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Effectiveness of Midwifery Counseling on Adaptation to Pregnancy, Maternal-Fetal Attachment, and Quality of Life in Unplanned Pregnant Women: A Randomized Controlled Trial

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Abstract

Background: Women with unplanned pregnancy experienced a number of psychological problems. Thus, the present study aimed to examine the effectiveness of midwifery counseling based on cognitive approach in improvement of adaptation to pregnancy, mother-fetal attachment and quality of life among unplanned pregnant women.

Materials and Methods: This pre-test posttest control group single blind study was done on pregnant women who were chosen from the healthcare centers of Zanjan city, Iran. Of 187 women screened for eligibility to participate in the study, 54 unplanned pregnant women met inclusion criteria and were randomly assigned into intervention group or control group. The intervention group received eight weekly group cognitive therapy sessions. The control group received prenatal routine care. The participants answered WHO Quality of Life Questionnaire, Maternal–Fetal Attachment Scale, and Lederman Prenatal Self-evaluation Questionnaire at pretest, posttest, and one-month follow- up periods.

Results: The two groups were not different in terms of age ($p = 0.89$), educational status ($p = 0.56$), and job status ($p = 0.31$). In addition, they were not different regarding pre-test scores of Lederman Prenatal Self-evaluation Questionnaire ($p = 0.27$), Maternal–Fetal Attachment Scale ($p = 0.22$), and WHO Quality of Life Questionnaire ($p = 0.37$). At posttest and one-month follow- up, the intervention group showed significant improvement in adaptation to pregnancy ($p < 0.0001$), Maternal-fetal attachment ($p < 0.0001$), and quality of life ($p < 0.0001$) than the control group.

Conclusion

Midwifery counseling based on cognitive approach could be an effective approach to improve adaption to pregnancy, maternal-fetal attachment, and quality of life among women who became pregnant unintentionally.

Key Words: Cognitive Approach, Midwifery Counseling, Pregnancy, Quality of life.

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1- INTRODUCTION

Unplanned pregnancy is a main public health issue worldwide (1). Nearly half of the pregnancies in the world are unplanned, with 90% of them occurring in developing countries (2). Unplanned pregnancy is a primary health problem among Iranian females, too. A systematic review showed among Iranian females the prevalence of unplanned pregnancy is 30.6% (3). Since there are legal, cultural, and religious barriers for abortion in Iran, women with unplanned pregnancy face a number of medical and psychological problems (4). Some Iranian women with unplanned pregnancy, seek to induce abortion (5). Mirzamoradi et al. (5) reported 14.5% of women with unplanned pregnancy, have done induced abortion. However, it seems the actual prevalence of abortion in Iran is underestimated, because there is no valid data about rate of unsafe abortions. Ranji (4) found that one third of abortions following unplanned pregnancy were done by nonmedical providers, and 85% of those women experienced serious medical side effects. Therefore, majority of the women have to continue their pregnancy (6).

Those women with unplanned pregnancy who decide to continue their pregnancy experienced a number of problems. Women with unplanned pregnancy experience challenges to adapt with the pregnancy (6). Adaptive responses refer to reactions through which a person accepts change and develops skills to adapt to events, conditions, or abnormal situations (7). Pregnancy is a transitional phase that needs acceptance for new roles and responsibilities. Adaptation to pregnancy occurs in seven domains: relationship with husband, relationship with mother, fear of helplessness and loss of control, preparation for labor, identification of motherhood role, acceptance of pregnancy, and well-being of self and baby (8). The surprising nature of unplanned pregnancy challenges the process of adaptation with it (6), and leads to inability to do daily activities, dificulty in acceptance of maternal role, and reduced maternal attachment to the fetus (9, 10). Thus, it is not surprising that unplanned pregnant women showed a number of physical and mental health problems. Evidence showed that women with unplanned pregnancy are less likely to do prenatal health care behaviors (11) and show higher rate of mortality and morbidity (12). Also, unplanned pregnancy is significantly associated with low birthweight and increased rate of infant's mortality (13). In addition, women with unplanned pregnancy experience significantly higher depression, and anxiety symptoms and lower levels of quality of life than women with planned pregnancy (6, 14).

Unplanned pregnancy also has huge negative effect on mother-fetal attachment. Women with unplanned pregnancy need a longer time to adapt with pregnancy and they have difficulties to form a sense of bonding with their fetus (15). Pregnant women who suffer from depression and anxiety, talk significantly less with their fetus (16); and rumination related to the depression is a strong predictive factor of disruptive mother-fetal attachment (17). A number of psychological approaches have been developed in order to increase mother-fetal attachment. For example, effectiveness of cognitive behavioral training for mothers (18), Beliefs, Attitudes, Subjective norms, and Enabling Factors (BASNEF) model (19), Mindfulness Yoga (20), relaxation training (21) on increasing adaptation to pregnancy and mother-fetal attachment have been demonstrated. Also, studies showed cognitive therapy reduces prenatal anxiety (22), postpartum depression (23), and fear of childbirth (24). However, to our knowledge, no published study has investigated the effect of midwifery counseling based on cognitive approach on

mother-fetal attachment and mothers' quality of life among unplanned pregnant women. Also, as far as we know, there is no study that investigated effect of cognitive therapy on adaptation to unplanned pregnancy. Thus, this study investigated the effect of midwifery counseling based on cognitive approach on adaptation to pregnancy, mother-fetal attachment, as well as mothers' quality of life among Iranian unplanned pregnant women. The study question was whether midwifery counseling based on cognitive approach significantly improves adaptation to pregnancy as well as mother-fetal attachment compared with control group. Furthermore, we examined the effects of cognitive therapy on mothers' quality of life.

