



## Determination of The Relationship between Socio-demographic Characteristics and Prenatal Attachment

Atike Kaya<sup>1\*</sup> and Kamile Altuntug<sup>2</sup>

<sup>1</sup>MEB, Meram Sifa Hatun Vocational and Technical Anatolian High School, Konya

<sup>2</sup>Department of Obstetrics and Gynecology, Faculty of Nursing, Necmettin Erbakan University, Konya

\*Corresponding e-mail: [atike20102011@gmail.com](mailto:atike20102011@gmail.com)

### ABSTRACT

Pregnancy is both a physiological and a natural process in a women's life. Attachment is a behavioral skill that is initiated and maintained through healthy relationships. This study aimed to determine the relationship between socio-demographic characteristics and prenatal attachment. The type of study was descriptive and applied to 394 volunteers and fulfilled the criteria of the 20<sup>th</sup> gestational week, literate, spontaneously pregnant women who consulted to pregnant follow-up outpatient service of a hospital of gynecology and pediatrics located in the province of Konya. Necessary institutional and board permissions were obtained before data was collected, and verbal consents were obtained by informing pregnant women about the purpose of the study. Personal data form and prenatal attachment inventory were used for gathering the data. The relationship between socio-demographic characteristics and prenatal attachment was examined; it was found that the scale score did not change according to the working status, perceived economic status, and place of residence ( $p > 0.05$ ). However, the mean prenatal attachment score was higher in those whose marriage period was 1-2 years ( $66.50 \pm 8.79$ ) than those who were 7 years or more ( $63.33 \pm 9.68$ ); prenatal attachment scale scores were found to be lower in those with primary education or less than those with high school and university education ( $p < 0.05$ ).

**Keywords:** Mother-infant attachment, Attachment, Prenatal period, Socio-demographic characteristics

### INTRODUCTION

Pregnancy is both a physiological and a natural process in a women's life [1]. This period, which is considered an anxious process, is important for the life of the fetus and woman [2]. Women experiencing physiological, psychological, and social changes need the help of healthcare professionals in subjects such as adapting to pregnancy period and changes, tests recommended during pregnancy, and control examinations. Health problems experienced before or during pregnancy by the expectant mother can make the pregnancy process and compliance with this pregnancy process difficult [1].

Emotional attitudes and behaviours of the expectant mother affect the pregnancy process and some situations caused by pregnancy may also affect the mother's emotional state [3]. The mother meets all the physical and emotional needs of the fetus in intrauterine life, continues to meet and take care of her child in the postnatal period. This care process prepares the ground for the formation of a bond between mother and baby [4]. Attachment is a behavioural skill that is initiated and maintained through healthy relationships [5]. During pregnancy, which is quite active and changeable; the first basis of attachment is the ability to evaluate the emotion and condition of the pregnant woman, to recognize the changes and find a solution, and to communicate with the fetus with positive emotions [6]. The concept of attachment was first mentioned by Bowlby; It was expressed as an uninterrupted, positive, lovable, friendly, and strong communication between mother and child. As much as nutrients are necessary for the physical development of the fetus and the new born, the interest and devotion of the mother in terms of spiritual development are also necessary [7]. With the onset of maternal feelings, the prenatal period plays an important role in the rapid establishment of attachment between the new born and mother in the postpartum period. Behaviours such as not receiving prenatal

care, starting or continuing harmful habits (such as alcohol and smoking), unsafe behaviours such as not wearing seat belts, the importance of gender for parents, previous loss of fetus, risky or difficult labor, and not wanting pregnancy are known to have negative effects on maternal feelings [8].

The woman, whose maternal feelings appear in the prenatal period, is curious about her baby and her postpartum development and dreams. It is ready to take on behaviours such as baby care, protection, and shelter. This situation initiates the formation of the bond between mother and baby in the prenatal period and enables it to continue by getting stronger [4]. Prenatal attachment is an emotional attitude and behaviour pattern that begins between mother and baby during pregnancy [3]. It is thought that the attachment first started and developed in the prenatal period and matured during pregnancy, childbirth, and postpartum [7].

