

Investigating the effect of attachment behaviors on various dimensions of paternal-fetal attachment

S. Mir¹, R. Noori², Z. Azimpour³, M. Torshizi⁴

¹Student Research committee, Nursing and midwifery school, Zabol University of Medical Sciences, Zabol, Iran.

²Assistant Professor, Department of Psychiatry, Zabol University of Medical Sciences, Zabol, Iran.

³Clinical psychologist, Mashhad University of Medical Sciences, Mashhad, Iran.

⁴Faculty of Nursing and Midwifery, Birjand University of Medical Sciences, Birjand, Iran.

Corresponding author: M. Torshizi, Faculty of Nursing and Midwifery, Birjand University of Medical Sciences, Birjand, Iran. Email: Torshizi2012@yahoo.com

Keypoints

Implementation of educational programs as well as training parenteral-fetal attachment by midwives during the care periods is suggested.

Abstract

Introduction

The paternal-fetal attachment behaviors are a kind of sense of love and deep affection of the father towards the unborn child during the pregnancy of the spouse. This research was performed to examine the effect of attachment behaviors on various dimensions of paternal-fetal attachment.

Material and Methods

This semi-randomized controlled field clinical trial was performed on the spouses of 68 primigravida women referring to urban healthcare centers of Birjand University of medical sciences who met the inclusion criteria. The sampling was available sampling with random allocation. To assess the extent of paternal-fetal attachment, Cranelly paternal-fetal attachment questionnaire has been used.

For the intervention group, 4 sessions once per week were held for training the attachment behaviors, and then one month after the intervention, the paternal-fetal attachment was reevaluated. The results obtained from the research were evaluated by SPSS 19 along with descriptive statistic tests including mean and standard deviation plus independent and paired t-test.

Results

The results showed that in the intervention group, the mean score of attachment showed a significant increase across all dimensions postintervention compared to the preintervention ($p < 0.05$). However, in the control group, this difference was significant ($p = 0.001$) only in the area of interaction with the fetus.

Conclusion

Since training attachment behaviors has had effects on different dimensions of paternal-fetal attachment, thus through training and its associated counseling, the necessary grounds can be provided for enhancing the attachment and in turn increasing the paternal role for the cares of their spouse's pregnancy.

Keywords

Paternal-fetal attachment, attachment behaviors, pregnancy

Introduction

Parenthood is one of the enjoyable experiences of marital life and indeed a turning point in marital relationships (1). The attachment of the pregnancy period develops out of the relationship between the parents and fetus during pregnancy, and is associated with the cognitive and emotional abilities of the parent, such that they could

conceive the presence of another human (2). Both father and mother during pregnancy find a kind of attachment to their child. The paternal-fetal attachment has been defined as a kind of sense of love and affection of the father and beyond a theory or belief toward the fetus, which is considered as the basis of paternal identity. Fathers, given their physical limitations, cannot witness the physical changes resulting from the growth of fetus in their body unlike pregnant mothers. However, expecting fathers during this period can be heavily attached to their child, and experience a wide range of special emotions and feelings in this period (3). Fathers are deeply affected by the pregnancy of their spouse, and undergo various physical and psychological changes in this period. Quid theory states that men during the pregnancy of their spouse experience a wide range of physical and psychological symptoms similar to those of their spouses, including sense of nausea and vomiting, longing, weight gain, abdominal and back pain, as well as depression during pregnancy plus postpartum depression, etc. He believes that as the attachment of father to the fetus grows further, they manifest more symptoms of this syndrome (4). Although the results of different studies indicate that the maternal-fetal attachment behaviors occur more during pregnancy than men (5), some studies have reported for more paternal-fetal attachment behaviors compared to mothers (6). The international conference of population and development in 1994 heavily emphasized promotion of participation of men in undertaking their responsibilities as parent, and it was propounded as one of the most important strategies in achieving the objectives of the third millennium development (3-7). World Health Organization has also considered needs assessment and identification of suitable strategies for involving fathers in the course of pregnancy and delivery as absolutely essential, and has emphasized participation of men in safe maternal programs (7). The prevalence and fetal attachment behaviors are different across different individuals; some feel a sense of communication with the fetus as soon as they find out about the pregnancy; some parents state such a

