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The Effect of Breastfeeding Training on Timely Initiation of Breastfeeding in a Baby-Friendly Hospital in Turkey

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ABSTRACT:
Purpose: Although it is known that timely initiation of breastfeeding (TIB) has beneficial effects on newborn and maternal health as well as increasing exclusive breastfeeding for first 6 months, global and regional desired TIB rates have not been reached yet. This study aimed to evaluate the effect of the "Neonatal Baby Service" (NBS) on TIB.
Material and Methods: The descriptive and cross-sectional study was carried out at NBS and obstetrics and gynecology service (OGS) of Aksaray University Training and Research Hospital in Turkey between September 01 and December 31, 2021. A total of 486 newborns who were born between 32-40 weeks, weighed over 2000 g and were not separated from their mothers during the first 2 hours were included in the study.
Results: TIB rate was found 80.5% (n=391). TIB rate were found to be significant as 83.1% (n=296) in the NBS, and 73.1% (n=95) in the OGS (p=0.013). When breastfeeding problem were analysed, it was found to be 46.9% in OGS and 28.9% in the NBS (p<0.001). TIB rates in newborns (92.6%) born by normal vaginal mode were significantly higher than the other groups (p<0.001). The rate of skin-skin contact (SSC) in 0-30 minutes was found to be remarkable as 59.6% in the NBS and 33.8% in the OGS (p<0.001).
Conclusions: It was shown that the NBS service, which only focuses on newborns during the period from delivery to discharge in the hospital, increases the rates of SCC and TIB.
Keywords: *Timely initiation of breastfeeding (TIB); Skin-skin contact (SSC); Exclusive breastfeeding; Early initiation; Breastfeeding problem*

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INTRODUCTION

Breast milk is undoubtedly the main nutrient that protects newborns/infants from infections such as gastrointestinal and pulmonary infections and also mortality, strengthens their immune systems, provides the relationship between mother as well as ensures healthy growth and development of newborn/infants from birth (Yalcin et al., 2021). World Health Organization (WHO) recommends that exclusive breastfeeding for the first 6 months, and should be continued with complementary feeding after the 6th month, at the age of 2 and beyond (Demirtas and Erdal, 2020; Yalcin et al., 2021). It is recommended that breastfeeding, which is beneficial for both maternal and newborn health, should start within half an hour or at the latest within an hour after birth that is timely initiation of breastfeeding (TIB) (UNICEF, 2016).

TIB is one of the factors affecting exclusive breastfeeding for the first 6 months, and it also reduces neonatal deaths (Yalcin et al., 2021; Demirtas and Yalcin, 2022). In studies comparing TIB with breastfeeding after 24 hours, it was found that the risk of death increased by 2 to 2.4-fold in newborns who started breastfeeding late (Smith et al., 2017; Teshale and Tesema, 2021). Despite these

vital advantages of TIB, only around 42-45% of newborns globally can benefit from TIB practice. TIB ratios were determined between 40-45% in Central Africa, East Asia, Pacific and South Asia regions, 49% in Latin America and Caribbean, and 59% in southern and eastern Africa (UNICEF, 2016). TIB ratios in Turkey are stated as 49.9% and 71% in the 2013 and 2018 report of the Turkish Demographic and Health Survey (TDHS), respectively (HÜNEE, 2014; HÜNEE, 2019). TIB and breastfeeding rates of Turkey have been increased by the 10 steps to successful breastfeeding and the International Code of Marketing of Breastmilk Substitutes program, which are the main two component of Baby-Friendly Health Facilities (BFHF) Program (Çaylan et al., 2019).

The majority of the care and follow-up of the newborns who are not admitted to the neonatal intensive care unit in Turkey is carried out by midwives/nurses working in the obstetrics and gynecology service (OGS). Neonatal baby service (NBS) departments that deal only with the care and follow-up of newborns are located in a few centres around the country. In this current study, the effect of the "Neonatal Baby Service" established to make the BFHF program more successful at Aksaray University Training and Research Hospital, which has a newborn-friendly hospital certificate, on the TIB will be investigated.

MATERIAL and METHODS

Study design

The descriptive and cross-sectional study was carried out between September 01 and December 31, 2021 at Aksaray University Training and Research Hospital in Turkey. The study was planned to cover between November-December period after the NBS was established, and September-October period when OGS that serves both newborns and mothers.

The NBS department was planned to work with 24/7 duty to be responsible for all stages of the newborn (such as breast-feeding, skin-to-skin contact, breastfeeding problems, newborn heel prick test (Guthrie test), critical congenital heart disease screening, newborn follow-up) from the birth of the newborn to the discharge from the hospital. The nurses who will start their duties here received theoretical and practical training on WHO's breastfeeding recommendations and practices (WHO, 2020) during a 10-day program.

Study sample

The newborns who were born between 32-40 weeks gestational age, over the 2000 g and who were not separated from their mothers for more than 2 hours due to any condition or illness were included in the study. Newborns born with a weight of less than 2000 g, born before 32 weeks, hospitalized in the neonatal intensive care unit in the first 2 hours were not included in the study. Newborns of mothers who were taken into surgery/medical intervention after birth due to the mother's existing illness, had to be separated from their newborn for the first 2 hours due to health conditions were not included in the study. In addition, the newborns of mothers who refused to care of the newborn were not included in the study.

The study was carried out on a total of 486 newborns, including 356 newborns cared for by the NBS and 130 newborns cared for by the OGS. A total of 163 newborns, including 138 newborns in the OGS as well as 25 newborns in the NBS whose file information was missing or could not be found, and whose anamnesis and demographic information were not fully entered, were excluded from the study.

Data Collection

The study data were examined based on the newborn and mother information contained in the patient file form prepared for the NBS. The information of the newborns in the OGS was taken from the newborn information form contained in the mother's file. The age of the mother, gravida, whether she had a disease condition (Gestational Diabetes Mellitus/ Diabetes Mellitus (GDM/DM), Preeclampsia, Hypertension (HT)), the delivery mode (caesarean (C/S), normal vaginal) were asked. About the newborn, gestation week, birth weight, sex, small for gestational age (SGA), large for gestational age (LGA), diabetic mother newborn (DMB) and hypoglycaemia status were questioned.

Regarding breastfeeding, when the newborn was breastfed (which 0-30 minute, 30-60 minute, and

after 60 minute); the state of giving/not giving formula and if the formula was given to the newborn why is given; whether breastfeeding is successful, if not, why not (nipple problems, the newborn's health condition, empty breast, insufficient human milk (HM), the status of the newborn's illness, the mother's drug use and desire to breastfeed skin-to-skin contact (SSC) status (0-30 minute, 30-60 minute, and after 60 minute) were questioned.

We used the APGAR and LATCH score. The APGAR score is used within the neonatal resuscitation program and provides the evaluation of the newborn at the 1st and 5th minutes. The Apgar score includes the newborn's colour, heart rate, reflexes, muscle tone and respiratory rate. Each item is scored as 0 (zero), 1 or 2. Latch assessment tool has been developed to objectively diagnose breastfeeding, detect breastfeeding problems, plan breastfeeding education and create the same language for health professionals. LATCH stands for the English expressions of these steps. These evaluation steps are ''L=Latch on breast'', ''A=Audible swallowing'', ''T=Type of nipple'', ''C=Comfort of the mother regarding the breast and nipple (Comfort breast/nipple)'' is expressed as ''H= Hold the baby position''. Items in the scale are scored as 0-1-2. The highest score that can be obtained from the scale is 10, and the lowest score is 0 (Jensen et al., 1994).

Ethics

This study has been carried out in accordance with the Code of Ethics of the World Medical Association. This survey was approved by ethical committee of Aksaray University (Number: 2022 / 01-12).

Statistical analysis

In this study we analysed the data with the SPSS v. 22.0 (IBM, USA) program. The Shapiro–Wilk test was performed to determine the distribution patterns of the variables. Categorical variables were presented as number or percentages. The relationship between two quantitative parametric variables was evaluated with Pearson correlation. The student's t test was used to compare continuous variables between the two groups, as appropriate. The Chi-square test was used in group comparisons of nominal variables. Binary logistic regression analyses test was used for the comparison of data. A p value of less than 0.05 was considered as statistically significant.

Results

Of the total 486 newborns evaluated in the study, 73.3% (n=356) of them received their first care from the NBS and 26.7% (n=130) in the OGS. The mean age of the mothers was 26 ± 5.4 years. It was the first pregnancy of 25.7% (n=125) of the mothers, the second pregnancy of 30% (n=146), the third pregnancy %26.7 (n=130) and the fourth and more pregnancy %17.5 (n=85). Of the newborns included in the study, 54.7% (n=266) were male and 45.3% (n=220) were female and other information of newborn and mother is summarized in Table 1.

There was no significant difference between the maternal age, number of pregnancies and gestational week between NBS and OGS groups (p=0.459, 0.084, 0.390, respectively). LATCH score was found to be significant as 9.1 ± 1.1 in the NBS group and 7.5 ± 0.99 in the other group (p<0.001) and similarly in 1. and 5. minute APGAR scores was found significant in both groups (p=0.022, p=0.012, respectively). When we evaluated in terms of service units, the rate of SSC in 0-30 minutes was found to be significant as 59.6% (n=212) in the NBS and 33.8% (n=44) in the other service (p<0.001). In addition, from the point of view of breastfeeding problems faced by mothers, 33.7% of mothers (n=164) encountered breastfeeding problems and this situation was evaluated between the two services, it was found remarkable that the breastfeeding problem rate in the OGS was 46.9% (n=61) and in the NBS was 28.9% (n=103) (p<0.001) (Table 2).

40.7% (n=198) of the newborns in the study were breastfed within the first half hour; the rate of starting breastfeeding within 0-30 minutes was found to be significant as 46.6% in the NBS and 24.6% in the gynecology obstetric service (p<0.001). In this study TIB rate in the study was 80.5% (n=391). When we examined at the TIB rate were found to be significant as 83.1% (n=296) in the NBS, and 73.1% (n=95) in the other service (p=0.013). TIB rates according to the mode of delivery were examined, it was found that 92.6% (n=239) of newborns born by

normal vaginal way were breastfed within the first hour, and this rate was 63.2% in planned C/S and 68.1% in emergency C/S groups. (p<0.001) (Table 3).

When the factors (mother's illness status, the mode of delivery, 1th and 5th minute APGAR score, number of pregnancies and service departments) affecting the TIB are examined by binary logistic regression analysis, the service group, the mother's illness status, gestational week, the mode of delivery and 1th minute APGAR score was found to be effective (p<0.001, p=0.002, p<0.001, p<0.001, p=0.006, respectively) (Table 4).

Table 1. Sociodemographic information and general characteristics of participants

Features	Subgroups	Number	%
Mother's illness status	Healthy	368	75.7
	GDM/DM*	55	11.3
	Preeclampsia	43	8.8
	HT	20	4.1
Delivery mode	Normal vaginal	258	53.1
	Planned C/S	68	14
	Emergency C/S	160	32.9
Gestational week classification	37-40 week	351	72.2
	34-36 week	124	25.5
	32-33 week	11	2.3
Gender	Male	266	54.7
	Female	220	45.3
Service Group	NBS¥	356	73.3
	OGS£	130	26.7
Gravida	1	125	25.7
	2	146	30
	3	130	26.7
	≥4	85	17.5
Starting Breastfeeding	0-30 minute	198	40.7
	30-60 minute	193	39.7
	60 minute and beyond	95	19.5
SCC$^{\pi}$	0-30 minute	256	52.7
	30-60 minute	145	29.8
	60 minute and beyond	85	17.5
Starting Formula	Yes	149	30.7
	No	337	69.3
Breastfeeding Problem	Yes	164	33.7
	No	322	66.3
Breastfeeding Problem Cause	Nipple problems	58	11.9
	Dry breast/Insufficient HM$^{\beta}$	14	2.9
	Drugs used by mother	5	1.1
	Newborn's disease	31	6.4
	Mother reluctant	56	11.5
	No	322	66.3
Feature	**Mean ± Std. Deviation**	**Min-Max**	
Age (year)	26.7 ± 5.41	16-41	
Gestational week (week)	37.6 ± 2.2	26-41	
Birth weight (g)	3182 ± 516	2030-4390	
1st minute APGAR	8.85 ± 0.82	4-10	
5th minute APGAR	9.79 ± 0.51	7-10	
LATCH score	8.67 ± 1.31	5-10	

*GDM/DM= Gestational Diabetes Mellitus/ Diabetes Mellitus, ¥NBS=Neonatal Baby Service, £OGS= Obstetrics and Gynecology Service, $^{\pi}$SCC= Skin-to-Skin Contact, $^{\beta}$HM=Human Milk

Table 2. Evaluation of newborn, mother and breastfeeding characteristics between NBS and OGS

Features	Neonatal Baby Service (n=356)	Obstetrics and Gynecology service (n=130)	p
Mother's features n %			
Mother's illness status			
Healthy	263 (73.9)	105 (80.8)	
GDM/DM*	41 (11.5)	14 (10.8)	0.24
Preeclampsia	34 (9.6)	9 (6.9)	
HT	18 (5.1)	2 (1.5)	
Age	26.6 ± 5.45	27 ± 5.32	0.46
Gravida	2.37 ± 1.1	2.60 ± 0.88	0.084
Delivery mode			
Normal vaginal	191 (53.7)	67 (51.5)	
Planned C/S	47 (13.2)	21 (16.2)	0.707
Emergency C/S	118 (33.1)	42 (32.3)	
Newborn's features n %			
Gestational week			
37-40week	262 (73.6)	89 (68.5)	
36-34 week	87 (24.4)	37 (28.5)	0.479
32-33 week	7 (2)	4 (3.1)	
Gender			
Male	197 (55.3)	69 (53.1)	0.658
Female	159 (44.7)	61 (46.9)	
1st minute APGAR	8.92 ± 0.79	8.67 ± 1.18	**0.022**
5th minute APGAR	9.84 ± 0.43	9.68 ± 0.68	**0.012**
Breastfeeding Features n %			
LATCH score	9.1 ± 1.13	7.5 ± 0.99	**<0.001**
Breastfeeding problem			
Yes	103 (28.9)	61 (46.9)	**<0.001**
No	253 (71.1)	69 (53.1)	
Starting Formula			
Yes	91 (74.4)	58 (44.6)	**0.001**
No	265 (25.6)	72 (55.4)	
SGA[¥]/LGA[£]/Hypoglycemia			
Yes	53 (14.9)	33 (25.4)	**0.007**
No	303 (85.1)	97 (74.6)	
Starting Breastfeeding			
0-30 minute	166 (46.6)	32 (24.6)	
30-60 minute	130 (36.5)	63 (48.5)	**<0.001**
60 minute and beyond	60 (16.9)	35 (26.9)	
SCC[π]			
0-30 minute	212 (59.6)	44 (33.8)	
30-60 minute	93 (26.1)	52 (40)	**<0.001**
60 minute and beyond	51 (14.3)	34 (26.2)	

*GDM/DM= Gestational Diabetes Mellitus/ Diabetes Mellitus, [¥]SGA=Small Gestational Age, [£]LGA=Large Gestational Age, [π]SCC= Skin-to-Skin Contact

Table 3. Analysed of the factors affecting the TIB rate

Features	TIB* 0-60 minute (n=391)	TIB 60 minute and beyond (n=95)	p
Service Group			
NBS[¥]	296 (83.1)	60 (16.9)	**0.013**
OGS[£]	95 (73.1)	35 (26.9)	
Delivery mode			
Normal vaginal	239 (92.6)	19 (7.4)	
Planned C/S	43 (63.2)	25 (36.8)	**<0.001**
Emergency C/S	109 (68.1)	51 (31.9)	
Gestational week			
37-40 week	316 (90)	35 (10)	
36-34 week	73 (58.9)	51 (41.1)	**<0.001**
32-33 week	2 (18.2)	9 (81.8)	
Gender			
Male	213 (80.1)	53 (19.9)	0.818
Female	178 (80.9)	42 (19.1)	
Skin-to-skin contact (SCC)			
0-30 minute	244 (95.3)	12 (4.7)	
30-60 minute	145 (100)	0 (0)	**<0.001**
60 minute and beyond	2 (2.4)	83 (97.6)	

*TIB= Timely Initiation of Breastfeedin (The data for 0-30 minutes and 30-60 minutes were combined). [¥]NBS=Neonatal Baby Service, [£]OGS= Obstetrics and Gynecology Service

Table 4. Logistic regression analysis of factors affecting TIB.

Variable	Regression Factor	Standard Error	p	Odds Ratio	95% CI
Service Group (NBS)	1.43	0.29	**<0.001**	4.18	2.36-7.38
Mother's disease (+)	-0.52	0.17	**0.002**	0.60	0.43-0.83
Gravida	-0.14	0.12	0.248	0.87	0.69-1.10
Gestational week	1.19	0.30	**<0.001**	3.28	1.82-5.90
Delivery mode	1.94	0.19	**<0.001**	6.93	4.72-10.18
Gender (male)	0.14	0.25	0.563	1.15	0.72-1.87
1st min. APGAR	-0.65	0.24	**0.006**	0.52	0.33-0.83
5th min. APGAR	0.05	0.37	0.902	1.05	0.50-2.18

DISCUSSION

In the current study, we found that our TIB rates were 80.5% in general and %83.1 in NBS (p=0.013). The most important result of our study was that we had a TIB rate of 92.6% in normal vaginal births and 93.7% in the NBS (p<0.001). Our SSC rate was 52.7% in the first half-hour, and while it was 59.6% in the NBS, we found this rate to be 33.8% in the OGS (p<0.001). The rate of breastfeeding problem was found in OGS was 46.9% (n=61) and in the NBS was 28.9% (p<0.001).

WHO emphasized TIB and made recommendations on its implementation, as well as classified early breastfeeding as poor (0-29%), fair (30-49%), good (50-89%) and very good (90-100%) (UNICEF, 2016; Demirtas and Erdal, 2020). Although the TIB rates highlighted by WHO vary globally and regionally, they are generally included in the poor and fair category. While the TIB rate is 32% in Iran, 23% in India, 8.5% in Pakistan, this rate is in the good

category with 71% in Turkey (WHO, 2020). In this study, we had a higher TIB rate of 83.1% in newborns in the NBS than globally and regionally (p=0.013). We attributed the increase in TIB rates in our clinic within the 2-month period to the presence of a unit that only deals/deals with newborns and the NBS team's sensitive approaches to TIB and breastfeeding.

