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Makale Türü Original Research

Attitudes toward breastfeeding of mothers breastfeeding 0-6-month-old infants during the Covid-19 pandemic and impacting factors

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ABSTRACT

Objective: This study was conducted to identify the attitudes towards breastfeeding of mothers breastfeeding their 0-6-month-old infants during the Covid-19 pandemic, and to determine impacting factors. **Method:** It is a descriptive study. The study was carried out over the period May-July 2021 with mothers (n=400) who were breastfeeding their 0-6-month-old infants in Turkey. The snowball sampling method was used in the study. Data were collected by means of an online form on google.docs program. A "Descriptive Data Form" and the "Infant Feeding Attitude Scale" were used in the data collection. The analysis of the data was performed using the Shapiro-Wilk, Mann-Whitney and Kruskal-Wallis H tests. Significance for the study was accepted as p<0,05. **Results:** The mean "Infant Feeding Attitude Scale" score of the mothers participating in the study was found to be 65.05±6.746 (min=30, max=83). A significant difference was found between the mothers' "Infant Feeding Attitude Scale" scores and their age, education and employment status. A significant difference was found between the mothers' "Infant Feeding Attitude Scale" scores and their feeding their infants' formula in addition to breastfeeding, the frequency of their breastfeeding, and their use of a baby bottle. **Conclusion:** It was found that mothers who were bottle-feeding their infants with formula in addition to breastfeeding had more negative attitudes and behaviors toward breastfeeding. It is recommended that mothers in the risk group who have a negative impact on breastfeeding be identified early on and that during the pandemic, breastfeeding education programs be continued without interruption and presented by health professionals such as nurses, doctors and midwives.

Keywords: Breastfeeding, breast milk, Covid-19, attitude

Covid-19 pandemisi döneminde 0-6 aylık bebeğini emziren annelerin emzirme tutumları ve etkileyen faktörlerin belirlenmesi

ÖZET

Amaç: Bu çalışma Covid-19 pandemisi döneminde 0-6 aylık bebeğini emziren annelerin emzirme tutumlarının ve etkileyen faktörlerin belirlenmesi amacıyla yapılmıştır. **Yöntem:** Tanımlayıcı bir çalışmadır. Çalışma, Mayıs-Temmuz 2021 tarihlerinde Türkiye'de 0-6 aylık bebeğini emziren (n=400) anneler ile yürütülmüştür. Çalışmada kartopu örneklem yöntemi kullanılmıştır. Veriler "google.docs" programında online form aracılığıyla toplanmıştır. Verilerin toplanmasında "Tanımlayıcı Veri Formu" ve "Bebek Beslenmesi Tutum Ölçeği" kullanılmıştır. Verilerin değerlendirilmesinde Shapiro Wilk, Mann-Whitney U testi ve Kruskal-Wallis H testi kullanılmıştır. Çalışmada p<0,05 değeri istatistiksel olarak anlamlı kabul edilmiştir. **Bulgular:** Çalışmaya katılan annelerin "Bebek Beslenmesi Tutum Ölçeği" puan ortalaması 65,05±6,746 (min=30, max=83) olarak bulunmuştur. Annelerin yaş ortalaması 29,45 (SD±4.541) (min=18, max=45)'tir. Annelerin yaşı, öğrenim durumu ve çalışma durumları ile "Bebek Beslenmesi Tutum Ölçeği" puanları arasında istatistiksel olarak anlamlı bir fark bulunmuştur. Annenin emzirmeye ek olarak mama verme durumu, bebeğin emzirilme sıklığı, annenin biberon kullanma durumu ile "Bebek Beslenmesi Tutum Ölçeği" puanları arasında istatiksel olarak anlamlı bir fark bulunmuştur. **Sonuç:** Emzirmeye ek olarak bebeğine mama veren ve biberon kullanan annelerin emzirme tutum ve davranışlarının daha olumsuz olduğu belirlenmiştir. Emzirmeyi olumsuz etkileyen riskli grupta yer alan annelerin erken evrede belirlenmesi, pandemi döneminde emzirme eğitimlerinin aksatılmaması ve eğitimlerin profesyonel sağlık meslek grupları olan hemşireler, doktorlar ve ebeler tarafından verilmesi önerilir.

