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Original Article

Obstetrics and Gynaecology Section

Evaluation of a New Parent Support Intervention for Postpartum Depression and Bonding in Mothers: A Pilot Study

JALPA PRAJAPATI[1], ANJALI PUSHKAR TIWARI[2]

ABSTRACT

Introduction: Postpartum is an equally important period for both mother and child; even a minor neglect during this phase can have a lasting adverse effect. The emotional and physical well-being of postpartum mothers has a direct link to the health of the newborn, and any degree of neglect may contribute to significant complications. Evidence suggests that proactive, theory-based, and multi-component interventions- especially psychoeducational and mindfulness-based programs- show considerable promise in the prevention of the development of PPD. Additionally, social support measures, such as parent support groups, have demonstrated effectiveness in enhancing psychological well-being and strengthening the maternal- child relationship.

Aim: To evaluate the effect of the new parent support group on the development of Postpartum Depression (PPD) and on the level of postpartum bonding in mothers of selected hospitals in central Gujarat, India.

Materials and Methods: The present pilot Study was conducted in selected Hospitals of central Gujarat, India, from April to June 2025. Fifty mothers experiencing postpartum blues symptoms were recruited using block randomisation. After ensuring that each participant understood their information would remain anonymous, the researcher explained the purpose of the research and solicited any concerns they may have. After that, participants were divided into an experimental and a control group. New parent support group intervention was given to the experimental group only, whereas the control group continued with routine postpartum care till 21 days. The primary outcome measures of the study were assessed using the Edinburgh Postnatal Depression Scale (EPDS), and maternal-infant bonding was assessed using the postpartum bonding scale. Statistical Package for Social Sciences (SPSS) VERSION 20.0 was used for the statistical analysis. For comparisons within and between groups, the paired t-test and independent t-test were used, respectively.

Results: The participants in the control group were significantly younger than the experimental group. The findings of the study revealed that there was significant decrease in EPDS score (p-value <0.001) and improvement in maternal postpartum bonding score post intervention of experimental group compared to control group (p-value <0.001).

Conclusion: As per the present study findings, the new parent support group significantly reduced the development of PPD and improved postpartum bonding among mothers.

Keywords: Maternal infant bonding, Maternal mental health, Parent support group program, Postpartum depression

INTRODUCTION

Postpartum is the period when special attention is needed for both mother and newborn. Any kind of neglect may lead to complications that affect both the physical and mental health of the mother. During this period sudden hormonal alteration along with sleep deprivation, new responsibilities, isolation, and stress result in an emotional rollercoaster, which affects mothers' self-care and bonding to baby also. This generally starts within the immediate postpartum day, contributing mild symptoms like mood swings, crying jags, sadness, insomnia, anxiety, and irritability, known as baby blues/ postpartum blues, which is common among mothers [1]. However, if it is ignored and persists for an extended period, it can develop into severe PPD and even psychotic problems.

Baby blue usually develops within two to three days of delivery and resolves within two weeks. In the immediate postpartum period, up to 85 percent of every new mother will experience the postpartum blues [2]. If the symptoms persist beyond that, or are more intense and long-lasting, it is considered PPD. If PPD can last for months or longer, it converts to an ongoing depressive disorder. Breastfeeding and caring for an infant can be affected, and there is also an increased risk of suicide. Even after treatment, PPD increases a woman's risk of future episodes of major depression [3]. PPD is the most common complication of childbirth, impacting approximately 19% of postpartum mothers globally [4]. The baby blues affect between 50% and 75% of mothers after delivery, with an incidence of 300-750 per 1000 mothers globally [5]. It had been observed that the prevalence of PPD was 48.5% in the Anand district of Gujarat, India [6]. Despite such high prevalence of PPD in the Anand district of Gujarat, there was no scientific evidence found of work being done on finding a solution or management option for treating or preventing PPD in the district.

