD in the early postpartum period to enable an immediate intervention.[4]

Unrecognized and untreated postpartum depression (PPD) can have long-term adverse effects, potentially leading to chronic recurrent depression in mothers. Understanding the factors contributing to the prevalence of PPD is crucial for providing the necessary support and resources for those affected.[6] Women at risk for postpartum depression (PPD) are rarely recognized during pregnancy or in the maternity ward. It is believed that up to 80% of women with PPD do not report the condition and are not diagnosed by their physicians.[7]

OBJECTIVES

To assess the prevalence of PPD and to identify associated factors of Postpartum depression (PPD).

MATERIALS AND METHODS

Study design: A community based interventional study was carried out to assess prevalence, associated factors of postpartum depression in Mangaluru, Dakshina Kannada, Karnataka state in India conducted for a duration of 6 months from March 2023 – August 2023.

Ethical clearance: The study protocol was approved by the Institutional Ethics Committee (IEC) of Srinivas Institute of Medical Science, Mukka, Mangaluru. In addition, written informed consent was obtained from all the participants in this study.

Inclusion criteria: Mothers willing to participate and are in postpartum period of 6 weeks to 1 year of delivery.

Exclusion criteria: Mothers given consent and later withdrawn during the study and with present history and undergoing any psychiatric treatment.

Source of data: Data(s) were collected using data collection form through direct interaction with the study subjects at their residences. The current study included mothers who were in Postpartum period.

Inform consent process: Inform consent form were in English and Kannada, only the participants willing to fill ICF were included. ICF were orally explained to the participants before filling it and nonverbal by taking help of caregiver.

Data(s) collection method: Data was collected using questionnaire after subjects were given information regarding the study and confidential statement of respondents' information, depression status using Edinburgh's Postnatal Depression scale. Data was collected using Data Collection Form, Prevalidated Questionnaire, Edinburgh Postnatal Depression Scale (EPDS) and through direct interaction with the patient at their homes. All the data(s) were kept confidential. The average time needed to answer the questionnaire and complete the session was between 20- 30 minutes.

Data analysis: Data collected was recorded and analysed using SPSS. The descriptive statistics were produced for all variables and data were represented using tables and charts. Inferential statistic was also done using chi-square with level of significance set at 5% (0.05). Student-t test was applied to analyse the data using Social Sciences Statistical Software.

Operational modality

Phase 1: Preparation for the study: Preparation of Patient's Data Collection form (Demographic details, Risk factors questionnaires) and patient information leaflet (PIL)

Phase 2: Pre intervention study: Post ethics approval, subjects met inclusion criteria were selected, were approached through Anganwadis of Mangaluru. Average of 20-30 mins spent each session. Participants were explained about study and consent obtained. EPDS scale was used to assess mother suffering PPD. Pre validated questionaries were given to assess risk factor of PPD was analysed.

Criteria selection for intervention group: Based on the EPDS score having ≥10 was categorized randomly into control group and intervention group.

Providing intervention: Intervention group was provided intervention using a PIL.

Phase 3: Post-intervention study: The post-intervention phase was started 2 months in which the subjects were analysed using the same data collection form and checked for improvement. The data obtained was then analysed by applying Student t test.

RESULTS

Socio demographic characteristics of study participants

The research included 131 participants in total, 116 of mothers had an EPDS score of >=10, suggesting PPD. All of the study's 131 participants were married and 129 of them could read and write while only 2 were illiterate. The majority of participants were between the ages of 20 – 29 (61%), There were 86 joint and 45 nuclear families, among the participants. 61 people were employed, and 70 were housewives. The sociodemographic information of the participants shown in Table 1.

Table 1: Socio-demographic profile of study subjects.

Variable	Responses	Frequency	Percentage (%)
Age	<20	9	6.87
	21-30	80	61.06
	31-40	39	29.77
	>40	10	7.63
Education	Illiterate	2	1.52
	Primary	8	6.10
	High school	21	16.03
	Graduation	100	76.33

Occupation	Employed Housewife	61 70	46.53 53.43
Domicile	Rural Urban	75 56	57.25 42.74
Type of family	Joint Nuclear	45 86	34.35 65.64
Planned pregnancy	Yes No	73 58	55.72 44.27
Mode of delivery	C- section Vaginal	58 73	44.27 55.72
Gender of baby	Female Male	71 60	54.19 45.8
Preference regarding baby	As expected, No preference Not as expected	35 63 33	26.71 48.09 25.19
Pregnancy outcome	Healthy Sick	115 16	87.77 12.21
Baby feeding practices	Breastfeeding Formula feeding Animal milk Mixed	68 11 7 45	51.9 8.39 5.34 34.35

2 Assessment of prevalence and identify associated factors of PPD

A total of 131 participants were enrolled, with 88.54% of the women showing an EPDS score of >=10, indicating an experience of Postpartum Depression (PPD). The prevalence rates of PPD are detailed in Table 2.