The attachment process that the mother initiates with her unborn baby can be affected by many things. These factors must be recognized early by nurses who are closely interested in the mother [4]. Nurses should be able to evaluate the level of mother-infant attachment starting from the prenatal period and support the mothers to maintain the attachment process in the best way [9]. Mothers who are distressed with weak attachment should be treated with appropriate diagnosis and nursing interventions, training, and motivation [10].

Studies on mother-infant attachment in our country have found that attachment style is passed down from previous generations; low economic status and younger maternal age have a negative effect on the attachment process. In addition, it has been revealed that the massage applied to the baby, the first pregnancy, and the desired and planned pregnancies have the effect of enhancing attachment [7]. Although many reasons that contribute positively or negatively to mother and baby attachment are mentioned in the literature, we encountered no study on how socio-demographic characteristics direct mother and baby attachment. This study was conducted to determine the relationship between socio-demographic characteristics and prenatal attachment.

## MATERIALS AND METHODS

This descriptive study was conducted with 394 literate, spontaneously pregnant women who applied to the pregnancy follow-up outpatient clinic of a gynaecology and paediatrics hospital, who fulfilled the 20<sup>th</sup> gestational week and met the research criteria. Using the  $n = t^2 \cdot \sigma^2 / d^2$  formula used in cases where the number of individuals in the universe is unknown, and taking  $t = 1.96$  and  $d = 1$  at 95% confidence interval, the Prenatal Attachment Inventory (PAI) in Yilmaz and Beji's study by calculating the standard deviation (10,12) value, 394 people were included in the sampling [2,11]. Personal information forms and PAI were used for data collection. PAI was developed by Mary Muller in 1993 to explain the thoughts, feelings, and situations experienced by women during pregnancy and to determine the level of attachment to the baby during the prenatal period. An inventory to evaluate the validity and reliability in Turkey by Yilmaz and Beji was made in 2010 [2]. The inventory consists of twenty-one items. Each item is scored between 1 to 4 points (1:Never, 2:Sometimes, 3:Frequently, 4:Always). A minimum of 21 and a maximum of 84 points can be obtained from the inventory. The increase in the score obtained by the pregnant woman indicates that the level of attachment to her baby has increased. The Cronbach alpha reliability coefficient of the inventory was found to be 0.84 [10]. Cronbach alpha value was found 0.83 in our study.

### Analysis of Data

By examining the distributions of the data groups, the means, standard deviations, quarter value widths of the groups, whether they fit the normal distribution, and histograms were obtained. In comparison of independent groups with measured data; student's t-test and variance analysis were used if parametric test data were provided, and Mann Whitney U-test and Kruskal Wallis variance analysis were used if not. In addition, correlation and regression analysis were applied to determine whether there is a relationship between two or more variables. In the analysis of the data obtained by determining; according to the dependency or independence of the groups and according to the number of groups, Fisher Exact Chi-Square test, Kolmogorov Smirnov test, Chi-Square test for dependent groups, significance test of the difference between two percentages in the dependent groups or universe mean significance test was applied.

### Ethical Dimension

For our study conducted to determine the relationship between socio-demographic characteristics and prenatal attachment, the ethics committee of a university hospital for drug and non-medical device researches (decision number:

2019/2218) and the provincial health directorate ethics committee for the relevant hospital (number: 86737044-806.01.03) the necessary permissions were obtained and verbal consent was obtained from the pregnant women who were included in the sampling by explaining the purpose of the study before the application.

## RESULTS

The average age of women in the study was  $26.6 \pm 5.1$ ; the mean age of spouses is  $30.1 \pm 5.5$ . 40% have been married for 1-2 years; the family characteristic of 76% is nuclear; 54% of the participants and 49% of the spouses have graduated from primary school or below. While 89% of women are unemployed, only 11% of their spouses are unemployed. The rate of those who perceive their economic situation as the medium is 74% and the rate of those living in the city centre is 65%. When the relationship of these variables with PAI was examined, it was found that the scale score did not change according to the working status of the participants and their spouses, perceived economic situation, and place of residence ( $p > 0.05$ ). However, the average PAI score of those with 1-2 years of marriage ( $66.50 \pm 8.79$ ) is higher than those of 7 years or more ( $63.33 \pm 9.68$ ). The PAI score of those whose own and peer education level is primary school or below was found lower than those with high school or university ( $p < 0.05$ ). It was determined that there was no relationship between the ages of the individuals and their spouses and the scale score ( $p > 0.05$ ) (Table 1).