Anahtar Kelimeler: Emzirme, anne sütü, Covid-19, tutum

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INTRODUCTION

The most suitable source of nourishment to ensure an infant's growth and development is breast milk. Breastfeeding is a method whereby an infant is fed an appropriate amount of breast milk.[1] Breastfeeding is important because it is beneficial for the health of both mother and child and encourages the forming of an emotional bond.[2] The World Health Organization (WHO) and the United Nations International Children's Emergency Fund (UNICEF) recommend that infants of up to six months of age be exclusively fed breast milk, with supplementary foods added to breast milk as from the sixth month of life up to the age of three.[3-4] In Turkey, however, the exclusive breastfeeding rate for the first 6 months of life is 41%, and the rate of breastfeeding infants over the age of 6 months is only 3%.[5]

There are many factors that have an impact on the breastfeeding of infants**.** The mother's perspective on breastfeeding, her self-confidence and motivation are only a few of these factors.[6] The mother's age, education, status of employment, the training she has received with regard to breast milk and breastfeeding and other similar factors all affect the rate of exclusive breastfeeding in the first 6 months of an infant's life.[7] Extraordinary circumstances can also have an impact on mothers' attitudes towards breastfeeding their infants. One such circumstance is the current COVID-19 pandemic that is still prevailing.[8]

Covid-19 infects by way of droplets,[9-10] through the enteral route, the conjunctival mucosa or contaminated articles.[11] It is reported today that Covid-19 is not transmitted to an infant through breast milk, and that to the contrary, the antibodies contained in the milk protect the infant from the Covid-19 infection.[12] In one study,[9] the virus was not detected in samples of breast milk collected from six mothers who had tested positive for Covid-19. In another study, it was found that breastfeeding was safe for mothers testing positive for Covid-19 if they took the required precautions.[13] WHO[3] and various other organizations[4,10-11,14] emphasize the importance of breastfeeding during the Covid-19 pandemic.

In spite of all this information however, mothers can feel anxious and concerned that their baby will contract the virus through droplets in the air.[15] This belief can have an adverse effect on breastfeeding. The present study was conducted to identify the attitudes towards breastfeeding of mothers breastfeeding their 0-6-month-old infants during the Covid-19 pandemic and to determine impacting factors.

METHOD

Study Design

This is a descriptive study. The study was conducted in Turkey over the period May 28, 2021 - July 1, 2021 with mothers who could be contacted online. The aim of the study was to identify the attitudes towards breastfeeding of mothers breastfeeding their 0-6-month-old infants during the Covid-19 pandemic and determine impacting factors.

The universe of the study consisted of mothers breastfeeding their 0-6-month-old infants in Turkey. To determine sample size, the formula for an unknown population was applied to the number of individuals in the target group ($n=t^2pq/d^2$). Dogan's study was taken as a reference for the sample calculation.[16] Taking into consideration the IOWA scores in the study by Dogan (2019), it was determined that 11.4% of the mothers in the study were inclined to breastfeed. The calculation ($t=1.96$, $p=0.114$, $q=0.886$, $d=0.05$) based on the mothers' inclination to breastfeed resulted in the conclusion that at least 155 mothers would have to be included in the research.

The snowball sampling method was used in the study. The authors sent an online link on the "google.docs" program to mothers they knew in their own circle who were breastfeeding a 0-6-month-old infant. The mothers were requested to fill out the questionnaires and forward the questionnaire link to other mothers they knew who had a 0-6-month-old baby that they were breastfeeding. Using this method, recruitment for the sample ultimately reached a total of 400 mothers who matched the criteria, could be reached, and who had filled out the questionnaire completely. The inclusion criteria were; a mother's currently breastfeeding an infant, the infant being between the ages of 0-6 months, and having the consent of the mothers to participate in the research.

Data Collection Instruments

Data collection in the study was carried out by a "Description Data Form" prepared by the researchers and the "IOWA Infant Feeding Attitude Scale". "Description Data Form" has 43 questions. This form was created by researchers. In the form, there are questions about the sociodemographic characteristics of the mother and the baby, breastfeeding and Covid-19.

IOWA was developed by de la Mora & Russell (1999) to assess mothers' attitudes toward breastfeeding.[17] The adaptation of the scale into Turkish and its validity/reliability study was carried out by Eksioglu et al. (2016).[18] Cronbach's alpha coefficient of the Turkish version of the scale was found to be 0.71. The 5-point Likert-type scale consists of 17 items that are scored from 1 (I definitely disagree) to 5 (I definitely agree). Nine items in the scale contain positive statements on the subject of breastfeeding, while 8 items contain positive statements on the matter of feeding formula. The total attitude score varies between 17-85. As the score increases, positive

attitudes about breastfeeding also increase; when the score decreases, this means that positive attitudes about formula feeding are increasing. De la Mora and Russell tested the scale a total of 3 times in studies, finding Cronbach's alpha coefficient 0.86 in the first two studies and 0.68 in the third study.[17] In this study, the Cronbach's alpha coefficient of the scale was found to be 0.66.

