

The Effect of Perinatal Educational Empowerment of Women and their Key Supporters on Perceived Social Support and Postpartum Depression: A Quasi-Experimental Study

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ARTICLE INFO	ABSTRACT
Article type: Original article	Background & aim: Postpartum care is an important factor in improving mothers' performance. One effective strategy for improving postpartum services is participatory health promotion training. This study was conducted to examine the effect of perinatal educational empowerment of women and their key supporters on perceived social support and postpartum Depression.
Article History: Received: 14-Jul-2024 Accepted: 07-Jun-2025	Methods: A quasi-experimental study was conducted on 178 women in the perinatal period using multistage sampling from July 2020 until February 2021 in Bojnurd, Northeast Iran. Four online sessions of self-care training were conducted for mothers and their key supporters. The duration of each session varied from 30 to 100 minutes, depending on the participants' needs. Hopkins Perceived Social Support and Edinburgh postpartum depression scales were completed at two and eight weeks postpartum. Data were analyzed using the independent t-test.
Key words: Empowerment Perceived Social Support Postpartum Depression Postpartum	Results: No significant difference was found in perceived social support between the intervention and standard care groups at two weeks (81.07 ± 22.94 vs. 78.32 ± 17.38 ; $P=0.380$) or eight weeks postpartum (76.32 ± 18.08 vs. 76.53 ± 17.96 ; $P=0.938$), although perceived social support decreased significantly over time in both groups ($P=0.002$ and $P=0.025$). Postpartum depression rates did not differ significantly between groups at two weeks (18.9% vs. 13.6%) or eight weeks (7.8% vs. 6.8%), but the reduction within the intervention group was significant ($P=0.013$).
	Conclusion: Although the educational empowerment did not significantly improve social support or depression compared with standard care, but it significantly reduced postpartum depression within the intervention group over time. Further studies with larger sample size and longer follow-up are needed to confirm these findings.

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Introduction

Caring for a new newborn is essentially a significant change (1). The perinatal period consists of the first few weeks after birth (between 4 and 6 weeks) (2). This period is associated with numerous physical, social, and emotional changes related to the inclusion of a new child into the family, which significantly

affects mothers' health. This period is considered a vulnerability period due to the accompanying stress from the daily chores (1), the stress following the birth of a newborn and taking care of him/her (3), and sleep problems (4). Crises during pregnancy can lead to anxiety and depression in mothers (5).

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Social support is defined as the resources produced by others, particularly friends and family, that are beneficial for one's health. Based on indirect effect models, it acts like a shock absorber and can support the person against pressures (6). A survey conducted on 274 Italian and Canadian pregnant mothers showed that social support from the family reduced anxiety and depression symptoms, and social support from friends, in particular, increased life satisfaction (7). Social support reduces postpartum depression and negative experiences of pregnancy and childbirth (8). Postpartum depression (PPD) is a complex mood disorder characterized by persistent feelings of sadness, severe fatigue, anxiety, and difficulty bonding with the newborn, occurring typically within the first few weeks or months following childbirth. "Numerous studies have highlighted the direct and indirect roles of education and counseling in self-care practices for mitigating postpartum depression (PPD). For instance, a systematic review conducted in 2017 demonstrated that participatory care can be effective in improving postpartum depression (9). Similarly, a 2022 systematic review highlighted the effectiveness of these interventions in reducing postpartum depression (10).

Crises increased mothers' emotional distress and confusion, significantly affecting reproductive and perinatal care. In critical situations including floods, earthquakes, war, and pandemics disrupted various aspects of life and reduced social communication (11). The most effective methods for receiving social support during the pandemic were virtual tools to interact with friends (12). In a study conducted on 5210 pregnant and postpartum women in European countries, 16.1% of pregnant women and 17% of postpartum women suffered from depression (13).

The significance of proper planning and care during the postpartum period has always been taken into account (2).

During Crises, in order to increase mothers' safety and health during pregnancy and postpartum, most care needs, particularly the educational needs, were neglected in public health centers. Furthermore, self-care counseling and training during pregnancy that meet

mothers' and babies' self-care needs in the postpartum period were affected by the current conditions. To manage the pressures caused in the postpartum period and by contracting this disease, more social support alleviates the stressful conditions (14-15).