The burden of PPD extends beyond maternal health. Studies consistently demonstrate its detrimental effects on maternal functioning, marital relationships, mother-infant bonding, and the child's cognitive, emotional, and behavioural development [7]. Despite growing awareness, stigma surrounding mental health, limited access to specialised care, and inadequate screening practices remain significant barriers to early diagnosis and intervention [8].

Various preventive interventions have been explored in recent years to address this growing public health issue. A comprehensive scoping review (2025) identified nine categories of PPD preventive strategies, including psychoeducation, Cognitive Behavioural Therapy (CBT), mindfulness-based interventions, home-visiting programs, and dietary supplement strategies. The review highlighted that structured psychoeducational and mindfulness programs are particularly effective in reducing PPD risk, especially when supported by family or community engagement [9]. Furthermore, narrative evidence from 2024 underscores the importance of social

support interventions, such as peer support, nurse-led counselling, and culturally tailored community approaches, in preventing and alleviating PPD symptoms [10]. These interventions demonstrate promise due to their accessibility, sustainability, and suitability for low-resource settings.

Though research has been done and ongoing, there is a significant disparity between the prevalence of PPD and the actual measures taken to manage, treat, or prevent it. Hence, it is prudent to find a possible solution to prevent the conversion of postpartum blues into a more complicated stage, such as PPD. Furthermore, research on postnatal mental health has been conducted globally, but it only focuses on one area-either mother or bonding [11,12].

Thus, the present study aimed to evaluate an integrated researcher developed new parent support intervention that simultaneously targets maternal mental health and mother-infant bonding and also includes multiple components with combined psychological and relational outcome measures.

MATERIALS AND METHODS

The present pilot study was conducted in selected hospitals of Central Gujarat located in Anand and Kheda district, India, from April to June 2025. Prior to data collection, Ethical clearance was obtained from the Institutional Ethics Committee, Charotar University of Science and technology (IEC/CHARUSAT/23/110). CTRI registration was done at Clinical Trials Registry-India (CTRI/2025/01/079049).

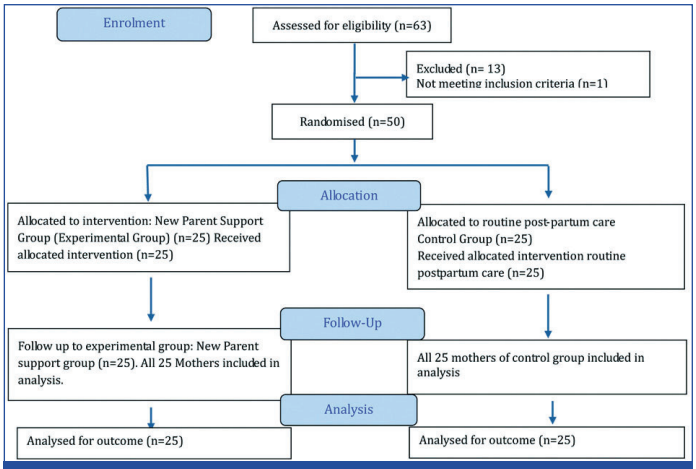
Inclusion and Exclusion criteria: Postnatal mothers within the age group of 18 to 35 years and having undergone a singleton delivery within the past seven days either through normal or assisted vaginal delivery and having their postpartum blue score between six to nine as measured by the Edinburgh Depression Assessment Scale were recruited in the study [13]. Additionally, these participants should have had access to their own smartphone device to be recruited for the study. Postnatal mothers who were clinically diagnosed with any psychological disorders or who were under any treatment involving the use of antipsychotic drugs were excluded from the study. Additionally, mothers who had a stillbirth or a baby delivered with any malformation/deformity/disorder or who had undergone operative delivery were also excluded from the study. Written informed consent was obtained from all participants prior to enrollment.