The first few hours of the newborn after birth is a sensitive period that can affect the health of the newborn in the short and long term, and it is necessary to support the newborn during this period not only by providing physiological conditions, but also in a psychological and medical perspective (Demirtas and Yalcin, 2022, Yalcin et al., 2021). Ensuring a quality, at least one hour of SSC has positive effects for both the newborn and his/her mother. In addition to providing positive interaction with the newborn on the mother, SSC initiates the secretion of the hormone oxytocin, which provides the flow/secretion of human milk, creates the caregiving / protective behaviours of the mother and ensures the contraction of the uterus (Pohl et al. 2019). SSC also plays an important role in providing thermoregulation from hypothermia, which poses a risk to newborns in the first hours, physiological cardio-pulmonary stability and protection from hypoglycemia states (Alebel et al., 2017; Ionio et al., 2021, Demirtas and Erdal, 2020). It was found that postnatal stress and crying in newborns who were not treated with SSC after birth were 90% higher than those in babies with SSC (Christensson et al., 1995). SSC has effects on the creation and maintenance of microbiota, which is shown as a secondary brain and is an important factor of immunity, as well as on increasing cognitive capacity in later childhood years and affecting lifelong health status (Hendricks-Munoz et al., 2015). The SSC rate varies regionally and globally. In studies conducted on SCC, Allen et al. (2019) found it to be 70.4% in Australia, and Mukherjee et al. (2020) in India found it to be 62.2%. In our study, a total of 52.7% of newborns were SCC with the mother in the first 30 minutes and, we found that there was a significantly higher SCC rate in the NBS with 59.6% compared to the other group (p<0.001).

Conditions that have negative effects on maternal health, such as uterocervical lacerations, bleeding during delivery, need for blood transfusion also have adverse effects on newborn breastfeeding and SSC (Lai et al., 2015). Tilahun et al. (2016) in their studies conducted in Ethiopia, it was found that the TIB rate was negatively affected by caesarean section in 86% of births (p<0.001). In Turkey, Oflu et al. (2022) in their TIB study, they showed that normal vaginal delivery was 5.03 times more effective (2.75-9.18 95% CI). In parallel with the literature, it was found that the breastfeeding rate, which is 92.6% in normal vaginal births, decreased in C/S (p<0.001). We thought that among the negative factors in the breastfeeding rate in C/S delivery births, the mother's general anesthesia, the cold operating room for the newborn's thermoregulation, the newborn's health status at the first moment, and the lack of professional nurses/midwives who are trained and practical in this field.

Breastfeeding, even if it is a physiological process, support may be required to initiate and continue breastfeeding. Nurses, who are the professional group who spend the most time with the patient in the professional health system, have positive effects on the initiation, maintenance and duration of breastfeeding (Britton et al., 2007; Swerts et al., 2016). As the workload of nurses and the number of patients they care for increases, the mistake rates they make also increase (Demirtas, 2021). Li et al. (2014) in their study, which examined the effect of hospital staff on breastfeeding in Alabama, they showed that there was a 2.1-fold increase (1.41-3.13 95% CI) in TIB rates in uncomplicated births because of trained staff. In the evaluation of the factors affecting the duration of TIB, we found that the NBS increased TIB by 2.36 times (2.36-7.38 95% CI), which was the most remarkable result in our study. Considering the responsibilities of nurses/midwives working in OGS in Turkey regarding both the newborn and the mother, we thought that they could not create enough time for each newborn for a situation such as breastfeeding and SSC that requires one-to-one support and effort. We believe that our breastfeeding and SSC rates have increased with the influence of trained and professional staff who work only newborn-oriented, with a reduced workload.

CONCLUSION

We found that our TIB rates were 80.5% in general and %83.1 in NBS (p=0.013). The most important result of our study was that we had a TIB rate of 92.6% in normal vaginal births and 93.7% in the NBS (p<0.001). We emphasize that TIB rates will be increased with a service with the status of NBS service in the current study. TIB, SSC and care of newborns who are not hospitalized in the neonatal intensive care unit, can only be increased with qualified and trained professional medical staff who are focused just only the newborn. In addition, with the professional care and follow-up that newborns will receive from the moment of birth, unnecessary formula use can also be reduced. Our study is a pioneering study for cohort and multicentre studies in this field.

LIMITATIONS

The study contained some limitations. This study had a prospective single-center design and included a relatively small sample size. Larger prospective studies are needed to confirm these findings, to determine the factors influencing TIB.

Conflict of Interest Statement

The authors declare no conflict of interest.

Authors Contributions

Conception and design of the research: MSD Acquisition of data: CK and MSD. Analysis and interpretation of data: CK. Statistical analysis: MSD. Drafting the manuscript: MSD, CK. Revision of manuscript for important intellectual content: CK and MSD. All authors read and approved the final manuscript

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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 (η2) 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, η^2: 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 (η2=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 (η^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, η^2: 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 breast-feeding 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 Aşcı 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

No potential conflict of interest is reported by the authors.

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Investigation of Awareness of Students on Child Neglect and Abuse and Their Attitudes Towards Reporting Child Neglect and Abuse**

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ABSTRACT:

Purpose: This study aims to investigate the awareness of nursing department students about child neglect and abuse and their attitudes about reporting cases of child neglect and abuse.

Material and Methods: The study was conducted 331 students who agreed to participate in the research were included in the study. The data were collected using the Personal Information Form, The Diagnosis Scale of The Risks and Symptoms of Child Abuse and Neglect and the Healthcare Provider Attitudes Toward Child Maltreatment Reporting Scale. The research data were collected between March-April 2022. The study data were assessed in distribution, numbers, percentages, mean, standard deviation, t-test, one-way analysis of variance, and Person's correlation analysis were used in the data analysis.

Results: 72.2% of the students did not receive any course/training on neglect and abuse, 85.8% did not receive any course/training on forensic nursing, and 66.2% wanted to receive any course/training on forensic nursing. The Diagnosis Scale of the Risks and Symptoms of Child Abuse and Neglect score average of the students participating in the study was 3.66±0.41, and their score average on the Healthcare Provider Attitudes Toward Child Maltreatment Reporting Scale was 67.14±7.47. A significant difference was found between the students' gender, year in school, the status of having received a course/lesson/training on neglect and abuse, and their average scores on The Diagnosis Scale of The Risks and Symptoms of Child Abuse and Neglect and the Healthcare Provider Attitudes Toward Child Maltreatment Reporting Scale.

Conclusion: It was determined that more than half of the students did not receive education on neglect and abuse, they had sufficient knowledge about neglect and abuse, their anxiety about reporting child abuse and neglect was lower and their level of responsibility was higher. Professionals working in the field of health have important duties in the prevention, detection and treatment of abuse and neglect cases. It is recommended to add subjects to improve nurses students' knowledge and attitudes towards diagnosing and reporting neglect and abuse.

Keywords: *Abuse, Attitude, Awareness, Neglect, Student, Reporting*

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INTRODUCTION

All societies perceive the child as the adult of the future and the guarantee of the future and having a healthy society. For this reason, children, who are different from adults in every aspect, exhibit a rapid physical, mental, emotional and psychosocial development, have their own special care needs and are among the primary targets of societies in terms of health protection and promotion (Bozkurt and Erdim 2019; Törüner and Büyükgönenç 2017). Childhood, which has a critical importance in terms of both physiological and psychological development of human beings, is an age that should be paid attention by parents and communities. Positive and negative experiences individuals experience during this period have life-long effects. In this sense, violence and abuse events people experience during childhood must not be ignored (Aktay 2020). Child

maltreatment (abuse and neglect) is a serious problem that has increased recently in the world and in Turkey and may cause permanent harmful effects on its victims (Aktay 2020; Cirik, Ciftcioglu, and Efe 2017). The World Health Organization describes, child abuse or maltreatment as "all types of physical and/or emotional maltreatment, sexual abuse, neglect and commercial or other exploitation that results in actual or potential harm to the child's health, survival, development or dignity" (World Health Organization 2022). Child neglect is defined as actions that can lead to serious health problems, including damage to the development of children and their death, as a result of not meeting their basic needs, such as love, nutrition, shelter, clothing, education, and health (Aktay 2020; Avdibegoviü and Brkiü 2020). WHO reports that approximately 3 out of every 4 (or 300 million) children between the ages of two and four are frequently subjected to are regularly subjected to violence (physical/psychological punishment) by adults, such as their parents/caregivers and that 1 in every 5 women and 1 in every 13 men suffer from sexual abuse by the time they reach the age of 17 (WHO, 2022). Children exposed to abuse and neglect during childhood may suffer from physical, emotional, cognitive, academic, and social problems such as depression, eating disorder, behavioral problems, substance abuse, suicide, anxiety and post-traumatic stress disorders, depression, dissociative symptoms, sexual behavior disorders, low self-esteem, self-blame, hopelessness, fear of rejection, expectation of abandonment, hopelessness, poor peer relationships, academic failure, growth retardation and developmental delay (Aktay 2020; Atencion et al. 2019; Cirik et al. 2017; Kılıç and Özçetin 2018; Selçuk and Karadeniz 2020). Even though reporting child abuse and neglect is a mandatory and legal responsibility in many countries, the majority of abuse and neglect cases are not reported (Turan and Erdoğan 2019). Studies with healthcare professionals, it was determined that the majority of researchers did not report neglect and abuse cases (Cho et al., 2015; Khidir 2021). Studies in the literature have reported that the obstacles in reporting cases of neglect and abuse that apply to the hospital include the fear of losing the patient, fear of going to court, lack of knowledge in diagnosing neglect and abuse, factors related to the reporting process, workload, not having problems with the families of the victims, and considering child abuse/neglect as a family issue (Cho et al., 2015; Elarousy and Abed 2019; Khidir 2021; Selçuk and Karadeniz 2020; Tiyyagura et al. 2015). Nurses have a major role in recognizing child abuse and neglect, identifying risk factors and determining abused children, providing competent and comprehensive nursing care, and reporting cases as they have a greater chance of interacting with children and their families at different levels of health care (Elarousy and Abed 2019; Selçuk and Karadeniz 2020). It is important for the nursing profession that nursing students develop their knowledge and attitudes towards diagnosing and reporting child neglect and abuse. This study purposed to define the awareness of students studying in the nursing department about child maltreatment (neglect and abuse) and their attitudes towards reporting child neglect and abuse.

MATERIAL and METHODS

Purpose and Type of the Study

This study aims to analyze the awareness of nursing department students about child maltreatment (neglect and abuse) and their attitudes about reporting cases of child maltreatment (neglect and abuse). This is a descriptive study.

Sampling and participant

The population of the study consisted of 464 students studying in the Faculty of Health Sciences, Nursing Department of a university during the 2021-2022 academic year. No sample selection was used, and the study was completed with 331 (71% of the population) students who could be reached. The questionnaires were administered by the researcher to the students after the purpose of the research was explained between March-April 2022. The data were collected by face-to-face interview technique with the students. Necessary explanations were given to the students and it took approximately fifteen to twenty minutes to complete the relevant forms.

Data Collection Tools

Data were agglomerated using "Personal

Information Form", "Scale of Diagnosis of Symptoms and Risks of child Abuse and Neglect" and "Healthcare Provider Attitudes Toward Child Maltreatment Reporting Scale".

Personal Information Form: The form, which was prepared to determine the demographic datas of the students such as age, gender, and year, consists of 6 questions and was created by the researchers.

The Diagnosis Scale of the Risks and Symptoms of Child Abuse and Neglect (DSRSCAN): The scale was improved by Uysal in 1998. The scale contains of 67 items which are rated using a five-point Likert scale. The scale contains 6 (subscales; "Physical Symptoms of the Abuse and Neglect on the Child": Items 1-20, "Symptoms of Neglect in the Child": Items 21-27 , "Behavioral Symptoms of Neglect and Abuse in Child": Items 14-28,-40-67, "The features of the parents having tendency to abuse and neglect: Items 42-50,-55-60-66, "The features of the children having tendency to be abused and neglected": Items 41-51-54,-56, "Familial Characteristics in Child Neglect and Abuse": Items 57-59,-61-65. The items in the scale are rated as "very true = 5 points", "quite correct = 4 points", "undecided = 3 points", "not quite correct = 2 points", and "not at all correct = 1 point". Items 3, 5, 8, 10, 12, 14, 16, 27, 28, 30, 32, 34, 41, 42, 49, 54, 56, 59, 61 and 63 are reversely coded. However, if all questions in the scale are answered correctly, 335 points are obtained. Evaluation of the scale is based on the mean score, and when the mean score is close to 5, it is interpreted that the level of knowledge is high, those with 3 points and above have a sufficient level of knowledge, and those with less than 3 points do not have a sufficient level of knowledge. In the study conducted by Uysal (1998), the Cronbach's α Coefficient of the scale was computed 0.92 (Uysal, 1998). In this study, Cronbach's α Coefficient was computed as 0.91.

Healthcare Provider Attitudes Toward Child Maltreatment Reporting Scale (HPATCMRS): It was adapted by Singh et al., in 2014 from the 21-item original scale "Teachers' Reporting Attitude Scale for Child Sexual Abuse" (Singh et al., 2017). Adapted to Turkish by Turan and Erdogan. Since the item-total correlation value of a total of 2 items was below 0.20, they were omitted from the scale. The scale with 19 items, is a 5-point Likert type and consists of two subscales: "Reporting Responsibilities" and "Concerns About Reporting". Total Cronbach's α value of the scale was computed as 0.83 (Turan and Erdoğan, 2019). In this study, Cronbach's α Coefficient was computed as 0.64.

Statistical Analysis

The study data were assessed in the IBM SPSS (Version 25.0) statistical software in the computer environment. Since the data showed a normal distribution, numbers, percentages, mean, standard deviation, t-test, one-way analysis of variance, and Person's correlation analysis were used in the data analysis. $P<0.05$ was accepted as statistical significance value.

Ethical Approval

Approval was taken from the Human Researches Health and Sports Sciences (25/02/2022 Protocol No: 02/13) to conduct the study. Then written permission was obtained from the Faculty of Health Sciences. The students who constituted the sample group were informed verbally and only the volunteer students were included in the study.

RESULTS

It was identified that 60.7% of the students within the scope of the research were in the age group of 18-21 years, 71.6% were female and 28.4% were 3rd-year students. 72.2% of the students did not receive any course/training on neglect and abuse, 85.8% did not receive any course/training on forensic nursing, and 66.2% wanted to receive any course/training on forensic nursing (Table 1).

It was found that the difference between the DSRSCAN total score averages according to the age of the students was significant, but the difference between the HPATCMRS total score averages was not significant ($p>0.05$). The difference between the variable of gender and both DSRSCAN and HPATCMRS total mean scores was statistically significant ($p<0.05$).The difference between their both DSRSCAN and HPATCMRS total mean scores in terms of the variable of university year was statistically significant ($p<0.05$, Table 1).

Table 1. Comparison of the Students' Demographic Variables and DSRSCAN and HPATCMRS Mean Scores (N=331)

Demographic Variables	N	%	DSRSCAN Mean± SD	HPATCMRS Mean ± SD
Age				
18-21	201	60.7	242.43±25.93	67.43±07.44
22-25	128	38.7	249.55±28.92	66.54±07.48
26-29	2	0.6	264.00±12.73	76.00±05.66
Test – p			**F=3.174, p=.043**	F=1.947, p=.139
Gender				
Female	237	71.6	247.35±27.89	68.04±06.95
Male	94	28.4	240.17±25.06	64.86±08.26
Test – p			**t=2.173, p=.030**	**t=3.554, p=.000**
University Year				
1st year	88	26.6	237.78±28.70	65.67±07.65
2nd year	78	23.6	237.15±29.21	66.46±07.34
3rd year	94	28.4	247.61±22.12	67.60±07.50
4th year	71	21.4	260.58±22.48	70.01±06.99
Test – p			**F=13.593, p=.000**	**F=3.154, p=.025**
The status of receiving any course/training on neglect and abuse				
Yes	92	27.8	254.75±25.40	67.59±07.32
No	239	72.2	241.68±27.15	66.97±07.54
Test – p			**t=3.993, p=.000**	t=.676, p=.499
The status of receiving any course/training on forensic nursing				
Yes	47	14.2	246.38±26.39	66.85±08.22
No	284	85.8	245,14±27,46	67,19±07,35
Test – p			t=.290, p=,772	t=-.285, p=.776
The status of wanting to take any course /training on forensic nursing				
Yes	219	66.2	246.65±27.03	67,71±07,04
No	112	33.8	242.70±27.68	66,02±08,14
Test – p			t=1.250, p=.212	t=1.961, p=.051

DSRSCAN: *The Diagnosis Scale of the Risks and Symptoms of Child Abuse and Neglect*
HPATCMRS: *Healthcare Provider Attitudes Toward Child Maltreatment Reporting Scale*

Table 2. Distribution of the Students' DSRSCAN and HPATCMRS Mean Scores (N=331)

Scales		Min-max scores the students obtained from the scale	Min-max scores to be obtained from the scale	Mean±SD
DSRSCAN	Physical Symptoms of the Abuse and Neglect on the Child	30-94	19-95	73.00±9.41
	Symptoms of Neglect in the Child	7-35	7-35	27.98±4.83
	Behavioral Symptoms of Neglect and Abuse in Child	23-71	15-75	55.19±6.75
	The features of the parents having tendency to abuse and neglect	20-56	12-60	41.37±6.45
	The features of the children having tendency to be abused and neglected	11-30	6-30	19.52±3.17
	Familial Characteristics in Child Neglect and Abuse	13-40	8-40	28.25±5.10
	Total Score	**117-312**	**67-335**	**245.31±27.27**
HPATCMRS	Reporting Responsibilities	16-46	10-50	39.14±04.79
	Concerns about Reporting	9-42	9-45	28.00±06.22
	Total	37-84	19-95	**67.14±07.47**

It was identified that there is a significant difference between the students' DSRSCAN total score averages according to whether they have taken any course/training about neglect and abuse before, and the difference between their HPATCMRS total mean scores was not significant. There was no statistically significant difference between the total mean scores of both DSRSCAN and HPATCMRS in terms of the status of receiving any course/ training on forensic nursing and the status of wanting to receive any course/ training on forensic nursing (Table 1).