Data Analysis

The data obtained was entered and evaluated in the SPSS 24 (IBM Corp. Released 2012. IBM SPSS Statistics for Windows, version 24.0, Armong, NY: IBM Corp.) package program. Descriptive statistics were evaluated in terms of frequencies, percentages, means and standard deviation. The normality of distribution among quantitative variables was explored with the Shapiro-Wilk test. Quantitative variables that were not normally distributed were summarized as median values (Min-Max). Paired group comparisons among the data that did not show normal distribution were made with the Mann-Whitney U test and multiple group comparisons with the Kruskal-Wallis H test. Significance for the study was accepted as p<0,05.

Ethical Considerations in the Study

Ethics committee approval was obtained from the Eskisehir Osmangazi University Noninterventional Clinical Trials Ethics Board Chairmanship (dated May 28, 2021, numbered E-25403353-050.99-180712). The required permission for the conduct of the study was received from the Ministry of Health Scientific Research Platform. The participants participated on a voluntary basis. The data collection instruments, and the Informed Consent Forms were sent to the participants online and those who did not consent were excluded from the study.

RESULTS

The mean IOWA score of the mothers participating in the study was found to be 65.05±6.746 (min=30, max=83).

Table 1. Comparison of mothers' descriptive characteristics and IOWA scores (n=400)

Variable	n	%	IOWA Score Mean Rank	Statistical Analysis
Age				
18-25	69	17.3	158.77	χ^2=11.694
26-33	259	64.8	206.20	**p=0.003**
34 and more	72	18.0	219.98	
Education				
Primary School (Elementary, Middle School)	52	13.1	148.15	χ^2=22.007
Secondary Education (High School)	87	21.8	174.51	**p<0.001**
Higher Education and Above (Associate Degree, Bachelor's Degree, etc.)	261	65.1	219.49	
Civil Status				
Married	395	98.8	201.72	Z=-1.877
Single	5	1.2	104.20	p=0.061
Employment Status				
Employed	167	41.7	224.13	Z=-3.465
Unemployed	233	58.3	183.57	**p=0.001**
Family Income Status				
Income less than expenditure	108	27.0	192.39	χ^2=1.168
Income equal to expenditure	198	49.5	200.42	p=0.558
Income greater than expenditure	94	23.5	209.99	
Family Type				
Nuclear family	355	88.7	203.54	Z=-1.481
Extended family	45	11.3	176.49	p=0.139
Number of pregnancies				
1	218	54.6	195.94	
2	111	27.8	190.19	χ^2=4.16
3	39	9.8	198.95	p=0.937
4 and more	32	7.8	184.48	
Number of children				
1	244	61.1	198.79	χ^2=3.907
2	115	28.7	203.42	p=0.272
3	29	7.2	207.95	
4 and more	12	3.0	133.82	
Wanted pregnancy?				
Yes	365	91.2	201.02	Z=-0.289
No	35	8.8	195.11	p=0.773
Problems during Pregnancy?				
Yes	284	71.0	200.06	Z=-0.042
No	116	29.0	200.63	p=0.967

*χ^2: Kruskal-Wallis H test. Z: Mann-Whitney U test. p: Significance value.

Table 2. Comparison of the infants' characteristics and the mothers' IOWA scores

Variable	n	%	IOWA Score Mean Rank	Statistical Analysis
Gender				
Female	194	48.5	197.78	Z=-0.457
Male	206	51.5	203.06	p=0.648
Birthweight				
Under 2000 gr	12	3.0	232.33	
2000-2500 gr	51	12.7	159.88	χ^2 =7.622
2501-4000 gr	304	76.0	204.69	p=0.055
More than 4001 gr	33	8.3	210.38	
Mode of delivery				
Normal	176	44.0	199.49	Z=-0.155
Cesarean section	224	56.0	201.29	p=0.877
Number of births				
Single	392	98.0	199.45	Z=-0.070
Twins or more	8	2.0	202.75	p=0.944
Has any medical issue developed in the infant after the birth?				
Yes	148	37.0	186.51	Z=-1.643
No	252	63.0	206.93	p=0.100