Sample size selection: As this was a pilot trial, a sample size of 50 was chosen to assess the feasibility of the study. This number provides sufficiently precise estimates of recruitment and retention (95% CI width≈±14% for proportions near 0.5). It also generates reliable variance and preliminary effect-size estimates for powering the definitive trial. Fifty postpartum mothers were selected through block randomisation to conduct the randomised control trial, allowing feasibility and acceptability to be evaluated within practical and ethical constraints. With single blinding and a one-to-one allocation ratio, they were divided into experimental and control groups [Table/Fig-1] [14]. The random allocation sequence was generated using the sealed envelope website [15].

Study Procedure

The tool for data collection included the researchers' developed proforma for demographic and maternal variables along with the Modified Kuppuswamy Socioeconomic Scale 2023 [16], the Edinburgh Depression Assessment Scale [17,18], and the Maternal Postpartum Attachment Scale [19], which were used for collecting data regarding socioeconomic status, postpartum blue score, and the bonding between mother and the newborn, respectively.

The researchers' developed proforma included age, types of family, place of living, mode of delivery, number of antenatal checkups, any unfavourable event in pregnancy, the gender of the baby, weight of the baby, and family history of mental health problems. The Modified Kuppuswamy Socioeconomic Scale 2023 assessed



[Table/Fig-1]: CONSORT flow diagram.

the socioeconomic status of the participants based on three parameters: education, occupation, and monthly family income. Based on total scores, participants were classified as upper (26-29), upper middle (16-25), lower middle (11-15), upper lower (5-10), or lower (<5) socioeconomic class, as described by Sood and Bindra (2022) [16].

The EPDS is a 10-item self-report questionnaire designed to screen for the identification of PPD among mothers. Each item was scored from 0 to 3, with a maximum score of 30. EPDS scores of 6-9 suggest mild depressive symptoms or postpartum blues, scores of 10 or above indicate possible depression, and higher cut-offs are linked to probable major depression [17,18].

Maternal postnatal attachment scale: The scale is a 19-point scale designed to assess mother-infant bonding during the postpartum period. A higher score suggests greater attachment [19].

Fifty postpartum mothers were allotted using a one-to-one allocation ratio into experimental and control groups. New parent support group intervention was given to the experimental group only, whereas the control group continued with routine postpartum care till 21 days. The intervention for this randomised control trial- The New Parent Support Group intervention was designed by researchers based on contextual needs identified during preliminary needs assessment and follows the World Health Organisation (WHO) recommendations described in the Guide for Integration of Perinatal Mental Health in Maternal and Child Health Services, World Health Organisation, 2022 guidelines [20].

The intervention was a structured three-week program as depicted in [Table/Fig-2], which was designed to enhance mental well-being, promote self-care practices, and strengthen mother-infant bonding among postnatal mothers. The program was delivered using a blended approach, combining in-person hospital-based sessions with continued support through a moderated WhatsApp group to ensure continuity, accessibility, and engagement. The structure of the intervention was similar across all three weeks; however, the content varied each week.

Throughout the three-week intervention, mothers were encouraged to maintain an activity log documenting moments of happiness and positive engagement. This practice aimed to reinforce mindfulness, gratitude, and emotional regulation, thereby promoting psychological well-being and positive parenting experiences. On the 22nd day, a post-intervention assessment was conducted. The primary outcome measures of the study were assessed using the EPDS, and maternal-infant bonding was assessed using the postpartum bonding scale.

STATISTICAL ANALYSIS

The statistical analysis was performed with IBM SPSS Version 20.0. Means and standard deviations were used to express continuous variables. For comparisons within and between groups, the paired

Day	Intervention
I	Focused on in-person sessions at the hospital, which were conducted in a supportive group environment. Here the mothers were encouraged to share their childbirth experiences. They were provided with educational materials about various aspects of postnatal self-care. Various techniques of pranayama were demonstrated, and they were encouraged to do this daily.
2	Focused on interaction with the participants through a moderated WhatsApp group where various educational materials were shared and reminders were sent to encourage daily practice of pranayama.
3	Focused on sending motivational messages and images and quotes in WhatsApp groups related to positive motherhood. Mothers were reminded of themselves through simple infant care activities and reflected on their interactions with their babies.
4	Focused on sharing educational material to the moderate WhatsApp group about various aspects of newborn care. Further reminders were given to continue with the pranayama exercises and self-care routines.
5	Focused on sharing motivational content within the group. Mothers were also given small tasks of sharing their experiences and interactions with their newborn baby, including family support within the group
6	Focused on educating the participants about the common practical challenges commonly faced during the post-natal period. Participants were also guided and reassured to maintain positive emotional health.
7	The final day of each week included motivational messages and interactive activities aimed at fostering happiness, social connection, and emotional support.