**Table 1 PAI score distribution by socio-demographic features**

| Duration of Marriage (years)        | n (%)    | Mean          | SD         | Test and p-value          |
|-------------------------------------|----------|---------------|------------|---------------------------|
| 1-2                                 | 157 (40) | 66.50         | 8.79       | F=3.210<br>p=0.023        |
| 3-4                                 | 56 (14)  | 65.14         | 9.04       |                           |
| 5-6                                 | 61 (16)  | 63.54         | 9.36       |                           |
| ≥ 7                                 | 120 (30) | 63.33         | 9.68       |                           |
| <b>Type of Family</b>               |          |               |            |                           |
| Nuclear                             | 299 (76) | 66.11         | 9.20       | t=0.865<br>p=0.387        |
| Extended                            | 95 (24)  | 64.16         | 9.48       |                           |
| <b>Status of Education</b>          |          |               |            |                           |
| Primary or less                     | 211 (54) | 63.01         | 9.48       | F=10.468<br>p<0.001       |
| Middle School                       | 107 (27) | 66.3          | 8.36       |                           |
| University or more                  | 76 (19)  | 68.05         | 8.75       |                           |
| <b>Education Status of Spouse</b>   |          |               |            |                           |
| Primary or less                     | 194 (49) | 62.97         | 9.51       | F=9.539<br>p<0.001        |
| Middle School                       | 112 (28) | 65.91         | 8.58       |                           |
| University or more                  | 88 (22)  | 67.79         | 8.69       |                           |
| <b>Employment Status</b>            |          | <b>Median</b> | <b>IQR</b> |                           |
| Employed                            | 43 (11)  | 68.00         | 15.00      | z=6.251<br>p=0.066        |
| Unemployed                          | 351 (89) | 65.00         | 12.00      |                           |
| <b>Employment Status of Spouse</b>  |          |               |            |                           |
| Employed                            | 363 (92) | 65.00         | 13.00      | z=4.976<br>p=0.285        |
| Unemployed                          | 31 (8)   | 65.00         | 10.00      |                           |
| <b>Perceived Economic Situation</b> |          |               |            |                           |
| Good                                | 82 (21)  | 67.00         | 14.75      | $\chi^2=1.675$<br>p=0.433 |
| Moderate                            | 290 (74) | 65.00         | 12.25      |                           |
| Bad                                 | 22 (5)   | 65.00         | 9.75       |                           |
| <b>Living Place</b>                 |          | <b>Mean</b>   | <b>SD</b>  |                           |

|              |                  |                |                |                    |
|--------------|------------------|----------------|----------------|--------------------|
| City         | 258 (65)         | 65.34          | 9.21           | F=2.643<br>p=0.433 |
| District     | 95 (24)          | 64.97          | 8.71           |                    |
| Village      | 41 (11)          | 61.78          | 10.44          |                    |
|              | <b>Mean ± SD</b> | <b>r-value</b> | <b>p-value</b> |                    |
| Age          | 26.6 ± 5.1       | -0.044         | 0.378          |                    |
| Age (spouse) | 30.1 ± 5.5       | -0.069         | 0.170          |                    |

It is the first pregnancy of 37% of the participants, the period between pregnancies is 24 months or more in 47% and 56% of the pregnancy is between 36<sup>th</sup> to 40<sup>th</sup> weeks. While 93% of the pregnant women want their pregnancy, 20% have previous abortus history, and 7% still birth history. While 88% are satisfied with the sex of the baby, 79% have a planned pregnancy, 12% of the pregnant women were hospitalized at least once during their pregnancy; 9% have chronic illnesses and 95% visited the doctor regularly during their pregnancy. 91% of pregnant women have good communication with their mothers and 93% with their spouses, and 60% reported positive changes in their lifestyle and health behaviours with their pregnancy. When the differentiation status of the inventory score was evaluated according to these variables; it was found that the inventory score differed significantly according to the number of pregnancies, the time between two pregnancies, the state of planning pregnancy, and the state of thinking that there were positive changes in lifestyle and health behaviours with pregnancy ( $p < 0.05$ ); The change according to other variables is insignificant ( $p > 0.05$ ).

