

Breastfeeding Practices and Breastfeeding Self-Efficacy of Mothers during the COVID-19 Pandemic in Turkey

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ABSTRACT:

Purpose: The research was conducted to examine the breastfeeding practices and breastfeeding self-efficacy of mothers during the COVID-19 pandemic in Turkey.

Material and Methods: The research is a descriptive and cross-sectional study. Between February and April 2021, the data for the research was collected using electronic surveys produced with Google Forms. The study's sample consisted of 220 women who were contacted in this manner and met the study's inclusion criteria. Data was collected using a Data Collection Form and the Breastfeeding Self-Efficacy Scale Short Form (BSES).

Results: The mothers' mean BSES score was found to be 49.84±12.12. It was found that there was a statistically significant difference between the mothers' state of being affected by the breastfeeding process during the COVID-19 pandemic, and the place where the baby slept during the breastfeeding period, and the mean scores of the BSES ($p<0.05$). It was found that 22.7% (50 mothers) of the mothers had COVID-19 infection during breastfeeding. 64% of these mothers continued to breastfeed their babies with a mask when they found out that they were COVID-19 infection, 42.0% were afraid of the transmission of COVID-19 to their babies while breastfeeding, and 76% did not use medication and continued to breastfeed. It was found that there was a statistically significant difference between the use of a medication related to COVID-19 infection and the mean score of BSES ($p<0.05$).

Conclusion: The pandemic has affected mothers' breastfeeding self-efficacy, breastfeeding behaviors, and the nutritional status of infants. Study findings highlight the importance of breastfeeding support during pandemics and other societal crises to protect maternal and infant health.

Keywords: Breastfeeding, Self-efficacy, Postpartum, COVID-19, Pandemic

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INTRODUCTION

The novel coronavirus disease 2019 (COVID-19) is a global and urgent public health problem that emerged on January 30, 2020, and is caused by a new virus (Severe Acute Respiratory Syndrome-CoV; SARS-CoV) belonging to the coronavirus family (Cascella et al., 2020). The World Health Organization (WHO) declared a pandemic in December 2019 due to the spread of COVID-19 from Wuhan city of China to the whole world (Aysan et al.,

2020). During this pandemic, millions of cases emerged and 2.5 million people lost their lives, and the morbidity and mortality rates caused by the disease continue to increase (Aysan et al., 2020; Hamidi et al., 2020).

Although the infection mostly affects the elderly; pregnant, lactating women and newborn infants have also been infected, raising concerns about the management of the perinatal period (Asadi et al., 2020; Lubbe et al., 2020). Especially at the beginning

of the pandemic, the risk of vertical transmission of the virus increased these concerns (Zhu et al., 2020). However, it is reported that there is no risk of vertical transmission of the disease (Zhu et al., 2020) and the virus is not found in breast milk (Chen et al., 2020; Chambers et al., 2020). However, there is conclusive evidence of transmission of the disease by droplet during breastfeeding from mothers infected with COVID-19 of infants (Cheema et al., 2020). The World Health Organization (WHO) emphasizes that breast milk is the ideal food for infants and reports that breastfeeding outweighs the potential risk of transmission of the coronavirus (WHO, 2020). For this reason, it is recommended that breastfeeding should not be interrupted, mother and baby should not be separated, and skin contact should not be interrupted by following the precautions to prevent infection during the pandemic process (Lubbe et al., 2020; Davanzo et al., 2020). However, mothers who are infected with the virus during breastfeeding are recommended not to breastfeed and to express and pour their milk if they receive current treatments, although there are no proven treatments for coronavirus infection. In case of discontinuation of breastfeeding, it is indicated to return to breastfeeding after the mother has recovered (Wang et al., 2020; La Course et al., 2020; Calil et al., 2020). Mothers with COVID-19 infection may have the fear of transmitting the virus to the baby, both through contact and through breast milk, and may feel clinically unwell to breastfeed or express their milk. In this case, mothers can be separated from their babies during the quarantine period, and since babies cannot get breast milk, they can switch to formula feeding and bottle feeding (Wang et al., 2020; Lubbe et al., 2020; Davanzo et al., 2020). Bottle and formula feeding may cause the baby to refuse to breastfeed at a later stage. In many countries, breast milk banks can be used in such cases or mothers can completely wean their babies (De Rose et al., 2020; Calil et al., 2020).

Given the risks and benefits, it can be concluded that all options for breastfeeding are justified, given the still very new and little-known aspects of COVID-19 infection. However, mothers and families should be well informed so that they can make an informed choice based on the information available in the

literature so far. In the literature, studies examining mothers' breastfeeding practices and breastfeeding self-efficacy in the COVID-19 pandemic are limited (Wang et al., 2020; La Course et al., 2020; Calil et al., 2020). Studies carried out in this direction will provide guidance on breastfeeding during the COVID-19 pandemic, raise awareness about breastfeeding, and offer appropriate and correct options. Breastfeeding during the pandemic is very important for mothers and their newborns, as it deserves special attention due to its short- and long-term health effects.