2- MATERIALS AND METHODS

2-1. Study design and population

This pretest posttest control group single blind study was done on pregnant women who were chosen from the healthcare centers of Zanjan city, Iran. The healthcare centers of Zanjan were divided into three regions based on the social and economic conditions, and three health care centers were randomly selected from each region. To collect data from a group of women with unplanned pregnancy, we asked pregnant women to think about the time right before pregnancy and choose one of the following items: 1) I wanted to be pregnant earlier; 2) I wanted to be pregnant later; 3) I wanted to be pregnant at exactly that time; and 4) I did not want to be pregnant never ever. Those who chose the second item were selected as unplanned pregnant women. A number of 187 women were assessed for the eligibility criteria. 133 women did not meet the inclusion criteria (119 women had a planned pregnancy and 14 women did not meet other inclusion criteria). Therefore, 54 women with unplanned pregnancy were recruited in the study, and randomly assigned into two groups: the intervention (n = 27) or control group (n = 27) via block randomization method.

Based on mean and standard deviation of scores of adaptation to pregnancy of intervention group (118.89± 3.84) and control group (123.63± 4.33), reported in the Baghdari et al. (7) study, power = 90%, and error of type 1 = 0.01, the sample size of 22 was calculated for each group. Considering the attrition rate, sample size of 27 was estimated for each group.

$$n = \frac{(Z_{1-\alpha/2} + Z_{1-\beta})^2 \quad (\sigma_1^2 + \sigma_2^2)}{d^2}$$

Two participants in the intervention group dropped out from the study (one participant missed more than two intervention sessions, and the other was diagnosed with gestational diabetes). Three participants in the control group also were excluded from the study because legal abortion (one participant), immigration (one participant) and unwillingness to participate in the study (one participant) (**Figure.1**).

2-2. Methods

Pregnant women were assessed for eligibility criteria. Women who announced, "I wanted to be pregnant later" (i.e., unplanned pregnancy), and signed written consent form were selected and randomly assigned into intervention or control group. The intervention group received eight weekly group cognitive therapy sessions. Each group consists of nine participants and each session lasts 60-90 minutes. A trained midwife (first author) administered the sessions. The third author (S.Z.) trained and supervised the first author about implementation of the intervention. The participants answered socio-demographic questionnaire, WHO Quality of Life Questionnaire (WHOQOL) (25), Maternal–Fetal Attachment Scale (MFAS) (28), and Lederman Prenatal Self-

evaluation Questionnaire (8) at pretest, posttest, and one-month follow- up periods.

2-3. Measuring tools

2-3-1. Socio-demographic questionnaire

This included age, education level, occupation, number of children, and history of pregnancy, childbirth and abortion.

2-3-2. WHO Quality of Life Questionnaire-26 (WHOQOL-26)

The WHOQOL-26 is a short version of the WHOQOL-100 (25). This instrument comprises 26 items. Two items assess overall quality of life and general health and the other 24 items measure four domains: physical, psychological, social relationships, and environmental. Participants were asked to answer items based a time frame of four weeks and using a 5 point Likert scale (from 1 to 5). The scores ranged from 24 to 120 and higher scores reflect favorable quality of life. Validity and reliability of both the English (26), and the Persian version of the WHOQOL-26 were established (27).

2-3-3. Maternal–Fetal Attachment Scale (MFAS)

The MFAS is a 24-item questionnaire that assesses the attitude towards the pregnancy and becoming a mother as well as towards the baby (28). The MFAS consists of five subscales, which measure (1) differentiation of self from the fetus; (2) interaction with the fetus; (3) attributing characteristics and intentions to the fetus; (4) giving of self; and (5) role taking. Participants were asked to answer items based a 5-point Likert scale [1 (definitely no), 2 (no), 3 (unsure), 4 (yes) to 5 (definitely yes)]. The total score ranged from 24 to 120, and higher scores reflect stronger attachment. Validity and reliability of the English version (29) and Persian version MFAS (30) were demonstrated.

2-3-4. Lederman Prenatal Self-evaluation Questionnaire (PSEQ):

The PSEQ is a 79-item questionnaire that measures the adaptation to pregnancy (8). Participants are asked to answer items using a four-point Likert scale (1= "always" to 4 = "never"). The total score ranged from 79 to 316, and lower scores indicate better adaptation to pregnancy. The questionnaire consists of seven subscales including relationship with husband, relationship with mother, fear of helplessness and loss of control, preparation for labor, identification of motherhood role, acceptance of pregnancy, well-being of self and baby. Validity and reliability of the English version (8, 31), and Persian version of the PSEQ was established (7).

2-4. Intervention

The structure of intervention was developed based on psychological adaption to pregnancy model (8), and cognitive therapy (32). The primary goal of midwifery counseling based on cognitive approach is to change the way a woman thinks about herself, her child and her pregnancy, as well as making changes in mother's affection that may increase her ability to be emotionally responsible for her child, and thereby increase adaptation to pregnancy and maternal-fetal attachment. In this approach, the necessary knowledge about the changes in pregnancy, the way of dealing with these changes, and appropriate feedback are given to the client (33), which ultimately leads to better adaptation with pregnancy and improves expectations about motherhood. The content of intervention protocol is shown in **Table.1**. In addition, to keep participants in contact with the contents of the sessions, the highlights of sessions were messaged to them. The control group only received routine postpartum care. A midwife who was blind to group assignment carried out assessment procedures (**Figure.1**).

Table-1: Intervention interview.