It was appointed that the students' DSRSCAN total mean score was 245.31±27.27, and when the scale was evaluated over the mean score, the mean score was above 3 (3.66±0.41). HPATCMRS total mean score of the students was 67.14±07.47 (Table 2).

A positive and significant correlation was identified between DSRSCAN total mean scores and HPATCMRS total mean scores of the students ($p<0.05$, Table 3).

Table 3. The Students' Results of Correlation Analysis on DSRSCAN and HPATCMRS (N=331)

Scales		HPATCMRS		
		Reporting Responsibilities	**Concerns About Reporting**	**Total HPATCMRS**
DSRSCAN	Physical Symptoms of the Abuse and Neglect on the Child	r=.404 p=.000	r=.231 p=0.000	r=.451 p=0.000
	Symptoms of Neglect in the Child	r=.380 p=0.000	r=.231 p=0.000	r=.383 p=0.000
	Behavioral Symptoms of Neglect and Abuse in Child	r=.385 p=0.000	r=.168 p=0.002	r=.462 p=0.000
	The features of the parents having tendency to abuse and neglect	r=.218 p=0.000	r=.258 p=0.000	r=.146 p=0.008
	The features of the children having tendency to be abused and neglected	r=.139 p=0.012	r=.008 p=0.889	r=.150 p=0.006
	Familial Characteristics in Child Neglect and Abuse	r=.236 p=0.000	r=.074 p=0.180	r=.303 p=0.000
	Total **DSRSCAN**	r=.414 p=0.000	r=.218 p=0.000	r=.446 p=0.000

DISCUSSION

Child maltreatment is a universal problem that has long-lasting effects on the children, their family and future generations and causes serious lifelong consequences (Cirik et al. 2017). In this study, which was conducted to investigate the awareness of the nursing students about child neglect and abuse and their attitudes towards reporting child neglect and abuse, it was determined that the majority of the students did not take any course on neglect and abuse (72.2%), did not receive any course/training on forensic nursing (85.8%) and wanted to receive any course/training on forensic nursing (66.2%). Similar studies conducted with nursing students reported that the majority of the students did not get any training on child neglect and abuse (Ozbey et al. 2018; Uysal, Bozkurt, and Düzkaya 2022). In the literature, studies conducted with nurses (Güner et al., 2016; Tekin and Kılıç, 2020) and healthcare professionals (Salami and Alhalal, 2020; Yükseler, 2020) more than half of the participants did not get any training on neglect and abuse before, the majority of the participants remarked that it is necessary to receive training on abuse and neglect (Güner et al., 2016; Yükseler, 2020). It was identified that the students' DSRSCAN mean score was above 3 (3.66±0.41) and at a sufficient level. In a similar study conducted by Yükseler on healthcare professionals, it was appointed that DSRSCAN total mean score was 3.69±.34 (Yükseler 2020). Similar studies conducted on nursing students reported that the students' child neglect and abuse mean scores were 3.7 ± 0.3 (Ozbey et al. 2018) and 3.45+0.45 (Tek and Karakaş 2021) and their knowledge levels were

moderate/sufficient, which supports the findings of the present study. In a study conducted by Poreddi with nursing students, it was determined that students' knowledge about child maltreatment (abuse and neglec)t was insufficient (Poreddi et al., 2016).

The findings of this study revealed that the age, gender and university year variable of the students affected the status of diagnosing the symptoms and risks of child abuse and neglect. The studies involving nursing students reported that students' gender and university year variables affected their levels of awareness on child maltreatment (neglect and abuse) (Güdek et al., 2019; Tek and Karakaş 2021) but the variable of age did not have any effect (Tek and Karakaş 2021). In similar studies with nursing students, the variables of age (Özçevik et al., 2018; Poreddi et al. 2016) and university year (Özçevik et al. 2018) affected the level of awareness on child maltreatment (neglect and abuse). Similar studies conducted with nursing students in order to define the level of awareness about diagnosing child maltreatment (neglect and abuse) reported that the variable of gender affected the awareness status (Ozbey et al. 2018; Uysal et al. 2022); whereas, the variable of university year did not affect it (Ozbey et al. 2018). There are also studies in the literature that the variable of the university year affected the levels of diagnosing the symptoms and risks of child maltreatment (abuse and neglect) (Burç and Tüfekci 2015; Kaya 2019), which supports the finding of the present study. It was determined in the present study that the status of receiving any course/ training on neglect and abuse affected their level of diagnosis of the symptoms and risks of child abuse and neglect. Similar studies conducted with nursing students in the literature reported that receiving education on child abuse and neglect affected the level of knowledge (Burç and Tüfekci 2015; Güdek Seferoğlu et al., 2019; Kim and Park 2020; Ozbey et al., 2018; Tekin and Kılıç 2020). Unlike, in a study conducted by Bağ and Bozkurt with nurses, it was determined that the status of receiving education on child abuse and neglect did not affect their level of diagnosis of symptoms and risks of child abuse and neglect (Bozkurt and Bağ 2021).

Nurses need to be competent in recognizing, reporting and intervening in child maltreatment (abuse and neglect) in the pediatric population (Overton 2020). In this study, it was identified that the students had lower concerns about reporting child abuse and had higher responsibilities for mandatorily reporting child maltreatment. In the literature, there are studies indicating that healthcare professionals have high (Atencion et al. 2019; Tekin and Kılıç 2020; Yükseler 2020) and low (Alkathiri et al., 2017; Cho et al. 2015; Khidir 2021; Salami and Alhalal 2020) reporting intentions in case of child maltreatment (neglect and abuse). In this study, it was identified that the variables of gender and university year affected the students' attitudes towards reporting child abuse. In a study conducted with healthcare professionals, they reported that the gender of healthcare professionals affected their attitude towards reporting abuse (Al-Saif et al. 2018). In the literature, there are numerous studies reporting that the university year of the students affects the diagnosis of the symptoms and risks of child maltreatment (abuse and neglect) (Burç and Tüfekci 2015; Kaya 2019; Özçevik et al. 2018; Tek and Karakaş 2021). It is thought that the university year of students affects their level of knowledge about diagnosing the symptoms and risks of child maltreatment (abuse and neglect) resulting in changes in their attitudes towards reporting child abuse.

Although reporting all kinds of maltreatment against children is one of the legal responsibilities of healthcare professionals, there are many factors that affect the reporting decision. (Tufford et al. 2021). In this study, it was determined that as the level of awareness of the students toward diagnosing the symptoms and risks of child maltreatment (abuse and neglect) increased, their positive attitudes towards reporting child abuse also increased. The studies have reported that one of the most important factors preventing the reporting of neglect and abuse is the lack of knowledge of healthcare professionals on this issue (Alkathiri et al. 2017; Azizi and Shahhosseini 2017; Elarousy and Abed 2019; Green 2020; Salami and Alhalal 2020). It is stated in the literature that as the level of awareness toward diagnosing the symptoms and risks of child abuse and neglect increases, healthcare

professionals are more likely to develop a positive attitude toward reporting child abuse; however, the elevated levels of awareness has no effect on the actual attitude toward reporting cases (Atencion et al., 2019; Khidir 2021). In addition to increasing the level of awareness to prevent neglect and abuse, other obstacles to reporting these cases (not following the cases, fear of testifying in court, workload, factors related to the reporting process, fear of violation of privacy and confidentiality principles, anxiety of losing the patient, deficiencies in diagnosis of treatment of abuse, uneasiness and lack of experience in preparing abuse report) should be taken under control and nurses should be encouraged to report suspicious cases (Azizi and Shahhosseini 2017; Güner, Yavuz, and Dörtbudak 2016; Selçuk and Karadeniz 2020; Tiyyagura et al., 2015).

CONCLUSION

Child neglect and abuse continues to be the most challenging and important social problem of today's society, which seriously threatens the health and well-being of families and societies, especially children. In this study, it was identified that the students studying in the nursing department had sufficient level of knowledge about diagnosing the symptoms and risks of child maltreatment (abuse and neglect), however, their anxiety about reporting child abuse was lower and their responsibility level was high in reporting child maltreatment. Healthcare professionals have an important role in the prevention, identification, and treatment of abuse and neglect cases. Nurses are considered to be at the forefront of providing care to abused children and essential reporters of child maltreatment. For this reason, it is recommended to add subjects to improve nurses students' knowledge and attitudes towards diagnosing and reporting neglect and abuse.

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Conflict of Interest

We declare that our manuscript has never been published and under consideration in a journal. Authors declare that there are no conflict of interest between them. Also, we note that our manuscript contains original material.

Limitations of the study

This study includes only the students studying in the Faculty of Health Sciences, Department of Nursing. The data obtained in this study are limited to the scales used and the sample group.

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School Burnout and Depression Among Adolescents: A High School Example in Sivas City Center

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ABSTRACT:
Purpose: This study was conducted to determine the relationship between school burnout and depression among adolescent high school students.
Material and Methods: The research employed a descriptive research design. The sample of the study consisted of 402 students enrolled in a public high school during the 2022-2023 academic year. Data were collected using the School Burnout Scale (SBS) and the Beck Depression Inventory (BDI). The data were transferred to the SPSS 22.0 program and analyzed using descriptive statistical analyses, as well as Pearson correlation analysis.
Results: The mean age of the students was 16.18 (SD=4.26), with 47.7% being female students, and 70.6% indicating experiencing career concerns. The mean total score of the SBS for the students was 106.86 (SD=10.46) (min: 34, max: 136), with 73.2% of the students showing no signs of depression and 26.8% exhibiting symptoms of depression. A statistically significant positive correlation was found between age and school burnout. When comparing the mean SBS scores of the participants according to their socio-demographic characteristics, significant differences were found in gender, grade level, maternal education level, paternal education level, income status, place of residence, career concerns, and depression symptom groups according to BDI ($p<0.05$). Male students, 12th-grade students, students whose parents had a middle school education or lower versus those with parents having a high school education or higher, students who described their income status as "low" versus those who described it as "good," students living in a district/village versus those living in the city center, and students indicating experiencing career concerns versus those who did not, all showed statistically significant levels of school burnout. Students with depression symptoms, as measured by the BDI, had higher average scores of school burnout.
Conclusion: Measures should be taken to help the sensitive and vulnerable population of adolescent students cope with school burnout and the risk of depression. Guidance and counseling services that meet the needs of students should be provided consistently by educators and healthcare professionals, and a supportive and safe school environment should be established to address students' emotional needs.
Keywords: *Adolescent, school, burnout, depression*

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INTRODUCTION

Burnout is defined as "emotional exhaustion, depersonalization, and a sense of low personal accomplishment observed in individuals who are in intense relationships with others as part of their work." Burnout, which occurs when an individual depletes their physical, mental, social, emotional, or economic resources, leads to numerous biopsychosocial problems. Physical problems caused by burnout include fatigue, headaches, sleep disorders, weakened immune system, loss of appetite, gastrointestinal problems, cardiovascular problems, and skin diseases. Psychosocial problems caused by burnout include irritability, anxiety disorders, decreased self-confidence, hostility, indifference, deterioration in relationships, depression, feelings of guilt, helplessness, job dissatisfaction, and decreased academic

performance (Maslach and Jackson, 1986; Maslach et al., 2001). Burnout is commonly observed among professionals working in fields such as health and education, including teachers, caregivers, and healthcare workers. However, burnout is also frequently encountered among students in the school environment. School burnout is defined as a state of tension observed when a student or others cannot meet educational expectations (Salmela-Aro et al., 2009; Barnett and Flores, 2016). The causes of school burnout can be complex and multifaceted. Factors such as high achievement expectations, intense academic demands (such as exams, assignments, and project work), competition in the school environment, peer pressure, time management problems, inadequate social support, ineffective communication, physical health problems, sleep problems, and irregular eating habits can all contribute to feelings of burnout in students (Salmela-Aro et al., 2009; Barnett and Flores, 2016; Çam and Öğütülmüş, 2019). School burnout is a prevalent problem among adolescent high school students and can be associated with the characteristics of the adolescent period. The adolescent period is a phase of rapid development, change, exploration, and experimentation (WHO, 2014). During this period, individuals need to complete their physical, sexual, emotional, cognitive, and social development in a healthy manner in order to become productive in biological and societal terms, establish their own values and goals, and be capable of taking responsibility for their lives (WHO, 2014). However, adolescents may experience significant levels of stress, academic expectations, excessive work demands, and continuous and intense stress caused by emotional exhaustion while they are in the process of exploring their identities, determining their values and goals. This can trigger the emergence of mental health problems. At this point, students may also face symptoms of depression, such as feelings of failure, hopelessness, worthlessness, and loss of interest (Özhan and Yüksel, 2021).

Depression is defined as a state of low mood characterized by symptoms such as decreased appetite or overeating, insomnia or excessive sleeping, lack of energy and fatigue, decreased self-esteem, difficulty concentrating and making decisions, and feelings of hopelessness (APA, 2013). Research has shown that depression is a common disorder among adolescents and that there is a close relationship between adolescent depression and personal, social, familial, and academic experiences (Eskin et al., 2008; Bodur and Küçükkendirci, 2009). In a study, the prevalence of depression among students aged 16-18 was found to be 26.2% (Bostancı et al., 2005). Depression depletes students' energy, reduces their motivation and overall life satisfaction. Diminished self-confidence and self-esteem can exacerbate the severity of depression. There is a mutual relationship between school burnout and depression. School burnout can increase the risk of depression, and depression can further deepen school burnout (Salmela-Aro et al., 2009; Çam and Öğütülmüş, 2019). Preventing and managing school burnout and depression in adolescent students, who are considered a vulnerable and at-risk group, is of utmost importance. Insufficient preventive interventions and delayed diagnosis can lead to the deepening and intractability of the situation. Therefore, it is crucial for both educators and healthcare professionals to be aware of the symptoms of school burnout in students, make timely diagnoses, and take necessary measures. Strategies such as stress management techniques, maintaining balance, effective time management, and creating a supportive environment can help prevent school burnout and cope with depression. The provision of effective guidance and counseling services is essential in raising awareness among students about self-awareness, clarifying their goals, and seeking professional help when needed (Salmela-Aro et al., 2009; Seçer and Gençdoğan, 2012; Demir, 2015; Özgen, 2016; Deniz and Karbeyaz, 2018). At this point, the first step is to determine the relationship between school burnout and depression in students based on their age and developmental stage. The obtained data can be used to contribute to the development of interventions that prioritize students' needs.

MATERIAL and METHODS

Purpose and Type of the Study

This study, which is of descriptive research type, was conducted to determine the relationship between school burnout and depression among adolescent high school students.

Sampling and participant

The research was carried out in a high school located in the Central Anatolia Region of Turkey during the 2022-2023 academic year. The population of the study consisted of 841 students enrolled in a public high school during the 2022-2023 academic year. With the known population, the sample size was calculated to be 386 with a 95% confidence level (α=0.05 error) using the formula for examining the frequency of occurrence. Then, a certain number of students were selected from each grade using simple random sampling method to be included in the research. The sample of the study consisted of 402 students who were willing to participate and completed the data collection tools accurately.

Data Collection Tools

The data for the study were collected using the Personal Information Form, the School Burnout Scale, and the Beck Depression Inventory.

Personal Information Form

This form, prepared by the researchers, consists of 17 questions. The form includes questions to determine some socio-demographic characteristics of the participants (age, grade, marital status, income status).

School Burnout Scale (SBS)

The scale was developed by Aypay (2012) to determine the level of school burnout in secondary school students. It is a 4-point Likert-type scale consisting of 34 items and 7 subscales (rated on a scale of 1- "Strongly Disagree" to 4- "Strongly Agree"). The subscales of the scale include lack of interest in school (6 items), exhaustion from studying (6 items), exhaustion from family-related factors (5 items), exhaustion from homework (5 items), frustration and boredom from teacher attitudes (4 items), need for rest and recreation (4 items), and feelings of inadequacy at school (4 items). Higher scores on each subscale indicate a higher level of burnout in that specific area. The scale also provides a total burnout score. The Cronbach's Alpha internal consistency coefficient for the scale subscales ranges from 0.67 to 0.86. In this study, the Cronbach's Alpha coefficient was calculated as 0.91.

Beck Depression Inventory (BDI)

The Beck Depression Inventory was developed to assess individuals' risk of depression and quantify the severity of depression in an objective manner (Beck et al., 1961). The scale is a self-report measure used to assess cognitive, emotional, somatic, and motivational symptoms commonly seen in depression. The validity and reliability study of the Turkish version of the scale was conducted by Hisli in 1988. The Beck Depression Inventory is a 21-item 4-point Likert-type scale. Scores on the scale range from 0 to 63. For each of the 21 symptom categories, four response options ranging from 0 to 3 are available. The cutoff score for the scale is set at 17, and scores above 17 indicate the presence of depression. The scale has a Cronbach's Alpha coefficient of 0.80, and the test-retest reliability coefficient is 0.74 (Hisli, 1988). In this study, the Cronbach's Alpha coefficient was calculated as 0.82.

Statistical Analysis

The statistical analyses were conducted using SPSS for Windows 22.0 (IBM Corp., 2013) statistical software package. Descriptive statistical analyses (mean, standard deviation, frequency, minimum, maximum) were performed on the data, and parametric tests such as independent samples t-test, one-way ANOVA, Pearson chi-square test, and Pearson correlation analysis were used to evaluate the relationships between variables. The results were interpreted at a 95% confidence interval, with statistical significance set at $p < 0.05$ level in a two-tailed manner.

Ethical Approval

Institutional approval for conducting the research was obtained prior to the commencement of the study. Participants were provided with relevant information about the subject and purpose of the research. Data collection instruments were administered to participants who agreed to participate in the research online.

RESULTS

The average age of the students is 16.18 (4.26), and 47.7% of them are female. 37.3% of the students are in the tenth grade, and 81.0% come from nuclear families. Moreover, 89.0% of the students live in the city center. Regarding the parents' education levels, 39.3% of the mothers and 31.3% of the fathers have completed middle school or lower. In terms of income status, 45.2% of the students define it as "moderate". Additionally, 70.6% of the students express experiencing career anxiety.

