



Akbas et al.

Volume 3 Issue 2, pp. 77-87

Date of Publication: 16th September 2017

DOI-<https://dx.doi.org/10.20319/lijhls.2017.32.7787>

This paper can be cited as: Akbaş, M., Akbaş, T., Akbaş, O., & Akbaş, I., (2017). An Analysis of Maternal-Fetal Attachment Level in Pregnant Women. LIFE: International Journal of Health and Life-Sciences, 3(2), 77-87.

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AN ANALYSIS OF MATERNAL-FETAL ATTACHMENT LEVEL IN PREGNANT WOMEN

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Abstract

This study aims to analyse maternal-fetal attachment levels of pregnant women. The population of the descriptive study consists of pregnant women who consulted Non Stress Test Policlinic of a private hospital and the sample consists of 101 pregnant women who participated in the study willingly. Confirmation of the ethics committee, permission of the institutions and verbal



informed consent were obtained. The data were collected via “Questionnaire Form” and “Prenatal Attachment Inventory” with face-to-face interviews and were analyzed on IBM SPSS Statistics version 20. Number, percentage, arithmetic average, independent t test and Pearson Correlation Coefficient were used in the analysis. It was found that the average age for pregnant women was $28,20 \pm 4,954$, average duration of marriage was 4.67 ± 4.157 , average number of pregnancy was $1,82 \pm 1,07$, average number of delivery was $0,73 \pm 0,989$, average pregnancy week was $35,88 \pm 2,380$. It was indicated that 69.3% of the pregnant women were 30 years old and younger, 44.6% had education at university level or higher, 64.4% were not working, 74.3% had good financial status, 92.1% had nuclear family, 94.1% had planned their pregnancy, 74.3% did not experience problems during pregnancy, 61.4% were examined 5 times or more during pregnancy. No statistically significant difference was found between average scores for Prenatal Attachment Inventory of pregnant women and their age, education level, work status, financial status, family type, frequency of health checks, problems experienced during pregnancy and planning of the pregnancy ($p > 0.05$). A weak, positive correlation was found between average scores for prenatal attachment inventory of pregnant women and the number of delivery ($p < 0.05$). The data suggest that the attachment level between mother and fetus is strong in pregnancy; however, significant difference was not found between variables related to mother and average scores for prenatal attachment inventory. A weak, positive correlation was found between average scores for prenatal attachment inventory of pregnant women and the number of delivery ($p < 0.05$).

Keywords

Bonding, pregnancy, prenatal, mother, baby

1. Introduction

The attachment theory is based on English scientist Bowlby's work (Duyan et al. 2013; Özsoy, 2015). It is the product of John Bowlby and Mary Ainsworth's joint efforts. Bowlby started his work in 1950's and defined the concept of “attachment” as a strong bond between two people (Kavlak and Şirin, 2009; Dereli Yılmaz and Kızılkaya Beji, 2010). According to Bowlby, a reliable maternal-fetal attachment is necessary for a healthy psychological development. If the need for attachment is not met sufficiently, the infant may develop pathology regarding self-perception (Tüzün and Sayar, 2006).



The concept of attachment has a wide meaning. It refers to the attachment of a baby to his/her mother and it is also used to describe a mother's emotional bonding with her baby. Attachment is an interactional process that begins in mother's womb and becomes intense especially in the first years in postpartum period and then continues throughout whole life. It refers to the mutual bond that is formed between a baby and his/her care provider. Strength of this bond is an important determinant for the newborn's life (Tüzün and Sayar, 2006; Özsoy, 2015; Kavlak and Şirin, 2009).

Prenatal period refers to the period between beginning of pregnancy and completion of delivery. Many inventories have been developed to measure the attachment and they are in use. However, there are disputes regarding the methods for measuring prenatal attachment (Brandon et al., 2009; Dereli Yılmaz, 2013; Dereli Yılmaz and Kızılkaya Beji, 2013; Jeanne and Alhusen, 2008; Duyan et al., 2013). Along these disputes, nurse researcher Cranley formed the theoretical structure of maternal-fetal attachment in 1981 and defined this attachment as "the extent to which women engage in behaviours that represent an affiliation and interaction with their unborn child." Another nurse researcher Muller defined maternal-fetal attachment as "the unique, affectionate relationship that develops between a woman and her fetus" in 1990 (Jeanne and Alhusen, 2008).