Table 2: Prevalence of PPD.

EPDS Scores	No of subjects	Percentage (%)
≥10	116	88.54
<10	15	11.45

The prevalence of postpartum depression (PPD) according to demographics is portrayed in Table 3. Mothers experiencing PPD was categorised in the age group of 18-20 years (52.67%), lower at 21-29 years (21.37%), followed by 31-40 (7.63%), while >41 years (6.87%). Analysing educational background, majority (67.1%) of graduates reported struggling with depression, whereas only 1.2% of illiterate mothers expressed similar feelings. In terms of employment status, 41.22% of employed mothers experienced depression, when compared to 47.32% of housewives who reported similar sentiments.

When considering residential areas, it was found that 51.9% of those residing in rural areas reported experiencing depression, while in urban areas, the percentage was slightly lower at 36.6%. Family structure also played a role, with 26.7% of those in joint families expressing

depressive feelings, while a higher percentage of 61.83% was observed among mothers in nuclear families.

Table 3: Prevalence at different cutoff points on the Edinburgh Postnatal Depression Scale (EPDS) according to demographics.

Variable	Responses	EPDS≥10	Percentage (%)	EPDS<10	Percentage (%)
Age	18-20	1	1.2	8	6.17
	21-30	10	7.3	69	52.67
	31-40	2	1.5	28	21.37
	>41	2	0.76	10	7.63
Education	Illiterate	2	1.5	0	0
	Primary	8	6.1	0	0
	High school	18	13.7	3	2.29
	Graduation	88	67.1	12	9.16
Occupation	Employed	54	41.22	7	5.34
	Housewife	62	47.32	8	6.1
Domicile	Rural	68	51.9	7	5.34
	Urban	48	36.6	8	6.1
Type of family	Joint	35	26.7	10	7.63
	Nuclear	81	61.83	5	3.81

In this study, the majority of women (52.6%) reported that they cannot spend enough time with their husbands. In addition, a significant number of mothers reported facing financial challenges both before (38%) and after (68%) childbirth. In addition, 52% of mothers felt guilt for not being able to meet the expectations of being a perfect mother, while the majority of mothers (54.1%) found it difficult to adhere to certain dietary restrictions.

Moreover, a higher portion of the participants (73.2%) reported difficulty in managing domestic responsibilities. Interestingly, majority of mothers (66.41) reported difficulty in falling asleep, even when their infants were already asleep. Table 4 highlights the correlation (with a significance level of $P < 0.05$) between the occurrence of postpartum depression and these distinct risk variables.

Table 4: Association between risk factors and PPD among the study participants.

Variables	Responses	EPDS <10(%)	EPDS ≥10 (%)	Total n=131	p-Value
Have you experienced any health issues after childbirth?	Yes	3 (2.2)	41 (31.2)	44	0.263
	No	12 (9.1	75 (57.2)	87	
After delivery do you ever struggle to sleep even when your baby was asleep?	Yes	7 (5.3)	87 (66.4)	94	0.0218
	No	8 (6.1)	29 (22.1)	37	

Do you ever have difficulty sleeping because of baby crying at night?	Yes No	9 (6.8) 6 (4.5)	100 (76.3) 16 (22.13)	109 22	0.0106
Do you have a good relationship with your parents?	Yes No	14 (10.6) 1 (0.7)	101 (77) 15 (11.4)	115 16	0.4861
Do you have a good relationship with your in laws?	Yes No	12 (9.16) 3 (2.2)	81 (61.8) 35 (26.7)	93 38	0.4139
Is your husband spending enough time with you?	Yes No	1 (0.7) 14 (10.6)	47 (35.8) 69 (52.6)	48 83	0.0104
Did you face financial issues before childbirth?	Yes No	1 (0.7) 14 (10.6)	67 (51.1) 49 (37.4)	68 63	0.0001
Do you face any financial problem after childbirth?	Yes No	1 (0.7) 14 (10.6)	78 (59.5) 38 (29)	79 52	0.00001
Do you have any social habits (alcohol, smoking, chewing tobacco etc.)?	Yes No	1 (0.7) 14 (10.6)	36 (27.4) 80 (61)	37 94	0.482
Do you find it challenging to follow food restrictions after childbirth?	Yes No	5 (3.8) 10 (7.6)	71 (54.1) 45 (37.4)	76 55	0.039
Did you quit your job after childbirth?	Yes No	4 (3) 11 (8.3)	59(4.5) 57(3.5)	63 68	0.07751
Do you ever feel guilty thinking that you are not being a perfect mother?	Yes No	2 (1.5) 13 (9.9)	68 (52) 48 (37)	70 61	0.0009
Do you feel like you have too much household to handle?	Yes No	5 (3.8) 10 (7.6)	96 (73.2) 20 (15.2)	101 30	0.0001
Did you have any past history of miscarriage?	Yes No	2 (1.5) 13 (9.9)	30 (23) 86 (65.6)	32 99	0.2879
Do you feel you were unable to spend enough time with your family and friends?	Yes No	6(4.4) 9(6.8)	74 (56.4) 42 (32)	80 51	0.075

To assess the impact of intervention provided on Postpartum depression (PPD) status

The depressed mothers (n=116) were randomly divided into 2 groups, namely the intervention and control groups (n=58). Only the intervention group was provided with PIL.