Purpose and Questions of the Research

This research was conducted to examine the breastfeeding practices and breastfeeding self-efficacy of mothers during the COVID-19 pandemic in Turkey.

1. How were the breastfeeding practices of mothers during the COVID-19 pandemic?
2. Has the COVID-19 pandemic affected mothers' breastfeeding self-efficacy?

MATERIAL and METHODS

Type of the Study

The study is descriptive and cross-sectional.

Sampling and Participant

Participants were recruited through the Google Forms between February and April 2021. No sample selection was made in the study and the study was conducted with 220 women who agreed to participate in the study. In the post-study power analysis (PostHoc) conducted to examine the power of the sample. Based on the Breastfeeding Self-Efficacy Scale-Short Form mean, the effect size was calculated as 0.24. In this direction; it was discovered that the sample had a 97% power at a 95% confidence interval with a 0.24 effect size ($G * Power 3.0.10$). The inclusion criteria were as follows: i- having a 0-24 month old baby, ii- breastfeeding/having the baby breastfed during the pandemic.

Coronavirus vaccination in Turkey first started on January 13, 2021, with the vaccination of the Ministry of Health and the Coronavirus Scientific Advisory Board. The vaccination of the society has

been carried out by age groups, starting with the individuals aged 60 and over, which is a priority group, and health workers. Mothers in the 18-40 age group were included in the study. These groups are in the 3rd group among the groups vaccinated in Turkey and are among the other groups planned to be vaccinated last at the time of vaccination. Individuals under the age of 40 were not vaccinated at the time of the study (Republic of Turkey Ministry of Health, 2021).

Data Collection Tools

Data Collection Form and Breastfeeding Self-Efficacy Scale-Short Form were used to collect data.

Data Collection Form: This form, which was prepared by the researchers by reviewing the literature (Calil et al., 2020; Chambers et al., 2020; Cheema et al., 2020; Davanzo et al., 2020; La Course et al., 2020; Zhu et al., 2020), consists of 27 questions in total to establish the socio-demographic, obstetric, COVID-19 pandemic process and breastfeeding practices of women.

Breastfeeding Self-Efficacy Scale-Short Form (BSES): The scale was developed by Dennis (2003) to evaluate how competent mothers feel about breastfeeding. The scale consists of 14 items in total. The scale is a 5-point Likert type and is evaluated as I am never sure (1 point), and I am always sure (5 points). The minimum score that can be obtained from the scale is 14, and the maximum score is 70. The scale has no cut-off point and an increase in the score means higher breastfeeding self-efficacy (Dennis, 2003). The Turkish adaptation of the scale was made by Tokat et al. (2010). The Cronbach's alpha value in the original scale was found to be 0.94 (Dennis, 2003), and in the study conducted for the Turkish sample, it was found to be 0.86 (Tokat et al., 2010). In our study, the Cronbach's alpha value of the scale was found to be 0.94.

Data Collection

Before the links for the forms were sent out to the women, data collection forms were administered to 5 women who were not included in the sample group and the forms were finalized. The data of the research was collected through electronic surveys created through Google Forms between February

and April 2021. During the pandemic, where direct contact was reduced as much as possible due to the physical distance rules, the participants were invited to the research via social media groups (WhatsApp groups, public forums, Twitter and Facebook accounts). All participants were informed about the study at the beginning of the online survey and their consent was obtained. No names, Internet Protocol (IP) addresses, or other identifying information were collected; thus, participants' responses were anonymous, and no personal information was attached to the data. All questions had to be completed before submission.

Statistical Analysis

SPSS 23.0 (Statistical Program for Social Sciences) package program was used to evaluate the data obtained from the research. Number and percentage were used in categorical measurements, mean and standard deviation were used in numerical measurements. The conformity of the variables to the normal distribution was found by the "Kolmogorov-Smirnov" test according to the number of samples. Accordingly, Kruskal Wallis test was used in the multi-group comparison where the data did not show normal distribution, and the Independent Sample t Test was used in the comparison of two independent groups with normal distribution. In cases where there is a significant difference between the groups, eta-square (η^2) effect size value was used in the Kruskal Wallis test results to evaluate the degree of effectiveness of the independent variable on the dependent variable. Eta-square (η^2) value was interpreted as "small" effect size at "0.01" level, "medium" effect size at "0.06" level and "large" effect size at "0.14" level (Cohen, 1988). In addition, multiple linear regression was performed to investigate the factors affecting mothers' breastfeeding self-efficacy. Statistical significance level was accepted as $p < 0.05$.

Ethical Approval

Written approval was obtained (Date: 23.12.2020 Decision No: 2020.22.345) from the Ethics Committee of the relevant University before starting the research. Written permission was obtained (Date: 31.12.2020; Decision No: T124104) from the

Ministry of Health to conduct the research. In addition, all participants were informed about the study at the beginning of the online survey and their consent was obtained. The study was based on the principles of the Declaration of Helsinki.

