

## Investigation of the Effect of Infant Gender on Mothers' Breastfeeding Attitudes and Duration: A Cross-sectional Study

### Bebek Cinsiyetinin Annelerin Emzirme Tutumları ve Süreleri Üzerindeki Etkisinin Araştırılması: Kesitsel bir Çalışma

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#### Abstract

The aim of this study was to examine the effect of infant gender on mothers' breastfeeding attitudes and duration in Turkey. This cross-sectional study was conducted with women (n:386) each of whom had a child between 1 and 36 months old and applied to family health centers in 2022. Data were collected using the "Information Form" and the "Iowa Infant Feeding Scale (IIFAS)". Data were analyzed by descriptive statistics, t-test. The study was carried out according to STROBE. The mothers' IIFAS mean score was 63.54±7.01. The IIFAS score of mothers with girls was 63.31 (SD: 7.04), with boys were 64.56 (SD: 6.87), and the difference between them was not statistically significant (t: -1.602, p>0.05). The mean duration of breastfeeding for girls was 14.36 + 7.52 months, and for boys were 15.26 + 7.62 months, and the difference between them was not significant (t: -1.215, p>0.05). We concluded that there was no disparity in the duration of exclusive breastfeeding and total breastfeeding for the children of both sexes of the mothers in the study. In addition, it was determined that mothers' attitudes toward breastfeeding were positive.

**Keywords:** Attitude, breastfeeding, gender, maternal child nursing, mother

#### Özet

Bu çalışmanın amacı, Türkiye'de bebek cinsiyetinin annelerin emzirme tutumları ve süreleri üzerindeki etkisini incelemektir. 2022 yılında aile sağlığı merkezlerine başvuran 1 ile 36 ay arasında çocuğu olan kadınlarla (n:386) kesitsel bir çalışma yapılmıştır. Veriler "Bilgi Formu" ve "Iowa Bebek Besleme Ölçeği (IIFAS)" kullanılarak toplanmıştır. Veriler tanımlayıcı istatistikler, t-testi ile analiz edilmiştir. Annelerin IIFAS puan ortalaması 63.54±7,01 olarak bulunmuştur. Kız annelerin IIFAS puanı 63,31 (SS: 7,04), erkek annelerin IIFAS puanı 64,56 (SS: 6,87) olup aralarındaki fark istatistiksel olarak anlamlı değildir (t: -1,602, p>0,05). Ortalama emzirme süresi kızlarda 14,36 + 7,52 ay, erkeklerde 15,26 + 7,62 ay olup aralarındaki fark istatistiksel olarak anlamlı değildir (t:-1,215, p>0,05). Çalışmaya katılan annelerin her iki cinsiyetteki çocukları için sadece anne sütü ile beslenme ve toplam anne sütü ile beslenme sürelerinde bir farklılık olmadığı sonucuna varılmıştır. Ayrıca annelerin emzirmeye yönelik tutumlarının olumlu olduğu belirlenmiştir.

**Anahtar Kelimeler:** Anne, cinsiyet, çocuk hemşireliği, emzirme, tutum

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## 1. Introduction

Breast milk is the ideal food for the growth and development of infants. The World Health Organization (WHO), the United Nations Children's Fund (UNICEF), and the American Academy of Pediatrics (AAP) emphasize that feeding infants exclusively with breast milk for the first six months is very important for both maternal and infant health (Eidelman & Schanler, 2012; Selim, 2023). While breastfeeding protects mothers from diabetes, breast and uterine cancer (Galson, 2008), it also protects children from infectious diseases (Horta & Vitoria, 2013), obesity (Rito et al., 2019) and most importantly reduces mortality rates (Gebretsadik & Gabreyohannes, 2016). However, despite all these benefits of breast milk, countries still have not reached the desired rates in the duration of breastfeeding (Rito et al., 2019). WHO's goal for breastfeeding is to increase the rate of exclusive breastfeeding in the first six months to 50% by 2025 (Cai et al., 2012). When the worldwide statistics are analyzed, it is seen that only one out of every three babies in developing countries is breastfed in the first six months. This rate was 36% between 2007 and 2014 (WHO, 2018). According to the 2020 report of the Center for Disease Control (CDC), the rate of infants who are exclusively breastfed for the first six months in the United States is 25.6% (CDC, 2023). According to the Turkish Demographic and Health Survey, the rate of exclusive breastfeeding for the first six months in Turkey is 41% (Çaylan & Yalçın, 2020).