Sessions	Content
Session 1	Introducing participants to each other Psychoeducation on cognitive behavior therapy model Education about relationship between situation, negative automatic thoughts, emotions and physical reactions, and behaviors Providing Thought Record Worksheet (TRW) Homework assignment: filling out TRW Review of the session.
Session 2	Homework review Education about relationship between situation, negative automatic thoughts, emotions and physical reactions, and behaviors focusing on pregnancy Education on understanding and identification of negative thoughts /images about pregnancy Homework assignment: filling out TRW about physical and emotional changes related to pregnancy.
Session 3	Homework review Psychoeducation on evaluation of thoughts and cognitive restructuring techniques (e.g. Evidence gathering, and cost benefit analysis) in order to form an alternative rationale thought. Homework assignment: filling out TRW and gathering evidence about their ability to accept the mother role.
Session 4	Homework review Psychoeducation on identifying thought error Relaxation training Talking about adaptation to pregnancy through empathy of the woman with her own mother. Homework assignment: filling out TRW focusing on thought errors, relationship with the husband, as well as relaxation exercise.
Session 5	Homework review Exercise on cognitive restructuring techniques and developing alternative rational thought. Talking about empathy and collaboration of spouse, reliability of the spouse, intimacy, interpersonal problem solving, and husband collaboration in caring for the baby. Homework assignment: filling out TRW focusing on labor and childbirth, and finding alternative rational thought, relationship with the husband, as well as relaxation exercise.
Session 6	Homework review Psychoeducation about differences between rationale thought and positive thought Education about procedure of labor and childbirth. Homework assignment: filling out TRW focusing on fear of pain during labor, inability and loss of control during childbirth, as well as relaxation exercise.
Session 7	Homework review Talking about experimentation of new rational alternative thought Education on designing of behavioral experiment Education on cognitive and behavioral pain management techniques Homework assignment: filling out TRW focusing on fear of pain during labor, inability and loss of control during childbirth, as well as relaxation exercise and pain management techniques.
Session 8	Homework review Talking about behavioral experimentations Preparation for labor and childbirth. Trust in the medical staff, management of negative emotions during childbirth.

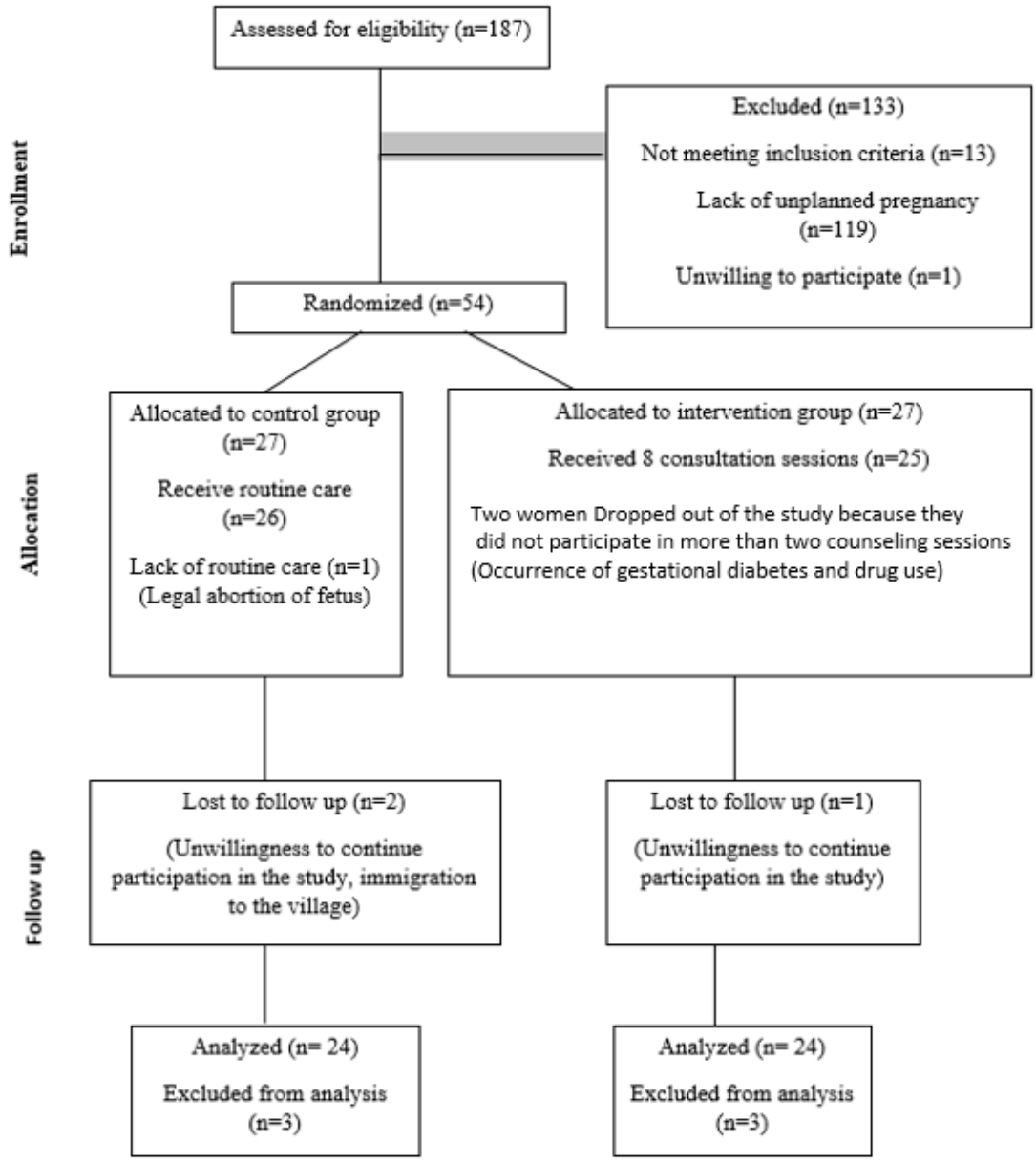

Fig1: Flow chart of participants in the study.