[Table/Fig-2]: Weekly intervention structure (Weeks 1-3).

t-test and independent t-test were used, respectively. Statistical significance was defined as a p-value <0.05.

RESULTS

The participants' distribution as per demographic characteristics and maternal variables is represented in [Table/Fig-3]. Although the participants in the control group were significantly younger, there were more planned pregnancy in control group (p<0.05).

S. No.	Demographic variables	Experimental group (n=25)		Control group (n=25)		p-value
		Frequency (N)	Percentage (%)	Frequency (N)	Percentage (%)	
1.	**Age (years)**					
	18-23	8	32	17	68	0.0383
	24-29	12	48	6	24	
	30-35	5	20	2	8	
2.	**Type of family**					
	Nuclear	10	40.0	12	48.0	0.5688
	Joint	15	60.0	13	52.0	
3.	**Area of living**					
	Rural	7	28.0	11	44.0	0.2207
	Urban	13	52.0	7	28.0	
	Suburban	5	20.0	7	28.0	
	Maternal variables					
4.	**Number of pregnancies till date**					
	1	16	64.0	21	84.0	0.2221
	2	8	32.0	4	16.0	
	>2	1	4.0	0	0.0	
5.	**Number of deliveries till date**					
	1	15	60.0	21	84.0	0.1146
	2	8	32.0	4	16.0	
	>2	2	8.0	0	0	
6.	**Number of miscarriages or abortions in previous pregnancies**					
	1	1	4.0	4	16	- -
	≥4	00	00	0	0	
7.	**No of living children**					
	1	15	60.0	21	84.0	0.1406
	2	9	36.0	4	16.0	
	>=3	1	4.0	0	0.0	
8.	**Preparedness for pregnancy**					
	Planned Pregnancy	10	40.0	18	72.0	0.0227
	Unplanned Pregnancy	15	60.0	7	28.0	
9.	**Number of antenatal check-up during present pregnancy**					
	Nil	2	8.0	0	0	0.0064
	1 to 3	3	12.0	9	36	
	4 to 6	13	52.0	16	64	
	7 or above	7	28.0	0	0	
10.	**Any unfavourable event during pregnancy**					
	No unfavourable events	22	88.0	21	84.0	0.2812
	Family dispute	1	4.0	0	0.0	
	Financial loss	1	4.0	4	16.0	
	Accident of self or family member	1	4.0	0	0	
11.	**Type of delivery**					
	Normal vaginal delivery without episiotomy	6	24.0	12	48.0	0.0142
	Normal vaginal delivery with episiotomy	18	72.0	8	32.0	
	Vacuum delivery	1	4.0	5	20	
12.	**Postnatal day**					
	1- 3	6	24.0	1	4.0	0.0416
	4-7	19	76.0	24	96.0	
13.	**Was a birth companion present during your current delivery**					
	Yes	00	0	00	0	--
	No	25	100	25	100	
14.	Baby Gender					
	Male	15	60.0	12	48.0	0.3946
	Female	10	40.0	13	52.0	
15.	Birth Weight					
	1.51-2.50 kg	5	20.0	6	24.0	0.3088
	2.51-3.50 kg	16	64.0	11	44.0	
	>3.50 kg	4	16.0	8	32.0	
16.	**Family history of mental health problems**					
	Negative	25	100	25	100	--

[Table/Fig-3]: Demographic and maternal variables data distribution group-wise.