*χ^2: Kruskal-Wallis H test. Z: Mann-Whitney U test. p: Significance value

Table 3. Comparison of Breastfeeding Characteristics and Mothers' IOWA Scores

Variable	n	%	IOWA Score Mean Rank	Statistical Analysis
Mothers' prenatal breastfeeding education				
Received	335	91.0	203.19	Z=-1.058
Did not receive	65	9.0	186.63	p=0.290
Mothers' satisfaction with breastfeeding education				
Finds it sufficient	194	57.9	162.52	Z=-1.216
Finds it insufficient	141	42.1	175.54	p=0.224
Did mother breastfeed previous children ‡				
Yes	249	67.0	182.54	Z=-1.134
No	124	33.0	195.96	p=0.257
Total time mother wishes to breastfeed her baby				
First 6 months	12	3.0	188.96	χ^2 =6.550
First year of life	36	9.0	157.46	p=0.088
First 2 years of life	293	73,2	207.80	
First 3 years of life	59	14.8	192.87	
Time planned to start supplementary foods				
Before 4 months	5	1.3	226.30	χ^2 =0.256
4-6 months	67	16.7	200.95	p=0.88
After the 6th month	328	82	200.02	
Relatives encouraging mother to breastfeed?				
Yes	339	85	200.76	Z=-0.107
No	61	15	199.05	p=0.915
Mother feeding infant formula in addition to breastfeeding?				
Yes	112	39.3	163.0	**Z=-4.318**
No	288	60.7	216.05	**p<0.001**
Mother feels adequate about breastfeeding?				
Yes	282	70	203.59	Z=-0.828
No	118	30	193.11	p=0.407
Mother experiences difficulties with breastfeeding?				
Yes	66	16.5	187.82	Z=-0.976
No	304	83,5	203.01	p=0.329
First breastfeeding after the infant's birth				
Within the first 30 minutes	153	38.2	202.83	χ^2 =2.357
In the 1st hour	100	25	204.74	p=0.502
Within 1-2 hours	59	14.8	211.01	
Longer than 2 hours	88	22	184.59	
Frequency of breastfeeding				
On demand[µ]	232	58	215.51	
Once every hour	17	4.3	167.32	**χ^2 =18.29**
Once every 2 hours	72	18	170.12	**p<0.001**
Every 3 hours or more	69	19.7	161.65	
Infant uses pacifier?				
Yes	158	39.5	204.73	Z=-0.592
No	242	60.5	17.74	p=0.554
Infant uses a baby bottle?				
Yes	187	46.8	178.67	**Z=-3.543**
No	213	53.2	219.66	**p<0.001**

*χ^2: Kruskal-Wallis H test. Z: Mann-Whitney U test. p: Significance value. ‡ Only mothers with more than one child answered this question

The mean age of the mothers in the study was 29.45 (SD±4.541) (min=18, max=45). A comparison of the mothers' characteristics and their IOWA scores can be seen in Table 1. A significant difference was found between the mothers' IOWA scores and their age, education and employment status ($p<0.05$) (Table 1). As a result of advanced analysis, it was determined that the difference was caused by the 18-25 age group ($p=0.002$). The IOWA scores of mothers between the ages of 18-25 were found to be lower than other age groups. Moreover, in advanced analysis, it was found that the difference was originated from mothers with higher and above education ($p<0.05$). It was determined that mothers with higher and above education level had higher IOWA scores. It was found that employed mothers had higher IOWA scores.

A comparison of the infants' characteristics and their mothers' IOWA scores can be seen in Table 2. Fifty-six percent of the mothers (n=224) delivered by cesarean section. There was no difference between the infants' characteristics and the mothers' IOWA scores ($p>0.05$) (Table 2).

It can be seen in Table 3 that 91% (n=335) of the mothers in the study received prenatal information on breastfeeding and that 42.1% (n=141) receiving this education found it insufficient. Among the mothers, 62.9% (n=211) were educated via the internet, TV, radio and other media, 52.5% (n=176) received education from health personnel, 32.2% (n=108) from their friends and relatives, and 26.5% (n=89) from books and magazines. A significant difference was found between the mothers' IOWA scores and their feeding their infants formula in addition to breastfeeding, the frequency of their breastfeeding, and their use of a baby bottle ($p<0.05$) (Table 3). Mothers who were feeding their infants formula in addition to breastfeeding had lower IOWA scores than those who fed exclusively breastmilk. In advanced analysis, it was found that mothers who breastfed their infants on demand had higher IOWA scores than other mothers ($p<0.05$). It was determined that mothers whose infants used a baby bottle had lower IOWA scores.

Table 4. Comparison of mothers' characteristics regarding Covid-19 disease and IOWA scores

Variable	n	%	IOWA Score Mean Rank	Statistical Analysis
Contracted Covid-19?				
Yes	110	27.5	213.02	Z=-1.336
No	290	72,5	195.75	p=0.182
Have friends and/or relatives contracted Covid-19?				
Yes	262	65.5	204.42	Z=-0.936
No	138	34.5	193.06	p=0.350
Taking protective measures against Covid-19?				
Yes	334	83.5	203.07	Z=-1.002
No	66	16.5	187.48	p=0.316
Afraid of infecting infant with Covid-19?				
Yes	353	88	196.40	Z=-1.945
No	47	12	231.27	p=0.052