RESULTS

The distribution of some socio-demographic and obstetric characteristics of the mothers participating in the study is given in Table 1. The mean age of the mothers was 28.49±5.09. It was found that 64.5% of

the mothers were between the ages of 20-34, 58.2% had a university or higher education, 60.9% did not work in any job, 39.5% lived in the city center, and 50.9% had income equal to expenditure. When the obstetric characteristics of the mothers were examined, it was found that 63.2% of them were primiparous, 49.5% had 7-12 months old babies, 90.5% were pregnant intendedly, 57.7% had cesarean section, and 20% had abortion.

Table 1. Distribution of some socio-demographic and obstetric characteristics of mothers (n=220)

Descriptive characteristics	Mean ± SD
Age (years)	28.49±5.09
	n (%)
Age (years)	
19-24	54 (24.5)
25-34	142 (64.5)
35-40	24 (10.9)
Educational status	
Elementary	42 (19.1)
High school	50 (22.7)
University and higher	128 (58.2)
Employment	
Employed	86 (39.1)
Not employed (Housewife)	134 (60.9)
Location	
Metropolis	64 (29.1)
City	87 (39.5)
District/Village	69 (31.4)
Income level	
Income is less than expenses	46 (28.2)
Income is equal	112 (50.9)
Income is more than expenses	62 (20.9)
Parity	
Primiparous	139 (63.2)
Multiparous	81 (36.8)
Age of the baby (months)	
0-6 months	68 (30.9)
7-12 months	109 (49.5)
13-24 months	43 (19.5)
Intended pregnancy	
Yes	199 (90.5)
No	21 (9.5)
Delivery Method	
Vaginal	93 (42.3)
C-section	127 (57.7)
Number of abortions	
Yes	44 (20.0)
No	176 (80.0)

Note. SD: Standard Deviation

The distribution of some breastfeeding experiences and behaviors of mothers is presented in Table 2. It was found that 90.5% of the mothers breastfeed

their babies immediately after birth, 49.1% of them have problems with breastfeeding in the postpartum period, 31.8% of those who have problems have

problems with nipple problems, 46.4% fed their baby with breast milk and solid food, and 62.3% received information about breastfeeding from health personnel, 57.7% wanted to receive information about COVID-19 infection and its effect on breast milk. The comparison of some breastfeeding-related characteristics experienced by mothers during the COVID-19 pandemic process according to the mean scores of the breastfeeding self-efficacy scale (BSES)

is given in Table 3. There was no statistically significant difference between the mothers' breastfeeding education/postpartum follow-up/care/consulting services from health institutions, fear/anxiety about not being able to access breastfeeding education/postpartum care, fear of contagion of the baby with COVID-19, and having COVID-19 infection during breastfeeding and the mean BSES scores ($p > 0.05$).

Table 2. Distribution of some breastfeeding experiences and behaviors of mothers (n=220)

Characteristics	n (%)
Breastfeeding status after birth	
Yes	199 (90.5)
No	21 (9.5)
The reason for not being able to breastfeed after birth (n = 21)	
Breast problems	1 (4.8)
Baby in intensive care	9 (42.9)
Lack of social support	3 (14.3)
Severe postpartum pain	4 (19.0)
Insufficient milk	4 (19.0)
Having problems with breastfeeding	
Yes	108 (49.1)
No	112 (50.9)
The problem with breastfeeding*	
Nipple problems (flatness or fissures)	70 (31.8)
Lack of education and support	16 (7.3)
Insufficient milk	52 (23.6)
Inexperience	40 (18.2)
Breast refusal	21 (9.5)
Baby's diet	
Only breast milk	48 (21.8)
Breast milk and formula food	32 (14.5)
Only formula food	6 (2.7)
Formula food and solid food	32 (14.5)
Breast milk and solid food	102 (46.4)
Information sources on breastfeeding*	
Health personnel (physician/nurse/midwife/breastfeeding consultant)	137 (62.3)
Social media	76 (34.5)
Family / environment / friends	82 (37.3)
Topics that are requested to receive information about breastfeeding*	
Breastfeeding process of a mother with COVID-19 infection	113 (51.4)
COVID-19 infection and its effect on breast milk	127 (57.7)
Medications used in COVID-19 infection and its effect on breast milk	105 (47.7)

Note. *Multiple options were marked

In the study, it was found that there was a statistically significant difference between the state of being affected by the breastfeeding process during the COVID-19 pandemic and the mean scores of the BSES, and this difference had a large effect size ($\eta^2 = 0.21$) ($p < 0.05$). According to the advanced statistical analysis, the mean BSES scores of those who continued to breastfeed without any problems

were found to be significantly higher than those who already fed their babies with formula and those who stopped breastfeeding ($p < 0.05$). Likewise, the mean BSES scores of those who stopped breastfeeding for a while were statistically higher than those who already fed their baby with formula and those who stopped breastfeeding ($p < 0.05$).

