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Investigating the relationship between the dimensions of mindfulness and maternal attachment to the fetus during pregnancy

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Abstract:

BACKGROUND: Maternal attachment to the fetus is a term used to describe the emotional relationship between mother and fetus. This emotional connection increases during pregnancy and is reflected in her feelings, perceptions, and behaviors. Mindfulness is important as one of the factors affecting the mental health of people during pregnancy. Therefore, the present study was conducted to determine the relationship between the dimensions of mindfulness and maternal attachment to the fetus during pregnancy.

MATERIALS AND METHODS: The present study was performed on 500 pregnant mothers referred to health centers affiliated to Isfahan University of Medical Sciences. The samples were entered into the study by available sampling method and if they had inclusion criteria and no exclusion criteria. The research instruments were the Fetal Attachment Questionnaire and the Bauer Mindfulness Questionnaire. The collected data were analyzed by SPSS software version 22.

RESULTS: The results of the data showed that there was no significant relationship between the overall score of mindfulness and the overall score of maternal attachment to the fetus ($P = 0.62$). While from the dimensions of mindfulness such as "action with awareness" there was a significant negative relationship ($P = 0.03$) with maternal attachment to the fetus and a significant positive relationship "observation" with maternal attachment to the fetus ($P = 0.03$).

CONCLUSION: According to the results of this study, there is a relationship between maternal attachment to the fetus during pregnancy and a number of dimensions of mindfulness. For this purpose, since mindfulness can increase the mother's interactions with the fetus, and this interaction begins during pregnancy and with the mother's attachment to the fetus, it is important to pay attention to this.

Keywords:

Maternal attachment to the fetus, mindfulness, pregnancy

Introduction

Pregnancy and motherhood are considered enjoyable and evolutionary events in women's lives.[1] During pregnancy, women undergo many unwanted changes that change their physical and mental needs.[2] In fact, this period is the result of physiological changes and adaptations and psychological adaptations and requires special attention.[1] Emotional communication with the fetus seems to be part of the process of adapting to the role of mother.[3] Maternal attachment to the fetus is a term used to describe the mother's emotional connection to the fetus. This emotional connection increases during pregnancy and is reflected in her feelings, perceptions, and behaviors.[1]

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The initial relationship between the mother and the fetus before birth is called maternal attachment to the fetus. Attachment between mother and fetus is potentially prenatal and relates to cognitive and emotional ability to relate to the existence of a human being. According to John Balbi's theory in attachment theory, the attachment relationship between mother and infant begins long before birth and is related to this[4] In addition, prenatal attachment can predict the relationship that has developed between the parent and the newborn.[5] This relationship can be seen during pregnancy in the form of various behaviors such as talking to the fetus, touching and caressing the abdomen, and recognizing the position of the fetus and is an important factor in accepting the role of the mother and the growth and development of the child.[6] Increased maternal attachment increases interaction with the fetus such as eating well, quitting alcohol, having positive perceptions about the fetus, talking to the fetus, paying attention to fetal movements, and other interactions with the fetus. All of these behaviors reduce anxiety and promote maternal and infant health.[7] Maternal attachment to the fetus, as an influential factor in maternal and infant health, has been considered by some researchers.[8,9] Alhusen study showed that there is a significant relationship between maternal attachment to the fetus with maternal health practices during pregnancy and neonatal outcomes.[10] According to studies, people with a conscious mind observe events and living conditions in a realistic way, and without the need to deny the bitter and unpleasant facts, they act with confidence and hope for all necessary and necessary reforms and changes. It promotes individual mental and general health.[11] The concept of mindfulness has been important in the clinical field and its effectiveness in reducing the symptoms of psychological disorders.[12] For more than three decades, mindfulness has been recognized as an important contributing factor to the health of the mother-child relationship. Mindfulness is "not judging, being alert in the moment, increasing self-awareness, and the ability to recognize experiences in order to avoid habitual reactions."[13-16]

For example, Sawyer Cohen in their study showed that prenatal compassion and mindfulness together predicted a significant variance of prenatal attachment.[17] The potential benefits of mindfulness are not limited to clinical populations and individuals suffering from confusion. Mindfulness can be considered as an effective factor in mental health and interpersonal functioning.[18-21] On the one hand, some evidence suggests that mindfulness plays an important role in identifying emotions, increasing empathy, feelings of solidarity and cohesion, and nondefensive and nonblameful attitudes toward oneself and others.[22,26] Dunn *et al*., showed that mindfulness-based intervention programs reduced psychological distress until delivery and up to 6 weeks' postpartum.[15] Studies on mindfulness-based educational programs during pregnancy and postpartum emphasize the effectiveness and efficiency of these programs on the mental status of pregnant mothers, improving family health and complete well-being during pregnancy. The physical and mental health of pregnant mothers is an important issue. It seems that mindfulness is one of the cases of reducing anxiety and stress during the important period of pregnancy and can reduce the attachment of pregnant men to increase their attachment to their fetus and in the future to the newborn. Emphasizing the existence of few studies in this field, the researcher decided to conduct a study with the aim of relating the dimensions of mindfulness to maternal attachment to the fetus during pregnancy.