2-5. Ethical considerations

The study was registered in the Iranian registry for clinical trials (IRCT2017042228352N5). The ethics committee of our university approved the procedure of the research (ZUMS.REC.1396/66). All participants signed a written consent before participating in the study and they could leave at any stage of the research.

2-6. Inclusion and exclusion criteria

The inclusion criteria were: 1. Having an unplanned pregnancy, 2. Being able to speak and read Persian (since some women were from the less privileged parts of Zanjan province in which all people do not speak Persian and did not have enough reading and speaking language skills), 3. Gestational age less than 14 weeks, 4. Living with her husband, 5. Not having medical or psychological disorders (based on the Electronic Medical Files of Iranian pregnant women), and 6. Not using

substances. The exclusion criteria were having a planned pregnancy.

2-7. Data analysis

The statistical analysis was done with the statistical package for social sciences (SPSS) software version 24.0. The probability value's significance level was 0.05. The demographic characteristics of the participants were estimated with descriptive statistics. We used independent t-test and Chi-square test to compare our groups based on socio-demographic characteristics. Thus, two-way repeated measure analysis of variance (ANOVA) was used to determine differences between the two groups, the pretest and posttest, and follow-up results on adaptation to pregnancy, maternal-fetal attachment, and quality of life.

3- RESULTS

In this section, at first, we reported results of comparison of the two groups in terms of sociodemographic characteristics as well as their pre-test scores of PSEQ, MFAS, and WHOQOL-26. After that, effectiveness of the intervention on the interested variables were reported.

3-1. Preliminary analysis

The participants' means of age were 28.66 ± 4.48 and 28.29 ± 4.58 years old for the intervention and control groups, respectively. The means of their husbands' ages were 32.22 ± 5.22 and 30.88 ± 5.43 years old for the intervention and control group, respectively. The two groups were not different in terms of age (t (52) = 0.23, p = 0.89), and their husbands' age (t (52) = 1.01, p = 0.24). Majority of participants were housewives (70.4% of intervention group and 51.9% of control group, respectively). The preliminary analyses showed that the two groups were not different regarding their own educational status (x^2 (2), n = 54) = 2.05, p = 0.56), and job status (x^2 (2), n = 54) = 3.56, p = 0.31). Also, the husbands of the intervention and control group women did not differ regarding educational status (x^2 (2), n = 54) = 4.61, p = 0.46), and job status (x^2 (2), n = 54) = 5.61, p = 0.11) (**Table.2**). Similarly, they were not different regarding pre-test scores of PSEQ (t (52) = 1.09, p = 0.27), MFAS (t (52) = 1.24, p = 0.22), and WHOQOL-26 (t (52) = 0.89, p = 0.37) (**Table.3**).

Table-2: Baseline characteristic of intervention group (n = 25), and control group (n = 24).

Variables	Intervention group Number (%)	Control group Number (%)
Education		
High school	8(29.6%)	10(37%)
Diploma	15 (55.6%)	10 (37%)
Bachelor or higher	4 (14.8%)	7 (25.9%)
Husbands' education		
High school	6 (22.2%)	12 (44.4%)
Diploma	8 (29.6%)	8 (29.6%)
Bachelor or higher	13 (48.1%)	7 (25.925)
Job status		
Housewife	19 (70.4%)	14 (51.9%)
Employee	7 (25.92%)	8 (29.62%)
Student	1 (3.7%)	5 (18.5%)
Husbands' job status		
Employee	11 (40.7%)	5 (31.3%)
Self employee	10 (37%)	18 (66.7%)
Worker	6 (22.2%)	4 (14.8%)

Table-3: Comparison of intervention group and control group on Maternal–Fetal Attachment Scale and WHO Quality of Life Questionnaire-26.

Tools	Pretest Mean (SD)	Posttest Mean (SD)	Follow up Mean (SD)	F (Group*time)	P-value
Maternal–Fetal Attachment Scale					
Intervention group	56.60(4.96)	83.4(2.59)	84.36(2.78)	412.11	<.0001
Control group	57.50(3.24)	54.66(3.26)	56.33(3.30)		
WHO Quality of Life Questionnaire-26					
Intervention group	61.64(8.29)	91.96(5.27)	88.36(4.08)	146.72	<.0001
Control group	63.37(6.89)	60.83(5.43)	71.08 (8.71)		
Lederman Prenatal Self-evaluation Questionnaire				776.59	<.0001
Intervention group	205(12.47)	131.12(7.24)	130.4(6.65)		
Control group	202.29(9.71)	242.38 (10.31)	242.41 (10.82)		

SD: Standard deviation.

3-2. The intervention effect on adaptation to pregnancy

To confirm the effect of midwifery counseling based on cognitive approach on mothers' adaptation to pregnancy, repeated measure ANOVA models tested whether the intervention group had a significant improvement in adaptation to pregnancy (measured by PSEQ, and lower scores indicated better adaptation) compared to the control group (**Table.2, Figure.2**). The two groups were different in scores over time, and there was a significant interaction between the group and time factors [f (2, 46) = 776.59, p <.0001, partial η2 = 0.94]. Also, there was a substantial main effect for time, [f (1, 47) = 79.82, p <.0001, partial η2 = 0.62], and for group [f (1, 47) = 1317.66, p <.0001, partial η2 = 0.96].

