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The Effect of a Supportive-Educational Intervention on Maternal-Fetal Attachment of Pregnant Women Facing Domestic Violence: A Randomized Controlled Trial

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Abstract

Background: One of the consequences of violence during pregnancy is impaired mother-fetus attachment.
Objectives: The present study aimed at determining the effect of supportive-educational intervention on maternal-fetal attachment in pregnant women facing domestic violence.
Methods: The current study was conducted on 100 pregnant women subjected to domestic violence by their husbands. The subjects were selected using convenience sampling method and were randomized to the intervention and control groups. The intervention group received four sessions of individual supportive-educational intervention, while the control group were provided with routine care during the same period. Data were collected using the Cranley maternal- fetal attachment scale in the two groups and analyzed by statistical tests eight weeks after the intervention.
Results: After the intervention, the mean maternal-fetal attachment score was significantly higher in the intervention group than the control group (80.36 ± 6.75 vs. 65.50 ± 6.78; $P = 0.0001$).
Conclusions: The study results showed that supportive-educational intervention was effective in promoting maternal-fetal attachment. Therefore, it was recommended that such interventions be integrated in the prenatal care programs of pregnant women facing domestic violence.

Keywords: Education, Domestic Violence, Mother-Infant Relations, Pregnancy, Social Support

1. Background

Domestic violence is a global problem and a major public health issue in most countries occurring in all socioeconomic classes (1). Although applied to violence against children and the elderly, it often refers to violence against the wife. Similarly, even though it can be imposed by any family member, it is often associated with the violence committed by men (2). Spousal violence refers to any form of assaultive and coercive behavior pattern that involves threatening or inflicting physical, sexual, or psychological abuse committed by the spouse with the intent of creating fears or gaining control over the victim (3).

Many women experience violence and abuse during pregnancy (2) and, contrary to the public opinion, pregnancy does not prevent the occurrence of violence. In fact, there is conflicting evidence of whether it increases or decreases such violence. In one study, half of the participants stated that they were insulted and subjected to violence for the first time during their pregnancy (3). Meanwhile, the prevalence of violence during pregnancy is much higher in the developing countries than in the developed countries (27.7% vs. 13.3%) (4). It is reported that the prevalence of different types of violence during pregnancy in Iran exceeds 60% (5). However, most women prefer to hide domestic violence due to social stigma, shame, embarrassment, and fear of reprisal (6).

Pregnancy can even be an excuse for imposing or intensifying domestic violence against pregnant women for various reasons such as reduced sexual intercourses, misconceptions about pregnancy, husbands' abnormal feelings regarding pregnancy, transition to parenthood, and lack of balance in couples' relationship and peace (7). Violence during pregnancy is an additional threat to the mother and fetus. Pregnancy alone causes many physical and psychological stresses in the individual, and its association

with other stressors such as violence can have adverse effects on both fetus and mother and predict childbirth outcomes. Violence during pregnancy can lead to these negative consequences either directly, through sexual or physical trauma, or indirectly, through subsequent stress (8, 9).

One of the outcomes of this violence is impaired maternal-fetal attachment to the extent that it is associated with a poor mother-infant attachment even in the presence of satisfactory prenatal care (10). Healthy diet, avoiding high-risk behaviors, having a positive feeling and impression on fetus, and talking and paying attention to fetal movements can improve maternal-fetal attachment. Spousal violence against a pregnant woman reduces her satisfaction and weakens her attachment behaviors (11). It seems that stress, anxiety, and depression caused by violence during pregnancy have direct negative implications for maternal-fetal relationship. In the same vein, Pires de Almeida et al., showed that victims adopt a more negative attitude toward their pregnancy and fetus and are much more likely to establish a weaker relationship with the fetus (12). In Iran, Jafarnezad et al., reported an inverse relationship between violence during pregnancy and mother-infant attachment (13).

Various interventions are proposed for domestic violence, including cognitive-behavioral therapy and psychological training in self-esteem, depression, and psychological distress (14), supportive intervention, defending women's rights in relation to reducing violence and improving health indicators (15), and home-based interventions (16). Previous studies also investigated the effectiveness of different methods such as mindfulness, cognitive-behavioral therapies, psychological training, and stress management in reducing the negative physiological outcomes of violence on mothers, especially nulliparous women (17). Meanwhile, to the best of authors' knowledge, no study is designed and implemented appropriate interventions to mitigate violence and improve mother-infant attachment in pregnant women thus far. By combining the main components of psychological therapies and attachment education, the present study aimed at designing and testing a short-term supportive-educational program and exploring its effect on maternal-fetal attachment in pregnant women facing domestic violence.