Materials and Methods

Study design and setting

The present study was a descriptive correlational study that was performed to determine the relationship between mindfulness and maternal-fetal attachment on 500 pregnant mothers referred to health centers affiliated to Isfahan University of Medical Sciences. Sampling in this study was performed by two-step method. At first, three centers of Nawab, Amir Hamzeh, and Motahhari were randomly selected from among the health centers in Isfahan, and then pregnant women were included in the study by available sampling method.

Study participants and sampling

The samples were entered into the study by available sampling method and if they had inclusion criteria and no exclusion criteria. Sampling in this study was done in a multi-stage method. At first, health centers (Nawab, Motahhari and Amir Hamzeh) were randomly selected using a table of random numbers and then pregnant women were selected from each urban health center based on the sample size available. Inclusion criteria were: Being Iranian and Muslim, living in Isfahan, having the desire and physical and mental ability to participate in the study, first pregnancy, having a gestational age of 28 weeks and above. Criteria for noninclusion in the study were: Use of drugs that affect the psyche, experience an unfortunate, anxious or stressful accident (death of first-degree relatives, severe family and marital disputes, financial problems, leaving home) during pregnancy, suffering from medical diseases (thyroid, diabetes, hypertension, cardiovascular diseases, kidneys, and nerves).

Data collection tool and technique

The data collection tool in this study was a questionnaire. The questionnaires were: Demographic and midwifery

characteristics questionnaire, Bauer mindfulness questionnaire, maternal-fetal attachment questionnaire.

Bauer *et al*.'s (2006) Mindfulness Questionnaire consisted of 39 questions and was scored on a Likert scale from one to five. This questionnaire has five dimensions. Dimensions include Observation, description, action with awareness, lack of judgment on inner experience, lack of reaction to inner experience. The overall score of the questionnaire is 39-195. Validation and reliability of this questionnaire have been done in Iran and its reliability has been confirmed.[24] The reliability of this questionnaire in this study was measured by retest test method and was confirmed by $r = 0.79$.

The Cranley Fetal Attachment Questionnaire consists of 24 items that are scored on a Likert scale from one to five. The answers were based on a 5-point Likert scale (definitely yes = 5, yes = 4, not sure = 3, no = 2, definitely no = 1, except for question 22 where the score is inverted, i.e., definitely yes = 1, yes = 2, not sure = 3, no = 4, definitely no = 5). The validity of the Cranley's fetal attachment scale was confirmed by content validity and its reliability was confirmed by Cronbach's formula of 0.83 in a Taavoni *et al*.'s study.[25]

In the present study, the reliability of this questionnaire was evaluated by retest test method, which was confirmed by $r = 0.88$. After confirming the research in the ethics committee (IR.MUMS.REC.1396.337) and obtaining a sampling permit, the researcher referred to health centers, and pregnant mothers were invited to participate in the research. First, the method and objectives of the research were explained. Individuals then completed a written consent to participate in the study if they met the inclusion criteria. The questionnaires were then given to them to complete in the presence of the researcher. At the end, supplementary questionnaires were collected. The obtained information was then coded and entered into SPSS software and analyzed by SPSS software version 22 (IBM Company, Armonk, NY, USA). Initially, the normality of the data was determined by Kolmogorov–Smirnov and Shapirovilk tests. Data were analyzed using descriptive and analytical statistical tests (Spearman and regression).

Ethical consideration

This study was conducted after obtaining permission from the ethics committee. Participants were assured that their information would be kept confidential and that they would be provided with the final result of the research if they wished. Study participants were reassured that their participation in the study was optional and that nonparticipation in the study would not alter their care process and that they could withdraw from the study at any time when the questionnaires were completed.

Results

Data analysis was performed on 500 pregnant mothers. The mean age of the participants was 26.66 ± 6.09 years and the mean gestational age was 33.99 ± 06.7 weeks (maximum 35 weeks and minimum 30 weeks). Most of the participants had a diploma and undergraduate education (263 = 54.9%). The income level of most participants was downward average (834 = 86.6%). Fetal sex of most participants was female (253 = 51.1%).