Table 3. Comparison of some breastfeeding-related characteristics of mothers during the COVID-19 pandemic process according to the average of breastfeeding self-efficacy scale (BSES) scores

Characteristics	n (%)	BSES (Mean±SD)	Statistical Analysis	p	η ²
BSES		49.84±12.12			
Breastfeeding education / postpartum follow-up / care / counseling service from health institutions					
Yes	61 (27.7)	49.58±12.47	-1.190	0.850*	-
No	159 (72.3)	49.94±12.02			
Fear/anxiety about not being able to access breastfeeding education/postpartum care					
Yes	87 (39.5)	48.45±12.58	-1.382	0.168*	-
No	133 (60.5)	50.75±11.76			
Affected breastfeeding process during the COVID-19 pandemic					
No, continued breastfeeding without any problems	175 (79.5)	52.0±10.73	44.908	p<0.001**	0.21
No, the baby was already being fed with formula food	29 (13.2)	36.37±11.13			
Yes, stopped breastfeeding	6 (2.7)	39.17±5.15			
Yes, stopped breastfeeding for a while	10 (4.5)	57.40±11.44			
Where baby sleeps					
In the same room as the mother, in a different bed	152 (69.1)	49.59±12.07	12.971	0.002**	0.06
In the same room as the mother, in the same bed	45 (20.5)	46.73±12.39			
In a different room	23 (10.5)	57.57±8.45			
Concern about transmitting COVID-19 to the baby					
No	7 (3.2)	54.71±11.31	2.603	0.272**	-
Yes, Very Little	46 (20.9)	48.13±12.06			
Yes, Very Much	167 (75.9)	50.11±12.12			
Status of being infected with COVID-19 during breastfeeding					
Yes	50 (22.7)	52.00±11.19	1.515	0.133*	-
No	170 (77.3)	49.21±12.33			

Note. *Independent sample t-test, ** Kruskal Wallis Test, SD: Standard deviation, BSES: Breastfeeding Self-Efficacy Scale-Short Form, η²: Eta-square value

In the study, it was found that there was a statistically significant difference between the place where the baby slept during the breastfeeding period and the mean BSES score, and this difference had a medium effect size ($\eta^2=0.06$) ($p<0.05$). Accordingly, the mean BSES scores of mothers whose babies slept in a different room were found to be statistically higher than those who slept in a different bed in the same room or slept in the same bed in the same room ($p<0.05$).

The comparison of some characteristics experienced by mothers with COVID-19 infection during breastfeeding according to the mean score of the breastfeeding self-efficacy scale (BSES) is given in Table 4. It was found that 22.7% (50 mothers) of the mothers had COVID-19 infection during breastfeeding. After learning that they were positive for COVID-19, 64% stated that they continued to breastfeed their babies with a mask, 42.0% stated that they were afraid of the transmission of COVID-19 to their babies while breastfeeding, 76% did not

use medication and continued to breastfeed. When some characteristics experienced by mothers with COVID-19 infection during breastfeeding were compared with the BSES score average, it was found that there was a statistically significant difference between the use of a medication related to COVID-19 infection while breastfeeding and the mean BSES score, and this difference had a low effect size ($\eta^2=0.03$) ($p<0.05$). Accordingly, the mean BSES score of those who did not use medication and continued to breastfeed was found to be statistically higher than those who discontinued breastfeeding because of medication use ($p<0.05$). In addition, the mean BSES score of those who continued to breastfeed when the medication was finished was found to be statistically higher than those who stopped breastfeeding because the medication was used ($p<0.05$).

Multiple linear regression results to investigate the factors affecting mothers' breastfeeding self-efficacy are given in Table 5. The established model was found to be statistically significant ($p<0.05$).

According to the results of the study, it was found that the factor affecting the breastfeeding self-efficacy of mothers was the state of being affected by the breastfeeding process during the COVID-19 pandemic. Accordingly, breastfeeding self-efficacy of mothers who continued to breastfeed their babies without any problems (Beta: 16.178) and mothers

who stopped breastfeeding for a while (Beta: 20.945) was found to be higher than mothers who already fed their babies with formula ($p < 0.05$). The power to explain the change in breastfeeding self-efficacy scores by independent variables is 28% ($R^2 = 0.288$).

Table 4. Comparison of some characteristics experienced by mothers with COVID-19 infection during breastfeeding according to the breastfeeding self-efficacy scale (BSES) mean scores (n=50)