2. Objectives

The current study aimed at investigating the effect of a supportive-educational intervention on maternal-fetal attachment in pregnant women facing domestic violence referring to comprehensive care centers.

3. Methods

3.1. Study Design and Participants

The current randomized clinical trial (IRCT20160924029954N10) was conducted on 100 pregnant women facing domestic violence. The subjects referred to the comprehensive care centers affiliated to Zahedan University of Medical Sciences to receive prenatal care in 2018. The inclusion criteria were: the minimum age of 20 years, gestational age of 20 - 25 weeks, facing spousal abuse or violence, being subjected to verbal and physical violence based on the domestic violence screening tool, the absence of psychiatric disorders (such as schizophrenia or bipolar disorder) in women or men, and the absence of partners' addiction. The exclusion criteria were lack of participation or being absent for more than one session from the educational program. First, a total of 100 individuals were selected, using convenience sampling method, from eligible pregnant women facing violence referred to the designated comprehensive care centers for prenatal care. Next, they were randomly assigned to the intervention (n = 50) or control (n = 50) group.

3.2. Measurement

Data collection tool included a questionnaire consisting of three parts. The first part covered demographic information of the participants and the second part, comprised the Cranley maternal-fetal attachment scale. This tool consists of 24 items with five subscales of role taking (four items), interaction with the fetus (five items), attributing characteristics to the fetus (six items), differentiation of self from fetus (four items), and self-devotion (five items). Items are scored based on a five-point Likert scale (5 = definitely yes, 4= yes, 3 = uncertain, 2 = no, and 1 = definitely no). Item #22 is scored inversely. Thus, total score ranges 24 to 125, higher scores representing more attachment. This scale was used by Tafazoli et al. (18), in previous studies and its reliability was reported to be acceptable. In the present study, the overall reliability of the questionnaire was found acceptable as well (Cronbach's alpha = 0.88).

The hurts, insults, threaten, and screams (HITS) scale, developed by Sherin et al. (19), was used as the third part of data collection tool in order to screen domestic violence. This questionnaire consists of four questions focused on verbal and physical violence and are scored based on a five-point Likert scale. The possible total score ranges from 4 to 20. Scores higher than 10 indicate being at risk of domestic violence and the need of seeking educational counseling or assistance from social support resources. Validity and reliability of HITS was approved in a study by Mirghafourvand et al. (20), in Iran.

3.3. Procedure

After receiving an official letter of introduction from the Vice Chancellor for Research and Information Technology as well as the Vice Chancellor for Health of the university, the researcher referred to the comprehensive care centers and made the necessary coordination with the relevant authorities to implement the study. When pregnant women facing violence were identified through interviews using HITS, the eligible subjects obtaining a minimum score of 10 were selected from the target population and their written informed consent was obtained. A total of 143 eligible subjects were examined, of whom 43 were excluded (25 subjects due to not meeting the inclusion criteria and 18 due to decline to participate). As a result, the study was conducted and followed up with 100 subjects. Subsequently, the eligible women were randomly assigned to the intervention or control group. First, a total of 100 colored balls identifying the study groups (red ball = intervention, white ball = control) were prepared (the random allocation rule); then, the group to which each woman belonged to was determined based on the color of the ball picked out of the vase. As the eligible subjects were gradually determined, one of the extracted list numbers was allocated to the selected pregnant women. Both groups took the pretest by completing the maternal-fetal attachment scale. The intervention group received four sessions of supportive-educational intervention twice a week based on the content presented in Table 1. After eight weeks, to perform the posttest, the scale was completed again by the intervention group either at home or the care center. Meanwhile, the control group did not receive any program other than the routine care. However, in order to observe ethical considerations, the educational content was also given to the control group in a booklet (coping and preventive strategies for domestic violence) after the study.

Table 1. Structure and Concept of Sessions Based on the Supportive-Educational Intervention

Session	Content
1	Getting acquainted with each other, establishing relationships, and discussing domestic violence and its types, violence cycle, and violence during pregnancy.
2	Training and practicing emotional disclosure and emotional release, providing psychological support based on the client-centered theory.
3	Management of marital conflicts, training problem-solving as well as conflict-resolution skills, and reducing the risk of victimization.
4	Maintaining communication with the fetus and training attachment behaviors, sum-up and review.

3.4. Intervention

After reviewing interventional studies and clinical trials on domestic violence in general and violence during pregnancy in particular, the initial format of supportive-educational intervention was prepared based on the studies by Ramos et al. (21), Sapkota et al. (2), and Tiwari et al. (22). Then, in order to increase the reliability, qualified experts (including counselors, social workers, and clinical psychologists) were consulted and their views were applied by the research team. Next, the final protocol was prepared.