The approaches to optimize postpartum care include lifestyle-improving interventions (16), home visits (17), and e-training (18). Increasing the awareness and health beliefs in the mother's family and relations help improve postpartum care. In this regard, the effect of family-oriented education (5), education of couples (19), and education of grandmothers (20) on improving breastfeeding can be mentioned. One of the essential components to manage the communicable diseases is caring the vulnerable population. Simple solutions, including social media, can be advantageous in alleviating mothers' worries (21). Training key supporters is one of the most effective health promotion interventions based on participation.

Key supporters' participation-based care includes four stages: motivation, preparation, involvement, and evaluation, which is a spectrum from self-care to professional care in which family members, service providers, and healthcare workers are involved, leading to improved health (22). In participation-based care, contrary to the traditional approach, the service provider is not focused as the main care agent. However, the combined and balanced role of all influential individuals, including the mother, husband, friends, or anyone accompanying the mother, is effective in the care process, which is beyond the nature and independent role of each one (23).

Since the large population covered by government centers in our country, women need care that, in addition to being affordable, straightforward, and accessible, is flexible and should be provided to them in accordance with their individual needs and social and economic conditions, and family-oriented services. Therefore, considering the necessity of implementing women's health promotion interventions during the sensitive postpartum period, particularly, this study was carried out to examine the effect of perinatal educational empowerment of women and their key

supporters on perceived social support and postpartum depression.

Materials and Methods

This quasi-experimental study was conducted with participation of primiparous women in the third trimester of pregnancy, their husbands, and a family member as their key supporters living in Bojnurd in Northeast, Iran. The inclusion criteria were pregnant women with gestational age of at least 28 weeks, ability to read and write in Persian, singleton pregnancy, without known medical and obstetric disorders during pregnancy and access to electronic messengers and the internet. Non-participation of participants in more than one session, the death of a newborn, premature birth, divorce of couples, and moving to another city were considered as exclusion criteria.

The sample size was calculated as 200 participants (pregnant women, their husbands, and key supporters) using the formula for comparing the means in each group, considering 10% sample attrition. To evaluate the effect of intervention, the sample size was calculated using the mean comparison formula after the pilot study with a type I error of 1.96, a power of 0.80, and an effect size of 0.30 in each group of 89 people, which was estimated to be 100 people in each group with a 10% drop in sample size.

A sampling of all health centers in Bojnurd city (six centers) was conducted in two stages using stratified and quota sampling methods. The health areas were categorized into two classes: socially and economically affluent, and socially and economically disadvantaged. The number of samples was determined based on the population served by each center. The affluent and prosperous centers were Madani and Bu Ali Health Centers, while the less affluent and deprived centers were Hur Health Center, Mohammad Rasoolullah Health Center, Kamyab Health Center, and Fayyaz Bakhsh Health Center (Figure 1).

Sampling started in July 2020, and the participants were followed up until delivery and eight weeks postpartum during four visits until February 2021.

The action plan was developed as health promotion training based on the participation of key supporters based on the previous study conducted in Bojnurd (24).

At the beginning of the study, meetings were held with administrators and staff of the health centers and the Bint Al-Hoda educational maternity hospital, and full explanations about the study were provided. After the eligible individuals were determined to enter the study, mothers were requested to identify their key supporters for being educated. In order to collect the data, after full explanations about the study objectives and obtaining written informed consent, the pregnant woman, her husband and key supporter were requested to visit the health center together during one of the visits during the third trimester of pregnancy. The first session was held online and offline after coordinating with pregnant women and their husbands and key supporters. Online sessions were held by two members of the research team via the "mother and child care" system, a remote medical care system in the obstetrics and gynecology field designed by North Khorasan University of Medical Sciences, Bojnord, Iran.