Characteristics	n (%)	BSES (Mean±SD)	Statistical Analysis	p	η ²
The way the baby was fed after finding out the mother was COVID-19 positive					
Continuing to breastfeed the baby with the mask	32 (64.0)	52.28±11.11			
Taking a break during the illness and then resuming breastfeeding	10 (20.0)	50.10±15.21	0.029	0.986**	-
Not doing anything	8 (16.0)	53.25±5.00			
Emotion while breastfeeding when COVID-19 positive					
Anxiety about infecting the baby	13 (26.0)	52.62±10.96			
Fear of infecting the baby	21 (42.0)	52.57±12.42	2.060	0.560**	-
Hesitating while breastfeeding	7 (14.0)	48.86±7.31			
Wanting to breastfeed more for the baby's health	9 (18.0)	52.22±12.29			
Use of a medication related to COVID-19 infection while breastfeeding					
Continuing to breastfeed without taking medication	38 (76.0)	53.32±10.13			
Stopping breastfeeding due to use of medication	5 (10.0)	38.60±12.97	7.555	0.023**	0.03
Continuing to breastfeed despite the use of medication	2 (4.0)	41.50±4.95			
Continuing to breastfeed after the medication is finished	5 (10.0)	59.60±6.58			

Note. T-test, ** Kruskal-Wallis test, SD: Standard deviation, BSES: Breastfeeding Self-Efficacy Scale-Short Form, η²: Eta-square value

Table 5. Multiple regression analysis results: factors affecting mothers' breastfeeding self-efficacy

Variables	β	SE	t	p values	F model	p model	R ²
Affected breastfeeding process during the COVID-19 pandemic							
Reference category: No, the baby was already being fed with formula food							
No, continued breastfeeding without any problems	16.178	2.141	7.556	p<0.001			
Yes, stopped breastfeeding	2.829	5.095	0.555	0.579			
Yes, stopped breastfeeding for a while	20.945	3.900	5.371	p<0.001	14.327	p<0.001	0.288
Where the baby sleeps during the breastfeeding process							
Reference category: In a different room							
In the same room as the mother, in a different bed	1.235	4.023	0.307	0.759			
In the same room as the mother, in the same bed	-4.099	3.883	-1.055	0.292			

Note. SE, standard error; β, regression coefficient

DISCUSSION

Breast milk is the most ideal food source for the baby. Many international organizations that deal with breastfeeding during the pandemic period recommend that babies, including COVID-19 positive mothers, be fed with breast milk. However, at the beginning of the pandemic, reasons such as concerns about this new virus, misinforming the public,

spreading dirty information on the internet, and mothers' lack of sufficient information affected the breastfeeding process during the epidemic. (WHO, 2020; Lubbe et al., 2020; Davanzo et al., 2020). In this direction, the study was conducted to examine breastfeeding practices and breastfeeding self-efficacy of mothers during the COVID-19 pandemic in Turkey.

An important factor in continuing to breastfeed is a sense of self-efficacy in breastfeeding mothers (Baud et al., 2020). Among the factors affecting the self-efficacy of breastfeeding mothers are physical, mental, and social conditions. Therefore, the COVID-19 pandemic is also an important factor that can affect breastfeeding self-efficacy (Baud et al., 2020). In our study, the mean BSES score of the mothers was found to be 49.84 ± 12.12 . In the study where Beheshti et al (2022) evaluated the breastfeeding self-efficacy of mothers during the pandemic, it was shown that the mean breastfeeding self-efficacy scale score of the mothers was 58.19 ± 10.48 . It is thought that the reason for the lower mean breastfeeding self-efficacy score in our study may be due to the fact that it was conducted with mothers who were or were not infected with coronavirus, and that our study was conducted during the period when strict quarantine measures were in place. In our study, the mean BSES score of mothers infected with COVID-19 during breastfeeding was 52.00 ± 11.19 points. In a qualitative study in which Aşçı et al. (2022) evaluated the breastfeeding experiences of women infected with COVID-19, it was shown that the thought of mothers that the content of breast milk will protect their baby from COVID-19 is common among women, this thought increases women's motivation to breastfeed and enables mothers to give priority to breast milk while feeding their baby. In this respect, it can be said that breastfeeding desires and motivations of mothers infected with COVID-19 and their desire to protect their babies against coronavirus affect breastfeeding self-efficacy positively.

In our study, it was found that breastfeeding self-efficacy of mothers was affected by some factors. Breastfeeding self-efficacy of mothers who continued to breastfeed their babies without any problems and mothers who stopped breastfeeding for a while were found to be higher than mothers who fed their infants with formula food. Beheshti et al. (2022) study also supports our results and reported that mothers who used formula together with breastfeeding had lower breastfeeding self-efficacy in the study. Similar results were reported in studies conducted before the pandemic (Ngo et al., 2019; Gümüşsoy et al., 2020). In addition,

breastfeeding self-efficacy of mothers who are positive for COVID-19 but continue to breastfeed and do not use medication were found to be higher than those who stopped breastfeeding because the medication was used, and those who continued to breastfeed when the medication was finished compared to those who stopped breastfeeding because the medication was used. This result shows that breastfeeding self-efficacy has a significant effect on maintaining breastfeeding and coping with the difficulties encountered during the breastfeeding process. Indeed, successful experiences play an important role in increasing people's self-efficacy. After a successful experience, they perceive challenge more easily, which can motivate them to fight (Ngo et al., 2019). A study conducted in Finland found that the more positive the breastfeeding experience, the higher the breastfeeding self-efficacy (Koskinen et al., 2014). Supporting mothers during the breastfeeding process and providing breastfeeding education can help to continue breastfeeding in the fight against difficulties such as COVID-19 infection.