The intervention was implemented by (1) an expert with MSc in Midwifery Counseling and practical experience in comprehensive care centers and (2) an expert with PhD in Counseling and practical experience in helping women facing domestic violence. The time was chosen in a way that participants feel as comfortable as possible. The midwifery counselor tried to provide a private environment to build trust. The intervention was held in a quiet room at the comprehensive care centers. The time of each session varied 60 - 90 minutes based on the content of each session. At the beginning of each session, the objective was described. Each session was initiated by reviewing the previous meeting, continued with presenting of the specified content, answering questions, and clarifying ambiguities and finally, session ended with setting up the next session.

3.5. Statistical Analysis

After being collected and coded, the data were analyzed using IBM version 21.0. Initially, frequency, percentage, mean, standard deviation, and minimum and maximum values were measured by descriptive statistics. Paired samples *t*-test was used to compare pre- and post-intervention means. Independent samples *t*-test was later used to compare mean scores between the two groups. The significance level in the current study was considered 0.05.

3.6. Ethical Considerations

The study protocol was approved by the Ethics Committee of Zahedan University of Medical Sciences (IR.ZAUMS.REC.1397.204).

4. Results

The results indicated that the mean age of the subjects was 28.58 $\pm$ 4.47 and 29.08 $\pm$ 5.03 years in the intervention and control groups, respectively. The other demographic characteristics are shown in Table 2. Independent samples *t*-test and chi-squared test showed no significant difference

between the two groups in terms of all demographic variables (P < 0.05). But there was a significant difference between the two groups in terms of the level of education (P = 0.005).

Table 2. Comparison of the Demographic Characteristics Between the Intervention and Control Groups[a]

Variable	Intervention	Control	P Value
Occupational status			0.99[b]
Housewife	46 (92)	46 (92)	
Employed	4 (8)	4 (8)	
Total	50 (100)	50 (100)	
Level of education			0.005[b]
Illiterate	9 (18)	14 (28)	
Below high school diploma	33 (66)	17 (34)	
Above high school diploma	8(16)	19(38)	
Total	50 (100)	50 (100)	
Pregnancy			0.68[b]
Wanted	23 (46)	21 (42)	
Unwanted	27 (54)	29 (58)	
Total	50 (100)	50 (100)	
History of domestic violence			0.47[b]
Yes	40 (80)	37 (74)	
No	10 (20)	13 (26)	
Total	50 (100)	50 (100)	
Age of women, y	28.58 ± 4.47	29.08 ± 5.03	0.52[c]
Gestational age, wk	22.88 ± 1.68	22.16 ± 1.60	0.03[c]
Marriage duration, y	9.00 ± 5.12	9.06 ± 4.68	0.06[c]

[a] Values are expressed as mean ± SD or No. (%).
[b] Chi-squared test
[c] Independent samples t-test

The mean score of violence before the intervention in the intervention and control groups was 15.26 ± 2.33 and 14.22 ± 1.79, which changed to 11.62 ± 2.05 and 13.28 ± 1.94 after the intervention, respectively. Hence, there was no significant difference between the two groups in terms of violence score prior to the intervention. But the results of independent samples *t*-test showed that the mean changes of the violence score was significant in the intervention (-3.64 ± 2.23) and control groups (-0.94 ± 1.57) (P = 0.0001).

Concerning the main objective of the study, it was revealed that the mean score of maternal-fetal attachment of pregnant women facing violence in the intervention group increased from 62.86 ± 8.03 before the intervention to 80.36 ± 6.75 after the intervention (Table 3). The results of independent samples *t*-test showed that the mean score of maternal-fetal attachment of pregnant women facing violence was significantly different between the two groups after the intervention (P = 0.0001). Moreover, paired samples *t*-test suggested an increase in the mean score of maternal-fetal attachment in both groups in the posttest as compared to the pretest (P = 0.0001).

5. Discussion

The current study was conducted to determine the effect of supportive-educational intervention on violence and maternal-fetal attachment in pregnant women facing domestic violence. The study findings showed that the supportive-educational intervention has led to a reduction in violence against women. Consistent with this finding, most studies aimed at mitigating violence against women, especially in the developed countries, confirm that identifying women facing violence and deploying tailored interventions can help decrease the rate of violence against this population (14-16). There are few studies on violence during pregnancy, while these works often tried to reduce violence. The meta-analysis by Sapkota et al. reported few such studies. They observed that in spite of the diversity of interventions and methodologies proposed so far, no study substantially reduced the rate of violence during pregnancy in the long run (2). The results of the review study by Leneghan et al. also indicated that empowerment counseling could significantly reduce the rate of violence and abuse against women during pregnancy (23).