Using the PORSALL software (a Persian web-based system for designing, registering, and publishing surveys, and research questionnaires), in the same system, the demographic information and obstetric records questionnaires and the perceived social support and postpartum depression scales were designed for simultaneous use. Before holding the first session, the link to the demographic and obstetric questionnaire was sent to pregnant women. The training session started after completing the questionnaires. The sessions were conducted simultaneously using the Persian KOMAK system. To this end, the system link was sent to pregnant women, their husbands, and key supporters. After three people logged in, the materials were provided for them. If one of the participants was not able to attend a simultaneous class, the classroom file was uploaded separately as a multimedia file in one of the virtual messenger applications for each of them and then followed up via a phone call to ensure that pregnant women and their husbands and key supporters watched the educational video and their possible questions were answered. In addition, in order to gain trust and cooperation, the researcher's phone number was provided to the study subjects; therefore, they could call at any time in case of any problem. All

individuals joined the virtual (question and answer) group. The meetings were held as follows in Table 1. The content of the sessions was developed based on a comprehensive review of relevant articles, midwifery reference textbooks, national guidelines, and World Health Organization (WHO) protocols.

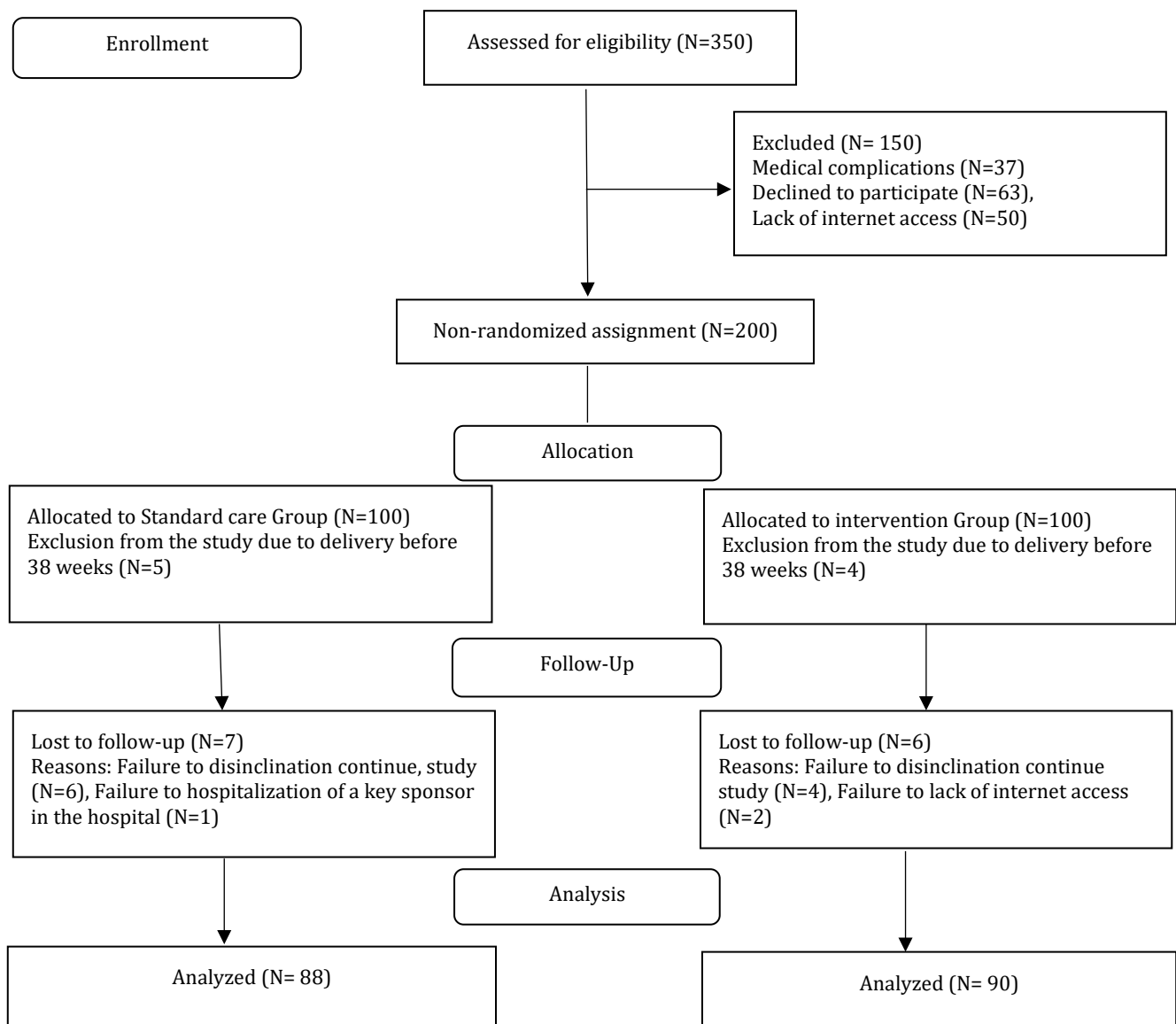


Figure 1. CONSORT Flowchart of the study

The drafted content was then sent to ten faculty members specializing in reproductive health for content validation. After incorporating their comments and making the necessary revisions, the final version was prepared. Four online sessions (Third trimester, 1, 7-14, 21-30 days after delivery) of self-care training were conducted for mothers, their husbands, and key supporters (mother and sister). The duration of each session varied from 30 to 100 minutes, depending on the participants' needs. Participants were enrolled in a virtual question-

and-answer group. To facilitate continuous interaction, the researcher provided 24-hour support for inquiries and disseminated daily educational and motivational content through the group. Perceived social support and postpartum depression were measured and compared in the intervention and standard care groups in the second and eighth weeks postpartum using the questionnaires electronically and by telephone. The summary of the interventions is provided in Table 1.