The PAI score average of those with their first and second pregnancies was found to be similar and also higher than those with three or more pregnancies. According to the Tukey HSD test, it was shown that those with their first pregnancy had higher mean scores according to the time between pregnancies. The median value of the inventory of pregnant women with planned pregnancy and regular control was found to be higher than those who had an unplanned pregnancy and did not go to regular medical control. The mean PAI score of pregnant women who think they have experienced positive changes in their lifestyle and health behaviours with their pregnancy is higher than the average score of those who do not ( $p < 0.05$ ) (Table 2).

**Table 2 PAI score distribution by some fertility characteristics**

| Rank of pregnancy                          | n (%)    | Mean          | SD         | Test and p-value            |
|--|----------|---------------|------------|-----------------------------|
| 1 <sup>st</sup>                            | 147 (37) | 66.59         | 8.86       | F=4.165<br>p=0.006          |
| 2 <sup>nd</sup>                            | 120 (30) | 65.11         | 9.08       |                             |
| 3 <sup>rd</sup>                            | 68 (18)  | 62.85         | 8.53       |                             |
| 4 <sup>th</sup> or more                    | 59 (15)  | 62.50         | 10.63      |                             |
| <b>The time between last two pregnancy</b> |          |               |            |                             |
| First pregnancy                            | 142 (36) | 66.45         | 8.92       | F=3.198<br>p=0.042          |
| <24 mos                                    | 65 (17)  | 63.98         | 9.96       |                             |
| ≥ 24 mos                                   | 187 (47) | 64.01         | 9.17       |                             |
| <b>Gestational weeks</b>                   |          | <b>Median</b> | <b>IQR</b> | $\chi^2 = 3.947$<br>p=0.267 |
| 20-27                                      | 35 (9)   | 63.00         | 11.00      |                             |
| 28-31                                      | 33 (8)   | 66.00         | 14.00      |                             |
| 32-35                                      | 105 (27) | 65.00         | 13.50      |                             |
| 36-40                                      | 221 (56) | 65.00         | 12.00      |                             |
| <b>Willing pregnancy</b>                   |          |               |            |                             |
| Yes  | 364 (93) | 65.00         | 12.00      | z=4478.0<br>p=0.101         |
| No   | 30 (7)   | 62.00         | 16.25      |                             |