* Z: Mann-Whitney U test. p: Significance value

Table 5. Comparison of mothers' thoughts about Covid-19 and their IOWA scores

Variable	n	%	IOWA Score Mean Rank	Statistical Analysis
Mother believes that Covid-19 can be transmitted with breast milk?				
Yes	121	30	177.50	**Z=-2.624**
No	279	70	210.48	**p=0.009**
Mother's opinion about whether "Mothers testing positive for Covid-19 can continue to breastfeed their infants"				
They can	328	82	209.87	**Z=-3.463**
They shouldn't	72	18	157.83	**p=0.001**
Mother's opinion about whether "Mothers testing positive for Covid-19 should wear a mask when breastfeeding or while expressing breast milk"				
Should wear a mask	356	89	197.19	Z=-1.633
Should not wear a mask	44	11	227.32	p=0.102
Mother's opinion about whether "Mothers testing positive for Covid-19 should definitely wash their hands before breastfeeding or expressing milk"				
Should wash	394	98.5	199.99	Z=-0.716
No need to wash hands	6	1.5	234.00	p=0.474

* Z: Mann-Whitney U test. p: Significance value

Of the mothers, 83.5% (n=334) said they were taking protective measures against Covid-19. These measures were mainly: washing hands frequently (n=334, 100%), wearing a mask (n=332, 99.4%), not leaving home unless absolutely necessary (n=291, 87.1%), keeping social distance (n=290, 86.8%), eating a balanced diet and taking vitamins (n=3, 0.9%), and using disinfectant (n=6, 1.8%). Other measures the mothers took to protect their infants from Covid-19 were: ventilation of the living space (n=352, 99.7%), not allowing anyone to kiss the child (n=292, 82.7%), washing one's hands effectively for at least 20 seconds before breastfeeding (n=265, 75%), not accepting visitors to the home (n=250, 70.8%), washing clothes with normal detergent at 60-90 degrees (°C) (n=221, 62.6%), not allowing anyone to pick up the infant (n=214, 60.6%), and not kissing the child (n=89, 25.2%). No statistically significant difference was found between the mothers' Covid-19 characteristics and their IOWA scores (p>0,05) (Table 4).

Table 5 shows a comparison of mothers' thoughts about Covid-19 and their IOWA Scores. Of the mothers, 30% (n=121) thought that Covid-19 can be transmitted to the infant through breastfeeding (Table 5). Mothers who believe that Covid-19 can be transmitted with breast milk had lower IOWA scores than those who do not believe. IOWA scores of mothers who think that "Mothers testing positive for Covid-19 can continue to breastfeed their infants" had higher.

DISCUSSION

In this study, which was conducted to examine the breastfeeding attitudes of mothers, the mean IOWA score of the mothers was 65.05±6.746 (min=30, max=83). Accordingly, it can be said that this study indicates that mothers have a positive attitude toward breastfeeding. Studies in Turkey[19-22] show that mean IOWA scores vary between 48.11 and 64.41. Studies in developed countries[23-24] indicate that mean IOWA scores vary between 56.55 and 63.12. The IOWA scores of the mothers in our study were higher, which can perhaps be explained by the fact that the participants were mothers with a better awareness of breastfeeding and more enthusiasm about joining in the study.

It was seen that the older the mothers were, the more positive were their attitudes about breastfeeding. Some studies in the literature where the IOWA scale was employed[23,25] did not reveal any correlation between the mother's age and the attitude toward breastfeeding. In a study by Kurnaz and Uyar Hazar (2021), the author reported that the increase in mothers' ages had a negative impact on breastfeeding attitudes.[26] Mercan and Tari Selcuk (2021) reported a different result, stating that attitudes toward breastfeeding improved with an increase in the mothers' age.[27] The results of our study are similar to those of Ozen and may be associated with the fact that mothers' levels of knowledge and experience rises as they get older. The differences in the various studies may stem from the differences in the characteristics of study populations and sites, and consequently from cultural and educational disparities.

It was found in the study that as the mothers' level of education rose, their attitudes toward breastfeeding improved. Akcay et al. (2021) reported in their study that mothers' attitudes toward breastfeeding were more positive the less educated they were.[28] In a study by Hamze et al. (2019, the authors found, similar to our results, that knowledge about breastfeeding increased the more educated mothers were.[23] This result is significant in that it indicates that a mother's level of education has an important impact on her attitude toward breastfeeding.

It is observed in the study that working mothers had more positive attitudes toward breastfeeding compared to non-working mothers. One of the factors that has an impact on breastfeeding is the mother's working life.[29] According to a TUIK (Turkish Statistical Institute, 2021) report, the number of women in the workforce steadily increases every year.[30]. WHO (2020) recommends that mothers continue to breastfeed their infants under all circumstances.[31] However, factors such as the lack of appropriate conditions in the workplace[32] or having to cut the breastfeeding period short due to a heavy workload[33] can have a negative effect on breastfeeding.[34] In a study by Yesilcicek et al. (2017), the authors found that exclusive breastfeeding percentages were higher in non-working mothers.[7]. Breastfeeding behaviors can be adversely affected by a mother's working conditions.[34] On the other hand, studies[21-22] have indicated results similar to ours in that it has been shown that working mothers' attitudes toward breastfeeding are more positive**.** This can be associated with the fact that working mothers may be more educated.