Table 1. Summary of the intervention implementation method

Sessions	Place	Time	Content
Session 1	Online/offline training	Third trimester of pregnancy (28-34w)	Changes and physical, mental, and emotional needs of the mother in the postpartum period Maternal and neonatal risk factors after delivery Benefits of breastfeeding The role of the father and supporter in supporting the mother in the continuation of exclusive breastfeeding
Session 2	Hospital	First day after delivery	Time to visit the health centre Time to screen the newborn Mother and newborn care Breastfeeding Maternal and infant danger signs Attention to maternal mood disorders
Session 3	Online/ offline training	7-14 days after delivery	Mental health Caring for the mother and child at home
Session 4	Online/ offline training	21-30 days after delivery	Communication with mother and newborn Maternal physical activity status Exercise and postpartum massage

The researcher-developed questionnaire on demographic information and obstetric records comprised 21 questions focused on essential details about couples and their key supporters. Seventeen questions focused on demographic details, while four questions addressed obstetric history and the current status of the pregnancy. Qualitative and quantitative face and content validity were assessed by 10 experts. All items met the required thresholds, with item impact factors > 1.5 (25), CVR > 0.62 (Lawshe's table), and CVI > 0.79 (26). Reliability was demonstrated by a Cronbach's alpha of 0.91 and an intraclass correlation coefficient (ICC) of 0.93 (tested with 20 participants over two weeks), indicating high stability.

The Hopkins Scale of Perceived Social Support contains 36 questions to measure the postpartum perceived social support level. This

questionnaire, designed by Hopkins (2008) (27), has four subscales of perceived social support from husband, parents, husband's parents, friends, and relatives, which are scored on a 5-point Likert scale: never (0), rarely (1), sometimes (2), most of the time (3), and always (4). The total score of the questionnaire is 0 to 144. The higher the score, the greater the perceived social support, which was evaluated at the end of the second and eighth weeks postpartum. The validity of this questionnaire has been assessed through content and criterion validity, and its reliability has been investigated by calculating Cronbach's alpha coefficient on ten individuals with $r = 0.90$ (28). In the present study, the reliability of this tool was determined on ten individuals by Cronbach's alpha $\alpha = 0.88$.