Mir et al. Paternal-fetal attachment

relationship after feeling the fetal movements or seeing him/her in the sonography; some do not establish any kind of communication with the fetus until the end of pregnancy, and possibly only the birth of the child and hugging children would create such a feeling in them (8). Men are in the margin of maternal services and have no access to the information that helps them in forms decision-making as well as protection and promotion of their health or spouse. In promoting maternal health, men play a significant role (9). Researchers believe that paternal-fetal attachment can lead to greater support for their spouses during the pregnancy (9). The results of the research by Cranelli (1981) indicated that supporting pregnant mothers especially by the spouse is significantly associated with paternal- and maternal-fetal attachment behaviors (10). The results of the research by Stonoz et al. also showed that there is a positive and significant relationship between the paternal and maternal attachment behaviors toward each other (11). In Iran, the father's role in the pregnancy care is neglected. However, in most parts of the world, when the physician holds a meeting to explain the necessary preparations for pregnancy and delivery as well as for the days post-delivery for the mother, the spouse is also allowed to attend these sessions (12). Education is a purposeful activity to promote learning (13) and in-person training is one of the educational methods of great value for those with a low level of education or understanding (13). Generally, sparse studies have dealt with training fetal attachment behaviors to fathers. Thus, the present research was performed to determine and investigate the effect of in-person training on paternal-fetal attachment.

Material and Methods

This semi-randomized controlled field clinical trial was performed on the spouses of 68 primigravida women referring to urban healthcare centers of Birjand University of medical sciences who met the inclusion criteria. The sampling was performed as available with random allocation. The sample size was calculated as 40 per each group based on the study by Abbasi et al. (2009), as well

as the mean comparison formula assuming $\alpha=0.05$ and $\beta=0.1$. The inclusion criteria were as follows: couples being Iranian, residence in Birjand city - permanent marriage - literacy at the level of reading and writing - pregnancy age of the spouse between 18 and 32 weeks - no disease for the fetus, and monogamy. On the other hand, the exclusion criteria were no willingness to continue the study - migration - not participating in more than two educational sessions. The sampling was performed as randomized multistage stratified sampling. In the first stage, each of the regions of Birjand city was considered as one stratum. Next, a list of the healthcare centers present in each stratum was prepared, whereby three centers were chosen randomly from North, South, and center of the city. Data collection was performed using demographics form including three parts: personal information (age - length of marriage - history of previous marriage - educational status - smoking), economic (the status of the adequacy of the monthly income to match the living costs), and midwifery information of the spouse (pregnancy age - pregnancy being intended or unintended, and interest in any special gender) along with paternal-fetal attachment scale (PFAS). This latter questionnaire is a self-report measurement tool first developed by Weer and Cranelli in 1983. In Iran, it has been translated and used by Straki et al. in 2011. This questionnaire has minimum score of 22 and maximum of 110. The scoring is based on 5-point Likert scale, with larger scores representing greater attachment. This questionnaire has five subgroups: interaction with the fetus (items 1-17-20), differentiation between the self and fetus (items 3-8-10-13-19), accepting maternal role (4-5-6-18), attributing special characteristics to the fetus (items 7- 9- 12-14-16), and self-sacrifice (items 2-11-15-21-22). The reliability of this instrument has been confirmed by Straki et al. with the Cronbach alpha coefficient of 0.77. In this study, the researcher attended the healthcare centers, introduced himself, and received written informed consent form from the subjects if they met the inclusion criteria. The subjects were then randomly assigned into two groups: in-person training

Mir et al. Paternal-fetal attachment

and routine care, and both of them completed the demographic information questionnaire and the PFAS. The sampling continued until achieving the desired sample size. In the control group, only routine care was trained, while the intervention group received an educational program in the form of four sessions (... min) once per week, through group discussion, lecture, question and answer, playing videos, using educational pamphlets, and homework. However, the control group did not receive any training. The content of the educational program included familiarization with the stages of the fetal growth, common problems as well as the physical and psychological changes of pregnant women, the duties of the spouse and paternal role, the concept of attachment as well as paternal-fetal attachment, the ways of communicating with the fetus, and the paternal-fetal attachment behaviors. Next, one month after the intervention, the paternal-fetal attachment levels were measured again.