In our study, it was found that 72.3% of the women did not receive breastfeeding education/postpartum follow-up/care/counseling services from health institutions during the COVID-19 pandemic. In the study of Hull et al. (2020), 61% of women reported that they could not access face-to-face health services due to fear in the postpartum period. It is reported that the limitations and various prohibitions experienced in the COVID-19 pandemic have reduced professional and peer support for breastfeeding women and caused various difficult experiences for mothers with breastfeeding (Brown and Shenker, 2021). In our study, it was found that 49.1% of women had problems with breastfeeding and a major reason for the problem was related to nipple problems and insufficient milk. In the study, Hull et al.(2020) reported that the biggest concern of women in the COVID-19 pandemic was insufficient milk supply and painful breast or nipple problems. Professional support can encourage and help mothers who want to overcome breastfeeding problems (Piankusol et al., 2021). Piankusol et al., (2021) found that the support of infant feeding by health personnel during the COVID-19 pandemic

positively affected breastfeeding practices. Providing the breastfeeding support that women need during the pandemic process with health personnel mobile applications and tele-health can help maintain breastfeeding and increase women's breastfeeding self-efficacy.

In our study, 79.5% of women reported that the breastfeeding process was not affected in the COVID-19 pandemic. Similar to our study results, Brown and Shenker (2021), in their study in the United Kingdom, reported that 41.8% of women generally reported that quarantine had a positive effect on their breastfeeding experience. On the other hand, Piankusol et al., (2021), in their study in Thailand, stated that there was a slight decrease in breastfeeding practices of women during the pandemic. Latorre et al. (2021), in his study in Italy, reported that lockdown and home confinement caused a decrease in breastfeeding during the pandemic process. The reason for the differences in the study results may be due to the fact that the studies were conducted in different periods of the pandemic. Breastfeeding may have been adversely affected by uncertainties about the safety of breast milk at the beginning of the pandemic. During our study, international organizations reported that breastfeeding is safe and should be encouraged (WHO, 2020; UNICEF, 2020). In this way, many women have been encouraged to breastfeed. The study of Aşcı et al. (2022) supports this. In this study, it was found that the thought that the content of breast milk will protect the baby from COVID-19 is common among women and this idea increases the motivation of women to breastfeed.

Definitive asymptomatic COVID-19 cases in Turkey are being followed up on an outpatient basis and Favipiravir is used as a treatment option in possible/definite cases of COVID-19 with uncomplicated or mild pneumonia. The use of Favipiravir in pregnant or breastfeeding women is not recommended (Usta and Teksin, 2020). In Turkey, the Ministry of Health recommends that if the mother is taking medication, she should stop breastfeeding, express her milk during the time she is using the medication, and continue breastfeeding after the medication is finished (Republic of Turkey Ministry of Health, 2021). In this study study, it was

found that 76% of the mothers who were positive for COVID-19 did not use medication and continued to breastfeed, 10% discontinued breastfeeding because of medication use, and 10% continued to breastfeed when the medication was finished. This may be due to the fact that the majority of women are correctly guided by the health personnel, their motivation to breastfeed is high despite their illness, and they prioritize the role of motherhood.

The remarkable finding in our study was that COVID-19 positive mothers were worried and afraid that the infection would be transmitted to their babies. In the study of Aşcı et al. (2022), it was found to support our results, and it was found that fear and anxiety caused most women to reduce physical contact with their babies, and in this case, women felt sad and inadequate. In this process, supporting the mother psychologically, helping her to express her feelings and encouraging breastfeeding can positively affect the mental health of the mother.

Limitations and Strengths

An internet-based survey was used in the study. Therefore, volunteer mothers participated in the study and random sampling method could not be used. This can lead to selection bias and poor generalization. In addition, the data obtained from the study are cross-sectional and another limitation is that they do not provide long-term results regarding breastfeeding practices of mothers. Individuals may also respond differently to the survey depending on the stage of the COVID-19 pandemic, on the other hand, in our study, data were collected in a short time and before vaccination, which may affect research variables, in order to minimize differences and changes in restrictions due to COVID-19. Despite its limitations, our study is important in terms of providing information on breastfeeding practices and breastfeeding self-efficacy of mothers in Turkey during the COVID-19 pandemic.

CONCLUSION

The pandemic has affected mothers' breastfeeding self-efficacy, breastfeeding behaviors, and the nutritional status of infants. The vast majority of breastfeeding mothers are not infected with the

coronavirus. Mothers infected with COVID-19 continued to breastfeed to protect their babies from virus transmission. However, mothers' breastfeeding self-efficacy is moderate and most of the mothers did not receive breastfeeding education and counseling during the pandemic. Mothers who continue to breastfeed should be guided, and mothers who have to stop breastfeeding in the early period and unplanned should be supported. This support should be continued through applications such as tele-health during the quarantine period for mothers infected with COVID-19. International organizations and governments should include breastfeeding, which is the cornerstone of protecting public health during the pandemic, in their priority health policies and show the necessary importance to maintain and promote breastfeeding.