The average scores for the School Burnout Scale (SBS) and its sub-dimensions among the students are as follows: total SBS score is 106.86 (10.46), lack of interest in school is 6.18 (3.06), exhaustion from studying is 5.16 (2.18), exhaustion from family-related factors is 8.26 (3.46), exhaustion from homework is 8.78 (3.24), frustration and boredom from teacher attitudes is 9.40 (3.10), need for rest and recreation is 11.04 (4.18), and feelings of inadequacy at school is 10.82 (4.60) (Table 1). When examining the distribution based on the presence of depressive symptoms according to the Beck Depression Inventory (BDI), it is determined that 73.2% of the participants do not exhibit depressive symptoms, while 26.8% have depressive symptoms (Table 1).

A statistically significant positive relationship is found between the age of the students and the total SBS score and sub-dimension scores ($p < 0.05$; Table 2).

Table 1. Mean total and sub-dimension scores of SBS and distribution according to BDI (n=402)

SCALE TOTAL and SUB-DIMENSION	Scale Min – Max Score	m (sd)
sbs		
Lack of interest in school	**6-24**	6.18 (3.06)
Exhaustion from studying	**6-24**	5.16 (2.18)
Exhaustion from family-related factors	**5-20**	8.26 (3.46)
Exhaustion from homework	**5-20**	8.78 (3.24)
Frustration and boredom from teacher attitudes	**4-16**	9.40 (3.10)
Need for rest and recreation	**4-16**	11.04 (4.18)
Feelings of inadequacy at school	**4-16**	10.82 (4.60)
Total	**34-136**	106.86 (10.46)
BDI	**n (%)**	
No depression symptoms	294 (73.2)	
Yes depression symptoms	108 (26.8)	
Total	**402 (100.0)**	

Abbreviations: SBS, School Burnout Scale; BDI, Beck Depression Inventory; m, mean; sd, standard deviation

Table 2. The correlation between the mean total and sub-dimension scores of the SBS and the age of the participants (n=402)

SBS	Age	
	r	p
Lack of interest in school	0.258	**0.000**
Exhaustion from studying	0.486	**0.000**
Exhaustion from family-related factors	0.346	**0.000**
Exhaustion from homework	0.368	**0.000**
Frustration and boredom from teacher attitudes	0.482	**0.000**
Need for rest and recreation	0.310	**0.000**
Feelings of inadequacy at school	0.208	**0.000**
Total	0.664	**0.000**

Abbreviations: SBS, School Burnout Scale; BDI, Beck Depression Inventory; r, Pearson corelation coffient

In terms of the participants' sociodemographic characteristics, significant differences are observed in the average SBS scores based on gender, grade level, mother's education level, father's education level, income status, place of residence, career anxiety, and presence of depressive symptoms

according to BDI ($p < 0.05$). Male students, students in the twelfth grade, students with mothers who have a middle school education or lower, students with fathers who have a middle school education or lower, students with a "low" income status, students living in rural areas, students experiencing career anxiety, and students with depressive symptoms according to BDI exhibit significantly higher levels of school burnout ($p < 0.05$; Table 3).

When comparing the presence of depressive symptoms according to BDI based on the participants' sociodemographic characteristics, significant differences are observed in terms of gender, grade level, mother's education level, income status, place of residence, and career anxiety ($p < 0.05$). Male students, students in the twelfth grade, students with mothers who have a middle school education or lower, students with a "poor" income status, students living in rural areas, and students experiencing career anxiety exhibit significantly higher levels of depressive symptoms according to BDI ($p < 0.05$; Table 3).

Table 3. Mean scale scores according to some variables (n=402)

Characteristics	SBS	BDI	
	Total m (sd)	No depression symptoms n (%)	Yes depression symptoms n (%)
Gender			
Female (n=192)	82.20 (4.28)	92 (47.9)	100 (52.1)
Male (n=210)	96.48 (6.16)	82 (39.0)	128 (61.0)
	[1]p= 0.036	**[3]p= 0.040**	
Grade			
9. grade(n=118)	82.26 (5.44)	98 (83.0)	20 (17)
10. grade(n=150)	86.82 (6.62)	116 (77.3)	34 (22.7)
11. grade (n=102)	94.06 (5.70)	16 (15.6)	86 (84.4)
12. grade (n=32)	94.40 (5.48)	8 (25.0)	24 (75.0)
	[2]p= 0.000	**[3]p=0.032**	
Family Type			
Nuclear family (n=326)	86.06 (6.48)	216 (66.2)	110 (33.8)
Extended family (n=76)	87.82 (5.20)	68 (89.4)	8 (10.6)
	[1]p= 0.342	[3]p=0.086	
Maternal Education Level			
Middle school or below (n=158)	83.38 (6.68)	62 (39.2)	96 (60.8)
High school or above(n=244)	88.12 (6.40)	218 (89.3)	26 (10.7)
	[1]p=0.000	**[3]p= 0.028**	
Paternal Education Level			
Middle school or below (n=126)	80.19 (6.06)	84 (66.6)	42 (33.4)
High school or above (n=276)	87.10 (6.14)	206 (74.6)	70 (25.4)
	[1]p= 0.000	[3]p=0.051	
Income Level			
Low (n=112)	96.02 (6.12)	16 (14.2)	96 (85.8)
Medium (n=182)	96.18 (5.48)	85 (46.7)	97 (53.3)
High (n=108)	93.10 (6.20)	87 (80.5)	21 (19.5)
	[2]p= 0.046	**[3]p=0.018**	
Place Live			
Urban(n=358)	90.24 (4.40)	290 (81.0)	68 (19.0)
Rural (n=44)	94.18 (5.12)	8 (18.1)	36 (81.9)
	[1]p= 0.0420	**[3]p=0.048**	
Career Concern			
Yes, I have (n=284)	94.02 (5.08)	84 (29.5)	200 (70.5)
No, I haven't (n=118)	85.46 (4.18)	97 (82.2)	21 (17.8)
	[1]p= 0.000	**[3]p=0.026**	
BDI			
No depression symptoms (n=294)	80.12 (6.12)		
Yes depression symptoms (n=108)	96.08 (5.10)		
	[1]p= 0.000		

Abbreviations: SBS, School Burnout Scale; BDI, Beck Depression Inventory; m, mean; SD, standard deviation; [1]Independent samples t-test, [2]One-Way ANOVA test, [3]Pearson chi-square test.

DISCUSSION

Students may face various challenges at every stage of education. In high school years, factors such as entering adolescence, increased academic responsibilities, and intense concerns about their future can increase the risk of school burnout. Therefore, it is important to investigate the problems associated with school burnout during high school years (Koçak & Seçer, 2018). This study aims to address the relationship between school burnout and depression among adolescent high school students. In this section, the findings will be compared with the literature to contribute to existing research. Existing studies in the literature indicate that depression predicts school burnout (Çapri & Sönmez, 2013; Seçer, 2015; Salmela-Aro et al., 2017; Koçak & Seçer, 2018), school burnout can lead to depression (Fiorilli et al., 2017; Salmela-Aro et al., 2017), and there is a relationship between academic failure, low grade point average, and depression (Undheim & Sund, 2005). The relationship between school burnout and depression is negatively associated with students' psychosocial well-being, and positively associated with school absenteeism and dropout (Çam et al., 2014). In this study, students with depressive symptoms according to the Beck Depression Inventory (BDI) had higher average scores of school burnout. Based on the data, it can be said that school burnout can have an impact on depression due to its nature of emotional exhaustion, depersonalization, and feelings of low accomplishment. In this regard, depression can be considered a significant risk factor for school burnout in adolescents.

Findings in the literature show that there are relationships between depression, school burnout, and gender. However, it is difficult to draw a definitive conclusion from these findings. Gender can be considered as a variable in the relationship between both depression and school burnout. In our study, male students had higher levels of depressive symptoms and school burnout compared to female students. Another study found that the prevalence of severe depression among high school girls was 9.6%, while it was 5.4% among boys (Ertem & Yazıcı, 2004). Similarly, studies on the relationship between gender and school burnout also present mixed findings. Some studies indicate that school burnout is more prevalent among female students compared to males (Atalayın et al., 2015; Demir, 2015; Bayrakdar, 2016), while other studies found that school burnout levels were similar or higher among male students compared to females (Balkıs et al., 2011; Seçer & Gençdoğan, 2012; Çapulcuoğlu & Gündüz, 2013; Çapri & Sönmez, 2013; Akıl & Yazar, 2014; Özgen, 2016; Deniz & Karbeyaz, 2018; Akbaş & Okutan, 2019). The higher stress levels, lower self-esteem, negative self-image, and social pressures experienced by female students, as well as the concerns of male students about success in the business world, achieving financial goals, and career choices, may contribute to their experience of school burnout and depression (Akbaş & Okutan, 2019). Therefore, it can be said that the relationship between school burnout and gender is complex and multifaceted. Gender alone is not sufficient to understand these relationships.

The educational level of parents can influence the experience of depression and school burnout. In this study, it was found that students with mothers who have a high school education or higher had fewer depressive symptoms and experienced less school burnout compared to other groups. Another study found that the average school burnout scores of middle school students were associated with parental attitudes (Çengel, 2021). Having parents with a higher educational level may lead to providing more resources and support to their children. This situation can help children develop a better awareness and planning ability regarding their future career choices and job prospects. Similarly, having parents with a lower educational level can result in children having limited resources and support, facing uncertainties about their future, and experiencing concerns about finding a job. This can increase the risk of school burnout and lead to the manifestation of depressive symptoms. Particularly, the mother plays an important role as a role model for children. The mother's attitudes towards her own career, work discipline, and motivation can influence the child's academic life and interest in school.

Family economic status can be another factor that affects a child's career anxiety. If the family's income level is high, individuals have the opportunity to

receive education in their desired fields and careers (Kuzgun, 2014; Aytaç & Keser, 2017). If the family is financially stable, the child may develop a belief that they will be financially secure in the future. This can reduce the tendency to experience school burnout and depressive symptoms. In this study, students who defined their income status as "high" had lower levels of depressive symptoms and school burnout compared to those who defined it as "low". Some studies in the literature also show that depression, anxiety, and school burnout are affected by the family's income level. Students from families with a lower income level have higher levels of anxiety and depression compared to students from families with a higher income level (Ayyıldız, 2015; Şanlı Kula & Saraç, 2016; Gökçe & Traş, 2017; Akbaş & Okutan, 2019). Expectations from students from economically disadvantaged families to enter the workforce as soon as possible and their inability to express themselves accurately regarding the careers they want to pursue can lead to future anxiety and, consequently, increase the risk of school burnout and depressive symptoms.

CONCLUSION

This study found a positive relationship between school burnout and depression among adolescent students. It was determined that as school burnout increased, the severity of depressive symptoms in students also increased. Factors such as gender, grade level, family type, mother's education level, family income status, and place of residence were found to have an impact on career anxiety and school burnout. Measures should be taken to help adolescent students, who are a sensitive and at-risk population, cope with the risk of school burnout and depression. Guidance and counseling services that students need should be provided continuously by educators and healthcare professionals, and a supportive and safe school environment should be created to meet students' emotional needs. Providing students with a space where they can express themselves, activating social support mechanisms through collaboration with parents and the community, teaching stress coping strategies, relaxation techniques, and promoting healthy lifestyle habits can help reduce the risk of school burnout and depression.

Conflict of Interest

This study is authored by a single author. There is no conflict of interest.

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The Validity and Reliability of the Occupational Performance Questionnaire

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ABSTRACT:
Purpose: In this study, it was aimed to examine the validity and reliability of the Turkish version of the Occupational Performance Questionnaire (OPQ) in individuals aged 3-6 with autism spectrum disorder.
Material and Methods: After the questionnaire was translated into Turkish, it was applied to 51 parents with a child diagnosed with autism spectrum disorder aged 3-6 years. Cronbach Alpha coefficient was used to determine reliability. Correlation analysis with identical forms was used to establish the construct validity. In this context, correlation status of Occupational Performance Questionnaire with Sensory Profile Questionnaire and Parental Stress Index- Short Form were evaluated.
Results: The Cronbach Alpha value for the Occupational Performance Questionnaire was found to be highly reliable as "0.93". In the correlation analysis between the main sections and sub-sections of the Occupational Performance Questionnaire and identical forms; significant correlation was found with all of the main sections, and sub-sections were found to have significant relationships other than "sleep, peer and group interaction, individual and group play" sections.
Conclusion: The Occupational Performance Questionnaire is valid and reliable for Turkish children diagnosed with autism spectrum disorder aged 3-6.
Keywords: *Occupational performance, Validity, Reliability, Autism Spectrum Disorder*

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INTRODUCTION

Autism Spectrum Disorder (ASD) has been defined in DSM-V (Diagnostic and Statistical Manual of Mental Disorders) as a neurodevelopmental disorder characterized by difficulties in social communication, limitation of repetitive behaviour patterns, and the presence of interests and activities (APA, 2013). The prevalence of ASD in Turkey is unknown. According to 2014 data of the Ministry of Education, there are 16,837 children with ASD at the age of compulsory education (Ministry of Education, 2016). According to 2018 data of the Ministry of Health, 107,834 people, 82,079 men and 25,755 women, were diagnosed with ASD (The Ministry of Health, 2018). The international prevalence of ASD was found to be 1:54, according to 2016 data obtained from the Centres for Disease Control and ASD Prevention (Maenner et al., 2020). In Turkey, individuals with ASD in 3-6, 7-11, and 12-15 age groups are educated in special education classes (The Ministry of Education, 2012). In addition, 53.2% of special education and rehabilitation centres in Turkey also offer support training to individuals with ASD (Official newspaper, 2016). Although the history of Occupational Therapy (OT) is not very old in Turkey, where there are a substantial number of individuals with ASD, occupational therapists have been actively involved in ASD rehabilitation in recent years.

There are sensory differences between ASD diagnostic criteria (APA, 2013). Sensory differences cause performance and participation problems in children's daily life, self-care, productivity, leisure and play activities (Jasmin et al., 2009). The lack of occupational performance in early children with ASD is common problem faced by parents (Allik et al. 2006). OT intervention offered to children with ASD does indeed lead to improved occupational performance (Jacklin et al., 2006). But there is a lack of evidence to show that OT intervention improves occupational performance. Therefore, therapists need valid outcome measures that they can use (Miller-Kuhaneck et al., 2004). In children diagnosed with ASD, these activity performance problems are generally evaluated with Canadian Occupational Performance Measurement (Law et al., 1994), but these measurements do not investigate the problems related to behaviours especially in children with ASD, by evaluating the degree of parental satisfaction, uses the reported information (Wallace, Franzsen, & Potterton, 2016). Occupational Therapist Kerry Wallace and colleagues, considering that there was a lack of evidence to support children with ASD that Occupational therapy intervention led to improvement in occupational performance, and valid results criteria were needed for therapists to evaluate the effectiveness of the intervention in occupational performance. Following they conducted the Occupational Performance Questionnaire (OPQ) in 2016 (Wallace et al., 2016). On the other hand, parents of children with ASD have higher rates of psychological distress than parents of children with other developmental disabilities (Fombonne, 2003). In occupational therapy interventions, programming not only for the child but also for reducing the stress level of the parents will increase the efficiency of the session. OPQ is applied to children with 3-6 years of age, who have undergone occupational therapy intervention using sensory integration technique. It aims to evaluate the pre-school skills in daily life activities including personal care, play and social interaction areas, to monitor the development of these skills, as well as to examine the effect of any improvement in these skills on the level of family harmony and mother's stress (Wallace et al., 2016).

The purpose of this study is to create the Turkish translation and cultural adaptation of the OPQ and to examine its validity and reliability in individuals aged 3-6 with ASD.

MATERIAL and METHODS

Purpose and Type of the Study

The purpose of this study is to create the Turkish translation and cultural adaptation of the OPQ and to examine its validity and reliability in individuals aged 3-6 with ASD.

Sampling and participant

This study was carried out with parents of 51 children aged 3-6 years, who were diagnosed with ASD, who were studying in special education and rehabilitation centre. All cases were evaluated by an occupational therapist who has three years of experience in the field. While determining the sample size in the study, the study that developed the scale made by Kerry Wallace and colleagues was taken into consideration (Wallace et al., 2016). The study was completed with 51 participants.

Data Collection Tools

The evaluation was made only once, and all participants were administered the Dunn Sensory Profile (SP), Parental Stress Index-Short Form (ESI-short form) and Occupational Performance Questionnaire (OPQ) sections 1 and 2.

Occupational Performance Questionnaire (OPQ): The scale consists of 3 parts with different question contents. Section 1 includes demographic information and medical history about the child. Section 2 includes questions that investigate the level of Occupational Performance and its impact on family members. Section 3 is the section where the effectiveness of therapy is evaluated after therapy. In this study, the reliability of the first two parts of the scale was investigated. Part 3, which was used to evaluate the effect of 1-year sensory integration therapy on the child, could not be included in the study due to the time barrier. In the OPQ, evaluation of the Occupational Performance is carried out in Section 2. This section consists of 11 items and sub-parameters of these items. Each item is a Likert-type scale designed to score within the range of 1-5. For

each question, the person filling the scale is asked to tick the box corresponding to the words "almost never", "rarely", "sometimes", "often" and "always". For the positively expressed questions in the scale, "Always" is scored with 5 points and "Never" with 1 point. In addition, “Always” is scored with 1 point and “Never” with 5 points for negative expressive questions in the scale. The high score obtained from the scale indicates high success in Occupational Performance Areas and low parental stress of the family. It takes 12-15 minutes for a person to complete the scale and the scale is filled by parents with children with ASD (Wallace, Franzsen, & Potterton, 2016).

Sensory Profile (SP): It was developed by the Occupational Therapist Winnie Dunn (Kientz & Dunn, 1997). It is used to measure the sensory processing abilities of children aged 3-10. It consists of 125 questions in total. It consists of 3 sections as “Sensory Processing”, “Modulation”, “Behavioural and Emotional Responses” and 14 sub-sections covered by these sections. The survey was completed by the child's caregiver or parent. This scale can be used in all disability groups. The Turkish version study was carried out by Kayıhan et al in 2015 (Kayıhan et al., 2015).

Parental Stress Index-Short Form (PSI-SF): It was developed by Abidin (Abidin, 1983). The purpose of the scale is to measure the severity of parents' stress from their parenting roles. The scale was originally developed as 120 items, while the short form of the scale was developed in subsequent studies. This short form consists of 3 sub-sections, namely “Parental Distress”, “Parent-Child Dysfunctional Interaction” and “Difficult Child” and consists of 36 questions in total. The validity and reliability study of the scale was adapted to Turkish by Mert, Hallıoglu, Ankaralı, Camdeviren (Ankaralı, 2008).