The socioeconomic status of participants in the experimental and control groups was compared using Fisher's-exact test. No statistically significant difference was observed between the two groups with respect to socioeconomic class (χ^2=0.12, df=2, p=0.94) indicating that both groups were comparable at baseline [Table/Fig-4].

The mean preintervention EPDS score in the experimental group was 8.40±0.91, which significantly reduced to 2.12±0.83 following the intervention (t=21.966, p<0.001), indicating a highly significant improvement. In contrast, the control group showed an increase in mean EPDS scores from 8.68±0.62 at baseline to 10.84±3.15 post-assessment (t=3.236, p=0.004). These findings clearly demonstrate that the intervention was effective in markedly reducing postnatal blue symptoms among mothers in the experimental group, whereas the control group exhibited a significant worsening of symptom

S. No.	Total Score	Socio economic class	Experimental group (n=25)		Control group (n=25)		p-value
			Frequency (N)	Percentage (%)	Frequency (N)	Percentage (%)	
1	26-29	Upper (I)	5	20	6	24	0.94
2	16-25	Upper middle (II)	16	64	15	60	
3	11-15	Lower middle (III)	4	16	4	16	
4	5- 10	Upper lower (IV)	-	-	-	-	
5	<5	Lower (V)	-	-		--	

[Table/Fig-4]: Modified Kuppuswamy Socioeconomic classes group-wise [12].

levels over the same period. This reveals that intervention is feasible for prevention. Significantly higher depression scores were seen in the control group post intervention when compared to experimental group (p<0.001) [Table/Fig-5].

Parameters	Preintervention Mean±SD	Post intervention Mean±SD	t-test	p-value
Edinburgh Postnatal Depression Scale (EPDS) score				
Experimental group	8.40±0.91	2.12±0.83	21.966	<0.001
Control group	8.68±0.62	10.84±3.15	3.236	0.004
p-value	0.2097	<0.001	-	-
Maternal Postpartum Bonding Scale score				
Experimental group	33.52±4.46	64.96±5.51	25.306	<0.001
Control group	31.64±3.97	36.60±5.97	1.413	0.171
p-value	0.1220	<0.001	-	-

[Table/Fig-5]: EPDS Score of experimental and control group.

When maternal postpartum Bonding Scale scores were compared, the experimental group scored significantly higher than the control group (p<0.001) post intervention. This shows that the intervention effectively enhanced maternal-infant bonding compared to no intervention. These findings clearly establish that the intervention was effective in reducing postnatal depression while simultaneously enhancing maternal- infant bonding compared to routine care [Table/Fig-5].

DISCUSSION

The present randomised feasibility trial was carried out to evaluate the effect of the researcher-developed new parent support group on the development of PPD symptoms and bonding between mother and newborn, including 50 mothers who had postpartum blue symptoms as measured by an EPDS score between 6 to 9.

In this trial, a structured intervention for new parent support delivered to women with EPDS scores of 6-9 produced a large and clinically meaningful reduction in postpartum blue symptoms as measured by the EPDS scale (mean EPDS 8.40±0.91 to 2.12±0.83; t=21.966, p<0.001). The study's results align with current evidence demonstrating that targeted psychotherapeutic interventions for perinatal depression are effective when outcomes are assessed using the EPDS. As in a 2026 meta-analysis of randomised trials, Cognitive Behavioural Therapy (CBT) was the only modality that significantly reduced EPDS scores compared with a control group having usual care (mean difference -3.22; 95% CI -5.91 to -0.54; p=0.019), underscoring the value of structured, skills-based therapy in the postpartum period among mothers having an EPDS score >10 [21]. Similarly, online or brief CBT formats have demonstrated clinically significant improvements in EPDS scores and reductions in postpartum depressive symptoms along with enhancements in mother-infant relationship quality and social support, supporting the scalability of psychosocial treatments in postpartum care [22]. Collectively, they propose that structured, skills-based psychotherapy-whether group-based, nurse-delivered, or digitally mediated- can achieve meaningful symptom relief measured by EPDS and improve functional outcomes in the early postpartum period.