The independent sample t-test indicated that the intervention group had a significantly greater reduction in PSEQ scores at post-test (t (47) = 44.41, p <.0001), and one month follow up (t (47) = 43.83, p <.0001) compared to the control group. Paired samples t-test also showed intervention group had a significant reduction in PSEQ scores at post-test and follow up compared to pre-test (t (24) = 25.60, p <.0001), and this reduction continued in follow up period (t (24) = 1.73, p = .09). However, control group women showed significant increase in PSEQ scores from pretest to posttest (t (24) = 14.04, p <.0001). In addition, this increase in PSEQ scores was stable in follow up period (t (24) = 0.44, p = .66). In other words, intervention group women showed better adaptation to pregnancy after intervention and one month follow up. While, control group women showed even worse circumstance in adaptation to pregnancy (**Table.2, Figure.2**).

3-3. Intervention effect on mother- fetal attachment

To confirm the effect of midwifery counseling based on cognitive approach on mother-fetal attachment, repeated measure ANOVA models tested whether the intervention group had a significant increase in mother-fetal attachment (measured by MFAS) compared to the control group (**Table.2, Figure.3**). The two groups were different in scores over time, and there was a significant interaction between the group and time factors [f (2, 46) = 412.11, p <.0001, partial η2 = 0.88]. Also, there was a substantial main effect for time, [f (1, 47) = 199.85, p <.0001, partial η2 = 0.81] and for group [f (1, 47) = 280.28, p <.0001, partial η2 = 0.89]. The independent sample t-test indicated that the intervention group had a significantly greater increase in MFAS scores at post-test (t (47) = 33.92, p

<.0001), and one month follow up (t (47) = 32.16, p <.0001) compared to the control group. Paired samples t-test also showed that both intervention (t (24) = 24.63, p <.0001), and control groups (t (25) = 2.89, p <.01) had a significant increase in MFAS scores at post-test compared to pre-test. Also, in both intervention (t (24) = 3.58, p <.001), and control groups (t (23) = 4.92, p <.0001), MFAS scores significantly increased from post-test to one month follow up. The time-group interaction indicated that the mother- fetal attachment was significantly higher among the intervention group compared to the control group (**Table.3, Figure.3**).

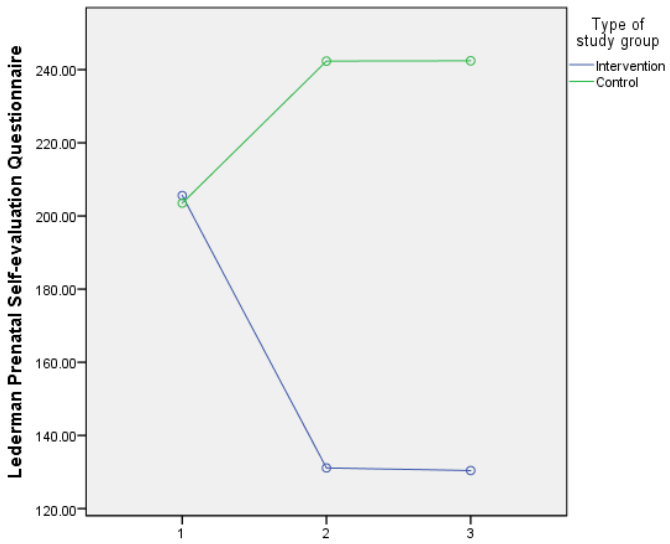

Fig.2: Pre-test, Post-test and follow-up scores of Lederman Prenatal Self-evaluation Questionnaire of intervention and control group.

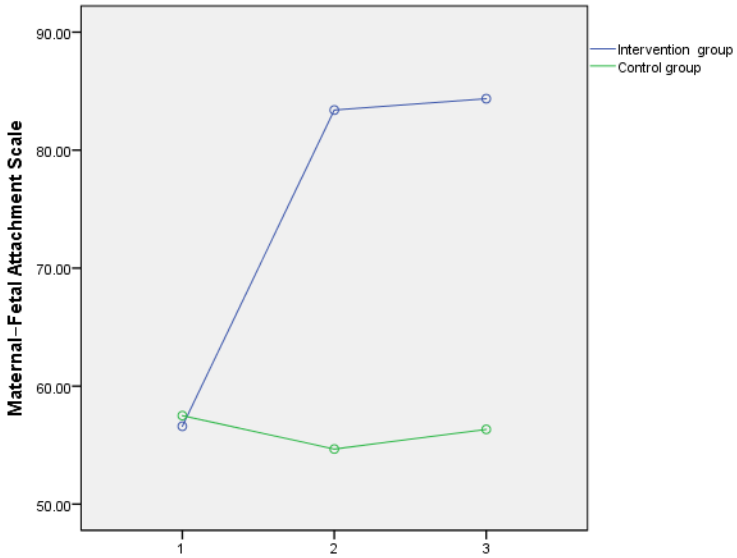

Fig.3: Pre-test, Post-test and follow up scores of Maternal–Fetal Attachment Scale of intervention and control group.