Statistical Analysis

SPSS 21.0 program was used in the analysis of the data. Descriptive statistical methods such as mean, standard deviation, median, minimum, and maximum values were used while evaluating the data in the study. In addition, Alpha Coefficient (Cronbach Alfa) was used to test the reliability of the Occupational Performance Questionnaire. The data obtained from 51 children were used in the analysis. In addition, in order to determine to what extent, the questions affect alpha coefficient and in what direction; "If the variable is deleted, the Alpha coefficient of the scale" value is calculated. These values indicate the internal consistency of the remaining variables if any variables are deleted. Alpha if Item Deleted represents the scale’s Cronbach’s alpha reliability coefficient for internal consistency if the individual item is removed from the scale.

The construct validity of the questionnaire was tested by correlation method. Spearman correlation coefficient was used since the variables did not show normal distribution. In this context, correlation analysis was performed between the sub-sections of the Occupational Performance Questionnaire-Activity Performance Areas section and Sensory Profile. At the same time, correlation analysis was performed between the Occupational Performance Questionnaire-Effect on Family Members section and the sub-sections of the Parent Stress Index-Short Form scale. In the analysis made, the evaluation of the Spearman Correlation coefficient, was accepted as the critical value of 0.05 for the significance of p values.

Translation and Adaptation Procedure

The procedure defined by Guillemin and his friends was followed for the translation and adaptation process. In accordance with this procedure, the following steps have been completed (Beatone et al., 2000). The Occupational Performance Questionnaire was translated into Turkish by a Physiotherapist and occupational therapist whose mother tongue is Turkish, fluent in English and familiar with the terminology of the related questionnaire. A synthesis questionnaire was created by comparing these two translations. This translation was translated into English, the original language of the questionnaire, by the physiotherapist and nurse, who are native English speakers and fluent in Turkish. The original form of the questionnaire and this back translation were compared by the translators and inconsistencies were corrected. In the survey obtained, after the interviews with the author of the scale, Kerry Wallace, some expression

changes were made. Thus, the questionnaire has been prepared for a pilot study. The pilot study was carried out with 7 parents with randomly selected children with ASD. In this context, the expressions in some articles have been changed because they have no equivalent in society or are expressed differently (For example, the translation of the question 2 has been translated as “Marital status of the mother: single- divorced- living with partner- married”, but this question is adapted to Turkish society. “Marital status of the mother: divorced- married” Similar changes were made in the 7th, 8th, and 21st questions.). In some items, the expression was changed to make the sentence more understandable (For example, the translation of the question 18 was made as “How old was your child when he no longer needed to wear a nappy at night?” But for the sentence to be more understandable, “How old was your child when he stopped using diapers at night?” Similar changes were made in the 23rd, 8.7th, and 11.6th questions.). Some questions were not found explicit by the parents in the pilot study and an example was added to these questions (For example, in the 3.2 question, the translation was made as “Is the variety of food textures that your child eats limited?” But the sentence is “hard, soft, etc.” because it is not understood by the parents sufficiently. Similar additions were made in questions 8.6, 3.2, 4.2.1, 4.5., 8.3., 9.1.1., 9.1.2.)

Ethical Approval

Before starting the study, ethical approval was obtained with the decision numbered 2018/675 of the Uskudar University Non-Interventional Research Ethics Committee. This study was conducted in accordance with the Helsinki Declaration revised in 2013 and informed consent was obtained from the parents of the children included in the study.

RESULTS

Demographic Profile

The study was completed with 51 children, 84.4% male and 15.6% female. The average age of the participating children is 5.06 (SD = 1.21). 31.37% of children stay at home with their caregivers, 17.34% attend a kindergarten for children with special needs, 50.98% attend a kindergarten for normally developing children. In addition, the therapies that children receive in addition to sensory integration are speech and language therapy (10%), physiotherapy (20%), and applied behaviour analysis (40%). The socio-demographic characteristics of the participants are shown in Table 1.

Reliability

The internal consistency of the OPQ was determined by the Cronbach Alpha coefficient. Internal consistency results of all parts of OPQ and scale total are given in Table 2.

As a result of the reliability analysis of the scale, the Cronbach Alpha coefficient was found to be 0.93 and the reliability of the scale was found to be high. When the question sections that make up the sub-sections of the scale are analysed, it is determined that the alpha values of the "sleep, toilet, nutrition, individual interaction, peer interaction, communication, play levels, group play and parental stress" sections are very reliable and highly reliable values. On the other hand, "individual play" section Alpha value has been found to have low reliability value. In the first case of the "group interaction" section, Alpha value was found to be "0.63". When the questions of this section are examined, "Can your child's brothers make friends to play?" When the question is removed from the scale, it is determined that the Alpha value of the section takes the value of "0,85". The effects of group interaction section items on reliability are indicated in Table 3.

Then, the correlation analysis of this question with other questions in the department and the total score of the department was examined. As a result of this examination, no meaningful relationship was found and it was decided to exclude the item from the scale. Correlation values for this question are given in Table 4.

Validity

Testing the validity of the OPQ was provided by the correlation method performed with identical forms. In this context, correlation analysis of OPQ and Sensory Profile and Parental Stress Index-Short Form scales were performed. Findings related to this analysis are given in Table 5.

Table 1. Sociodemographic Characteristics

Descriptive Statistics		Number	Percent
Gender	Female	8	15.6
	Male	43	84.4
Educational Status	Does not attend school	16	31.37
	Kindergarten for special needs children	9	17.34
	Kindergarten for normally developing children	26	50.98
Therapies receiving	Speech and language therapy	9	17.06
	Physiotherapy	1	1.09
	Applied behaviour analysis	25	49.01
		Min.-Max.	**Mean-SD**
Age		3-6.91	5.06±1.21

Table 2. Occupational Performance Questionnaire internal consistency results

Occupational Performance Questionnaire (OPQ)		Cronbach α
Personal Management	Sleeping	0.85
	Toilet Training	0.77
	Feeding	0.67
Social Interaction	Individual	0.86
	Peer Interaction	0.84
	Group Interaction	0.85
	Communication	0.74
Play	Level of Play	0.70
	Individual	0.42
	Group	0.74
TOTAL OCCUPATIONAL PERFORMANCE AREAS SCORE		0.93
Parent Stress		0.86
TOTAL OPQ SCORE		0.939

Table 3. Effect of group interaction items on reliability

6. Group Interaction Questions	If Item Deleted: Mean	If Item Deleted: Varyans	Corrected Item Whole Correlation	If Item Deleted: Cronbach Alpha
6.1. Are you able to attend family gatherings with your child?	13.69	8.500	0.603	0.499
6.2. Are you able to take your child to birthday parties?	13.76	7.984	0.641	0.469
6.3. Are you able to take your child to eat at restaurants?	13.86	8.681	0.448	0.558
6.4. Are his/her siblings able to have friends to play?	13.80	10.001	0.005	0.850
6.5. Is the family able to sustain relationships with other families?	13.43	8.810	0.655	0.498

Table 4. Correlation values for the question derived from the scale

6. Group Interaction Questions	Extracted Item	p	r
6.1. Are you able to attend family gatherings with your child?	6.4. Are his/her siblings able to have friends to play?	0.930	-0.013
6.2. Are you able to take your child to birthday parties?		0.977	0.004
6.3. Are you able to take your child to eat at restaurants?		0.436	-0.111
6.5. Is the family able to sustain relationships with other families?		0.833	-0.030
Total Group Interaction Score		0.038*	-0.291

Table 5. Correlation analysis of Occupational Performance Questionnaire and Sensory Profile and Parental Stress Index-Short Form (n = 51)

Occupational Performance Questionnaire Correlation			
Occupational Performance Questionnaire		**p**	**r**
A. Personal Management		0.04*	0.399
Sleeping		0.141	0.209
Toilet Training		0.010*	0.358
Feeding		0.035*	0.296
B. Social Interaction		<0.001**	0.521
Individual		<0.001**	0.550
Peer Interaction	Sensory Profile	0.125	0.217
Group Interaction		0.079	0.219
Communication		0.038*	0.291
C. Play		0.009*	0.361
Level of Play		0.02*	0.425
Individual		0.059	0.266
Group		0.133	0.213
Total Occupational Performance		<0.001**	0.557
D. Impact on Individual Family Members	Parental Distress	<0.001**	-0.706
	Parent-Child	<0.001**	-0.499
	Difficult Child	<0.001**	-0.602
	Total Stress Score	<0.001**	-0.696

p ≤0.05 * Significant
p≤0.01 ** High rate significant
Rho(r); 0.5-0.8, High correlation
0.3-0.5, Medium correlation
0.1-0.3, Weak correlation

There was a significant relationship between Sensory Profile and OPQ's total score and main sections. There was a high-level correlation between "Sensory Profile" and "Total Occupational Performance" scores and "social interaction" scores, and a medium level correlation between "personal management" and "play" scores. While there was no correlation with the sections of "sleep, peer interaction, group interaction, individual play and group play", which are the main parts of the question sections, correlations were found with the sections of "toilet, nutrition, communication, individual interaction, play levels". A negative high-level correlation was found between the "individual effect on family members" section of the OPQ and the ESI-Short Form total score and all of its sub-parameters.

DISCUSSION

In this study, it was aimed to examine the validity and reliability of the Turkish version of the Occupational Performance Questionnaire (OPQ) in individuals aged 3-6 with autism spectrum disorder. According to the results of the study, the Occupational Performance Questionnaire is valid and reliable for Turkish children aged 3-6 years diagnosed with autism spectrum disorder. In the analysis conducted to determine the internal consistency, Cronbach Alpha value was found to indicate a high degree of reliability (0.939) (Table 1). The Cronbach Alpha value (0,93) of the Occupational Performance Areas Total score, which is one of the parts of OPQ, was published in the article published by Wallace et al. to improve the original form of the scale, the same section was higher than the Cronbach Alpha value (0.72) supports reliability (Wallace et al., 2016). In addition, while the sections of the OPQ and the sub-sections of these sections were acceptable for internal consistency, the acceptable Alpha level for the "Individual Play" section, which is one of the "Play" section sub-sections, was not achieved (Table 4). Therefore, the items in this section need to be re-examined to increase the internal validity of OPQ. When the study of Wallace and his friends while developing the original of the scale is examined; an Acceptable Alpha level for internal consistency was not achieved in all of the sub-sections of "Social Interaction" section, "Group Interaction" and "Communication" sections and "Play" section and all sub sections of this section. This situation showed that the internal consistency of our study was higher

than the original scale development study. When the Cronbach Alpha values were deleted for each item in the OPQ (Table 3), an item that reduces the internal consistency in the sub-section and causes the Alpha value to increase in the section when it is deleted (0, 0.63, Increased to 85). The total score of this item and the correlation value between the questions in the department were examined (Table 2) and no significant relationship was obtained ($p \geq 0.05$). As a result of these analyses, it was decided to exclude the item from the scale.

In correlation analysis with identical forms to determine the construct validity of the scale, significant correlations were found between the total scores of each major part of the OPQ and the total score of the questionnaire and the identical forms used (Table 1) ($p \leq 0.05$). This situation showed that the validity of the scale is appropriate. The correlation values determined for the scale translated into Turkish were stronger than the correlation analysis values applied by Wallace et al. to determine the validity of the scale (Wallace et al., 2016).

Activity Performance, Sensory Profile, and Parental Stress Scores

Normally developing preschool children in the age group of three to six (Bayley, 1993; Case-Smith & Bryan, 1999) are generally among the activity performance areas described in the OPQ: "personal management", "social interaction", "play" and "communication". achieves developmental goals. Therefore, the expectation is that children in these age groups who develop normally will achieve maximum scores on all items in the OPQ. The general information section of the OPQ showed that only 9.8% to 66.6% of the participants with ASD were successful in the activity performance areas where children with normal development were expected to achieve 100%. This result supports the study by Jasmin et al. (Jasmin et al., 2009) that showed that children with ASD have significant deficiencies in daily living skills compared to their normally developing peers.

In the study, the fact that the evaluated sensory processing level scores of the participants were below the standard raw scores in many areas supports the literature reporting the symptoms of sensory processing deficiency in ASD and the diagnostic criteria of ASD determined by the American Psychiatric Association (Baranek et al., 2007; Kern et al., 2007).

When the stress levels of the parents participating in this study were evaluated, it was seen that the results were high (X=97.7). Scores higher than 90 for the ES-Short Form are considered clinically significant (Abidin, 1983). Other studies using the ESİ-Short Form in studies conducted with parents of children with ASD also reported that parents of children diagnosed with ASD have high levels of parenting stress (Fisman et al., 2000).

The Relationship Between Activity Performance and Sensory Processing

In children with ASD, inappropriate sensory reactivity is strongly associated with being able to display adaptive responses. In the study by Dawson and Watling, sensory sensitivities and motor difficulties affect almost all dimensions of daily living skills (Dawson & Watling, 2000). In another study, sensory processing disorder in preschool children with ASD was compared with the activity performance in the areas of "Personal management", "Social interaction", "Communication" and "Play" and it was concluded that the impairment in sensory processing was strongly related to the failure in the activity performance areas. (Ben-Sasson et al., 2009). Consistent with the aforementioned literature, in this study, significant relationships were found between activity performance domains and sensory processing ($p \leq 0.05$).

The Relationship Between the Personal Management Section and the Sensory Profile Subsections

In this study, a significant relationship was found between the personal management section of the OPQ and all the main sections of the sensory profile questionnaire. Activity performance in the areas of sleep, toilet and nutrition, which are the sub-sections of personal management; The relationship between sensory processing, behavioural and sensory responses, and modulation subsections of the

sensory profile scale was also examined.

In the study conducted by Goldman et al., a significant relationship was found between sleep and sensory processing disorders (Goldman et al., 2009). Our study supports this study in some points, but since the relationship between all sub-scores of the sensory profile and sleep was examined in our study, the significance of the relationships changed according to the sub-sections. In our study, a significant relationship was found between sleep and "modulation", one of the main parts of the sensory profile, but no significant relationship was found between "sensory processing" and "behavioural and emotional responses". While there was a significant relationship between sleep and sensitivity between the sensory profile subsections, no significant relationship was found with the other sections.

Studies have shown that in children diagnosed with ASD; It is stated that the acquisition of toilet skills is delayed (Kırcaali-İftar, 2007). In our study, when the toilet section scores of the OPQ were examined, the score required for maximum performance was 20, while the average score of the participants was below this figure (x=12.2), which supports the literature on acquiring toilet skills. In addition, significant relationships were found between the ability to acquire toilet skills and all the main parts of the sensory profile in our study. Again, with the ability to acquire toilet skills, from the subsections of the Sensory profile; Significant correlations were found with multi-sensory processing, oral sensory processing, recording, research, and sensitivity, with vestibular processing and sensory input seeking highly significant.

Cermak, Curtin and Bandini found in their study that sensory sensitivities cause high food selectivity. In our study, however, a significant relationship was found between nutrition and sensory processing, which is one of the main sections of the sensory profile, and no significant relationship was found with other sections. With nutrition; A significant relationship was found between oral sensory processing, which is one of the sub-sections of the sensory profile, but no significant relationship was found with the other sections. These findings support the studies of Cermak, Curtin, & Bandini, 2010).

The Relationship Between the Social Interaction Section and the Sensory Profile Subsections

In a study by Hilton et al. using the Sensory Profile (Dunn, 1999), low scores in multi-sensory processing, oral sensory processing, and touch processing were associated with reduced levels of social interaction (C. Hilton, Graver, & LaVesser, 2007; C. L. Hilton et al. al., 2010). In our study, similar to the study of Hilton et al., significant relationships were found between the main parts of the Sensory Profile and social interaction. If we examine the meaningful relationships found by categorizing the social interaction areas better:

Significant correlations were found with individual interaction and all of the main parts of the sensory profile. Between individual interaction and sub-sections of sensory profile, hearing process, vestibular processing, touch processing, oral sensory processing, movement and body position, emotional and social responses, sensory input seeking, emotional response, inattention/distraction, sensory sensitivity, research sensitivity, avoidance. quite significant; Significant results were found between visual processing, multi-sensory processing, emotional responses, behavioural results of sensory processing, perceptual fine motor, research. No significant results were found with the other subdivisions.

No significant relationship was found between peer interaction and the main parts of the sensory profile. Significant relationships were found between peer interaction and sensory profile sub-sections with touch processing and sensory input seeking sections. No significant relationship was found between group interaction and the main parts of the sensory profile, but being quite significant with the response threshold from the sub-sections of the sensory profile; Significant relationships were found between visual processing, multi-sensory processing, and weak recording.

A significant relationship was found between communication and sensory processing, one of the main sections of the sensory profile, but no significant relationship was found with other sections. Significant relationships were found between communication and sensory profile sub-

sections, vestibular processing, tactile processing, and sensitivity.

The Relationship Between the Play Section and the Sensory Profile Subsections

Schaaf et al. stated that sensory processing difficulties affect participation in play activities and other activities of daily living (Schaaf, 2015). Ayres says that sensory processing disorders seen in children; stated that it has an effect on the child's ability to participate in school and at home, and to play games with family and peers (A Jean Ayres, 1972b). In this study, the play activities mentioned were analysed by dividing into sections, and sensory processing disorders were determined according to the main sections of the sensory profile. The relationship between these two determinations has been revealed. Significant relationships were found between the play and other main parts, except for behavioural and emotional responses. This finding supports the literature.

Significant relationships were found with modulation and behavioural and emotional responses, with play levels being quite significant with sensory processing, one of the main parts of the sensory profile. Significant relationships were found between play levels and the sub-sections of the sensory profile, tactile processing, seeking sensory input, emotional response, sensitivity, and movement and body position, emotional and social responses, seeking and avoidance.

While there were significant relationships between individual play and sensory processing and modulation, which are the main sections of the sensory profile, no significant relationship was found with the behavioural and emotional responses section. A significant relationship was found with the individual play and the visual inputs affecting the emotional response and activity level, with sensitivity and sensitivity, which are the sub-sections of the sensory profile, quite significant.

No significant relationship was found between group play and the main parts of the sensory profile. A very significant relationship was found between group play and touch operation, which is one of the sensory profile sub-sections.