Maternal-fetal attachment begins with a mother's positive response to pregnancy. A pregnant woman that has bonds to her baby in her womb believes that the baby establishes relations with her; he/she is dependent on her mother for nutrition and safety. Pregnant woman recognizes the baby as a separate individual and thinks about how the baby will look like, how he/she will move around and what kind of stages the baby will go through in life. These emotions of attachment enable the future mother to show affection and compassion to her baby; they encourage her to protect, feed and be interested in her baby, communicate with him/her and be attentive to his/her needs. Maternal-fetal attachment reflects a process for pregnant women to develop a mother identity (Brandon et al., 2009; Dereli Yılmaz, 2013; Dereli Yılmaz and Kızılkaya Beji, 2013; Jeanne and Alhusen, 2008; Duyan et al., 2013).

The studies on maternal-fetal attachment started in 1960's and 1970's after observing the mourning of women who lost their babies during labor. The studies to develop inventories to identify the level of maternal-fetal attachment began in 1970's. Cranley developed maternal-fetal attachment inventory in 1981 and Muller developed the inventory in 1990. These inventories are translated into other languages and following the validity and reliability tests, they are used to



identify the level of maternal-fetal attachment and the factors affecting this attachment (Brandon et al., 2009; Dereli Yılmaz, 2013; Jeanne and Alhusen, 2008; Duyan et al., 2013).

Various studies indicated that maternal-fetal attachment motivates good health practices during pregnancy, facilitates adaptation to motherhood role and prevents perinatal depression (Brandon et al., 2009; Dereli Yılmaz, 2013; Dereli Yılmaz and Kızılkaya Beji, 2013; Jeanne and Alhusen, 2008; Duyan et al., 2013). The factors that affect maternal-fetal attachment during pregnancy are income level, planning of pregnancy, monitoring of the fetus via ultra sound, fetal movements and positive health behaviours. On the other hand, unpleasant pregnancy symptoms, lack of support or interest from partners and prenatal depression are reasons for late attachment. Significant correlations were found between a strong maternal-fetal attachment during pregnancy and positive health behaviours, abstaining from tobacco, alcohol and illegal drugs, receiving prenatal care and participating in it, healthy diet and sleeping habits, proper exercises, using seat belt, trying to learn more about pregnancy, labor and baby care. The quality of attachment is also related with the mother's mental health during perinatal period (Brandon et al., 2009; Dereli Yılmaz, 2013; Dereli Yılmaz and Kızılkaya Beji, 2013; Jeanne and Alhusen, 2008; Duyan et al., 2013).

While there are many studies investigating maternal-fetal attachment in postnatal period (Özsoy, 2015; Kavlak and Şirin 2009; Dereli Yılmaz and Kızılkaya Beji, 2013), the studies on maternal-fetal attachment during pregnancy are less in number.

This study aims to analyse maternal-fetal attachment levels of pregnant women. The data acquired from this study is intended to be used in forming health policies and for on-the-job training programs and midwifery-nursing education. The study is expected to be an important and novel contribution to the literature on maternal-fetal attachment in scientific terms both in Turkey and the world.

2. Methodology

2.1 Research Objective and Type

The study is descriptive and it aims to analyse maternal-fetal attachment levels of pregnant women.

2.2 Research Population and Sampling

The research was conducted in Private Adana Metro Hospital between 01st-31th of March 2017. Systematic sampling method, which is one of the probability sampling methods, was used



in the research. Research population consisted of pregnant women who consulted Non Stress Test (NST) Policlinic in Private Adana Metro Hospital between 01st-31th of March 2017 and the sample consisted of 101 pregnant women who consented to participate in the study and were able to speak Turkish language. Pregnant women in their 3rd trimester consult NST policlinic. On average 1010 pregnant women consult this policlinic monthly. In line with the information that in descriptive studies sample size should be at least 10% of the population, the sample was calculated as 101 at minimum. In order to recruit the sample, population number was divided by sample number (1010/101) and 11 was found. A number was selected between 1 and 11 coincidentally in order to determine the first participant. Then 11 was added to this number to determine the second participant. The procedure to determine the participants continued until the selection of last participant by adding 11s. (Arlı and Nazik, 2001; Yazıcıoğlu and Erdoğan, 2004).