A multicentre randomised trial of internet-based CBT that began antenatally and continued into the postpartum period found no significant between-group differences in depressed symptoms, but a subgroup with moderate prenatal symptoms demonstrated reduced depression risk over one year [23]. Due to the fact that these international studies were carried out in various geographic locations, cultural contexts, individual intervention components, and intervention durations, their findings varied.

In this trial, the Maternal Postpartum Bonding Scale score showed a remarkable improvement (64.96±5.51) compared to the control group (36.60±5.97), indicating a highly significant enhancement in maternal-infant bonding after intervention. The result is supported by a study conducted at Lixin County People's Hospital in China that revealed that post-intervention, the intervention group showed significantly higher attachment scores (94.67±6.82) compared to the control group (85.43±7.91), p<0.001 [24]. The findings stresses on the effect of a psychologically oriented mother-infant interaction program on enhancing mother-neonate bonding. They found that mothers receiving the intervention showed significantly stronger bonding, as well as enhanced maternal sensitivity, emotional responsiveness, and interactive coordination, compared with those receiving routine care alone. These improvements were attributed to early psychological support, consistent engagement with the program, and family involvement, all of which positively influenced mother-infant interaction quality and bonding outcomes [24]. These findings indicate the effectiveness of the intervention in fostering more positive maternal feelings, responsiveness, and emotional connectedness toward the newborn. However, the Smart Mama randomised controlled trial, which used a mobile health application incorporating education, self-care prompts, and postpartum health monitoring, demonstrated significant reductions in depressive symptoms and anxiety. But no statistically significant improvement in maternal-infant bonding was found between the intervention and control groups [25]. The diverse results indicate that group intervention has a good impact on the reduction of EPDS scores and improvement in postpartum bonding with newborns. The lack of improvement suggests that technology-based or less interactive interventions may be insufficient to alter the emotional, behavioural, and relational components of bonding, which often require direct interpersonal engagement, therapeutic guidance, or structured interaction-enhancing activities. Current trial findings suggest that early and continuous support to mothers following delivery be it from peers, family, or healthcare professionals- has a positive impact on mother and newborn, which is consistent with the observations reported in the article. The observations reported by the scoping review documented a lack of social support as a significant risk factor for mental health complications after delivery [26].

Limitation(s)

The present current trial is a pilot study which was conducted to assess the feasibility of various aspects of the main RCT; hence the sample size of this feasibility study is small which limits the scope of generalisation. The participants of this pilot study were recruited from selected private hospitals of central Gujarat, India, where most of the participants were well educated and belonged to upper middle class. Hence, they might have previous awareness and positive mental conditioning about postnatal mental health.

CONCLUSION(S)

The present study results revealed that the intervention, the new parent support group, was highly effective in reducing PPD and strengthening maternal-infant bonding among mothers in the experimental group as compared to the control group. The highly

significant p-values (<0.001) for both outcome measures highlight the robustness of these findings. Overall, the study provides strong evidence that structured supportive interventions can play a crucial role in promoting maternal psychological well-being and enhancing early mother-infant relationships. These findings underscore the importance of incorporating such interventions into routine postnatal care, as they can positively influence maternal mental health and foster healthy developmental outcomes for infants.

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PARTICULARS OF CONTRIBUTORS:

1. PhD Scholar and Assistant Professor, Department of Obstetrics and Gynaecological Nursing, Manikaka Topawala Institute of Nursing, Charusat, Changa, Gujarat, India.
2. Associate Professor and Head, Department of Obstetrics and Gynaecological Nursing, Manikaka Topawala Institute of Nursing, Charusat, Changa, Gujarat, India.

NAME, ADDRESS, E-MAIL ID OF THE CORRESPONDING AUTHOR:
Jalpa Prajapati,
CHARUSAT Campus, Changa, Gujarat, India.
E-mail: jalpaprajapati.nur@charusat.ac.in

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