CONCLUSION

In conclusion, it was determined that the OPQ was valid and reliable, and it was suitable for evaluating the Occupational Performance of Turkish children aged 3-6 years diagnosed with ASD. In this study, the recommendation of increasing the sample size obtained in the study of Wallace and colleagues while developing the original of the scale was followed in future studies. In the version study of the scale translated into Turkish (n = 51), increasing the sample size was associated with higher validity and reliability values compared to the study conducted by Wallace et al. (N = 19) to develop the original version of the scale. Although the results indicate that OPQ shows good psychometric properties, limitation of the study is that part 3 of the scale could not be included in the study, we believe that it will be beneficial to apply the validity and reliability study in part 3 by applying adequate therapy process in future studies.

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Conflict of Interest

The authors declare that there is no conflict of interest.

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The Mediating Effect of Offence-related Feelings of Shame and Guilt on the Relationship between Sense of Coherence and Emotional Eating in Adult Women

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ABSTRACT:
Purpose: The aim of this study was to examine the mediating effect of offence-related feelings of shame and guilt on the relationship between the sense of coherence and emotional eating in adult women.
Material and Methods: The study was carried out in descriptive-relational design. The population of the research consisted of 543 adult women who met the criteria for inclusion in the research. A Introductory Information Form, Sense of Coherence Scale (SOC), Emotional Eater Questionnaire (EEQ) and Offence-Related Shame and Guilt Scale (ORSGS) were used to collect data.
Results: SOC mean score was 53.35 ± 8.17, EEQ mean score was 10.32 ± 5.90, and ORSGS mean score was 41.10 ± 12.11. It was determined that there was a weak statistically significant and positive correlation and between EEQ and ORSGS mean scores. It was determined that there was a weak, statistically significant and negative correlation between the SOC and the EEQ mean scores, and a weak, statistically significant and negative correlation between the SOC and the ORSGS mean scores ($p<0.05$). 6.9% of Adult women's ORSGS scores are explained by EEQ and 9.5% of SOC scores are explained by EEQ and ORSGS.
Conclusion: It is seen that offence related shame and guilt moderately mediate the relationship between the sense of coherence and emotional eating in adult women. At the same time, the sense of coherence in women has a direct predictive effect on emotional eating. The results of the study draw attention to the importance of emotional eating behavior and expressions of offence-related shame and guilt in protecting and maintaining health.
Keywords: *Adult women, Emotional eating, Sense of coherence, Shame, Guilt*

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INTRODUCTION

People develop emotional eating behavior as a reaction to the negative situations they experience. Emotional eating behavior occurs as a result of eating to control mood, although the individual does not feel hungry due to negative emotions (Konttinen, 2012). This is a situation that can be seen in individuals with normal weight or obesity, as well as in dieters (Sevinçer and Konuk, 2013). The person may encounter problems such as gaining excess weight by eating more than the amount of food, and in this process, he/she may resort to restrictive diets frequently and experience various problems such as regaining weight afterwards. Emotional eating is a common problem in eating disorders, but it can also occur without an eating disorder. Emotional eating or psychological eating behavior is an inappropriate solution that a person resorts to for reasons such as avoiding problems, avoiding distressing situations, and coping with negative emotions, even though there is no real hunger. Although the distressed situation decreases for a while with the feeling of pleasure, the feelings of shame and guilt experienced afterwards may occur in individuals. As

a result of the study by Tetik (2019), it was stated that as emotional eating behavior increases, the feeling of shame also increases. It has been stated that coping with stress through emotional eating behavior is insufficient. Hasking (2006), on the other hand, found that avoidant coping and emotion-focused coping strategies are associated with eating disorders. It is thought that the sense of coherence will contribute to coping effectively with stressors. A sense of coherence can be defined as a way of seeing life and the ability to successfully manage the many stressors encountered in the course of life (Eriksson, 2017). A sense of coherence is a resource that enables people to manage tension, think about their internal and external resources, identify and activate those resources, encourage effective problem solving, and release tension in a health-promoting way (Eriksson, 2007). Antonovsky draws an important distinction between stress and tension. Antonovsky named negative life situations that we encounter in daily life as stressors (Eriksson and Lindstrom, 2006). These stressors encountered in daily life cause a person to develop a wide range of reactions in the emotional spectrum, from anger to joy, from the grieving process to acceptance. Reactions to events are related to the person's reaction to the situation. The variety of strategies developed makes it easier to deal with the situation (Bağ, 2017). When we look at the studies on emotional eating and stress, it has been stated that women eat more when they are stressed (Konttinen et al., 2010; Van Blyderveen et al., 2016). Tan and Chow (2014) stated in their study that individuals who experience high levels of stress have a very low ability to regulate their eating behaviors. This lack of ability to regulate eating behavior has also been directly associated with emotional eating (Tan and Chow, 2014). A strong sense of coherence helps to mobilize resources in eating behavior to cope with stressors and successfully manage tension. Thanks to this mechanism, the sense of coherence helps to protect the health of the person and to ensure its continuity (Mittelmark and Bauer, 2017). In the literature, the effects of a sense of coherence on emotional eating and feelings of offence-related shame and guilt. No studies were found in which the effect was examined in depth. The aim of this study was to examine the mediating effect of offence-related shame and guilt on the relationship between a sense of coherence and emotional eating in adult women.

Hypotheses

H_1: There are statistically significant negative correlations between the sense of coherence, emotional eating, and the levels of offence-related shame and guilt in adult women.

H_2: There are statistically significant positive correlations between emotional eating and the levels of offence-related shame and guilt in adult women.

H_3: In adult women, the relationship between a sense of coherence and emotional eating is mediated by offence-related shame and guilt.

MATERIAL and METHODS

Purpose and Type of the Study

The research was carried out as a descriptive-relational study to investigate the mediating effect of offence-related shame and guilt on the relationship between a sense of coherence and emotional eating in adult women by establishing structural equation modelling.

Sampling and Participant

The population of the research consisted of women who agreed to participate in the study online via Google forms in a city in the Central Anatolia region of Turkey. Considering the R2 value of the model in the study conducted by Oliveira et al. (2017) in line with the literature, the sample of the study was determined as 95% confidence (1-α), 95% test power (1-β), $f^{2=0.047}$ effect size and the number of samples to be taken was 530 people. The sample of the study consisted of 543 people who met the criteria for inclusion in the study. As a result of the study, the power of the test was found to be 95.6%.

The study included women aged 18 and over, living in a province of the Central Anatolian region of Turkey, without any psychiatric or physical disorders, gastrointestinal disorders, or any chronic disease, using smartphones and social media, and confirming the informed consent form. The data of the study were collected online between 1 May 2021 and 15

February 2022. Considering the possibility of being missing, a total of 650 people were invited to the study. Among these individuals, 543 people agreed to participate in the study.

Data Collection Tools

Introductory information form: The introductory information form consists of 15 questions in total, including sociodemographic data on age, height, weight, educational status, marital status, income status, employment status, and weight assessment.

Sense of coherence scale (SOC-13): The scale was developed by Antonovsky (1987) and it is a self-rating scale consisting of 13 items ranging from 1 to 7. The scale was adapted to the Turkish language by Scherler and Lajunen (1997) and it was reported that it had a three-factor structure (understandability, manageability, significance). Scale items are Likert type scored from 1 to 7. The scale allows getting total scores as well as subscale scores. The total SOC score ranges from 13 to 91. High scores on the scale indicate that the person has a high sense of coherence. In the reliability study of the scale, internal consistency coefficients were determined as 0.69 for the whole scale. In this study, Cronbach's alpha coefficient of the total sense of coherence was 0.60.

The emotional eater questionnaire (EEQ): It was developed to evaluate the emotional eating behaviors of obese and overweight people (Garaulet et al., 2012), and its validity and reliability in Turkish were made by Arslantaş et al. (2020). The Emotional Eating Scale consists of 10 items and three sub-dimensions (disinhibition, type of food, guilt) and is answered on a 4-choice Likert-type scale. There is no reverse item on the scale. The lowest "0" and the highest "30" points are taken from the scale. High scores on the scale indicate a high level of emotional eating behavior. The internal consistency coefficients of the scale, which were created according to the factors, were found to be 0.81 for the disinhibition, 0.57 for the type of food, 0.64 for the guilt, and 0.84 for the whole scale. In our study, the total Cronbach's Alpha coefficient was found to be 0.88.

The offence-related shame and guilt scale (ORSGS): The original scale was developed by Wright and Gudjonsson (2007). Its validity and reliability in Turkish were done by Sarıçam, Akın, and Çardak (2012). The scale consists of 10 items and has a 7-point Likert type rating. The scale has two sub-dimensions: guilt and shame. The lowest "10" and the highest "70" points are taken from the scale. As the scores obtained from the shame and guilt dimensions of the Offence-Related Shame and Guilt Scale without an inverted item increase, it can be said that the individual has the characteristics of the relevant dimension at a higher level. Internal consistency reliability coefficients were found to be .78 for the shame subscale and .70 for the guilt subscale. In our study, the Cronbach's Alpha coefficients were found to be .82 for the shame subscale, .59 for the guilt subscale, and 0.83 for the total.

Data Collection

Data forms were sent via Google Forms and women who met the inclusion criteria were asked to fill in. An "Informed Consent Form" was added to Google Forms and the voluntary consent tab was made mandatory. The invitation to fill out the survey was sent via WhatsApp groups and emails.

Statistical Analysis

AMOS 26.0, SPSS 25.0 (IBM Corp., Armonk, New York, USA) package software and the PROCESS macro, which is an add-on of this software, were used in the analysis of the research data. In the study, the upper limit of the error value for statistical significance was determined as .05. Moreover, a descriptive analysis of the research variables was made after frequency and percentage analysis regarding the demographic information of the participants. In the examination of the relations between the variables, it was examined whether the variables, which are the hypothetical criteria for the use of parametric techniques, meet the normality assumption. It was observed that the variables showed normal distribution according to the kurtosis and skewness coefficients and the coefficient of variation. Relationships between research variables were analyzed with Pearson product-moment correlation coefficient. For the use of regression analysis, linear scattering was observed between the

variables. Furthermore, path analysis was performed within the framework of structural equation modelling (SEM) to determine the direct and indirect predictive power of the independent variable on the dependent variable. CMIN/DF, RMSEA, CFI, GFI and AGFI fit indices were used to evaluate the path analysis model fit. Besides, Conditional Process Analysis was used to analyze the hypothesis model of the research. Conditional Process Modeling is a new approach that can handle mediation and regulation analyses together, and can include constrained situations before and after variables that affect each other (Hayes, 2018). Besides, the analyzes of the multi-mediation effect in the research were made using the PROCESS macro (Model 4) developed by Hayes (2018). In data analysis, Bootstrap was performed on 5,000 samples.

Ethical Approval

In order to conduct the research, approval (21/36-21.04.2021) from the Social and Human Sciences Ethics Committee of a university was obtained.

RESULTS

The distribution of adult women by descriptive characteristics is given in Table 1. The mean age of the women participating in our study was 32.78 ± 11.79, 60.8% of them were undergraduate graduates, 57.8% were married, 61.3% had medium income, 64.3% were unemployed, and 82.7% of them had a nuclear family. The body mass index of 51.2% of the women was normal, 43.5% of them considered themselves a little overweight in terms of weight, 39% were less satisfied with their current weight, 33% have not been on a diet to lose weight until now, % 72.9 of them stated that they have not been on a diet for the purpose of gaining weight, and 81.6% of them have not used a product with a laxative effect for weight loss. In addition, 55.4% reported that they tend to eat during stressful periods. The mean, standard deviation and correlation values of adult women's Sense of Coherence Scale, Emotional Eater Scale, the Offence-Related Shame and Guilt Scale and the other variables are given in Table 2. It was determined that there was a weak statistically, significant and positive correlation between age and SOC ($r=0.215$; $p<0.05$), and between EEQ and ORSGS mean scores ($r=0.263$; $p<0.05$). It was determined that there was a weak, statistically significant and negative correlation between the SOC and the EEQ mean scores ($r=-0.222$; $p<0.05$), and a weak, statistically significant and negative correlation between the SOC and the ORSGS mean scores ($r=-0.264$; $p<0.05$).

The structural equation modelling formed between the Feeling of Coherence Scale, the Emotional Eater Scale, and the Offence-Related Shame and Guilt Scale are given in Figure 1. In addition, the results of the analysis of the Sense of Coherence Scale, the Emotional Eater Scale, Offence-Related Shame and Guilt Scale and their sub-dimensions are given in Table 3. First of all, it was examined whether the measurement model was significant for each sub-dimension. The effect of the Sense of Coherence Scale on the Emotional Eater Scale was found to be statistically significant (β =-0.257; $p<0.001$). The effect of the Emotional Eater Scale on the Offence-Related Shame and Guilt Scale was found to be statistically significant (β =0.206; $p<0.001$). The effect of the Sense of Coherence Scale on the Offence-Related Shame and Guilt Scale was found to be statistically significant (β =-0.309; $p<0.001$). At the same time, the path coefficients belonging to all the items under each dimension were found to be statistically significant. When the fit values were examined, it was obtained as CMIN= 43,017, DF= 17, CMIN/DF= 2.530, RMSEA= 0.053, CFI= 0.977 and GFI= 0.981. All of the compliance criteria were obtained within the desired limits. While SOC predicts 6.6% of EEQ, EEQ and SOC predict 17.1% of ORSGS. Moreover, SOC explains 53.8% of Comprehensibility, 26.7% of Manageability, and 21.5% of Meaningfulness. Besides, EEQ predicts 84% of Disinhibition, 46.4% of Type of Food, and 47.5% of Guilt Feeling. Moreover, ORSGS explains 42.7% of Guilt and 96.4% of Shame.

Table 4 shows the mediating role of the Offence-related Shame and Guilt Scale in the effect of the Emotional Eater Scale on the Sense of Coherence Scale. Moreover, the path coefficient between EEQ and ORSGS was statistically significant (β=0.540; $p<0.001$). The direct effect between EEQ and SOC was statistically significant, and a one-unit increase

in EEQ causes a 0.227-unit decrease in SOC (β=-0.227; p<0.001). Path coefficient between ORSGS and SOC was significant (β=-0.149; p<0.001). When the indirect effect was examined, it was observed that the effect was 0.080 and the 95% confidence interval obtained with the Bootstrap technique did not contain the zero value, and it was determined that the indirect effect was significant. The fully standardized indirect effect was obtained as -0.058 (-0.094: -0.028). With this result, the mediating role of ORSGS was found to be moderate. Furthermore, 6.9% of Adult women's ORSGS scores are explained by EEQ and 9.5% of SOC scores are explained by EEQ and ORSGS.

Table 1. Distribution of Adult Women by Descriptive Characteristics (n=543)

Characteristics		
Age (Mean ± SD)	32.78 ± 11.79	
Educational status	**n**	**%**
Literate	7	1.3
Primary school	62	11.4
Secondary school	16	2.9
High school	83	15.3
Bachelor's degree	330	60.8
Postgraduate	45	8.3
Marital status		
Married	314	57.8
Single	229	42.2
Income status		
Very bad	7	1.3
Bad	34	6.3
Middle	333	61.3
Good	157	28.9
Very good	12	2.2
Working status		
Not working	349	64.3
Public sector	131	24.1
Private sector	54	9.9
Retired	9	1.7
Family structure		
Nuclear family	449	82.7
Extended family	50	9.2
Broken family	23	4.2
Alone	21	3.9
Body mass index		
Weak	14	2.6
Normal	278	51.2
Fat	152	28.0
Obese	99	18.2
Emotional eating states according to emotional eating scores		
Not emotional eater	126	23.2
Low emotional eater	187	34.4
Emotional eater	196	36.1
Very emotional eater	34	6.3
Self-assessment in terms of weight		
Too weak	8	1.5
A little weak	35	6.4
At normal weight	221	40.7
A little fat	236	43.5
Very fat	43	7.9
Satisfaction with current weight		
I am not satisfied at all	151	27.8
I'm less satisfied	212	39.0
I am satisfied	148	27.3
I am very satisfied	32	5.9

Table 1. Distribution of Adult Women by Descriptive Characteristics (n=543) (**continued**)

The status of dieting for weight loss / slimming to date		
Never	179	33.0
Rarely	127	23.4
Sometimes	123	22.7
Often	92	16.9
Always	22	4.1
The status of dieting for the purpose of gaining weight / getting fat to date		
Never	396	72.9
Rarely	62	11.4
Sometimes	50	9.2
Often	29	5.3
Always	6	1.1
The status of using any drug, food, product, etc. with a laxative (laxative) effect for weight loss / slimming purposes.		
Never	443	81.6
Rarely	54	9.9
Sometimes	37	6.8
Often	6	1.1
Always	3	0.6
Inclination to eat during stressful times		
Yes	301	55.4
No	242	44.6

Table 2. The mean, standard deviation and correlation values of the Feeling of Coherence Scale, the Emotional Eater Scale, the Offence-Related Shame and Guilt Scale and the other variables (n=543)

Variables	Mean ± SD	1	2	3	4
1. Age	32.78 ± 11.79	-			
2. SOC	53.35 ± 8.17	0.215**	-		
3. EEQ	10.32 ± 5.90	-0.051	-0.222**	-	
4. ORSGS	41.1 ± 12.11	-0.054	-0.264**	0.263**	-

Pearson correlation coefficient was used. SOC: Sense of Coherence Scale; EEQ: The Emotional Eater Questionnaire; ORSGS: The Offence-Related Shame and Guilt Scale.*p<0.05, **p<0.01

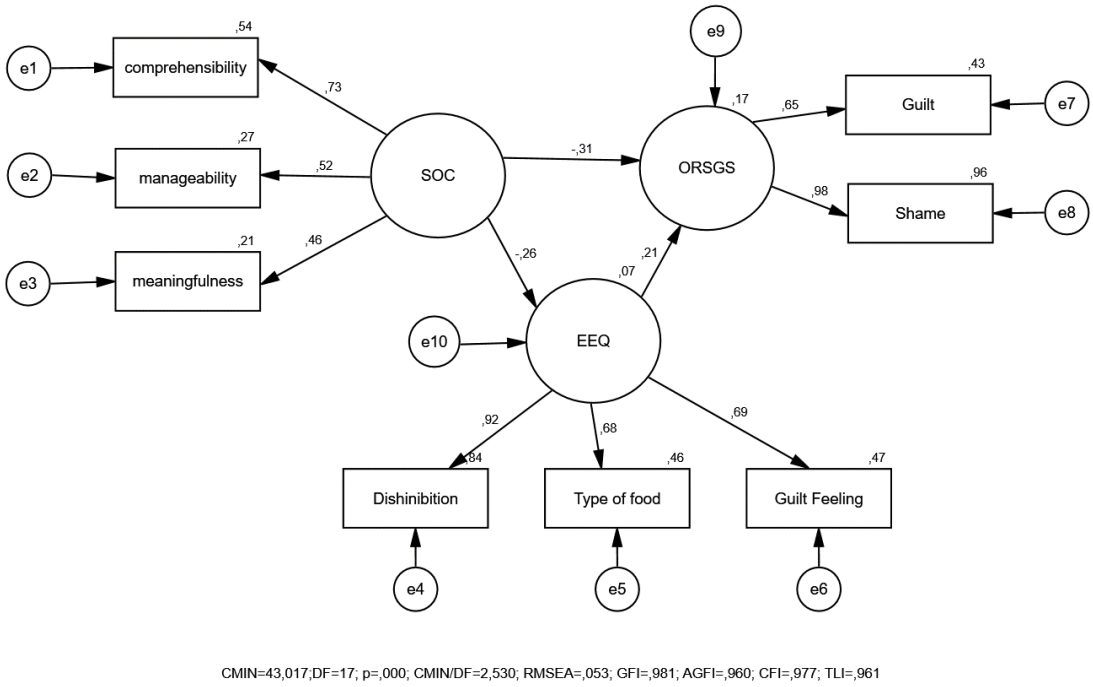

Figure 1. Structural equation modelling between the Sense of Coherence Scale, the Emotional Eater Scale, and the Offence-related Shame and Guilt Scale.