Ninety-one percent of the mothers in the study said that they had received breastfeeding education during pregnancy. In the study by Akcay et al. (2020),[28] this rate was 75.6%, in that of Yildiz et al. (2020),[22] it was 72.3%. Sahin Uysal et al. (2021) reported in their study that mothers' breastfeeding education rates dropped during the Covid-19 pandemic.[35] In our study, 42.1% of the mothers revealed that they found the breastfeeding education they received inadequate. This may have been caused by the interruptions in face-to-face education during the period of the Covid-19 pandemic.[36].

According to data collected by TNSA (Turkey Population and Health Research, 2018), the rate of exclusive breastfeeding among infants younger than 6 months is 41%.[5] In the present study, 60.7% of the

infants were being exclusively breastfed. It was observed that mothers who were exclusively breastfeeding had more positive attitudes toward breastfeeding than the others.

Current guidelines[3,37] recommend that infants are breastfed on demand. There was a significant correlation between the frequency of breastfeeding and the mothers' IOWA scores. Mothers who said that they breastfed their infants whenever they demanded it had more positive attitudes toward breastfeeding. In their study, Niela-Vilen et al. (2016) revealed a positive correlation between breastfeeding frequency and positive attitudes toward breastfeeding.[38] This finding may be associated with the fact that mothers who breastfeed on demand are likely to be mothers who are aware of and keep up with current knowledge.

In order to continue breastfeeding, the use of bottles, pacifiers and other artificial materials must be avoided.[39] Despite this, however, TNSA 2018 data indicate that 53% of 0-23-month-old infants are bottle-fed. In our study, close to half of the mothers of 0-6-month-old infants (46.8%) were being bottle-fed. Similarly, other studies conducted in Turkey have reported a bottle-feeding rate varying between 32.2%-45.4%.[7,21,28]. It is found a significant relationship between IOWA scores and bottle-feeding ($p<0.05$). Mothers who were bottle-feeding their infants were found to have higher levels of negative attitudes about feeding. It was similarly reported in a study conducted in New York that bottle-feeding had a negative effect on breastfeeding.[40]

Many organizations,[4,11] and WHO (2020) in particular[31] advise mothers to continue to breastfeed by taking precautions during the Covid-19 pandemic even though the mother has tested positive. It can be seen however that despite this, Covid-19 still makes mothers uneasy.[15] The fact that 82% of the mothers in our study continued to breastfeed their infants even though they tested positive for Covid-19 is in support of the recommendation. We observed that 40.9% of the mothers were afraid of infecting their infants with Covid-19, and 30% believed that Covid-19 could be transmitted to the infant through breastfeeding. There was a significant correlation between the IOWA scores and the mothers' thinking that Covid-19 could be transmitted via breast milk and also that positive-testing mothers should continue to breastfeed ($p<0.05$). This finding indicates the important need for mothers to receive more education about breastfeeding during the still ongoing Covid-19 pandemic. A positive outcome noted was that most of the mothers continued to breastfeed their infants during the pandemic although they feared transmitting the disease, taking their precautions and being able to experience a safe period of breastfeeding in which they could avoid interruptions. A study that examined breastfeeding among mothers with Covid-19[13] similarly reported that a large majority of mothers chose to breastfeed their infants**.** Avoiding interruptions in breastfeeding during the pandemic will have a positive effect on mother and child bonding.

CONCLUCIONS

It was found that mothers' attitudes and behaviors regarding breastfeeding were more positive the older and the more educated they were. It was seen that mothers who bottle-fed their infants with formula in addition to breastfeeding had more negative attitudes and behaviors regarding breastfeeding. Some of the mothers thought that Covid-19 can be transmitted to the infant through breastfeeding. Most of the mothers believed that breastfeeding should be continued by taking the necessary precautions even when the mother may have tested positive for Covid-19. We recommend that mothers in the risk group that display a negative attitude toward breastfeeding be identified early on and that breastfeeding education programs be continued without interruption during the pandemic and presented by health professionals such as nurses, doctors and midwives.