Ethical consideration

This study was approved by the Ethics Committee of Birjand University of Medical Sciences (Ethic code: IR.BUMS.REC.1395.3). The written and oral consent form was obtained from participants.

Statistical analysis

After investigating data normality using Kolmogorov-Smirnov test, the data were analyzed using descriptive statistics as well as paired t-test an independent t-test via SPSS 19. The significance level was considered less than 0.05.

| The educational content of the Paternal-fetal attachment behaviors | |
|--|--|
| First session | <ul style="list-style-type: none"> - general concept of attachment - the effects of attachment on the maternal and fetal health - the ways of communication between the father and fetus - the manner of formation of paternal-fetal attachment as well as the time of beginning of attachment plus its symptoms |
| second session: | <ul style="list-style-type: none"> - expressing different attachment skills <ul style="list-style-type: none"> - practical implementation of the paternal-fetal attachment behaviors - the effect of pregnancy care in the health of pregnant mother |
| third session: | <ul style="list-style-type: none"> - psychological changes during pregnancy - physical changes during pregnancy - the role of learned skills in resolving psychological problems - expressing the signs and symptoms of risk in pregnant women |
| fourth session: | <ul style="list-style-type: none"> - the role of spouse as a support for pregnant woman - training the method of focus on the fetus - recognizing the fetus as an independent creature - expressing the manner of training the attachment behavior by fathers to their pregnant spouses |

Results

The findings indicated that the two groups matched each other in terms of personal characteristics (history of previous marriage - history of consanguineous marriage - level of education - pregnancy status - status of ...) (Table 1). The results of t-test showed no significant relationship regarding age, duration of marriage, and age of pregnancy. The mean age in the in-person training group and control group was 22.91±6.340 and 23.32±6.59, respectively (p=0.795). The mean duration of marriage in the in-person training and control groups was 2.55±1.41 and 2.1/88.82 years respectively (p=0.417). The total score of the paternal-fetal attachment following the intervention in the in-person training and control groups was 56.41±10.29 and 41.35±14.17. Independent t-test showed a significant difference between the two groups (p=0.000). The results of the present research indicated that in-person training across all areas causes increased paternal-fetal attachment compared to the control group (Table 2).

In the in-person training group, study of the mean score of attachment across all areas postintervention showed no significant increase compared to preintervention. However, in the control group, all attachment scores diminished, and only in the area of interaction with the fetus, no significant difference was observed between the pre- and post-intervention in the control group (p=0.325).

Discussion

The paternal-fetal attachment behaviors are a kind of sense of love and deep affection of the father towards the unborn child during pregnancy of the spouse. These behaviors play a substantial role in accepting paternal identity, desired pregnancy outcomes, as well as development of the future child (14). The fathers with greater attachment to the fetus are more sensitive to timely initiation of the pregnancy care of their spouse as well as its continuation - sleep - proper nutrition, and adequate exercise for their spouse (15).

In the present research, in the in-person training group, the areas of differentiation between the self and fetus as

well as self-sacrifice acquired the highest scores for paternal-fetal attachment behaviors,

Table 1. Comparing the demographic characteristics of the two groups. * Chi-do

| Variable | In-person training group | | Control group | | P-value* |
|------------------------------|--------------------------|------|---------------|------|----------|
| | No. | % | No. | % | |
| History of previous marriage | | | | | |
| Yes | | | | 83.5 | |
| No | 25 | 73.5 | 29 | 14.7 | 0.230 |
| | 9 | 26.5 | 5 | | |
| Consanguineous marriage | | | | | |
| Yes | 23 | 67.6 | 24 | 70.6 | 0.793 |
| No | 11 | 32.4 | 10 | 29.4 | |
| Level of education | | | | | |
| primary | 5 | 14.7 | 5 | 14.7 | 0.861 |
| guidance | 12 | 35.3 | 14 | 41.2 | |
| High-school | 10 | 29.4 | 7 | 20.6 | |
| university | 7 | 20.6 | 8 | 23.5 | |
| Employment status | | | | | |
| unemployed | 5 | 14.7 | 5 | 14.7 | 0.051 |
| employee | 5 | 14.7 | - | - | |
| worker | 13 | 38.2 | 8 | 23.5 | |
| freelancer | 8 | 23.5 | 14 | 41.2 | |
| others | 3 | 8.8 | 7 | 29.6 | |
| | | | | | |
| Smoking ben | | | | | |
| No | 15 | 44.1 | 18 | 52.9 | 0.646 |
| Cigarette | 10 | 29.4 | 10 | 29.4 | |
| Hobble bubble smoker | 9 | 26.5 | 6 | 18.6 | |
| Malekiatvaslich | | 35.3 | | | |
| Yes | 12 | 64.7 | 22 | 64.7 | 0.621 |
| No | 22 | | 12 | 35.3 | |
| Pregnancy status | | 70.6 | | | |
| wanted | 14 | 29.4 | 22 | 64.7 | 0.398 |
| unwanted | 10 | | 12 | 35.3 | |