3-4. Intervention effect on quality of life

To confirm the effect of midwifery counseling based on cognitive approach on mothers' quality of life, repeated measure ANOVA models tested whether the intervention group had a significant increase in quality of life (measured by WHOQOL-26) compared to the control group (**Table.2**, **Figure.4**). The two groups were different in scores over time, and there was a significant interaction between the group and time factors [f (2, 46) = 146.72, p <.0001, partial η2 = 0.75]. Also, there was a substantial main effect for time, [f (1, 47) = 47.56, p <.0001, partial η2 = 0.50] and for group [f (1, 47) = 101.85, p <.0001, partial η2 = 0.68]. The independent sample t-test indicated that the intervention group had a significantly greater increase in quality of life scores at post-test (t (47) = 21.06, p <.0001), and one month follow up (t (47) = 8.94, p <.0001) compared to the control group. Paired samples t-test showed the intervention group had a significant increase in quality of life scores at post-test compared to pre-test (t (24) = 19.04, p <.0001). However, quality of life scores of intervention group slightly decreased from post-test to follow up (t (24) = 2.30, p <.01). On the other hand, control group showed significant reduction in quality of life scores form pre-test to post-test (t (25) = 2.86, p <.01). However, quality of life scores of control group significantly increased from post-test to follow up period (t (23) = 7.73, p<.0001) (**Table.3, Figure.4**).

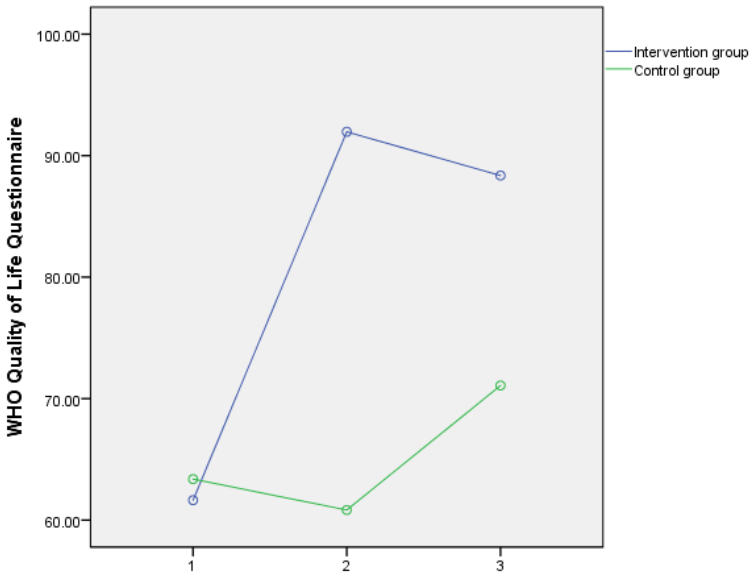

Fig.4: Pre-test, Post-test and follow up scores of WHO Quality of Life Questionnaire of intervention and control group.

4- DISCUSSION

The present study aimed to investigate effectiveness of midwifery counseling based on cognitive approach on adaptation to pregnancy, maternal-fetal attachment, and quality of life in unplanned pregnant women. The preliminary analysis showed that the participants of the two groups were not different in terms of sociodemographic characteristics as well as pretest scores on interested variables. Therefore, the random allocation of the participants appeared to be successful. The results showed midwifery counseling significantly improved adaptation to pregnancy, maternal-fetal attachment, and

quality of life in Iranian unplanned pregnant women. To our knowledge, this is the first study that explores effectiveness of midwifery counseling based on cognitive approach on adaptation to pregnancy, maternal-fetal attachment, and quality of life among unplanned pregnant women. The results of the present study showed midwifery counseling based on cognitive approach significantly improved adaptation to pregnancy in Iranian unplanned pregnant women; while, the control group women experienced more difficulties in adaptation to their pregnancy in post-test and follow up period. Thus, it can be concluded that midwifery counseling based on cognitive approach has increased adaptation to pregnancy.

In line with these findings, Baghdari et. al (7) showed that educational intervention improved adaptation to pregnancy in women with a history of fetal or neonatal death. Serçekuş et al. (34) also showed antenatal adaptation training is effective on increasing prenatal and postpartum adaptations. However, Hamilton et al. (35) found no changes in the score of adaptation to pregnancy in women receiving antenatal training. These differences in the results are probably due to the fact that Hamilton's training lasted only six hours, which is much less than the time allocated for consulting in this study. In addition, Hamilton has started training from one month before the childbirth (32-35 week). During this time, pregnant women are more focused on labor and are not ready to receive information and education about pregnancy and adaptation to it. It seems that midwifery counseling based on cognitive approach helps unplanned pregnant women to accept physical and psychological changes during pregnancy and improves their relationship with their husband and mother. Midwifery counseling based on cognitive approach also raised mother's self-esteem and reduced mother's fears and anxiety about labor or the health of themselves and their child and thereby promoted maternal role. The results of the present study implied necessity of screening unplanned pregnant women in initial weeks of pregnancy and providing psychological intervention to them. Our results also showed that, although both intervention and control group women have a significant increase in maternal-fetal attachment, the intervention group women show significant and substantial higher improvement in maternal-fetal attachment. This result is in line with previous studies, which showed significant increase of maternal-fetal attachment after various psychological interventions (18-21). For example, Tabaeh Emami et al. (18) reported 12 sessions of cognitive therapy improved maternal behavior and child attachment style. In addition, Akbarzadeh et al. (19) found that a 6 session training based on BASNEF model could increase maternal-fetal attachment in pregnant women. Toosi et al. (21) also indicated that relaxation training significantly increased maternal-fetal attachment.