Many maternal and infant-related factors affect the breastfeeding of infants. Maternal factors include the mother's age (Mihreshahi et al., 2010), education level (Mihreshahi et al., 2010; Yu et al., 2020), employment status, income, place of residence (Mihreshahi et al., 2010), number of previous births/lactation experience (Ahmed et al., 2018; Li et al., 2020), socio-cultural characteristics (Green et al., 2021; Morrow et al., 2021), access to antenatal care services (Mihreshahi et al., 2010), psychological status (Arifunhera et al., 2016; Avilla et al., 2020) attitudes towards breastfeeding (Mannion et al., 2013; Rehayem et al., 2020) and support from health professionals (Burns et al. 2016). Infant-related factors include gender (Fledderjohann et al., 2014; Ferris et al., 1987; Mihreshahi et al., 2010; Shafer and Hawkins, 2017) feeding behavior (Yu et al., 2020), health status (Rehayem et al., 2020), place of birth (Mihreshahi et al., 2010) and type of delivery (Hoang Nguyen et al., 2020). Different studies in the literature have determined that whether the baby is a boy or a girl affects the mother's breastfeeding attitudes and duration, but the study results present different findings (Ferris et al., 1987, Fledderjohann et al., 2014; Shafer & Hawkins, 2017; Jayachandran & Kuziemko, 2011). It is known that mothers' breastfeeding attitudes are influenced by their perceptions and cultures, but the number of qualified studies conducted in this field to determine the direction of the effect is quite limited (Cevik & Yasar, 2023; Gyamfi et al., 2021; Scott et al., 2019). It is important to know the factors affecting mothers' breastfeeding attitudes to ensure effective and adequate breastfeeding without inequality between genders. Adequate breast milk intake can support a healthy life for infants of both sexes. Although breastfeeding has an important place in Islam, breastfeeding rates in countries where Islam is predominant are below the expected levels (Alzaheb, 2017; Chehab et al., 2016).

## 2. Methods

### 2.1. Aim of Study

This study was conducted to determine whether the gender of infants has an effect on mothers' breastfeeding attitudes and durations in Turkey, a country with culturally different perspectives on gender.

### 2.2. Research Questions

- Does the gender of infants have an effect on mothers' breastfeeding attitudes?
- Does the gender of the infants have an effect on mothers' breastfeeding duration?

### 2.3. Population and Sample of the Research

The study population consists of mothers who gave birth within one year in Turkey. According to the Turkish Statistical Institute (TUIK) (2019) data, the number of births in Turkey in one year is 1.183.652. Qualtrics sample calculation tool was used to calculate the sample size and it was determined as 384. For data collection, cooperation was made with five different Family Health Centers (FHCs) affiliated with the Ministry of Health in Istanbul. In the selection of FHCs, the heterogeneous structure of the society in the region was taken into consideration. Between October and May 2021, 388 mothers who visited the FHCs and volunteered to participate were included in the study. The study was conducted with 386 mothers who completed the questionnaires. The study was carried out according to STROBE.

#### 2.3.1. Inclusion and Exclusion Criteria

All volunteer mothers (aged 18 or above) with children between the ages of one month and three years who came to FHCs were included in this study. However, women with a history of multiple pregnancies and premature birth, whose children did not develop some postnatal complications (congenital anomalies or medical conditions that require formula use), and who could not read and write Turkish were excluded from the study.

### 2.4. Data Collection and Data Collection Tools

A cross-sectional study was done from October 2020 to May 2021 at five FHCs in Istanbul, Turkey. FHCs follow up on postnatal care and follow-up of mothers who gave birth, as well as breastfeeding, infant feeding, vaccination, percentile follow-up.

Data were collected via "Information Form" and "Iowa Infant Feeding Scale."

**2.4.1. Information Form:** It was created by the researchers by utilizing the literature (Yıldız & Gölbaşı, 2020). The form includes a total of 13 questions that reveal the demographic characteristics of the mothers (age, education level, income status) and the breastfeeding status of their children (the presence of a child who is currently breastfeeding, the gender, age, and duration of exclusive breastfeeding of this child, and the gender and duration of breastfeeding of each of their previous children, if any).

*2.4.2. The Iowa Infant Feeding Attitude Scale (IIFAS):* It is a self-reported scale designed by Mora et al. to measure women's attitudes toward infant feeding (Mora et al., 1999). This tool is reported as the most effective in measuring women's attitudes toward breastfeeding (Chambers et al., 2007; Ho & McGrath, 2010). Eksioglu et al. (2016) have adapted the tool to Turkish. It consists of 17 items in total. The scale is a five-point Likert type (1- I strongly disagree, 2- I do not agree, 3- I am undecided, 4- I agree, 5- I completely agree) and consists of one dimension. While nine items in the scale affirm the issue of breastfeeding, eight items contain positive statements about formula (food) feeding. Formula nutrition items are scored reversely (1=5, 2=4, 4=2, and 5=1). The total attitude score ranges from 17 (reflecting a positive attitude towards bottle feeding) to 85 points (reflecting a positive attitude towards breastfeeding). The scale developed by Mora et al. was tested in three studies, and Cronbach's alpha coefficient was found to be 0.86 in the first two studies and 0.68 in the third study (Mora et al., 1999). The Cronbach's alpha coefficient of the Turkish version of the scale was calculated as 0.71 (Eksioglu et al., 2016). In this study, the Cronbach alpha value of the scale was found to be 0.67.