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Conflict of Interest

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REFERENCES

- Aşçı, Ö., Demirgöz Bal, M., Ergin, A. (2022). The breastfeeding experiences of COVID-19-positive women: A qualitative study in Turkey. *Japan journal of nursing science*, 19(1), e12453. <https://doi.org/10.1111/jjns.12453>
- Asadi, L., Tabatabaei, R.S., Safinejad, H., Mohammadi, M. (2020). New Coronavirus (Covid-19) Management In Pregnancy And Childbirth. *Arch Clin Infect Dis*, 15(COVID-19),e102938. <https://doi.org/10.5812/Archcid.102938>
- Aysan, A.F., Balcı, E., Karagöl, E.T., Kılıç, E., Gültekin, F., Şahin, F., et al. (2020). Covid-19 Pandemic Assessment Report. Şeker M, Özer A, Tosun Z, Korkut C, Doğrul M, editors. Ankara: Turkish Academy of Sciences Publications, TÜBA Reports, 34.
- Baud, D., Qi, X., Nielsen-Saines, K., Musso, D., Pomar, L., Favre, G. (2020). Real estimates of mortality following COVID-19 infection. *The Lancet. Infectious diseases*, 20(7), 773. [https://doi.org/10.1016/S1473-3099\(20\)30195-X](https://doi.org/10.1016/S1473-3099(20)30195-X)

- Beheshti, M. A. Z., Alimoradi, Z., Bahrami, N., Allen, K. A., Lissack, K. (2022). Predictors of breastfeeding self-efficacy during the covid-19 pandemic. *Journal of Neonatal Nursing*, 28(5), 349–355. <https://doi.org/10.1016/j.jinn.2021.08.012>
- Brown, A., Shenker, N. (2021). Experiences of breastfeeding during COVID-19: Lessons for future practical and emotional support. *Maternal & child nutrition*, 17(1), e13088. <https://doi.org/10.1111/mcn.13088>
- Calil, V. M. L. T., Krebs, V. L. J., Carvalho, W. B. D. (2020). Guidance on breastfeeding during the Covid-19 pandemic. *Revista da Associação Médica Brasileira*, 66(4), 541-546. <https://doi.org/10.1590/1806-9282.66.4.541>
- Cascella, M., Rajnik, M., Aleem, A., Dulebohn, SC, Di Napoli R. (2020). Features, Evaluation, and Treatment of Coronavirus (COVID-19). In: *StatPearls* [Internet]. Treasure Island (FL); Available from: <https://www.ncbi.nlm.nih.gov/books/NBK554776/>
- Chambers, C., Krogstad, P., Bertrand, K., Contreras, D., Tobin, N. H., Bode, L., & Aldrovandi, G. (2020). Evaluation of SARS-CoV-2 in breastmilk from 18 infected women. *JAMA*, 324(13),1347-1348. <https://doi.org/10.1001/jama.2020.15580>
- Cheema, R., Partridge, E., Kair, L. R., Kuhn-Riordon, K. M., Silva, A. I., Bettinelli, M. E., et al. (2020). Protecting breastfeeding during the COVID-19 pandemic. *American journal of perinatology*, 40(3), 260–266. <https://doi.org/10.1055/s-0040-1714277>
- Chen, H., Guo, J., Wang, C., Wang, C., Luo, F., Yu, X, et al. (2020). Clinical characteristics and intrauterine vertical transmission potential of COVID-19 infection in nine pregnant women: a retrospective review of medical records. *Lancet*, 395(10226), 809–815. [https://doi.org/10.1016/S0140-6736\(20\)30360-3](https://doi.org/10.1016/S0140-6736(20)30360-3)
- Cohen, J. (1988). *Statistical power analysis for the social sciences*. Hillsdale, NJ: Erlbaum.
- Davanzo, R., Moro, G., Sandri, F., Agosti, M., Moretti, C., Mosca, F. (2020). Breastfeeding and coronavirus disease-2019: Ad interim indications of the Italian Society of Neonatology endorsed by the Union of European Neonatal & Perinatal Societies. *Maternal & child nutrition*, 16(3), e13010. <https://doi.org/10.1111/mcn.13010>
- De Rose, D. U., Piersigilli, F., Ronchetti, M. P., Santisi, A., Bersani, I., Dotta, A., Danhaive, O., Auriti, C., Study Group of Neonatal Infectious Diseases of The Italian Society of Neonatology (SIN) (2020). Novel Coronavirus disease (COVID-19) in newborns and infants: what we know so far. *Italian journal of pediatrics*, 46(1), 56. <https://doi.org/10.1186/s13052-020-0820-x>
- Dennis C.L. The breastfeeding self-efficacy scale: psychometric assessment of the short form. *J Obstet Gynecol Neonatal Nurs*. 2003;32(6):734–44.
- Gümüşsoy, S., Çelik, N. A., Güner, Ö., Kıratlı, D., Atan, Ş. Ü., Kavlak, O. (2020). Investigation of the Relationship Between Maternal Attachment and Breastfeeding