2.3 Data Collection Tools

The data was collected by the researchers based on face-to-face interviews with the participants via “Questionnaire Form” and “Prenatal Attachment Inventory.” Questionnaire Form consisted of 21 items that were prepared by the researchers based on literature in order to identify socio-demographic and obstetric characteristics of pregnant women. Prenatal Attachment Inventory was developed in 1993 by Mary Muller and it was adapted to Turkish society in 2009 by Dereli Yılmaz and Kızılkaya Beji. Item-total score correlation reliability coefficient ranged between $r=0.36 - 0.68$, and a positive, strong and statistically significant correlation was found between them ($p<0.001$). In internal consistency analysis of the scale, Cronbach alfa reliability coefficient was calculated as $\mu=0.84$. Test-retest analysis was conducted in order to evaluate invariance of the scale based on time and no difference was found between the two analyses ($p>0.05$). The scale consists of 21 items and is developed in order to explain thoughts, emotions and situations women go through during pregnancy and identify the level of attachment to fetus in prenatal period. Each item is 4-point Likert type and the response may range between 1 to 4 points. The minimum score for the scale is 21 while the maximum is 84. An increase in the score indicates an increase in pregnant women’s level of attachment.

2.4 Data Analysis

The data were analyzed on computer with “Statistical Package for Social Sciences” (SPSS) for Windows 20.0 program using number, percentage, arithmetic average, independent t test and Pearson Correlation Coefficient.

2.5 Ethical Considerations

Çukurova University Medical Faculty Non-Invasive Clinical Research Ethics Committee’s confirmation (61/2, 10 February 2017), the hospital’s permission and verbal informed consent of pregnant women who participated in the study were obtained.

3. Findings and Discussion

3.1 Findings on Descriptive Characteristics of Pregnant Women

Table 1: *The Averages for Some Descriptive Characteristics of Pregnant Women (N: 101)*

Pregnant Women’s Characteristics	Avr±SD	Range
Age	28,20±4,954	18-43
Partner’s age	31,98±5,213	21-48
Period in marriage	4,67±4,157	1-18
Number of pregnancy	1,82±1,071	1-5
Number of delivery	0,73±0,989	0-5
Number of abortion	0,15±0,384	0-2
Number of miscarriage	0,14±0,401	0-2
Number of stillbirth	0,03±0,171	0-1
Number of alive children	0,67±0,826	0-3
Pregnancy week	35,88±2,380	29-40

Table 1 presents averages for some descriptive characteristics of pregnant women. Socio-demographic characteristics of pregnant women indicated that the average age was 28,20±4,954, their partner’s average age was 31,98±5,213, average period in pregnancy was 4.67±4.157 (Table 1). The average for obstetric characteristics of pregnant women indicated that the average number of pregnancy was 1,82±1,07, average number of delivery was 0,73±0,989, average number of abortion was 0,15±0,384, average number of miscarriage was 0,14±0,401, average number of stillbirth was 0,03±0,171, average number of alive children was 0,67±0,826 and average pregnancy week was 35,88±2,380 (Table 1).

Table 2: *The Percentages for Some Descriptive Characteristics of Pregnant Women (N: 100)*

Characteristics of Pregnant Women	Number	%
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Age		
30 years and younger	70	69.3
31 years and older	31	30.7
Education Level		
High school and lower	56	55.4
University and higher	45	44.6
Occupation		
Unemployed	65	64.4
Employed	36	35.6
Partner's Age		
30 years and younger	44	43.6
31 years and older	57	56.4
Partner's Education Level		
High school and lower	57	56.4
University and higher	44	43.6
Partner's Occupation		
Public	65	64.4
Private	36	35.6
Economic Status		
Bad	26	25.27
Good	75	74.3
Family Type		
Nuclear family	93	92.1
Extended family	8	7.9
Planning for Pregnancy		
Yes	95	94.1
No	6	5.9
Problems during Pregnancy		
Yes	26	25.7
No	75	74.3
Number of Health Checks during Pregnancy		
4 times and less	39	38.6
5 times and more	62	61.4

Table 2 presents percentage distributions for some descriptive characteristics of pregnant women. Socio-demographic characteristics of pregnant women indicated that 69.3% were 30 years old and younger, 44.6% had university education or higher, 64.4% were unemployed, 74.3% had good economic status and 92.1% had nuclear family (Table 2). In terms of pregnant women's partners; 56.4% were 30 years old and younger, 43.6% had university education or higher, 64.4% worked in public sector. Obstetric characteristics of pregnant women indicated that



94.1% had planned the pregnancy, 74.3% did not experience problems during pregnancy, 61.4% underwent health checks 5 times or more during pregnancy (Table 2).

3.2 Findings on Maternal-Fetal Attachment Levels of Pregnant Women

It was found that the pregnant women's average score for prenatal attachment inventory was 66.27 ± 11.050 , and the distribution interval was 40-84.