Table 2. Comparing the mean scores of the subscales of the paternal-fetal attachment questionnaires in the two groups. ** independent t-test

| Area | In-person group | | Control group | | P-value** |
|--|--------------------|---------------------|--------------------|---------------------|-----------|
| | Pre-test (mean±SD) | post-test (mean±SD) | Pre-test (mean±SD) | post-test (mean±SD) | |
| Interaction with the fetus | 7.1±58.32 | 8.2±52.58 | 7.1±26.46 | 7.1±14.30 | 0.70 |
| Differentiation between self and fetus | 7.2±47.13 | 12.3±64.95 | 10.2±32.23 | 9.2±23.17 | 0.01 |
| Accepting parental role | 6.1±35.59 | 2±10.48 | 8.2±46.37 | 7.2±38.30 | 0.01 |
| attribution | 7.1±17.83 | 12.3±38.53 | 9.2±20.18 | 7.1±97.85 | 0.01 |
| Self-sacrifice | 7.1±64.32 | 12.2±85.61 | 11.2±05.26 | 9.2±61.17 | 0.01 |
| Total score | 34.5±23.55 | 56.10±41.29 | 46.4±29.93 | 41.4±35.17 | 0.01 |

which is in line with the findings of While and Wilson (16). Also, in the present study, the area of interaction with the fetus acquired the minimum score, which concurred with the results of Cranelly (17). One of the possible reasons of acquiring the score this area can be the fact that interaction with the fetus which involves talking to the fetus - reading poems or telling stories, etc., occurs

mostly when the fetus is considered an independent creature for the parents with power of thought and listening abilities. Another possible reason is the father's fear of hurting the child or in some cases some sense of embarrassment (18-19). Akbarzadeh et al. (2017) concluded that training fathers about attachment behaviors leads to increased paternal-fetal attachment scores, which is in line with the results of the present research (20). Nosrati et al. (2017) showed implementing a three-session intervention on paternal-fetal attachment to fathers caused improved psychological health of their pregnant houses (21). Studies performed on the factors affecting the parental-fetal attachment suggest that this attachment is trainable, and educational programs enhance this attachment, eventually improving the psychological health of couples. Further, this attachment in addition to being trainable, is also transferable, and causes improved psychological health of mothers and reduction of their anxiety.

An attachment-based educational program leads to enhanced paternal-fetal attachment as well as improved psychological health of mothers. Martin et al. considered involvement of spouses during pregnancy as one of the factors affecting better maternal self-care and care for the fetus plus low risk delivery. One of the strong points of research was its educational methods. This method was traditionally in person, which has always been of interest. Meanwhile, not necessitating the participants to read an educational package caused some participants not to study the educational package. Therefore, the effect of in-person training would be greater over training via educational package. One of the limitations of this research was small sample size which could reduce the generalizability of the results, as well as the sparse background of the research.

Conclusion

Considering the influence of paternal-fetal attachment and familial health and greater participation of fathers in pregnancy cares, implementation of educational

programs as well as training parenteral-fetal attachment by midwives during the care periods is suggested.

Acknowledgements

This article is the result of a master's thesis approved by the School of Nursing of Zahedan University of Medical Sciences. In this way, we thank and appreciate from the cooperation of all pediatricians and nurses in the neonatal intensive care unit of Ali Ibn Abi Talib (AS) Hospital in Zahedan.