- Self-Efficacy and Affecting Factors in Turkish Sample. *Journal of pediatric nursing*, 54, e53–e60. <https://doi.org/10.1016/j.pedn.2020.04.022>
- Hamidi, S., Ewing, R., Sabouri, S. (2020). Longitudinal analyses of the relationship between development density and the COVID-19 morbidity and mortality rates: Early evidence from 1,165 metropolitan counties in the United States. *Health & place*, 64, 102378. <https://doi.org/10.1016/j.healthplace.2020.102378>
- Hull, N., Kam, R. L., Gribble, K. D. (2020). Providing breastfeeding support during the COVID-19 pandemic: Concerns of mothers who contacted the Australian Breastfeeding Association. *Breastfeeding Review*, 28(3), 25-35.
- Koskinen, K. S., Aho, A. L., Hannula, L., Kaunonen, M. (2014). Maternity hospital practices and breast feeding self-efficacy in Finnish primiparous and multiparous women during the immediate postpartum period. *Midwifery*, 30(4), 464-470. <https://doi.org/10.1016/j.midw.2013.05.003>
- La Course, S., John-Stewart, G., Adams Waldorf, K. M. (2020). Importance of inclusion of pregnant and breastfeeding women in COVID-19 therapeutic trials. *Clinical Infectious Diseases*, 71(15), 879-881. <https://doi.org/10.1093/cid/ciaa444>
- Latorre, G., Martinelli, D., Guida, P., Masi, E., De Benedictis, R., Maggio, L. (2021). Impact of COVID-19 pandemic lockdown on exclusive breastfeeding in non-infected mothers. *International Breastfeeding Journal*, 16(1), 1-7. <https://doi.org/10.1186/s13006-021-00382-4>
- Lubbe, W., Botha, E., Niela-Vilen, H., Reimers, P. (2020). Breastfeeding during the COVID-19 pandemic—a literature review for clinical practice. *International breastfeeding journal*, 15(1), 1-9. <https://doi.org/10.1186/s13006-020-00319-3>
- Ngo, L. T. H., Chou, H. F., Gau, M. L., Liu, C. Y. (2019). Breastfeeding self-efficacy and related factors in postpartum Vietnamese women. *Midwifery*, 70, 84-91. <https://doi.org/10.1016/j.midw.2018.12.014>
- Piankusol, C., Sirikul, W., Ongprasert, K., Siviroj, P. (2021). Factors Affecting Breastfeeding Practices under Lockdown during the COVID-19 Pandemic in Thailand: A Cross-Sectional Survey. *International Journal of Environmental Research and Public Health*, 18(16), 8729. <https://doi.org/10.3390/ijerph18168729>
- Republic of Turkey Ministry of Health. (2021, October 14). COVID-19 information page 23: Is the disease transmitted to her baby while breastfeeding from a mother with coronavirus? <https://covid19.saglik.gov.tr/TR-75255/23-koronavirus-hastasi-anneden-emzirirken-bebegine-hastalik-bulasir-mi.html> (in Turkish).
- Tokat, M. A., Okumuş, H., Dennis, C. L. (2010). Translation and psychometric assessment of the Breast-feeding Self-Efficacy Scale—Short Form among pregnant and postnatal women in Turkey. *Midwifery*, 26(1), 101-108. <https://doi.org/10.1016/j.midw.2008.04.002>
- UNICEF. Breastfeeding safely during the COVID-19 pandemic. <https://www.unicef.org/coronavirus/breastfeeding-safely-during-covid-19-pandemic> (access date: 01.11.2021)
- Usta, D. Y., Teksin, Z. Ş. (2020). Biopharmaceutics, pharmacokinetics and patent evaluations of drugs used in the treatment of COVID-19: Current status in the development of generic drugs in Turkey. *Gazi Medical Journal*, 31(3A), 498– 509 (in Turkish).
- Wang SS, Zhou X, Lin XG, Liu YY, Wu JL, Sharifu LM, et al. (2020). Experience of clinical management for pregnant women and newborns with novel coronavirus pneumonia in Tongji hospital. *Current medical science*, 40(2), 285–289. <https://doi.org/10.1007/s11596-020-2174-4>
- WHO (2020). Breastfeeding advice during the COVID-19 outbreak. <http://www.emro.who.int/noncommunicable-diseases/campaigns/breastfeeding-advice-during-the-covid-19-outbreak.html> Access Date: November 30, 2020.
- Zhu, H., Wang, L., Fang, C., Peng, S., Zhang, L., Chang, G., et al. (2020). Clinical analysis of 10 neonates born to mothers with 2019-nCoV pneumonia. *Translational pediatrics*, 9(1), 51–60. <https://doi.org/10.21037/tp.2020.02.06>