Author contributions

Study idea/design: FT, HU
Data collection: FT, HU, AA
Data analysis and interpretation: FT, HU, AA, FC
Literature review: FT, HU, AA
Writing of the article: FT, HU, AA
Critical review: FT, HU, AA, FC
Final approval and responsibility: FT, HU, AA, FC

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REFERENCES

1. Yenal K, Alus Tokat M, Durgun Ozan Y, Cece O, Bakilan Abalin F. The relation between breastfeeding self-efficacy and breastfeeding success in mothers. *JERN.* 2013;10(2):14-9.
2. Irmak N. The importance of breastmilk and the factors that effect exclusive breastfeeding. *TJTFP.* 2016;07(2):27-31. doi: 10.15511/tjtfp.16.02627.
3. World Health Organization (WHO). Infant and young child feeding. 2021. Available from: https://www.who.int/news-room/fact-sheets/detail/infant-and-young-child-feeding. Accessed October 5, 2022.
4. United Nations International Children's Emergency Fund (UNICEF). Coronavirus disease

(COVID-19): What parents should know. How to protect yourself and your children? Available from: https://www.unicef.org/stories/ novel-coronavirusoutbreak- what-parents-should-know. Accessed October 7, 2022.
5. Turkey Population and Health Research (TNSA). 2018 Turkey Population and Health Research. 2019. Available from: http://www.sck.gov.tr/wp-content/uploads/2020/08/TNSA2018_ana_Rapor.pdf Accessed June 18, 2022.
6. Stockdale J, Sinclair M, Kernohan G, Keller J. Understanding Motivational Theory and the Psychology of Breastfeeding. Bryar R & Sinclair M, eds. In: Theory for midwifery practice. Palgrave Macmillan: 2011;92-106.
7. Yesilcicek KC, Cosar Cetin F. Erkaya R. Breastfeeding practices of mothers and influencing practices. *GUSBD.* 2017;6(3):80-91.
8. Nalbantoglu A, Nalbantoglu B, Gokcay G. Knowledge and attitudes of mothers about breastfeeding during COVID-19 infection. *Namık Kemal Tıp Dergisi*. 2020;8(3):314-20. doi: 10.37696/nkmj.779496
9. Chen H, Guo J, Wan C, Luo F, Yu X, Zhang W, et al. Clinical characteristics and intrauterine vertical transmission potential of COVID-19 infection in nine pregnant women: a retrospective review of medical records. *Lancet.* 2020; 395(10226):809-815. doi: 10.1016/S0140-6736(20)30360-3.
10. Royal College of Paediatrics and Child Health (RCPCH). COVID-19- guidance for pediatric services. 2020. Available from: https://www.ibfan.org/wp-content/uploads/2020/03/Royal-college-of-Pediatrics-and-Child-Health.pdf. Accessed June 15, 2022.
11. Centers for Disease Control and Prevention (CDC). Coronavirus Disease (COVID-19) and breastfeeding. 2021. Available from: https://www.cdc.gov/breastfeeding/breastfeeding-special-circumstances/maternal-or-infant-illnesses/covid-19-and-breastfeeding.html. Accessed June 15, 2022.
12. Yang N, Che S, Zhang J, Wang X, Tang Y, Wang J, et al. COVID-19 evidence and recommendations working group. Breastfeeding of infants born to mothers with COVID-19: A rapid review. *Ann Transl Med.* 2020;8(10):618. doi: 10.21037/atm-20-3299.
13. Pereira A, Cruz-Melguizo S, Adrien M, Fuentes L, Marin E, Forti A, et al. Breastfeeding mothers with COVID-19 infection: A case series. *International Breastfeeding Journal*. 2020;15(1):1-8.
14. Academy of Breastfeeding Medicine (ABM). Statement on Coronavirus 2019 (COVID-19). 2020. Available from: https://www.bfmed.org/abm-statementcoronavirus. Accessed May 18, 2022.
15. El-Gilany AH. COVID-19 and Breastfeeding. *Asp Biomed Clin Case Rep.* 2020;3(2):102-5.
16. Dogan G. Evaluation of information,attitudes and behaviors of mothers on infant nutrition and postpartum depression status, institute of health sciences [unpublished dissertation]. Ankara: T.C. Başkent University; 2019.
17. De La Mora A, Russell DW. The Iowa Infant Feeding Attitude Scale: Analysis of reliability and validity. *Journal of Applied Social Psychology.* 1999;29(11):2362-80. http://dx.doi.org/10.1111/j.1559-1816.1999.tb00155.x
18. Eksioglu A, Yesil Y, Turfan EC. The translation and validation of the Iowa Infant Feeding Attitude Scale into Turkish. *JERN.* 2016;13(3):209-15. http://dx.doi.org/10.5222/HEAD.2016.209
19. Topal S, Yuvaci HU, Erkorkmaz U, Cinar N, Altinkaynak S. The determination of infant feeding attitudes among Turkish mothers using the Iowa Infant Feeding Attitude Scale. *J Pak Med Assoc.* 2017;67(10):1567-73.
20. Guner UC, Inan B. Mothers' infant feeding attitudes and influencing factors during the Covid-19 pandemic process: Facebook, Instagram example. *TJFMPC.* 2022;16(2):357-66. http://dx.doi.org/10.21763/tjfmpc.1024755.
21. Akin B, Demir E, Gurdal A, Yilmaz S. Attitudes of mothers with babies of 0-6 months of age regarding infant nutrition and transition times to complementary feeding. *AUHSJ.* 2021;12(2):472-8. https://doi.org/10.31067/acusaglik.849205
22. Yildiz I, Golbasi Z. Determination of breastfeeding behaviors and infant feeding attitudes of mothers with 4-6 months old baby. *TJFMPC.* 2020;14(4):554-63.
23. Hamze L, Mao J, Reifsnider E. Knowledge and attitudes towards breastfeeding practices: A cross-sectional survey of postnatal mothers in China. *Midwifery.* 2019;74:68-75. https://doi.org/10.1016/j.midw.2019.03.009.
24. Bien A, Kulesza-Brończyk B, Przestrzelska M, Iwanowicz-Palus G, Ćwiek D. The Attitudes of Polish women towards breastfeeding based on the Iowa Infant Feeding Attitude Scale (IIFAS**).** *Nutrients.* 2021;13(12):4338. https://doi.org/10.3390/nu13124338.
25. Vijayalakshmi P, Susheela T, Mythili D. Knowledge, attitudes, and breastfeeding practices of postnatal mothers: A cross-sectional survey. *Int J Health Sci (Qassim).* 2015;9(4):364-74.
26. Kurnaz D, Uyar Hazar H. Factors Influencing The Attitudes and Successes Related to Mothers' Breastfeeding In The Early Postpartum Period. *Journal of Nursing Science*. 2021;1 4 (2): 76-86.
27. Mercan Y, Tari Selcuk K. Association between postpartum depression level, social support level and breastfeeding attitude and breastfeeding self-efficacy in early postpartum women. *PloS one.* 2021; 16(4): e0249538.
28. Akcay Didisen N, Uzsen H, Buldur E. Investigation of Mothers Attitudes During Breastfeeding Affecting Breastfeeding Behavior. *AMUSBFD.* 2021;5(1):84-92. https://doi.org/10.46237/amusbfd.674579
29. Gokdemirel S, Bozkurt G, Gokcay G, Bulut A. Experiences of working mothers during breastfeeding: A qualitative study. *Journal of Child.* 2008;8(4):221-34.
30. Turkish Statistical Institute (TUIK). Women by Statistics. 2021. Available from: https://data.tuik.gov.tr/Bulten/Index?p=Istatistiklerle-Kadin-2021-45635. Accessed July 7, 2022.
31. World Health Organization (WHO). Breastfeeding advice during the COVID-19 outbreak. 2020. Available