The mean score of maternal attachment to the fetus in the study participants was 98.43 ± 9.09 and the mean total score of mindfulness was 142.32 ± 7.20. The frequency distribution of the total score and the dimensions of maternal attachment to the fetus and mindfulness during pregnancy are listed in Table 1.

The results of the data showed that there is a significant negative relationship between the overall score of mindfulness and the dimension of attributing characteristics to the fetus. The judgment dimension has a significant negative relationship ($P = 0.02$) with the dimensions of fetal interaction and self-sacrifice. There is a positive and significant relationship ($P = 0.04$) between the observation dimension and the dimensions of interaction with the fetus and self-sacrifice [Table 2].

The results of data analysis by Spearman and regression tests showed that there was no significant correlation between maternal attachment to the fetus with demographic variables (mother's age, gestational age, number of pregnancies, mother's job, mother's education, spouse's job, spouse's education, financial status, housing status) ($P > 0.05$) [Tables 3 and 4].

Discussion

Maternal-fetal attachment is a natural and important part of pregnancy and is a way for mother-child communication in the future. Therefore, the present study was conducted to determine the relationship between mindfulness and maternal attachment to the fetus during pregnancy.

The results of data analysis showed that the attachment score of pregnant mothers participating in the study was 98.43 ± 9.09. The lowest score was obtained in the field of acceptance of mother role and the highest score was obtained in the field of interaction with the fetus. A 2010 study by Sawyer Cohen. Reported a maternal attachment score of 58.68 ± 10.32,[17] which was much lower than the number reported in the present study. The reason for this difference can be found in the type of questionnaire used and the smaller sample size in the studies mentioned and the difference in the culture of the people studied.

Table 1: Evaluation of the average overall score and dimensions of maternal attachment to the fetus and mindfulness during pregnancy

Variables	Mean±SD	Minimum	Maximum
Overall attachment score	98.43±9.09	77	139
Dimensions of attachment			
Interaction with the fetus	20.58±2.46	11	25
Sacrifice	20.57±2.50	15	25
Distinction between self and fetus	16.51±2.72	12	20
Attributing characteristics to the fetus	24.66±3.73	18	74
Accepting the role of mother	16.08±2.14	12	20
Overall score of mindfulness	142.32±7.20	129	157
Dimensions of mindfulness			
No reaction	25.15±3.19	20	31
Lack of judgment	29.31±3.38	24	39
Action with awareness	28.48±3.14	23	36
Description	27.03±3.01	20	33
Observation	29.03±2.38	25	35

SD=Standard deviation

Table 2: Evaluation of the relationship between maternal attachment to the fetus and its dimensions with the overall score and dimensions of mindfulness during pregnancy

Overall score and dimensions of mindfulness	Overall score and dimensions of maternal attachment to the fetus											
	Interaction with the fetus		Sacrifice		Distinction between self and fetus		Attributing characteristics to the fetus		Accepting the role of mother		Overall score of maternal attachment to the fetus	
	P	Correlation coefficient	*P*	Correlation coefficient	*P*	Correlation coefficient	*P*	Correlation coefficient	*P*	Correlation coefficient	*P*	Correlation coefficient
Overall score of mindfulness	0.26	−0.050	0.26	−0.050	0.64	0.021	0.05	−0.090	0.38	−0.039	0.62	−0.022
No reaction	0.72	0.056	0.09	0.076	0.09	0.076	0.09	0.065	0.83	0.009	0.14	0.065
Lack of judgment	0.02	−0.098	0.02	−0.098	0.47	−0.032	0.45	−0.033	0.66	−0.020	0.17	−0.061
Action with awareness	0.06	−0.083	0.06	−0.083	0.43	−0.035	0.34	−0.042	0.71	−0.016	0.03	−0.096
Description	0.77	0.013	0.77	0.013	0.42	0.036	0.84	0.009	0.56	−0.026	0.77	0.013
Observation	0.04	0.091	0.04	0.091	0.06	0.083	0.71	−0.016	0.94	0.003	0.03	0.094

Table 3: Correlation between maternal and fetal attachment with demographic variables of research units

Variables	Mother's age	Gestational age	Number of pregnancies	Mother's job	Mother's education	Spouse's job	Spouse's education	Financial status	Housing status
Maternal and fetal attachment									
P (Spearman)	0.79	0.95	0.26	0.40	0.36	0.56	0.99	0.99	0.64
r	0.025	−0.005	−0.111	0.077	0.090	−0.057	0.001	0.000	0.037

The score of mindfulness in the present study was 142.32 ± 7.20 and the lowest score was in the nonreaction dimension and the highest mean was in the nonjudgment dimension. In the study of Sawyer Cohen, The overall score of mindfulness was not reported, but according to the scores reported in the domains of mindfulness, the lowest score was related to the nonreaction domain with a mean of 22.42 ± 4.12 and the highest score was related to the domain of description with a mean of 30.18 ± 60.7.[17] The lowest score obtained in both studies was nonresponse.