The Edinburgh Postpartum Depression Scale is a tool for screening of postpartum depression,

which was developed by Cox et al. in 1978 and is used to screen depression symptoms during the last seven days in the postpartum period. This tool contains ten items that emphasizes the mental aspects of depression, especially the inability to enjoy. The minimum and maximum scores are zero and 30, respectively. A cut-off point of 12 has been determined as a diagnosis of postpartum depression risk two and eight weeks postpartum (29). The psychometric of the Iranian version of this scale was evaluated by Montazeri et al. (2007) (30) and Ghiasvand et al. (2017) (31). The average time required to complete the questionnaires was approximately 20 minutes

The data were analyzed using SPSS software (version 23.0). Before analyzing the raw data, the Kolmogorov-Smirnov test was used to check the normality of the distribution of quantitative variables. The quantitative variables were normal and the independent parametric t-test was used. $P < 0.05$ was considered significant.

Results

Of the 200 participants at the beginning of the study, 12 individuals were excluded due to various reasons during the implementation of the study (Figure 1). The two groups were homogeneous in terms of demographic variables. The demographic characteristics of the study subjects are presented in Table 2.

Table 2. Demographic characteristics of the intervention and standard care groups

variable	Intervention group Mean±SD or N (%)	Standard care group Mean±SD or N (%)	P-Value
Woman's age (year)	26.48 ±4.03	25.40±4.73	0.103*
Husband's age (year)	29.75±3.92	29.46± 4.25	0.638*
Women's education			
Elementary school education	4 (4.4)	6 (6.8)	0.066**
Intermediate School High School and Diploma	19 (21.2)	23 (26.2)	
University degree	67(74.4)	59(67)	
Total	90(100)	88(100)	
Field of women's education			
Medical sciences	5(5.6)	7(8)	0.564***
Non-medical sciences	85(94.4)	81(92)	
Total	90(100)	88(100)	
Woman's job			
Housewife	67(74.4)	69(78.4)	0.567**
Employed	23(25.7)	19(21.6)	
Total	90(100)	88(100)	
Husband's education			
Elementary school	1(1.1)	3(3.5)	0.124*
Intermediate School, High School and Diploma	31(34.4)	39(44.2)	
University degree	51(56.7)	46(52.3)	
Total	90(100)	88(100)	
Husband's job			
Employed	33(36.7)	28(31.8)	0.388**
Worker	6(6.7)	11(12.5)	
Self-employed	51(56.7)	49(55.7)	
Total	90(100)	88(100)	

*Independent t-test, **Mann-Whitney U test, *** Chi-Square test

According to the obstetric file, the mean gestational age at delivery was 39.20 ± 0.97 weeks in the intervention group and 39.18 ± 1.03 in the standard care group ($P=0.889$). The newborn's birth weight was 3209.61 ± 365.38 in the intervention group and 3295.85 ± 365.81 in the standard care group; the two groups were not significantly different ($P=0.113$). Moreover, the reason for admission in both groups was the onset of labor pain ($P=0.415$). The majority of neonates in the intervention group were female (55.6%), whereas 56.8% of those in the standard care group were male. The majority of

pregnancies in both groups were planned, and normal vaginal delivery was the most common mode of delivery. However, results from the Chi-square and Fisher's exact tests indicated no statistically significant differences between the two groups.

The main key supporter in both groups was the woman's mother. There was no statistically significant difference between the participants' key supporters in terms of their education level ($P= 0.486$) and employment status ($P= 0.065$) (Table 3).

Table 3. Comparison of the demographic characteristics of supporters in the intervention and standard care groups

Variable	Intervention group Mean $\pm$ SD	Standard care group Mean $\pm$ SD or N(%)	P-value
Key supporter's age (years)	49.01 $\pm$ 9.47	51.02 $\pm$ 9.97	*0.171
Key supporter			
Mother	74(82.3)	67(76.1)	0.454*
Other (sister-in-law, mother-in-law, sister)	16(17.8)	21(23.9)	
Total	90(100)	88(100)	
Key supporter			
Elementary school	47(52.2)	55(62.5)	0.486**
Intermediate School, High School and Diploma	19(21.1)	17(19.3)	
University degree	24(26.7)	16(18.2)	
Total	90(100)	88(100)	
Key supporter's job			
Housewife	71(78.9)	79(89.7)	0.065***
Employee	19(21.1)	9(10.3)	
Total	90(100)	88(100)	