from: http://www.emro.who.int/nutrition/nutrition-infocus/breastfeeding-advice-during-covid-19-outbreak.html. Accessed October 7, 2022.
32. Yorgancı Sokucu F, Aslan E. The effect of woman's work status on breast-feeding. *Florence Nightingale J Nurs*. 2012;20(1):62-8.
33. Ata Yuzugullu D, Aytac N, Akbaba M. Investigation of the factors affecting mother's exclusive breastfeeding for six months. *Turk Arch Pediatr*. 2018;53(2):96-104. https://doi.org/10.5152/TurkPediatriArs.2018.6262.
34. Hekimoglu B. Comparison of breastfeeding habits of working and non-working mothers. *SETSCI Conference Indexing System* 2018;3:1057-60.
35. Sahin Uysal N, Tugrul Ersak D, Azami A, Aliyeva K, Duran E, Esin S. Has COVID-19 pandemic period affected mothers' breastfeeding self-efficacy perceptions? *Health and Society*. 2021;31(3):77-84.
36. Ozer M, Suna HE, Perc M, Sensoy S, Uygun Ilikhan S. Turkey's transition to face-to-face schooling during the COVID-19 pandemic. *Turk J Med Sci*. 2022;52(3):529-40. https://doi.org/10.55730/1300-0144.5343
37. NHS, Breastfeeding: the first few days. 2019. Available from https://www.nhs.uk/conditions/baby/breastfeeding-and-botte-feeding/breastfeeding/the-first-few-days/. Accessed May 6, 2022.
38. Niela-Vilen H, Melender Hl, Axelin A, Löyttyniemi, Salantera S. Predictors of breastfeeding initiation and frequency for preterm infants in the NICU. *J Obstet Gynecol Neonatal Nurs*. 2016;45(3):346-58. https://doi.org/10.1016/J.Jogn.2016.01.006.
39. Tomar RS. Initiation of re-lactation: An army hospital based study of 381 cases. *Int J Contemp Pediatr*. 2016;3(2):635-8.
40. Howard CR, Howard FM, Lanphear B, Eberly S, deBlieck E, Oakes D, et al. Randomized clinical trial of pacifier use and bottle-feeding or cup-feeding and their effect on breastfeeding. *Pediatrics*. 2003;111(3):511-8. https://doi.org/10.1542/peds.111.3.511.