Counseling has a positive effect on decreasing domestic violence. In this regard, Jahanfar et al. (24), and Van Parys et al. (25), suggested that counseling contributes to the relative decline of violence during pregnancy. In explaining this finding, it could be posited that perhaps the supportive aspect of individual counseling provided by the therapist helps decrease violence. Tiwari et al. (22), and Kiely et al. (3), concluded that supportive counseling coupled with social and psychosocial support as well as client-centered therapies such as empathic listening can alleviate violence, depression, and other postpartum disorders, which was consistent with the results of the present study. The psycho-educational dimension of the current intervention may help reduce the incidence of domestic violence. While implementing the intervention, attempts were made to train healthy communication as well as problem-solving and conflict-resolution skills so as to assist pregnant women to treat their husbands in such a way that the risk of spousal violence is minimized. Based on circular causality in family dynamics, a part of domestic violence inflicted on women is related to stress, irritability, psychological vulnerability, and coping as well as interactive strategies with husband. Perhaps the relative decrease

Table 3. Comparison of the Mean and Standard Deviation of Mother-Fetus Attachment Before and After the Intervention in the Two Groups

Group	Time			Paired Samples *T*-Test (Before-After)
	Before, Mean ± SD	After, Mean ± SD	Changes, Mean ± SD	
Intervention	62.86 ± 8.03	80.36 ± 6.75	17.50 ± 6.44	P = 0.0001
Control	61.34 ± 7.28	65.50 ± 6.78	4.16 ± 2.90	P = 0.0001
Independent samples *t*-test	P = 0.75	P = 0.0001	P = 0.0001	

of violence after the intervention in the current study was due to the effect of the designed intervention on these factors.

The findings also demonstrated that maternal-fetal attachment was significantly greater in the intervention group than the control group. The intervention used in the current study also featured a supportive aspect, namely training and practicing techniques to express one's emotions, emphatic listening to pregnant woman, and providing psychological support based on a client-centered therapy. The use of these techniques may lead to a reduction in the perceived stress of women and further improve their relationship with the infant. Similarly, Pisoni et al. (26), believed that mothers experiencing high-risk pregnancies, including those facing domestic violence, have huge psychological stress and distress, which could entail maternal anxiety and depression, and ultimately undermine maternal-fetal attachment. Additionally, women facing domestic violence are not aware of their emotions to the fetus, because they are not able to focus on this relationship due to the impact of violence on their mental state (27).

One of the reasons for the development of maternal-fetal attachment observed in the present study could be associated with the educational dimension of the proposed intervention realized through establishing a favorable relationship with the fetus and training attachment behaviors. Instructing attachment behaviors to mothers is a process including techniques such as counting of the fetal movements and developing affectionate relationships with the fetus through touching and talking (17).

The current study findings showed that maternal-fetal attachment in the control group improved significantly. Part of the rise in maternal-fetal attachment in both groups in the present study, as confirmed by Azogh et al., can be attributed to the progression of pregnancy (17).

Although the World Health Organization offers clinical guidelines to address the needs of pregnant women facing violence, they have not gained a wide acceptance in some countries. McCauley et al. (28), articulated that domestic violence is often considered a private issue, which is not openly discussed by health care providers. Therefore, it is recommended to design and test practical interventions that are appropriate to the cultural and social structures of different populations. This is an especially urgent need in communities such as Iran where religious orders discourage violence against women.

5.1. Limitations

Failure to provide group therapy, significant difference of level of education between the two groups, short time follow-up, and small sample size were the limitations of the current study. It is suggested that future studies be conducted on the effect of group intervention, supportive intervention design tailored to the type of violence, and evaluation of long-term effects of the intervention on enhancing mother-baby bond in postpartum period.

5.2. Conclusions

The short-term supportive-educational intervention proposed in the current study proved effective in decreasing spousal violence and promoting maternal-fetal attachment. Hence, health care providers are recommended to screen and identify pregnant women facing violence and take advantage of various components of this intervention, while designing care programs for vulnerable women. Reducing spousal violence and increasing maternal-fetal attachment can help foster psychological well-being of the mother, infant, and family.

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Footnotes

Authors' Contribution: All the authors contributed to the conceptualization and development of the study as well as interpretation of data. They all reviewed and edited the manuscript and approved the final draft. Ali Navidian supervised the study.

Clinical Trial Registration Code: The study was registered in the Iranian Registry of Clinical Trials (IRCT20160924029954N10).

Conflict of Interests: The authors declared no conflict of interests.

Ethical Approval: The study protocol was approved by the Ethics Committee of Zahedan University of Medical Sciences (code No. IR.ZAUMS.REC.1397.204).

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Informed Consent: Written informed consent was obtained from all participants.

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