*Fishers Exact test, ** Mann- Whitney U test, ***Chi-Square test

Table 4. Comparison of the mean overall score and scores of the different dimensions of the postpartum perceived social support in the intervention and standard care groups

Variable	Intervention group Mean $\pm$ SD	Standard care group Mean $\pm$ SD	P-Value	P-Value
Mothers' overall perceived social support				
Two weeks postpartum	0 $\pm$ 22.97.81	78.32 $\pm$ 18.38	0.380*	
Eight weeks postpartum	76.32 $\pm$ 18.08	76.53 $\pm$ 17.96	*0.938	0.078
P-Value	0.002**	0.025**		
Support from husband				
Two weeks postpartum	28.14 $\pm$ 6.56	27.98 $\pm$ 5.83	0.867*	
Eight weeks postpartum	27.10 $\pm$ 6.78	27.05 $\pm$ 6.22	*0.276	0.879
P-Value	0.085**	0.032**		
Support from parents				

Variable	Intervention group Mean±SD	Standard care group Mean±SD	P-Value	P-Value
Two weeks postpartum	24.83±8.80	23.43±8.29	0.640*	
Eight weeks postpartum	23.41±7.95	22.52±8.51	0.176*	0.478
P-Value	0.013**	0.046**		
Support from husband's parents				
Two weeks postpartum	13.26±6.80	13.72±6.29	0.965*	0.179
Eight weeks postpartum	11.62±5.96	12.93±5.93	0.473*	
P-Value	<0.001**	0.089**		
Support from relatives and friends				
Two weeks postpartum	14.83±8.35	13.18±7.86		
Eight weeks postpartum	14.18±6.36	14.02±8		0.159
P-Value	*.0461	**0.150	*0.878	

†Repeated Measures ANOVA, * independent t-test, ** paired t-test

Table 5. Comparison of postpartum depression in the intervention and standard care groups

Variable	Intervention group N (%)	Standard care group N (%)	P-Value
Depression in second week postpartum			
Yes	17(18.9)	12(13.6)	
No	73(81.1)	76(86.4)	
Total	90(100)	88(100)	0.418 [∞]
Depression in eighth week postpartum**			
Yes	7(7.8)	6(6.8)	
No	83(92.2)	82(93.2)	
Total	90(100)	88(100)	0.325 [∞]
P-Value	0.013 ^{∞∞}	0.146 ^{∞∞}	

[∞]Chi-Square test, ^{∞∞}McNemar's test

*The cutoff point for postpartum depression is considered as 12

**The names of women with depression eight weeks postpartum were provided to the health centers that covered them

Discussion

This study was conducted to examine the impact of perinatal educational empowerment for women and their key supporters during pregnancy and postpartum periods on perceived social support and postpartum Depression. The present study showed that the educational empowerment of pregnant women's key supporters did not significantly improve social support or depression compared with standard care, but it significantly reduced postpartum depression within the intervention group over time.

Social support, defined as the respect, sense of belonging, love, and affection an individual receives from others (31), acts as a social shock absorber by changing the person's beliefs about the existence of a support source when an incident occurs, which increases the mother's

sense of security and hope, and provides the feeling of being loved, valued, and respected (32). The broader an individual's social network, the better they can deal with the source of stress and lead a better life since each person can meet certain needs. Providing emotional, material, and informational support resources relieves the physical and mental changes associated with pregnancy and childbirth and encourages the mother to adopt healthy behaviors (23).

Contradictory results obtained regarding the role of counseling and training in the understanding of social support in the postpartum period (23, 33) might be sought in factors such as differences in individuals' expectations, perception of the support from people around them, the difference in the tools measuring the perception of social support, and the time of measuring this variable. On the other

hand, it seems that the birth of a newborn, his/her physiological needs, and the mother's fragile physical and mental condition in the first days postpartum create a higher need for care, support, and empathy in the couple. Gradually, due to the mother's physical condition improving, reduction in her physical pain, her adaptation to the existing situation, and strengthening of the mother-child attachment, the levels of emotional support and empathy from the husband remain constant, yet higher compared to the prenatal period. In Iranian society, family members traditionally accompany the mother from the beginning of pregnancy and assist her in caring for the newborn, and is prominent in the first weeks postpartum; however, women deal with their new world unaccompanied after a while.