The results of the data showed that there is no significant relationship between the overall score of mindfulness and the overall score of maternal attachment to the fetus. While there is a significant relationship between the dimension of action with awareness with the mother's attachment to the fetus. In line with this research finding, as found in Cohen's study, it can be said that observation as one of the important aspects of mindfulness can specifically reveal people's awareness of various stimuli such as sounds, smells, and body. For this reason, it can focus on maternal feelings uniquely before birth, thereby increasing attachment, which is actually a woman's response to fetal activity.

Also, the results of data analysis showed that there is a significant negative relationship between the overall score of mindfulness and the dimension of attributing characteristics to the fetus. Judgment has a

Table 4: Correlation between maternal and fetal attachment with demographic variables of research units

Variables	*B*	SD	β	*t*	*P* (regression)
Constant	51.595	11.532	-	4.478	0.000
Mother's age	0.086	0.209	0.042	0.410	0.682
Gestational age	−1.636	3.290	−0.050	−0.497	0.620
Number of pregnancies	2.944	2.794	0.107	1.053	0.295
Mother's job	−0.536	1.027	−0.055	−0.522	0.603
Mother's education	0.000	0.016	0.000	−0.008	0.993
Spouse's job	−0.105	0.103	−0.105	−1.030	0.306
Spouse's education	0.047	0.438	0.028	0.106	0.915
Financial status	4.945	2.650	0.175	1.866	0.065
Housing status	−0.087	0.459	−0.050	−0.190	0.850
F, *P*, adjusted R^2			0.482, 0.821, −0.031		

SD=Standard deviation

significant negative relationship with the dimensions of fetal interaction and self-sacrifice. There is a positive and significant relationship between the observation dimension and the dimensions of fetal interaction and self-sacrifice.

The results of Sawyer Cohen's study conducted in 2010 with the aim of determining self-compassion and mindfulness during the maternal transfer on 221 people showed that there is a significant relationship between mindfulness and maternal attachment to the fetus during pregnancy.[17] Also, a study conducted by Duncan *et al*. In 2010 on 27 mothers showed that mindfulness-based childbirth training can increase mothers' mindfulness and also reduce their anxiety.[13] Haghighat *et al*.'s study conducted in 2016 on 36 pregnant women to determine the effect of mindfulness-based maternal education program based on Iranian-Islamic culture on mother-fetus attachment showed that mindfulness-based educational program increased maternal-fetal attachment score.[27]

In fact, it can be said that mindfulness can increase the mother-fetus interactions that this interaction begins during pregnancy and with the mother's attachment to the fetus. In general, in explaining the results of the present study, we can point to the importance of the role of internal and external support resources. Research has shown that the quality of the mother's internal support resources, for example, Self-awareness, emotional regulation and recognition of needs is an important factor in promoting the health of the mother-infant relationship.[28] One of the promising areas in relation to increasing this internal source of support is mindfulness, which in practice indicates an increase in emotion regulation and a decrease in psychological stress and mood disorders and stress and anxiety in general.[28]

In conscious mind relationships, not reacting or reacting appropriately and responding with awareness is based on observing and describing feelings and thoughts, an observational observation of any judgment and with a sense of compassion for it. It is in this way that the heart and soul of pregnant mothers are opened to feelings and thoughts and they can gradually see the inner and complex layers of their thoughts and feelings.[29-31]

Limitation and recommendation

The present study was one of the limited studies that were conducted using a 24-item questionnaire of maternal-fetal attachment of Cranley to examine the relationship between attachment and mindfulness during pregnancy on a suitable number of samples (500 people). According to the results of this study, we can increase the acceptance of motherhood and increase the mental health of mothers and children in all stages of life by holding mindfulness-raising classes for pregnant mothers by health care personnel.

Conclusion

According to the results of this study, some aspects of mindfulness are related to maternal attachment to the fetus during pregnancy. For this purpose, it seems that paying attention to the mother's awareness and attachment to the fetus during pregnancy can promote maternal attachment to the fetus.

Acknowledgments

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Conflicts of interest

There are no conflicts of interest.

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