Table 3. Analysis results of the Sense of Coherence Scale, the Emotional Eater Scale, and the Offence-Related Shame and guilt Scale and their sub-dimensions

			β^0	β^1	SH	Test Stat.	p	R^2
EEQ	<--	SOC	-0.257	-0.496	0.121	-4.110	**<0.001**	0.066
ORSGS	<--	EEQ	0.206	0.433	0.100	4.323	**<0.001**	0.171
ORSGS	<--	SOC	-0.309	-1.254	0.255	-4.929	**<0.001**	
Comprehensibility	<--	SOC	0.734	1.526	0.226	6.747	**<0.001**	0.538
Manageability	<--	SOC	0.517	0.926	0.133	6.969	**<0.001**	0.267
Meaningfulness	<--	SOC	0.463	1.000				0.215
Disinhibition	<--	EEQ	0.917	1.000				0.840
Type of Food	<--	EEQ	0.681	0.272	0.019	14.424	**<0.001**	0.464
Guilt Feeling	<--	EEQ	0.689	0.274	0.019	14.537	**<0.001**	0.475
Guilt	<--	ORSGS	0.654	0.503	0.070	7.172	**<0.001**	0.427
Shame	<--	ORSGS	0.982	1.000				0.964

β^0: Standardized Coefficient; β^1: Non-standardized Coefficient; SE: Standard Error; R^2: Explained variance; SOC: Sense of Coherence Scale; EEQ: The Emotional Eater Questionnaire; ORSGS: The Offence-Related Shame and Guilt Scale.*p<0.05, **p<0.01

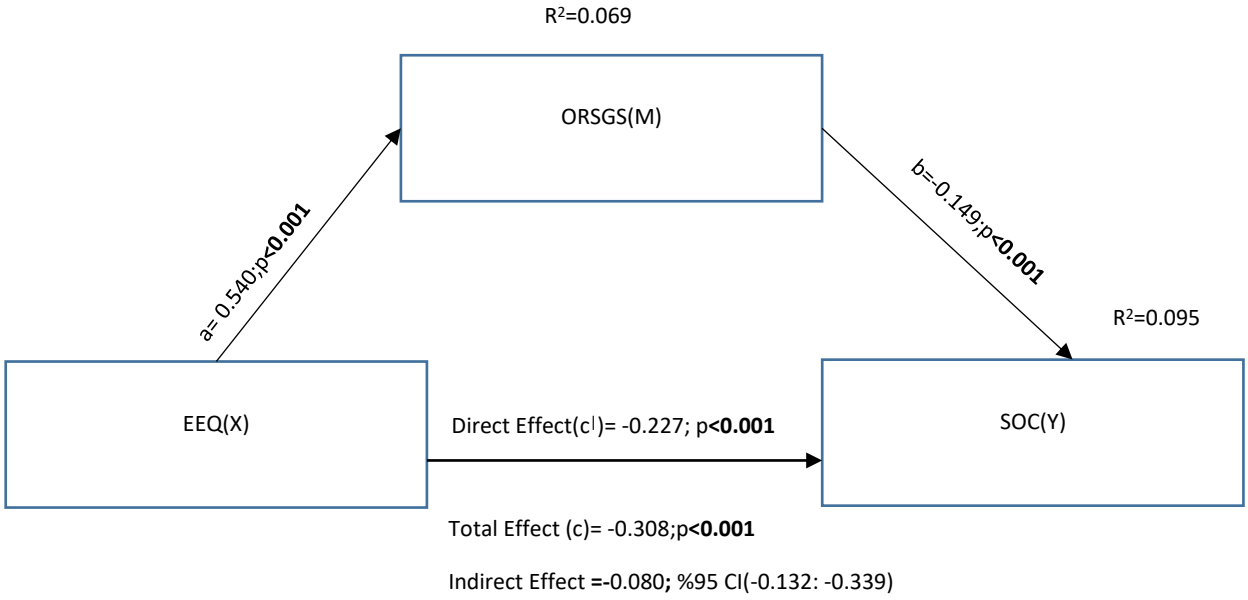

Figure 2. The mediating effect model of the Office-related Shame and Guilt Scale in the effect of the Emotional Eater Scale on the Sense of Coherence Scale

Table 4. The mediating role of the Offence-related Shame and Guilt Scale in the effect of the Emotional Eater Scale on the Sense of Coherence Scale

		ORSGS				SOC		
		β	SE	p		β	SE	p
EEQ	a	0.540	0.085	**<0.001**	c'	-0.227	0.059	**<0.001**
	Constant	35.535	1.013	**<0.001**				
ORSGS		***	***	***	b	-0.149	0.029	**<0.001**
					Constant	61.813	1.220	**<0.001**
R2			0.069				0.095	
Total Effect (c)= -0.308; p**<0.001**								
Indirect Effect = -0.080**;** %95 CI (-0.132:-0.039)								

β: Standardized Coefficient; SE: Standard Error; SOC: Sense of Coherence; EEQ: The Emotional Eater Questionnaire; ORSGS: The Offence-Related Shame and Guilt Scale.*<0.001

DISCUSSION

It has been reported that women are more prone to emotional eating and eating under stress and gain weight (Thompson and Romeo, 2015). The findings of the study conducted to examine the mediating effect of offence-related shame and guilt on the relationship between the sense of coherence and emotional eating in adult women were discussed within the scope of the literature. It has been stated that it will be possible to successfully cope with the numerous and complex stressors encountered throughout life with a sense of coherence (Ando and Kawano, 2018). In the study, the mean SOC score of women was found to be 53.35 ± 8.17. According to this score, it can be said that women's sense of coherence was at a moderate level. This result is similar to the research result in the literature (Ferguson et al., 2016). In this study, it was determined that as the age of the women increased, the level of sense of coherence also increased. Similar to our study, there is study in the literature dealing with this relationship (Fusz and Tóth, 2017). The increase in the sense of coherence as the age increases can be explained by the fact that the life experiences of women contribute to the increase in their level of coping with stress, which in turn affects the sense of coherence positively. Emotional eating occurs in response to psychological and emotional states such as fear and anxiety (Serin and Şanlıer, 2018). In this study, the mean EEQ score of women was found to be 10.32 ± 5.90. According to this score, it can be said that women were emotional eaters at a low level. In addition, it was determined in the study that 47% of women were emotional eaters. Similar results were obtained with the study conducted on students (Işık and Cengiz, 2020; Arslantaş et al., 2021). It can be said that women are at risk for emotional eating.

Guilt and shame are self-conscious emotions that result from negative self-evaluation (Bockers et al., 2016). In this study, the mean ORSGS score of women was found to be 41.10 ± 12.11. According to this average score, it can be said that the ORSGS scores of women were at a moderate level. It can also be said that the tendency of women to evaluate themselves negatively in their lives is high. Shame is thought to exacerbate the cycle of eating psychopathology by stimulating pathological eating behaviors (Pinto-Gouveia et al., 2014). In this study, it was determined that as the emotional eating scores of women increased, offence-related shame and guilt scores increased. Besides, 6.9% of adult women's ORSGS scores are explained by EEQ. The literature on eating disorders reports that shame or guilt (or both) play a role in women's disordered eating habits (Craven and Fekete, 2019; Tetik, 2019; Brockdorf et al., 2020; Dias et al., 2020; Mendia et al., 2021). This study also explains 42.7% of ORSGS Guilt and 96.4% of Shame. It can be said that ORSGS reveals the feeling of shame the most. Moreover, it can be said that the individuals who try to ignore their shame with emotional eating behavior also try to suppress their shame and guilt with eating behavior. Feelings of shame and guilt are defined as situations that cause distress and stress resulting from personal mistakes (Bockers et al., 2016). When the literature was examined, studies examining the sense of coherence and offence-related shame and guilt could not be found. In the study, it was determined that as the sense of coherence scores decreased, offence-related shame and guilt scores increased. With this result, it can be said that when women cannot cope effectively with the stressors in life, their feelings of offence-related shame and guilt increase.

In the study, it was determined that as women's SOC scores increased, their EEQ scores decreased. At the same time, as a result of this study, it was determined that the sense of coherence explained 6.6% of emotional eating. This is the first study to address emotional eating and sense of coherence in adult women without chronic diseases. Similar results were obtained in studies conducted with individuals with eating disorders (Dalley et al., 2020; Vagedes et al., 2021). In addition, the eating behaviors of students without chronic diseases were evaluated with different measurement tools and similar results were obtained with our study (Horiguchi et al., 2016; Kato et al., 2019). In a qualitative study conducted with female university students, it was stated that the trigger of emotional eating behaviors was stress (Bennett et al., 2013). A strong sense of coherence helps mobilize resources to cope with stressors and successfully manage

tension. Thanks to this mechanism, the sense of coherence helps to protect the health of the person and to ensure its continuity (Mittelmark and Bauer, 2017). With the development of a sense of coherence, stress formation can be reduced and emotional eating can be prevented. The mediation model in our study reveals that offence-related shame and guilt moderately mediate the relationship between the sense of coherence and emotional eating in adult women. By reducing women's feelings of offence-related shame and guilt, their sense of coherence can be activated, which can reduce emotional eating. Furthermore, the sense of coherence in women has a direct predictive effect on emotional eating. This study showed that the sense of coherence in women contributed positively to emotional eating, which is consistent with the results of previous studies in different groups (Horiguchi et al., 2016; Dalley et al., 2020; Vagedes et al., 2021). No similar study was found in the literature with our study. A sense of coherence is the ability to obtain and use various resources more effectively. When women are able to deal effectively with stressful situations in their lives, negative self-evaluations such as offence-related shame and guilt decrease.

As a result of the research, it is seen that offence related shame and guilt moderately mediate the relationship between the sense of coherence and emotional eating in adult women. At the same time, the sense of coherence in women has a direct predictive effect on emotional eating. The results of the study draw attention to the importance of emotional eating behavior and expressions of offence-related shame and guilt in protecting and maintaining health. Women need interventions to improve the senese of coherence. This study reveals the effect of emotional eating on emotions. Nurses, especially psychiatric nurses, can take a leading role in defining the negative emotions of women, determining the problems caused by their coping styles and behaviors, helping individuals to use their resources effectively, and protecting and maintaining health by providing holistic care.

Limitations

Limitations of this study; the use of self-report questionnaires is limited to women in one city of a particular region. It is recommended to study in larger sample groups for the generalizability of the results.

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Conflict of Interest

No potential conflict of interest was reported by the authors.

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Examination of the Relationship between Women's Perceptions of Health and Awareness of Gynecological Cancer

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ABSTRACT:
Purpose: The aim of this study is to determine the relationship between women's health perceptions and their awareness of gynecological cancer.
Materials and Methods: This descriptive study was conducted with 207 women. The data of the study were collected with the personal information form, the Perception of Health Scale (PHS), and the Gynecological Cancer Awareness Scale (GCAS). Descriptive statistics, Independent Sample-t test, ANOVA test, Mann-Whitney U test, Kruskal-Wallis test and Spearman correlation test were used in the analysis of the data. $p<0.05$ was considered statistically significant.
Results: The mean total score of women's PHS was 49.87±6.48, and the mean total score of GCAS was 153.71±18.79. A statistically significant positive correlation was found between the total score of the health perception scale and the total score of the gynecological cancer awareness scale ($r=0.309$, $p<0.001$). Women's marital status, education level, employment and economic status, frequency of going to gynecological examinations affect their health perceptions and awareness of gynecological cancer ($p<0.05$).
Conclusion: Early diagnosis of gynecological cancer reduces morbidity and mortality rates. For early diagnosis, women's awareness of gynecological cancer should be developed. As a result of the study, it was seen that as the health perceptions of women increased, their awareness of gynecological cancer also increased. It is recommended to raise awareness of health perceptions and gynecological cancer by informing women about gynecological cancer, early diagnosis, screening programs, and positive health behaviors.
Keywords: *Women, Health perception, Gynecological cancer, Cancer awareness.*

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INTRODUCTION

Cancer is a group of diseases that cause uncontrolled cell growth, depending on their location in the body and clinical features. In Globocan 2020 data, it is reported that breast and cervical cancer are among the five most common cancers in women in the world (Republic of Turkiye Ministry of Health, 2021). In Türkiye, breast, uterine corpus, ovarian and cervical cancers were among the top 10 cancers in women in 2017 (Republic of Turkiye Ministry of Health, 2017/2021). Gynaecological cancers originate from a woman's reproductive system (cervix, ovary, uterus, vaginal, vulvar and fallopian tube), each of which is referred to as the anatomical part where the cancer initiated (Ledford et al., 2019). Gynaecological cancers cause many physiological, psychological, economic and social problems in women and threaten their lives (Yagmur and Duman, 2016). Precautions such as developing a healthy lifestyle and avoiding risky behaviours are recommended for the prevention of gynaecological cancers (Kıyak and Burucu, 2022; Ozcan and Demir Dogan, 2021). Early diagnosis is very important in reducing cancer-related mortality rates. Women apply to health institutions late due to shame, lack of knowledge, religious beliefs, cultural problems, fear,

fatalism, and financial problems (Ozcan and Demir Dogan, 2021; Ozturk and Gursoy, 2020; Ndejjo et al., 2017). Women with low health literacy are less aware of the relationship between lifestyle and cancer and the purpose of cancer screening programmes (Boxell et al., 2012). To increase women's participation in early screening programmes, women's awareness of gynaecological cancer should be raised first (Kıyak and Burucu, 2022; Teskereci et al., 2020). High awareness of early screening programmes reduces cancer-related morbidity and mortality rates (Efe Arslan et al., 2022; Sahin, 2015; Durmaz et al., 2021). Women's health perceptions affect their health-related behaviours and health responsibilities (Ozdelikara et al., 2018). Similarly, attitude towards screening programmes, level of knowledge and access to screening services also affect participation in screening programmes (Ndejjo et al., 2017; Karakoyunlu Sen and Kılıc Ozturk, 2020). The health perception of the individual is very effective in acquiring preventive health behaviours (Uysal and Unal Toprak, 2022). Abandonment of negative health behaviours is associated with individuals' risk perceptions towards their health (Ferrer and Klein, 2015). Health perception is an important factor associated with patient outcomes, including quality of life, mental and physical health (Rathbun et al., 2020). Survival rates are higher in cancer cases detected with early diagnosis. In order for people to benefit from early diagnosis, their participation in cancer screening should be high. Studies have shown that people with positive health perception also have positive attitudes towards cancer screening (Uysal and Unal Toprak, 2022; Leung and Leung, 2010). This research was conducted to determine the relationship between women's health perceptions and their awareness of gynecological cancer.

MATERIAL and METHODS

Purpose and Type of the Study

This research was conducted to determine the relationship between women's health perceptions and their awareness of gynecological cancer. The research was planned as relation-seeking and cross-sectional.

Research questions

- What are women's perceptions of health?
- What is the gynecological cancer awareness status of women?
- Is there a relationship between health perceptions and gynecological cancer awareness?

Sampling and participant

The study was carried out between October-December, 2022. The sample of the current study consisted of the women between the ages of 18-65, being literate, having the ability to use a smartphone at a basic level, having no history/diagnosis of gynaecological cancer, and those with uterus, fallopian tubes and ovaries that were not surgically removed. In order to calculate the minimum sample size to be included in the study, the sample calculation formula used in cases where the number of people in the universe is unknown was used. $n= t^2.p.q / d^2$ [n= Population size; p= Sample proportion (the rate of women who underwent gynaecological examination for screening was taken as 0.11 in the study of Buyukkayacı Duman et al., 2015); q= Frequency of non-occurrence of the examined event (1-p); t= Critical value (95% confidence level) (1.96); d= Desired according to the frequency of occurrence ± deviation (0.05)]. According to this formula, the number of women to be sampled was found to be at least 150. Considering the possibility of invalid questionnaires, it was decided to include 200 women in the study. 207 women participated in the study.

Data Collection

The surveys were not delivered in hard copy, instead, a link including the surveys was created via a Google form. In the link, a question was asked concerning their consent to participate in the study. The link was sent to the women who met the inclusion criteria via whatsapp and instagram. In order to reach more participants, participants who agreed to participate in the study were asked to share the link in their friend groups. Participants accessed the scales after giving consent to participate in the study in the voluntary consent form. The system ensured that the questionnaires of the participants who marked only one answer option to the questions and items in the scales be sent by the system. Thus, the submission of

incomplete and multiple answers was prevented.

Data Collection Tools

Data were collected with Personal Information Form, Perception of Health Scale (PHS) and Gynaecological Cancer Awareness Scale (GCAS).