The results implied although women with unplanned pregnancy gradually feel a deeper attachment to their fetus, it seems midwifery counseling based on cognitive approach facilitates and accelerates this process for mothers. Cognitive approach helps a woman to change her way of thinking about herself, her child and her pregnancy, and in turn, increases her ability to be emotionally responsible for her child. Our findings on the significant effect of midwifery counseling based on cognitive approach on quality of life is partially consistent with previous literature which indicated significant improvement of quality of life among women after a variety of psychoeducational interventions (36, 37). However, control group women showed some improvement in quality of life scores at follow-up period. Studies showed gestational age is an influencing

factor on quality of life (38). In other words, pregnant women experience higher level of quality of life in third trimester of their pregnancy. These findings suggest that midwifery counseling based on cognitive therapy has indirect effects on physical, social relationship, and psychological domains that are beyond attachment to fetus and adaptation to pregnancy. One plausible explanation for these findings might be that when the unplanned pregnant woman feels that she has adapted with her new condition and develops bonding with her baby, then she would be able to concentrate on other domains of her life. The strength of our study is that we used midwifery counseling based on cognitive approach. Cognitive therapy was successfully applied for treatment of depression and anxiety of pregnant women (22-24). Cognitive therapy helps an individual to identify and reassess his/her automatic negative thoughts and related beliefs and then find logical and realistic alternative thoughts. It also teaches individual effective problem solving, stress management, and interpersonal relationship skills. Another strength of the current study is recruiting unplanned pregnant women. Finally, we focused on the counseling role of midwives in the perinatal care. This approach could be a logical and feasible solution for the limited available resources of specialized psychological and psychiatric services for Iranian pregnant women.

4-1. Study Limitations

These results should be interpreted with the limitations of the study in mind. The present study did not follow-up participants in postnatal period. Therefore, we are not aware of impacts of the intervention on maternal-child attachment, adaptation to postpartum period, and women's quality of life at postpartum. Thus, future research could concentrate on long-term effects of prenatal psychological interventions in postpartum period in unplanned pregnant women. Second, our participants were unplanned pregnant women who had decided to birth their baby t. Therefore, it is not plausible to generalize present findings to unplanned pregnant women who are willing to undergo abortion. Further research should investigate sociodemographic, psychological, and cultural differences between unplanned women who decide to continue their pregnancy and who decide to undergo abortion. In addition, future research could explore effects of midwifery counseling based on cognitive approach in unplanned pregnant women who do not want to birth their baby.

5- CONCLUSION

The results showed that distraction technique had a good effect on the intensity of pain in children. Given the need for pain control and its effects on the course of treatment, further studies are needed to be done.

6- AUTHORS' CONTRIBUTION

EJ, RK, RM, SZ designed and supervised the research. AA conducted the study. RM analyzed the data and wrote the manuscript. All authors have read and approved the manuscript.

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8- CONFLICT OF INTEREST: None.

9- REFERENCES

1. Sedgh G, Singh S, Hussain R. Intended and unintended pregnancies worldwide in 2012 and recent trends. Studies in family planning. 2014;45(3):301-14.

2. Cunningham F, Leveno K, Bloom S, Hauth J, Rouse D, Spong C. Williams Obstetrics. McGraw-Hill. New York. 2010.

3. Moosazadeh M, Nekoei-moghadam M, Emrani Z, Amiresmaili M. Prevalence of unwanted pregnancy in Iran: a systematic review and meta-analysis. The International journal of health planning and management. 2014;29(3):e277-e90.

4. Ranji A. Induced abortion in Iran: prevalence, reasons, and consequences. Journal of Midwifery & Women's Health. 2012;57(5):482-8.

5. Mirzamoradi M, Saleh M, Jamali M, Bakhtiyari M, Pooransari P, Saleh Gargari S. Factors related to unwanted pregnancies and abortion in the northern district of the city of Tehran, Iran. Women & health. 2018;58(6):714-28.

6. Mohammadi E, Nourizadeh R, Simbar M, Rohana N. Iranian women's experiences of dealing with the complexities of an unplanned pregnancy: A qualitative study. Midwifery. 2018;62:81-5.

7. Baghdari N, Sahebzad ES, Kheirkhah M, Azmoude E. The effects of pregnancy-adaptation training on maternal-fetal attachment and adaptation in pregnant women with a history of baby loss. Nursing and midwifery studies. 2016;5(2).

8. Lederman R, Weis K. Psychosocial adaptation to pregnancy: Seven dimensions of maternal role development: Springer Science & Business Media; 2009.

9. Bayrami R, Taghipour A, Ebrahimipour H. Experience of unplanned pregnancy in women attending to health centers of Mashhad, Iran: a phenomenological study. The Iranian Journal of Obstetrics, Gynecology and Infertility. 2014;16(87):15-23.

10. Kordi M, Fasanghari M, Asgharipour N, Esmaily H. Effect of a maternal role training program on postpartum maternal role competence in nulliparous women with unplanned pregnancy. Journal of Mazandaran University of Medical Sciences. 2016;25(134):124-34.

11. Nourollahpour Shiadeh M, Kariman N, Bakhtiari M, Mansouri S, Mehravar S. Unwanted pregnancy and its risk factors among pregnant women in Tehran, Iran. Nurs Midwifery Stud. 2016;5(3):e29740.

12. Gerdts C, Dobkin L, Foster DG, Schwarz EB. Side effects, physical health consequences, and mortality associated with abortion and birth after an unwanted pregnancy. Women's Health Issues. 2016;26(1):55-9.

13. Hall JA, Benton L, Copas A, Stephenson J. Pregnancy intention and pregnancy outcome: systematic review and meta-analysis. Maternal and child health journal. 2017;21(3):670-704.