Evaluation of the effects of the intervention on the status of PPD began after a period of 2 months. Subjects were thoroughly analyzed and observed for signs of improvement using the same predetermined questions.

Comparison of EPDS scores of Controals and Intervention group

PPD was present in 58 subjects before the intervention, and significant improvement was observed in the intervention group (n=47), whereas no changes were observed in the control group. Results were analyzed using social science statistical software used to analyze EPDS scores. The p-values were found to be significant at $p < 0.05$, indicating that the intervention

implemented was effective in reducing PPD. Table 5 shows comparison of EPDS scores in control and intervention group.

Table 5: Pre and Post Comparison of EPDS scores in Both Groups.

	Control (n=58)		Intervention (n=58)		P-value
EPDS	Pre (n=58)	Post (n=58)	Pre (n=58)	Post (n=58)	
Depressed (≥10)	58 (100%)	58 (100%)	58 (100%)	17 (29.3%)	<0.005
Not depressed (<10)	0	0	0	41 (70.70%)	

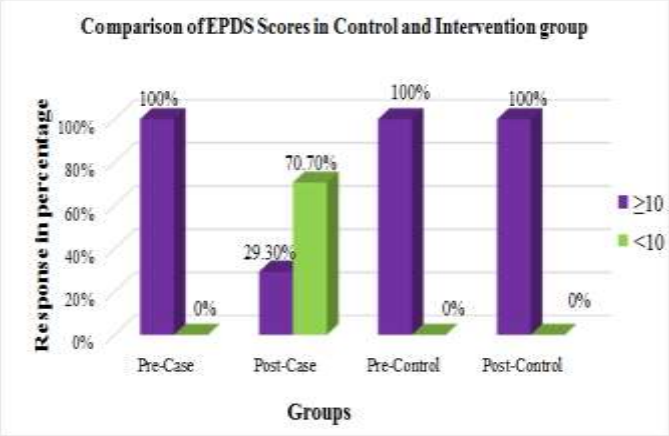

Figure 1: Comparison of EPDS scored between control and intervention group.

DISCUSSION

This study assessed prevalence, associated risk factors, knowledge and attitude of PPD in mothers residing in Mangalore. This study was able to bring about significant improvement in mother's knowledge, attitude and helped in diminishing PPD through intervention. Study demonstrated that providing education to mothers is a practical and effective method to improve their knowledge and attitude regarding PPD.

Questionnaire structured to collect sociodemographic data, assess risk factor having association to PPD, knowledge, attitude regarding PPD and Edinburgh Postnatal Depression Scale was administered.

Prevalence and Associated factors of postpartum

Prevalence of postpartum depression, using EPDS scale was measured to be 88.54% emphasizing the need to address and educate the community. These findings are contrary to a study conducted by Gebregziabher *et al.*, showing prevalence of 7.4%. Several sociodemographic factors were selected for the study in accordance with other studies. Most

of the study participants were between ages 20 and 29 explicating the suffering population to be vicenarian.[8] Majority of subjects were educated housewife who resided in rural areas with nuclear families. Though various sociodemographic factors were considered as part of risk assessment none showed significance with the study ($p<0.05$). Subjects addressed problems including sleeplessness, financial status, food restrictions after delivery, having too much household chores and the self-imaging of always being a perfect mother, which were found to having association with their EPDS scores similar to study conducted by Gaikwad S *et al*., inferring that mother residing in rural areas where more prone to PPD.[1]

This study provide intervention by educating mothers on PPD. Post-interventional phase thus supplied results showing significant improvement in prevalence, knowledge and attitude of mothers. Predominant percentage of the population were cured of Postpartum depression when assessed during post interventional studies with p-value of < 0.05 showing significance with the intervention provided.

CONCLUSION

The present study concluded that the prevalence of PPD is high and affects a significant proportion of mothers. By providing the intervention group with specific education, while maintaining the control group's education level, there was a significant decrease in the prevalence of PPD post-intervention. Comparison between pre-intervention and post-intervention phases showed that appropriate intervention and education can help depressed mothers cope with the disease, reduce its severity, and improve their quality of life.

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