References

1. Nematbakhsh F, Kordi M, Sahebi A, Esmaeli H. [The effect of mother-infant skin to skin contact on mother's attachment]. *The Quarterly Journal of Fundamentals of Mental Health*. Spring & Summer 2007; 8(33&34): 25-32. (Persian)
2. Bennett HA, Einarson A, Taddio A, Koren G, Einarson TR. Prevalence of depression during pregnancy: systematic review. *Obstet Gynecol*. 2004 Apr; 103(4): 698-709.
3. Jafarnejhad F, MOGHADAM HV, SOLTANIFAR A, EBRAHIMZADEH S. Study of the relationship between domestic violence intensity during pregnancy and mother-infant attachment. *journal of sabzevar university of medical sciences*. 2009;16(1(51)):35-42.
4. Astaraki L, Jamshidimanesh M, Moghadam ZB, Haghani H. Paternal-Fetal Attachment Behaviors and Associated Factors. *Journal of Mazandaran University of Medical Sciences (JMUMS)*. 2014;24(117).
5. Brandon AR, Pitts S, Denton WH, Stringer CA, Evans H. A history of the theory of prenatal attachment. *Journal of prenatal & perinatal psychology & health: APPPAH*. 2009;23(4):201.
6. Doan HM, Cox NLM, Zimerman AM. The maternal fetal attachment scale: some methodological ponderings. *Journal of Prenatal & Perinatal Psychology & Health*. 2003;18(2):167.
7. Laxton-Kane M, Slade P. The role of maternal prenatal attachment in a woman's experience of pregnancy

- and implications for the process of care. *Journal of Reproductive and Infant Psychology*. 2002;20(4):253-66
8. Schodt CM. Parental-fetal attachment and couvade: a study of patterns of human-environment integrality. *Nursing science quarterly*. 1989;2(2):88-97.
 9. Kisilevsky BS, Hains SM, Brown CA, Lee CT, Cowperthwaite B, Stutzman SS, et al. Fetal sensitivity to properties of maternal speech and language. *Infant Behavior and Development*. 2009;32(1):59-71.
 10. Abbasi A TM, Esmaili H, HossienAbadi H. the effect of Maternal- fetal attachment behaviors education on mental health of frist pregnant womens during trid trimester. *Journal of sabzevar university of medical sciences*. 2009;15(2):104-9
 11. Ustunsoz A, Guvenc G, Akyuz A, Oflaz F. Comparison of maternal-and paternal-fetal attachment in Turkish couples. *Midwifery*. 2010;26(2):e1-e9.
 12. Genesoni L, Tallandini MA. Men's psychological transition to fatherhood: an analysis of the literature, 1989-2008. *Birth*. 2009;36(4):305-18
 13. Alhusen JL. Aliterature Update On Maternal Fetal Attachment. *Jornal Of Obsttrics ,Jynecologic And Neonatal Nursing* 2008;37:315-28.
 14. Astaraki L, Jamshidimanesh M, Behboodi Moghadam Z, Haghani H. Paternal-Fetal Attachment Behaviors and Associated Factors . *J Mazandaran Univ Med Sci*. 2014; 24 (117) :173-183
 15. Lindgren K. Relationship among maternal-fetal attachment prenatal depression and health practices in pregnancy. *Res Nurs Health* 2001,24(3):203-217.
 16. Whilson ME, White MA, Cobb B, Curry R, Green D, Popovich D. Family dynamic , prenatal-fetal attachment ant in fant temperament . *J Adv Nurs*.2000.31(1):204-21.
 17. Cranley MS. Development of atool for the measurement of maternal attachment during pregnancy . *Nurs Res* 1981.30(5):281-284.
 18. Levine A,Zagoor Y, Sharon O, Feldman R, Weller A. Oxytocin during pregnancy and early postpartum individual patterns and maternal-fetal attachment. *Peptides* 2007;28(6): 162-169.
 19. Chanachote S. Spousal support and maternal fetal attachment in pregnant industria worker. Phd Thesis. Mahidol university. 2007.
 20. Tosi M, Akbarzadeh M, Zare N, Sharif F. The Effect Of Education On Anxiety And Maternal Attachment To The Infant's Attachment Behaviors First Pregnancy. 2011;17(3):69-79
 21. Nosrati.A,Mirzakhani.B,Golmakani.N,The effect of pedogenic attachment training on mental heaith of pregnant mothers,journal of mazandaran university of medical sciences.2017;27(152):50-62