The study indicated that maternal-fetal attachment level of pregnant women is high. Similar to our research, in two studies conducted by Dereli Yılmaz and Kızılkaya Beji (2010, 2013), it was found that maternal-fetal attachment level was high in prenatal period (60.71 ± 10.12), (61.72 ± 10.72) (Dereli Yılmaz and Kızılkaya Beji, 2010 & 2013). In a study conducted by Duyan et al. (2013), the average score for prenatal attachment inventory was 42.88 (11.26); thus, lower in comparison to our study (Duyan et al., 2013). In another study conducted by Metin (2014), the average score for prenatal attachment inventory was 61.409 ± 11.785 (Metin, 2014). This result is in line with our study.

Table 3: The Distribution of Pregnant Women's Average Scores for Prenatal Attachment Inventory Based on Socio-demographic and Obstetric Characteristics (N: 101)

Inventory Score Descriptive Characteristics	n	Avr±SD	t value	p value	
Age			0.883	0.379	
30 years and ↓	70	66.91 ± 10.925			
31 years and ↑	31	64.81 ± 11.371			
Education level			10.595	0.553	
High school and ↓	56	65.68 ± 11.997			
University and ↑	45	67.00 ± 9.828			
Work Status			0.876	0.383	
Employed	36	66.97 ± 10.641			
Unemployed	65	66.98 ± 11.284			
Economic Status			0.329	0.743	
Good	75	66.05 ± 11.249			
Bad	26	66.88 ± 10.645			
Health Checks			-0.192	0.848	
4 times and ↓	39	66.00 ± 10.645			
5 times and ↑	62	64.44 ± 11.051			
Problems During Pregnancy			-0.348	0.729	
Yes	26	65.62 ± 11.552			
No	75	66.49 ± 10.941			
	n	Mean rank	Sum of Rank	U value	p value



Willingness for Pregnancy					
Yes	95	51.84	4924.50	205.500	0.253
No	6	37.75	226.50		
Family Type					
Nuclear family	93	51.44	4783.50	331.500	0.610
Extended family	8	45.94	367.50		

Table 3 presents distribution of average scores for prenatal attachment inventory based on socio-demographic. No statistically significant difference was found between pregnant women's average scores for prenatal attachment inventory and their age, education level, work status, economic status, family type, frequency of health checks, problems experienced during pregnancy and planning the pregnancy ($p>0.05$) (Table 4).

The study indicated that there is no statistically significant difference between average scores for prenatal attachment inventory and the variables regarding pregnant women's characteristics. When compared with similar studies, in contrast to our research, it was found that women who have high school education or higher, are employed, between the ages of 18-34, have no child and have planned pregnancy have higher average scores in prenatal attachment inventory when compared with women with primary school education who are unemployed, multipara, older than 35, have children and have unplanned pregnancy (Dereli Yılmaz and Kızılkaya Beji, 2010). Another study on maternal-fetal attachment indicated that prenatal attachment was higher for women who has education at secondary school and university levels ($p<0.05$) (Metin, 2015). These differences may be associated with the fact that our study was conducted at a private hospital and the sample consisted of pregnant women who consulted NST policlinic. All of the participants were in their 3rd trimester and they formed a homogenous group.

Table 4: *The Distribution of Correlations between Pregnant Women's Average Scores for Prenatal Attachment Inventory and Some Variables N: 101)*

Characteristics	Scale	r value	p value
Age		-0.126	0.209
Partner's age		-0.077	0.446
Period in marriage		-0,161	0,107
Number of pregnancy		-0.164	0.101
Number of delivery		0.197	0.048
Number of abortion		-0.005	0.963
Number of miscarriage		0.005	0.960



Number of stillbirth	-0.010	0.924
Number of alive children	-0,177	0,077

There is a positive and weak correlation between pregnant women's average scores for prenatal attachment inventory and number of delivery ($p < 0.05$). No correlation was found between pregnant women's average scores for prenatal attachment inventory and their age, pregnancy week, period in marriage, number of pregnancy, abortion, stillbirth and alive children ($p > 0.05$) (Table 4). Pregnant women are a homogenous group and this may be the reason for these results.

The findings of this research are limited to pregnant women who consulted NST policlinics of the private hospital where the research took place and who consented to take part in the study.

4. Conclusions

According to the results, maternal-fetal attachment is high during pregnancy; however, no significant difference was found between the variables regarding mothers and the average scores for prenatal attachment inventory. There is a positive and weak correlation between average scores for prenatal attachment inventory and number of delivery ($p < 0.05$).

5. Future Research

Since this study was conducted with participants that form a homogenous group, it is recommended to repeat the study in heterogeneous groups, with more participants and at hospitals with different statuses.

6. Acknowledgments

This study was supported by the Research Fund of Cukurova University. Project Number: SED-2017-8573.

7. Disclosure

The authors declare no conflict of interest.

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