| Previous abortus history                      |          |       |       |                      |
|---|----------|-------|-------|----------------------|
| Yes   | 79 (20)  | 64.00 | 11.00 | z=10859.5<br>p=0.080 |
| No  | 315 (80) | 66.00 | 12.00 |                      |
| Still birth history                           |          |       |       |                      |
| Yes   | 31 (7)   | 66.00 | 11.00 | z=5447.0<br>p=0.768  |
| No  | 363 (93) | 65.00 | 13.00 |                      |
| Content with the baby's gender                |          |       |       |                      |
| Yes   | 348 (88) | 65.00 | 11.00 | z=7521.5<br>p=0.506  |
| No  | 46 (12)  | 65.50 | 16.25 |                      |
| Planned pregnancy                             |          |       |       |                      |
| Yes   | 310 (79) | 66.00 | 12.00 | z=10902.5<br>p=0.022 |
| No  | 84 (21)  | 62.50 | 14.00 |                      |
| Hospitalized during pregnancy                 |          |       |       |                      |
| Yes   | 69 (18)  | 65.00 | 12.50 | z=10914.5<br>p=0.729 |
| No  | 325 (82) | 65.00 | 13.00 |                      |
| Normal/risky pregnancy                        |          |       |       |                      |
| Normal  | 345 (88) | 65.00 | 12.00 | z=7610.0<br>p=0.258  |
| Risky   | 49 (12)  | 64.00 | 13.00 |                      |
| Accompanying chronic disease                  |          |       |       |                      |
| Yes   | 35 (9)   | 68.00 | 8.00  | z=5064.0<br>p=0.058  |
| No  | 359 (91) | 65.00 | 13.00 |                      |
| Regular follow-up visits                      |          |       |       |                      |
| Yes   | 373 (95) | 65.00 | 12.00 | z=2886.0<br>p=0.042  |
| No  | 21 (5)   | 61.00 | 11.50 |                      |
| Pregnant's relation with her mother           |          |       |       |                      |
| Good  | 357 (91) | 65.00 | 13.00 | z=5751.5<br>p=0.196  |
| Moderate                                      | 37 (8)   | 66.00 | 11.50 |                      |
| Pregnant's relation with her spouse           |          |       |       |                      |
| Good  | 366 (93) | 65.00 | 12.25 | z=4133.0<br>p=0.088  |
| Moderate                                      | 28 (7)   | 61.50 | 14.00 |                      |
| Positive reflections of pregnancy on the life |          |       |       |                      |
| Yes   | 236 (60) | 66.41 | 8.95  | t= -4.081<br>p<0.001 |
| No  | 158 (40) | 62.60 | 9.29  |                      |

PAI determinants were analyzed by multiple regression analysis-stepwise method. Independent variables that were significant in single comparisons were included in the analysis. The decrease in the pregnant woman's own ( $\beta = -0.118$ ) and spouse education ( $\beta = -0.125$ ) negatively affected prenatal attachment; It was found that the thought of experiencing a positive change in lifestyle and health behaviour with pregnancy ( $\beta = 0.142$ ) positively affected. The decisive rate of these variables is 0.08% (Table 3).

Table 3 Determinants of PAI

|   | B      | Std. Error | $\beta$ | t      | Sig.  |
|---|--------|------------|---------|--------|-------|
| Her own education level                   | -2.199 | 1.037      | -0.118  | -2.120 | 0.035 |
| Positive reflections of pregnancy on life | 2.688  | 0.966      | 0.142   | 2.783  | 0.006 |
| Her spouse's education level              | -2.306 | 1.003      | -0.125  | -2.299 | 0.022 |
| $R^2=0.080$ ; $F=11.255$ ; $p<0.01$       |        |            |         |        |       |

## DISCUSSION

Prenatal attachment, which starts with the interaction between mother and baby in the prenatal period and continues between the new born and mother in the postnatal period, has an important place in pregnancy [8]. Our study was conducted to determine the relationship between socio-demographic characteristics and prenatal attachment. According to the results of our study, the mean PAI score of pregnant women was  $64.8 \pm 9.2$  (lower-upper; 38-84) and the prenatal attachment level was found to be good (Table 1). Similarly, Buko and Ozkan  $65.12 \pm 11.12$  (bottom-top; 31-84); Dikmen and Cankaya found the average PAI score as good in their studies with  $61.24 \pm 0.49$  results [6,12]. Aksoy, et al.  $56.76 \pm 9.23$ , Elkin  $57.3 \pm 12.3$  (min 21.0-max 105.0), and Eswi and Khalil with a mean score of  $50.7 \pm 9.9$  found that the average PAI score in their studies is at a moderate level [1,13,14]. This situation can be explained by the inclusion of different groups in their study.

Kartal and Karaman found that the working status of mothers has an increasing effect on the prenatal attachment [15]. Yilmaz found in his study that the prenatal attachment levels of mothers who were economically worried and not working decreased [8]. Dikmen and Cankaya found in their study that the prenatal attachment levels of pregnant women with low perceived income levels were significantly low [12]. Similarly, Ossa, et al. stated in their study that there is a significant negative relationship between prenatal attachment and income level, while Bakir, et al., Yilmaz and Beji, Abasi, et al., Aksoy, et al., concluded that income level does not affect prenatal attachment. According to the results of our study, the economic situation does not affect prenatal attachment [1,2,16-18].