### *2.5. Ethical Considerations*

The study was permitted by Koç University Committee on Human Research (Dated: 25/03/2021; No:2021.58. IRB3.067), and formal permissions were acquired. Written and verbal consent was taken from the mothers. The participants were informed that the information collected in this research would remain confidential. Participants were informed that if they did not wish to continue the study, they could leave the research without giving a reason.

### *2.6. Limitations of the Research*

The first limitation of this study is that the sample consisted only of mothers who applied to FHCs in Istanbul. Although units serving the heterogeneous structure of a metropolitan city were preferred in selecting FHCs, there are significant cultural differences regarding infant care in different regions of our country (such as the southeast). Therefore, it is incorrect to generalize the study's results to the whole country. Another limitation of our study is that the study findings are based on the mothers' statements. Although the reliability of the mothers' statements about the breastfeeding duration of their current children is high, the statements about their previous breastfeeding experiences are limited as far as they remember.

### *2.7. Data Analysis*

IBM SPSS Statistics for Windows, Version 26.0 (IBM Corp. Armonk, NY: USA. Released 2020) were used for data analysis. It was found that the IIFAS scores and duration of breastfeeding were generally distributed according to Skewness (-0.308; 0.158-0.691, respectively) and Kurtosis (-0.119; -1.090-0.559, respectively) values (George & Mallery, 2010). Descriptive statistics (percentage, mean, standard deviation) were used to evaluate the mothers' breastfeeding status and IIFAS scores. A comparison of the Iowa Infant Feeding Attitude Scale scores of currently breastfeeding mothers (n:320) according to the gender of the breastfed infant was performed with the t-test in independent groups. The chi-square test was utilized to compare the exclusive breastfeeding times of infants at least six months old and

breastfeeding (n: 246) according to gender. Lastly, the t-test in independent groups was used to compare the duration of breastfeeding according to the gender of the breastfed children (n: 411).

### 3. Results

We determined that most mothers with a mean age of  $29.77 \pm 4.97$  were high school graduates, work, and had a balanced income. The all-demographic characteristics of the mothers participating in the study are presented in Table 1.

**Table 1.** Descriptive statistics on demographic characteristics of mothers (n=386)

Characteristics of Mothers	Min-Max	Mean $\pm$ SD
Age	19-45	29.77 $\pm$ 4.97
	<b>n</b>	<b>%</b>
Education status		
Literate	15	3.9
Primary/vocational	66	17.1
High school	160	41.5
College/University	145	37.5
Employment status		
Working	297	76.9
Not working	89	23.1
Self-assessed socio-economic status		
Very good, good	87	22.6
Average	219	56.7
Bad/very bad	80	20.7
Residence		
Urban—province capital	73	18.9
Urban—other Rural	313	81.1

*SD: Standard deviation*

Table 2 presents the descriptive statistics related to the children of the mothers. Of the mothers who reported that they had two or more children, 53.6% reported that their first child was a girl and 52% stated that their second child was a girl, while 61.8% stated that their third child was a boy. According to the information received from mothers who discontinued breastfeeding (n=411), the overall breastfeeding duration was  $14.83 \pm 7.59$  months in the first children,  $14.96 \pm 7.66$  months in the second children, and  $14.94 \pm 7.55$  in the third children. In addition, exclusive breastfeeding duration (months) for children aged 6 months to 3 years was  $5.21 \pm 1.61$  (Table 2).

**Table 2.** Descriptive statistics on number of children, infant gender and breastfeeding duration of mothers

Variables	n	%
Parity		
1	161	41.7
2	124	32.1
3	79	20.5
4	18	4.7
5	4	1.0
Number of children breastfed (n=386)		
Still being breastfed	66	17.1
Weaned from breastfeeding	320	82.9
Gender of the child being breastfed* (n=320)		
Girl	177	55.3
Boy	143	45.7
Gender of first breastfed baby** (n=252)		
Girl	135	53.6
Boy	117	46.4
Gender of second breastfed baby*** (n=125)		
Girl	65	52.0
Boy	60	48.0
Gender of third breastfed baby**** (n=34)		
Girl	13	38.2
Boy	21	61.8
	<b>Min - Max</b>	<b>Mean <math>\pm</math> SD</b>
Exclusive breastfeeding duration (months) for children aged 6 months to 3 years (n= 320)	0 - 8	5.21 $\pm$ 1.61