The majority of the studies have indicated the direct and indirect role of education and counseling on self-care in reducing postpartum depression. In a clinical trial in the United States in 2015, the Family Collaborative Care program reduced the postpartum depression rate (34). This narrative review highlights that social support interventions, particularly those led by skilled public health nurses, are effective and cost-efficient strategies for preventing and treating postpartum depression and improving maternal and infant outcomes (32).

The findings of the present study and similar studies indicate that women experience significant physical and psychological changes from pregnancy to delivery. Due to the lack of awareness and perception of the psychological state after childbirth, these women are prone to depression and are in great need of support, participation, and mutual understanding from their relations during this period. Accordingly, since mother's care is a mutual approach that encourages clients and women's families to actively participate in the process of supporting and caring for her, empowering family members, in addition to improving their knowledge, plays a fundamental role in the mother's necessary preparation to welcome the new life and facilitate better understanding and faster acceptance of the current situation.

In addition, most similar studies emphasize that interventions will be more efficient if they initiate from the beginning of pregnancy; the

husband's role in the service delivery system and the lack of educational programs for fathers should also be mentioned. In countrywide programs, men are usually marginalized and fail to access information that promotes the health of mothers and children. It is also necessary to mention the 'men not allowed' sign in the women's area (35). Some reports have provided the ineffectiveness of interventions during pregnancy or postpartum in reducing and preventing postpartum depression (36). In a clinical trial in Ardabil, Iran, four group counseling sessions with the husband in the third trimester of pregnancy indicated no significant difference in depression level two months postpartum (33). Another study in 2013 in Tabriz showed that telephone support six weeks postpartum did not significantly improve postpartum depression score (37). Some differences might be attributed to the participants' characteristics, the program type and content, and the way of providing individual or group training/counseling.

Due to crises such as pandemics and war, etc., there was a need to change the postpartum care policies by reducing the number of mothers' and their family members' visits to health centers and increasing distance care and sometimes telephone follow-ups and consultations by caregivers (38). In the meantime, simple solutions, including social networks and couple counseling simultaneously and separately, could be efficacious to some extent in reducing participants' concerns and meeting their needs (39).

One of the strengths of this research is the emphasis on supportive interventions during disease outbreaks. Given the critical importance of maternal health during pregnancy and postpartum, it is essential to provide comprehensive care and support to mothers during outbreaks of diseases, wars, through non-face-to-face interventions and education for caregivers. Similar to most quasi-experimental studies, this study had some limitations such as the impossibility of randomizing the participants into study groups and the participant blinding. Moreover, individuals' understanding and perception of social support received from the family might broadly vary, especially in the sensitive postpartum period; however, a

standard scale was used to measure this variable and minimize such differences as much as possible.

Future longitudinal studies are recommended to evaluate the effectiveness of participatory interventions that actively engage men and other key support persons in improving maternal health outcomes during the postpartum period.

Conclusion

Although the educational empowerment intervention did not significantly improve perceived social support or reduce postpartum depression compared with standard care, it led to a significant reduction in postpartum depression within the intervention group over time. These findings suggest that empowering women and their key supporters during the perinatal period may have a modest beneficial effect on postpartum depression, though larger studies with longer follow-up are needed to confirm its effectiveness.

Declarations

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Conflicts of interest

The authors declared no conflicts of interest.

Ethical approval

A written consent was obtained from each participant and they were ensured that their information and answers would remain confidential and would only be used for research purposes.

Code of Ethics

The present study was approved by the ethics committee of Shahid Beheshti University of Medical Sciences (ethical code: IR.SBMU.PHARMACY.REC.1400.061).

Use of Artificial Intelligence

Use of Artificial Intelligence (AI): We have not used any AI tools or technologies to prepare this manuscript.

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Authors' contributions

The study was designed by SH and SN, who were responsible for collecting the data and the educational intervention. Statistical analysis was performed by HAM and SN. Also, SH and SN prepared the first draft of the manuscript. All authors provided feedback on different versions of the manuscript and approved the final version.

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