Kartal and Karaman, Yilmaz and Beji, Dikmen and Cankaya concluded in their studies that pregnancy, at the desired time and being planned, has an increasing effect on the prenatal attachment [2,12,15]. In parallel with this result, in our study, it was found that planned pregnancy affects the scale score increasingly. In addition, according to the results of our study, the mean PAI score of pregnant women with planned pregnancy and regular follow-up visits was found to be high. This situation can be explained by the fact that marriages and pregnancies that started voluntarily and continued at the same time are effective in bonding mother-baby.

Aksoy, et al., concluded in their study that education level does not affect attachment [1]. In our study, it was found that the decrease in the education level of either the participants or their spouses decreased prenatal attachment ( $p<0.05$ ). This situation can be explained by the fact that mothers with high education levels have more awareness and knowledge about pregnancy and birth.

Bakir, et al., found that mothers who do not have a history of abortion-curettage have a high level of prenatal attachment [17]. Aksoy, et al. concluded that mothers' abortion-curettage history did not affect attachment, similar to our study [1]. Dikmen and Cankaya found a significant difference between the idea of terminating a pregnancy and prenatal attachment and concluded that pregnant women who intend to terminate their pregnancy do not want their babies, and this situation decreases their attachment levels [12]. In our study, on the other hand, no relationship was found between thinking about terminating a pregnancy and prenatal attachment. It is thought that this situation is due to regional and cultural differences, and also that the low number of pregnant women who do not want their pregnancy does not make a statistical difference.

Ozdemir, et al., found that gestational week and number of parity did not affect attachment [19]. In our study, the average PAI score of those with their first and second pregnancies was found to be higher than those of women with three or more pregnancies. In parallel with our study results, Yilmaz and Beji, Bakir, et al., and Elkin found that the number of living children has a decreasing effect on the prenatal attachment [2,13,17]. This can be explained by the

fact that women who have never had children desire their babies more and become more attached. In our study, it was also found that those who had their first pregnancy had higher mean PAI scores according to the time between pregnancies. Similar to our study, Dikmen and Cankaya found in their study that as the duration of the marriage and the age of the previous child increased, the level of prenatal attachment decreased [12]. This situation can be explained by the advancement of the maternal age, the change in the emotional attitude of the woman towards marriage and pregnancy, and the mother's difficulties in adapting to baby care.

In our study, it was concluded that the mothers' state of thinking that there are positive changes in their health behaviours with pregnancy also positively affected prenatal attachment. This situation can be explained by the fact that pregnant women, who take care of their health, avoid harmful habits, and receive prenatal care, attach more to their babies.

### CONCLUSION AND RECOMMENDATIONS

In conclusion, the number of pregnancies, education level of one's own and spouse, the time between two pregnancies, being planned pregnancy and thinking that there are positive changes in lifestyle and health behaviours with pregnancy positively affect prenatal attachment; On the other hand, it was concluded that her and her husband's employment status, perceived economic situation and place of residence did not affect prenatal attachment. In this context, in line with the results obtained in the study, healthcare personnel working in the prenatal period should plan care services considering prenatal attachment. Studies should be conducted with different pregnant groups by evaluating the educational plans in terms of socio-demographic characteristics.

### DECLARATIONS

#### Conflicts of Interest

The authors declared no potential conflicts of interest concerning the research, authorship, and/or publication of this article.