\*Only mothers who were breastfeeding at the time responded (n=320)

\*\*Mothers responded with prior breastfeeding experience for the first baby (n=252)

\*\*\* Previous experience of breastfeeding for the second baby, mothers responded (n=125)

\*\*\*\* Previous experience of breastfeeding for third baby mothers responded (n=34)

The mothers' IIFAS mean score was 63.54 $\pm$ 7.01. The results of the comparison of the IIFAS score of 320 mothers who were still breastfeeding their babies, according to the gender of the breastfed child were given in Table 3. The IIFAS score of mothers with girls was 63.31 (SD: 7.04) and with boys was 64.56 (SD: 6.87), and the difference between them was not statistically significant (t: -1.602, p>0.05).

We compared the breastfeeding duration by gender of children. Our analysis examined the total breastfeeding duration of 411 weaned children by gender (Table 3). The mean duration of breastfeeding for girls was 14.36 + 7.52 months, and boys were 15.26 + 7.62 months, and the difference between them was not significant (t: -1.215, p>0.05).

**Table 3.** Comparison of mothers' attitudes toward infant feeding according to the gender of the child

Gender of the children	n	Mean $\pm$ SD	t	p
Being breastfed (n=320)				
Girl	177	63.31 $\pm$ 7.04	-1.602	0.110
Boy	143	64.56 $\pm$ 6.87		
Weaned from breastfeeding (n=411)				
Girl	208	14.36 $\pm$ 7.52*	-1.215	0.225
Boy	203	15.26 $\pm$ 7.62*		

t: independent samples t test, \*months

#### 4. Discussion

There was no significant difference between exclusive breastfeeding (first six months), total breastfeeding duration and IIFAS total scores according to gender. On the other hand, different studies in the literature report that mothers' attitudes towards male and female gender affect the duration of breastfeeding. In the study of Ferris et al. (1987), it was reported that mothers felt the need for more feeding and breastfed longer because their female babies were born with a lower weight (Ferris et al., 1987). Shafer and Hawkins found that the duration of breastfeeding is less in boys by starting solid foods because mothers believe that boys need more nutrients (Shafer & Hawkins, 2017). Besides, in different studies examining the fact that female babies have a shorter breastfeeding period than male babies, there are comments that mothers shorten the duration of breastfeeding to increase the probability of conception due to their desire to have a boy (Fledderjohann et al., 2014; Jayachandran & Kuziemko, 2011). Our study results showed that Turkish mothers do not exhibit any different attitudes towards breastfeeding duration depending on the gender of their children. It can be said that both the perception of breastfeeding in Turkish culture and the "Promoting Breast Milk and Baby-Friendly Health Organizations" program, which has been implemented in our country since 1991, have positive effects (Timurturkan, 2020). According to the religion of Islam, it is the fundamental right of every baby to be fed with breast milk. There is information about the duration of breastfeeding in the Qur'an, and the understanding that the baby should not go hungry is dominant in Turkish culture and traditions (İsbay & Gerçek, 2021). The fact that all of the mothers participating in our study were Muslim and their egalitarian attitudes towards breastfeeding can be interpreted as an explanation for this situation. However, more research is needed to determine how Turkish women and their families see the nutritional needs of their babies to achieve the desired rates in breastfeeding and whether this varies according to cultural characteristics.

The average score of the mothers on the IIFAS was found to be  $63.54 \pm 7.01$ . In different studies conducted in our country, the total mean score of the scale was determined as  $66.70 \pm 3.41$  and  $61.57 \pm 5.34$  (Akin et al., 2021; Eksioğlu et al., 2016). Similarly, in another study conducted with Muslim mothers, the mothers' scale score average was found to be  $61.8 \pm 7.8$  (Chaabna et al., 2022). Our findings provide results that are consistent with the literature. In line with the scale score average, it is thought that the mothers participating in the study have a positive attitude towards infant feeding and breastfeeding.

#### 5. Conclusion

We concluded that there was no disparity in the duration of exclusive breastfeeding and total breastfeeding for the children of both sexes of the mothers in the study. In addition, it was determined that mothers' attitudes towards breastfeeding were positive. However, there is a need for more studies on this subject in regions of our country where there are different attitudes towards genders. It is recommended by health professionals to provide the necessary counseling to mothers in all areas on breastfeeding and infant nutrition, to promote ideal nutrition practices, and to monitor growth and development by evaluating the nutritional characteristics of the baby.

## Authors Contributions

Topic selection: SA, EHU, AA, NAA; Design: SA, EHU, AA; Planning: SA, EHU; Data collection: NAA; Data analysis: SA; Article writing: SA, EHU, AA, NAA; Critical review: SA, EHU, AA.

## Conflict of Interest

We confirm that there is no conflict of interest.

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