14. Abbaspoor Z, Razmju PS, Hekmat K. Relation between quality of life and mental health in pregnant women with prior pregnancy loss. Journal of Obstetrics and Gynaecology Research. 2016;42(10):1290-6.

15. Bajurna B, Galęba A, Szwarc A, Petermichl D. Mental changes occurring in women in planned and unplanned pregnancy and after delivery. Hygeia. 2014;49(3):536-42.

16. Hernandez-Reif M, Kendrick A, Avery DM. Pregnant women with depressive and anxiety symptoms read, talk, and sing less to their fetuses. Journal of affective disorders. 2018;229:532.

17. Schmidt D, Seehagen S, Vocks S, Schneider S, Teismann T. Predictive importance of antenatal depressive rumination and worrying for maternal–Foetal attachment and maternal well-being. Cognitive Therapy and Research. 2016;40(4):565-76.

18. TABAEH ES, Noori A, Malekpour M, Abedi A. Effectiveness of Cognitive-Behavior Training for Mothers on Changing Maternal Behavior and Child's Insecure Attachment. 2011.

19. Akbarzadeh M, Moattari M, Abootalebi M. Effect of the BASNEF model on maternal-fetal attachment in the pregnant women referring to the prenatal clinics affiliated to Shiraz University of Medical Sciences. Iranian Journal of Neonatology IJN. 2017;8(3):31-7.

20. Muzik M, Hamilton SE, Rosenblum KL, Waxler E, Hadi Z. Mindfulness yoga during pregnancy for psychiatrically at-risk women: preliminary results from a pilot feasibility study. Complementary therapies in clinical practice. 2012;18(4):235-40.

21. Toosi M, Akbarzadeh M, Ghaemi Z. The Effect of Relaxation on Mother's Anxiety and Maternal–Fetal Attachment in Primiparous IVF Mothers. Journal of the National Medical Association. 2017;109(3):164-71.

22. Goodman JH, Guarino A, Chenausky K, Klein L, Prager J, Petersen R, et al. CALM Pregnancy: results of a pilot study of mindfulness-based cognitive therapy for perinatal anxiety. Archives of women's mental health. 2014;17(5):373-87.

23. Sockol LE. A systematic review of the efficacy of cognitive behavioral therapy for treating and preventing perinatal depression. Journal of Affective Disorders. 2015;177:7-21.

24. Nieminen K, Malmquist A, Wijma B, Ryding EL, Andersson G, Wijma K. Nulliparous pregnant women's narratives of imminent childbirth before and after internet-based cognitive behavioural therapy for severe fear of childbirth: a qualitative study. BJOG: An International Journal of Obstetrics & Gynaecology. 2015;122(9):1259-65.

25. The World Health Organization quality of life assessment (WHOQOL): Position paper from the World Health Organization. Social Science & Medicine. 1995;41(10):1403-9.

26. Skevington SM, Lotfy M, O'Connell K. The World Health Organization's WHOQOL-BREF quality of life assessment: psychometric properties and results of the international field trial. A report from the WHOQOL group. Quality of life Research. 2004;13(2):299-310.

27. Nejat S, Montazeri A, Holakouie Naieni K, Mohammad K, Majdzadeh S. The World Health Organization quality of Life (WHOQOL-BREF) questionnaire: Translation and validation study of the Iranian version. Journal of School of Public Health and Institute of Public Health Research. 2006;4(4):1-12.

28. Cranley MS. Development of a tool for the measurement of maternal attachment during pregnancy. Nursing research. 1981.

29. Doster A, Wallwiener S, Müller M, Matthies LM, Plewniok K, Feller S, et al. Reliability and validity of the German version of the Maternal–Fetal Attachment Scale. Archives of gynecology and obstetrics. 2018;297(5):1157-67.

30. Abasi A, Tafazoli M, Esmaeili H. The effect of foetal movement counting on primipara maternal foetal attachment. Journal of Mazandaran University of Medical Sciences. 2010;20(77):53-60.

31. Lederman R, Weis K. Methods of assessment: psychosocial adaptation to pregnancy questionnaire scales and interview schedules, and review of interventions to enhance adaptation. Psychosocial Adaptation to Pregnancy: Springer; 2009. p. 263-98.

32. Greenberger D, Padesky CA. Mind over mood: Change how you feel by changing the way you think: Guilford Publications; 2015.

33. Imanparast R, Bermas H, Danesh S, Ajoudani Z. The effect of cognitive behavior therapy on anxiety reduction of first normal vaginal delivery. SSU_Journals. 2014;22(1):974-80.

34. Serçekuş P, Mete S. Effects of antenatal education on maternal prenatal and postpartum adaptation. Journal of advanced Nursing. 2010;66(5):999-1010.

35. Hamilton-Dodd C, Kawamoto T, Clark F, Burke JP, Fanchiang SP. The effects of a maternal preparation program on mother–infant pairs: A pilot study. American Journal of Occupational Therapy. 1989;43(8):513-21.

36. Domar AD, Gross J, Rooney K, Boivin J. Exploratory randomized trial on the effect of a brief psychological intervention on emotions, quality of life, discontinuation, and pregnancy rates in in vitro fertilization patients. Fertility and sterility. 2015;104(2):440-51. e7.

37. Li J, Long L, Liu Y, He W, Li M. Effects of a mindfulness-based intervention on fertility quality of life and pregnancy rates among women subjected to first in vitro fertilization treatment. Behaviour research and therapy. 2016;77:96-104.

38. Zahedi M, Deris F. The quality of life in pregnant women in Farokhshahr city, 2012. Journal of clinical nursing and midwifery. 2014;3.