### REFERENCES

- [1] Aksoy, YE, SD Yilmaz, and F. Aslantekin. "Prenatal attachment and social support in high-risk pregnancies." *Turkiye Klinikleri Journal of Health Sciences*, Vol. 1, No. 3, 2016, pp. 163-69.
- [2] Yilmaz, Sema Dereli, and Nezihe Kizilkaya Beige. "Pregnant women's levels of coping with stress, depression and prenatal attachment and the factors affecting them." *Journal of General Medicine*, Vol. 20, No. 3, 2010, pp. 99-108.
- [3] Bekmezci, H, and Ozkan H. "Psychosocial health care during pregnancy, prenatal attachment and midwife and nurse responsibilities." *JACSD International Refereed Journal of Gynecology and Maternal Child Health*, 2016, pp. 50-62
- [4] Koptur, Aysu, and Tuba Guner Emul. "Two faces of attachment in fetus and newborn: Maternal and paternal attachment." *Journal of Ege University Faculty of Nursing*, Vol. 33, No. 3, 2017, pp. 138-52.
- [5] Duyan, Veli, Sati Gul Kapisiz, and Halil İbrahim Yakut. "The Turkish adaptation study of the prenatal attachment inventory on a group of pregnant women." *Journal of Gynecology-Obstetrics and Neonatology Medicine*, Vol. 10, No. 39, 2013, pp. 1609-14.
- [6] Buko, G, and Ozkan H. "The relationship between emotional intelligence and prenatal attachment levels of pregnant women." *Anatolian Journal of Nursing and Health Sciences*, Vol. 19, No. 4, 2016, pp. 217-24.
- [7] Kirca, Ayca Solt, and Sevim Savaser. "The effect of birth rate on mother-infant attachment." *Journal of Health Sciences and Professions*, Vol. 4, No. 3, 2017, pp. 236-43.
- [8] Yilmaz S. "Prenatal mother-infant attachment." *Journal of Educational Research in Nursing*, Vol. 10, No. 3, 2013, pp. 28-33.
- [9] Karakulak, Hatice Aydemir, and Ozgur Alparlan. "Adaptation of mother-infant attachment scale to Turkish society: An example of intellectuals." *Journal of Contemporary Medicine*, Vol. 6, No. 3, 2016, pp. 188-99.

- 
- [10] Yilmaz, Sema, and Nezihe Kizilkaya Beji. "The adaptation of the prenatal attachment inventory to Turkish: Reliability and validity study." *Anatolian Journal of Nursing and Health Sciences*, Vol. 16, No. 2, 2013, pp. 103-09.
- [11] Sumbuloglu K and Sumbuloglu V. "Biostatistics" *Ankara*, 2010, p. 263.
- [12] Dikmen, Hacer Alan, and Seyhan Cankaya. "The effect of maternal obesity on prenatal attachment." *Acibadem University Journal of Health Sciences*, Vol. 9, No. 2, 2018, pp. 118-23.
- [13] Elkin, Nurten. "Prenatal attachment levels of pregnant women and factors affecting them." *Journal of Continuing Medical Education*, Vol. 24, No. 6, 2015, pp. 230-37.
- [14] Eswi, Abeer, and Amal Khalil. "Prenatal attachment and fetal health locus of control among low risk and high risk pregnant women." *World Applied Sciences Journal*, Vol. 18, No. 4, 2012, pp. 462-71.
- [15] Aydin Kartal, Yasem I. N., and Tugba Karaman. "On prenatal attachment and depression risk of birth preparation education in pregnant women." *Zeynep Kamil Medical Bulletin*, Vol. 49, No. 1, 2018, pp. 85-91.
- [16] Ossa, Ximena, Luis Bustos, and Lilian Fernandez. "Prenatal attachment and associated factors during the third trimester of pregnancy in Temuco, Chile." *Midwifery*, Vol. 28, No. 5, 2012, pp. e689-96.
- [17] Bakir, N., Z. Olcer, and U. Oskay. "Prenatal attachment level of high-risk pregnant women and influencing factors." *International Refereed Journal of Obstetrics and Gynecology and Maternal Child Health*, Vol. 1, No. 1, 2014, pp. 25-37.
- [18] Abasi, E., et al. "Assessment on effective factors of maternal-fetal attachment in pregnant women." *Life Science Journal*, Vol. 9, No. 1, 2012, pp. 68-75.
- [19] Ozdemir, F., et al. "Investigation the perceived social support levels of pregnant hyperemesis gravidarum." *Turkish Armed Forces, Preventive Medicine Bulletin*, Vol. 9, No. 5, 2010, pp. 463-70.