Personal Information Form

It is a form consisting of a total of 12 items to determine the sociodemographic and obstetric characteristics of the women participating in the study.

Perception of Health Scale (PHS)

The scale developed by Diamond et al. (Diamond et al., 2007) consists of 15 items and four sub-scales (importance of health, certainty, center of control and self-awareness) in five-point Likert type. Positive statements in the scale are scored as Strongly Agree (5), Agree, Neither Agree nor Disagree, Disagree, Strongly Disagree (1), while negative statements are reverse scored (Items 2, 3, 4, 6, 7, 8, 12, 13 and 15). The lowest score that can be obtained from the scale is 15 and the highest score is 75. The Turkish validity and reliability study of the scale was conducted by Kadıoglu and Yıldız (Kadıoglu and Yıldız, 2012). The Cronbach Alpha coefficient of the scale was found to be 0.77. In this study, the Cronbach Alpha value of the scale was found to be 0.70.

Gynaecological Cancer Awareness Scale (GCAS)

This scale was developed by Nursel Alp Dal and Gul Ertem (Alp Dal and Ertem, 2017). GCAS consists of 41 items and four sub-scales (Routine Follow-up and Awareness of Serious Disease Perception in Gynecological Cancers, Awareness of Gynecological Cancer Risks, Awareness of Protection from Gynecological Cancers, Awareness of Early Diagnosis and Information in Gynecological Cancers). Scores between 41-205 can be obtained from the scale. As the score of women from GCAS increases, their awareness increases (Alp Dal and Ertem, 2017). The Cronbach Alpha value of GCAS is 0.94. In this study, the Cronbach Alpha value of the scale was 0.93.

Statistical Analysis

The data were evaluated with SPSS 28.0 programme (IBM Corp). Normality of the data was analysed by Kolmogrov-Smirnov test. Independent sample t and ANOVA tests were done for normally distributed data, Tukey's T2 tests were used to determine which group was different from the others if homogenic assumption was met, and Tamhane's T2 tests were used if homogenic assumption was not met. For non-normally distributed data, Mann-Whitney U and Kruskal-Wallis tests were used. Spearman correlation coefficient was used to determine the relationship. Results were evaluated with a 95% confidence interval and $p<0.05$ value accepted as a significance level.

Ethical Approval

Ethics committee permission (Date: 29.09.2022 Decision no: 2022/002-004) was obtained from an University Scientific Research and Publication Ethics Committee. Written informed consent was obtained from women who agreed to participate in the study.

RESULTS

The mean age of the women who participated in the study was 41.58±11.69 years. Of the women; 79.7% were married, 63.8% were university graduates, 71.5% had moderate economic status, and 74.4% had no chronic disease. Of women; 62.8% went for gynaecological examination when they had a complaint and 88.9% had no relatives with a diagnosis of gynaecological cancer (Table 1).

The total PHS mean score of the women was 49.87±6.48. The mean scores of importance of health, center of control, self-awareness, certainty subscales of PHS were 10.68±2.05, 16.46±3.40, 10.48±1.94, 12.23±3.04, respectively. The total GCAS mean score of the women was 153.71±18.79. The GCAS mean subscales scores were between 16.76±2.50-88.02±12.81 (Routine Follow-up and Awareness of Serious Disease Perception in Gynecological Cancers= 88.02±12.81, Awareness of Gynecological Cancer Risks= 27.58±5.17, Awareness of Protection from Gynecological Cancers= 21.34±3.68, Awareness of Early Diagnosis and Information in Gynecological Cancers= 16.76±2.50) (Table 2).

The relationship between women's perception of health scale and gynaecological cancer awareness scale is given in Table 3. A positive, weak and statistically significant relationship was found between the PHS importance of health and GCAS

routine follow-up and awareness of serious disease perception in gynecological cancers (r=0.270 p<0.001), awareness of protection from gynecological cancers (r=0.243 p<0.001), awareness of early diagnosis and information in gynecological cancers (r=0.171 p=0.014).

A positive and weak relationship was found between the PHS center of control and GCAS routine follow-up and awareness of serious disease perception in gynecological cancers (r=0.192 p=0.006). There is a weak positive relationship between the PHS self-awareness and GCAS routine follow-up and awareness of serious disease perception in gynecological cancers (r=0.154 p=0.026) and awareness of protection from gynecological cancers (r=0.199 p=0.004). A positive, weak and statistically significant relationship was found between the PHS certainty and GCAS routine follow-up and awareness of serious disease perception in gynecological cancers (r=0.196 p=0.005), awareness of protection from gynecological cancers (r=0.212 p=0.002), awareness of early diagnosis and information in gynecological cancers (r=0.181 p=0.009). A statistically significant positive weak correlation was found between the total PHS and the total GCAS mean scores (r=0.309, p<0.001). In addition, a positive weak statistically significant relationship was found between all subscales of PHS and the total GCAS (p<0.05).

A statistically significant difference was found between the education level of the women and the PHS certainty and the total PHS mean scores (p<0.05). The PHS certainty (F=8.473 p<0.001) and total PHS mean scores (F=5.146 p=0.002) of the university graduate women were higher than the other groups. A statistically significant difference was specified between the PHS center of control and total PHS mean scores according to employment status (p<0.05). The PHS the center of control (t=1.997 p=0.047), certainty (t=3.403 p<0.001) and total PHS mean scores (t=3.119 p=0.002) of the working women were higher.

Table 1. Descriptive characteristics of women (n: 207)

Characteristics	**n (%)**
Age±SD	41.58±11.69
Marital status	
Married	165 (79.7)
Single	42 (20.3)
Education level	
Primary School	25 (12.1)
Middle School	9 (4.3)
High School	41 (19.8)
University	132 (63.8)
Employment status	
Working	112 (54.1)
Not working	95 (45.9)
Economic status	
High	54 (26.1)
Moderate	148 (71.5)
Low	5 (2.4)
Number of births±SD	1.84±1.35
Presence of chronic disease	
Yes	53 (25.6)
No	154 (74.4)
Experiencing gynaecological examination	
Once or twice a year (for control purposes)	43 (20.8)
I go when I have a complaint	130 (62.8)
I'm not going	34 (16.4)
Presence of a family member diagnosed with gynaecological cancer	
Yes	23 (11.1)
No	184 (88.9)
Total	**207 (100)**

Table 2. Total PHS and GCAS Mean Scores of Women

Scale / Subscales	Scale Min – Max	X±SD	Cronbach α
The total mean score of Perception of Health Scale (PHS)	30-69	49.87±6.48	
Importance of health	5-15	10.68±2.05	
Center of control	7-25	16.46±3.40	0.705
Self-awareness	6-14	10.48±1.94	
Certainty	5-20	12.23±3.04	
The total mean score of Gynaecological Cancer Awareness Scale (GCAS)	55-199	153.71±18.79	
Routine Follow-up and Awareness of Serious Disease Perception in Gynecological Cancers	25-110	88.02±12.81	
Awareness of Gynecological Cancer Risks	11-44	27.58±5.17	0.933
Awareness of Protection from Gynecological Cancers	6-30	21.34±3.68	
Awareness of Early Diagnosis and Information in Gynecological Cancers	5-20	16.76±2.50	

Table 3. The relationship between Total PHS and GCAS Mean Scores of Women

Scales		Perception of Health Scale (PHS)				
		Importance of health	Center of control	Self-awareness	Certainty	The total Perception of Health Scale
Routine Follow-up and Awareness of Serious Disease Perception in Gynecological Cancers	**r**	0.270	0.192	0.154	0.196	0.344
	p	<0.001	0.006	0.026	0.005	<0.001
Awareness of Gynecological Cancer Risks	**r**	0.003	-0.043	0.078	-0.016	0.007
	p	0.961	0.534	0.263	0.822	0.922
Awareness of Protection from Gynecological Cancers	**r**	0.243	0.060	0.199	0.212	0.276
	p	<0.001	0.392	0.004	0.002	<0.001
Awareness of Early Diagnosis and Information in Gynecological Cancers	**r**	0.171	0.111	0.117	0.181	0.226
	p	0.014	0.112	0.093	0.009	0.001
The total Gynaecological Cancer Awareness Scale (GCAS)	**r**	0.230	0.145	0.177	0.185	0.309
	p	<0.001	0.038	0.011	0.007	<0.001

r: sperman correlation

A statistically significant difference was determined between economic status and the PHS importance of health and certainty (p<0.05). The PHS importance of health (F=3.521 p=0.031) and certainty (F=4.025 p=0.019) mean scores of women with good income status were higher than those with moderate income status. There is a statistically significant difference between the PHS importance of health mean score and the status of experiencing gynaecological examination (p<0.05). The PHS importance of health mean scores of those who did not apply to gynaecological examination were found to be lower than those who applied to examination once or twice a year and those who applied to examination when they had complaints (F=4.740 p=0.010). There is a statistically significant difference (p<0.05) between the PHS self-awareness mean score and women who had a family history of gynaecological cancer. The PHS self-awareness mean scores of women who had no family history of gynaecological cancer were found to be higher (t=-2.091 p=0.038) (Table 4).

Table 5 shows the comparison of the sociodemographic characteristics of the women with the GCAS' subscales and total GCAS median scores. There is a statistically significant difference between marital status and the median scores of GCAS routine follow-up and awareness of serious disease perception in gynecological cancers and total GCAS (p<0.05). The median scores of GCAS routine follow-up and awareness of serious disease perception in gynecological cancers (z=-2.228 p=0.026) and the total GCAS (z=-2.390 p=0.017) of married women were higher than those of the single women. It was determined that the education level had an effect on the GCAS awareness of gynecological cancer risks and GCAS awareness of early diagnosis and information in gynecological cancers (p<0.05).

Table 4. Comparison of PHS mean scores according to socio-demographic characteristics of women

Descriptive Characteristics	n	Perception of Health Scale (PHS)				
		Importance of health X±SS F, t, p	Center of control X±SS F, t, p	Self-awareness X±SS F, t, p	Certainty X±SS F, t, p	Total PHS X±SS F, t, p
Marital status						
Married	165	10.72±2.07	16.36±3.54	10.41±2.01	12.27±3.04	49.78±6.81
Single	42	10.52±2.00	16.85±2.78	10.76±1.63	12.07±3.06	50.21±5.01
		t: 0.554	t: -0.828	t: -1.024	t: 0.393	t: -0.380
		p: 0.580	p: 0.409	p: 0.307	p: 0.695	p: 0.705
Education level						
Primary School[a]	25	10.60±1.93	15.40±3.75	10.20±1.87	10.28±2.17	46.48±7.81
Middle School[b]	9	9.55±2.50	14.44±4.58	10.44±2.12	11.11±3.01	45.55±8.32
High School[c]	41	11.29±1.92	16.29±3.56	10.56±2.34	11.31±3.62	49.46±5.51
University[d]	132	10.58±2.06	16.86±3.13	10.52±1.82	12.96±2.74	50.93±6.06
		F: 2.256	F: 2.570	F: 0.215	F: 8.473	F: 5.146
		p: 0.083	p: 0.055	p: 0.886	p<0.001*	p: 0.002*
Post hoc					d>a,c	d>a
Employment status						
Working	112	10.72±1.95	16.91±2.88	10.62±1.77	12.88±2.95	51.14±5.97
Not working	95	10.63±2.18	15.94±3.87	10.32±2.12	11.47±2.98	48.37±6.77
		t: 0.318	t: 1.997	t: 1.087	t: 3.403	t: 3.119
		p: 0.750	p: 0.047*	p: 0.279	p<0.001*	p: 0.002*
Economic status						
High[a]	54	11.29±2.06	15.81±3.10	10.61±2.04	13.14±3.38	50.87±7.09
Moderate[b]	148	10.44±2.03	16.74±3.52	10.45±1.87	11.96±2.86	49.60±6.30
Low[c]	5	11.00±1.58	15.40±1.81	10.20±3.03	10.40±2.30	47.00±3.67
		F: 3.521	F: 1.737	F: 0.186	F: 4.025	F: 1.255
		p: 0.031*	p: 0.179	p: 0.830	p: 0.019*	p: 0.287
Post hoc		a>b			a>b	
Presence of chronic disease						
Yes	53	10.33±2.18	16.07±3.81	10.47±1.94	11.56±2.76	48.45±6.90
No	154	10.79±2.00	16.60±3.25	10.49±1.94	12.46±3.11	50.36±6.28
		t: -1.404	t: -0.975	t: -0.070	t: -1.870	t: -1.861
		p: 0.162	p: 0.331	p: 0.944	p: 0.063	p: 0.064
Experiencing gynaecological examination						
Once or twice a year (for control purposes)[a]	43	10.90±2.05	16.65±3.63	10.86±2.24	12.23±3.53	50.65±6.92
I go when I have a complaint[b]	130	10.86±1.91	16.44±3.34	10.38±1.84	12.21±3.06	49.90±6.44
I'm not going[c]	34	9.70±2.34	16.32±3.39	10.41±1.89	12.32±2.29	48.76±6.08
		F: 4.740	F: 0.095	F: 1.000	F: 0.026	F: 0.806
		p: 0.010*	p: 0.910	p: 0.370	p: 0.974	p: 0.448
Post hoc		a,b>c				
Presence of a family member diagnosed with gynaecological cancer						
Yes	23	10.69±1.98	16.30±3.33	9.69±1.81	11.91±3.02	48.60±6.18
No	184	10.67±2.07	16.48±3.41	10.58±1.93	12.27±3.05	50.03±6.52
		t: 0.036	t: -0.245	t: -2.091	t: -0.540	t: -0.993
		p: 0.972	p: 0.807	p: 0.038*	p: 0.590	p: 0.322

The median score of GCAS awareness of gynecological cancer risks was higher in university graduates than in high school graduates (KW=8.351 p=0.039), while the median score of the GCAS awareness of early diagnosis and information in gynecological cancers was higher in primary school graduates (KW=9.556 p=0.023). There is a statistically significant difference between GCAS awareness of gynecological cancer risks and GCAS awareness of early diagnosis and information in gynecological cancers in the working women (p<0.05). The median scores of GCAS awareness of gynecological cancer risks (z=-2.325 p=0.020) and GCAS awareness of early diagnosis and information in gynecological cancers (z=-2.476 p=0.013) were found to be higher in the working women.

Table 5. Comparison of the GCAS median scores according to the socio-demographic characteristics of women

Descriptive Characteristics	n	Gynaecological Cancer Awareness Scale (GCAS)				
		Routine Follow-up and Awareness of Serious Disease Perception in Gynecological Cancers	Awareness of Gynecological Cancer Risks	Awareness of Protection from Gynecological Cancers	Awareness of Early Diagnosis and Information in Gynecological Cancers	Total GCAS
		Median z, KW, p	Median z, KW, p	Median z, KW, p	Median z, KW, p	Median z, KW, p
Marital status						
Married	165	88.00	27.00	22.00	17.00	155.00
Single	42	85.00	28.00	21.00	16.00	149.00
		z: -2.228	z: -0.301	z: -1.745	z: -0.859	z: -2.390
		p: 0.026*	p: 0.763	p: 0.081	p: 0.390	p: 0.017*
Education level						
Primary School[a]	25	87.00	27.00	22.00	16.00	152.00
Middle School[b]	9	92.00	27.00	23.00	16.00	154.00
High School[c]	41	88.00	26.00	21.00	17.00	153.00
University[d]	132	87.00	28.00	21.00	17.50	154.00
		KW: 0.339	KW: 8.351	KW: 1.600	KW: 9.556	KW: 1.478
		p: 0.952	p: 0.039*	p: 0.659	p: 0.023*	p: 0.687
Post hoc			d>c		d>a	
Employment status						
Working	112	87.00	28.00	21.00	18.00	154.50
Not working	95	87.00	27.00	22.00	16.00	152.00
		z: -1.098	z: -2.325	z: -0.230	z: -2.476	z: -1.918
		p: 0.272	p: 0.020*	p: 0.818	p: 0.013*	p: 0.055
Economic status						
High[a]	54	89.00	27.00	22.50	17.50	156.00
Moderate[b]	148	87.00	27.00	21.00	17.00	153.00
Low[c]	5	87.00	24.00	20.00	16.00	145.00
		KW: 3.186	KW: 2.758	KW: 7.682	KW:2.370	KW: 4.756
		p: 0.203	p: 0.252	p: 0.021*	p: 0.306	p: 0.093
Post hoc				a>b		
Presence of chronic disease						
Yes	53	88.00	27.00	22.00	17.00	156.00
No	154	87.00	27.00	21.0	17.00	153.00
		z: -0.822	z: -0.307	z: -0.666	z: 0.200	z: -0.920
		p: 0.411	p: 0.759	p: 0.505	p: 0.841	p: 0.357
Experiencing gynaecological examination						
Once or twice a year (for control purposes)[a]	43	92.00	27.00	22.00	17.00	160.00
I go when I have a complaint[b]	130	88.00	28.00	22.00	17.00	154.00
I'm not going[c]	34	80.00	27.00	19.00	16.00	140.00
		KW: 15.424	KW: 3.134	KW: 14.140	KW: 5.209	KW: 17.970
		p: 0.000*	p: 0.209	p: 0.001*	p: 0.074	p: 0.000*
Post hoc		a,b>c		a,b>c		a,b>c
Presence of a family member diagnosed with gynaecological cancer						
Yes	23	86.00	27.00	21.00	17.00	155.00
No	184	87.50	27.00	22.00	17.00	153.00
		z: 0.296	z: 0.252	z: 0.639	z: -0.113	z: 0.198
		p: 0.768	p: 0.801	p: 0.523	p: 0.910	p: 0.843

Economic status was found to have a statistically significant effect on GCAS awareness of protection from gynecological cancers ($p<0.05$). Those who defined their economic status as high had a higher median score (KW=7.682 p=0.021) in GCAS awareness of protection from gynecological cancers

than those who defined their economic status as moderate. There is a statistically significant difference ($p<0.05$) between the status of applying to gynaecological examination and the GCAS routine control in gynaecological cancers and serious disease perception, GCAS awareness of protection from gynecological cancers, and total GCAS scores. Those who did not apply to gynaecological examination had lower median scores in GCAS routine control in gynaecological cancers and serious disease perception (KW=15.424 p=0.000), GCAS awareness of protection from gynecological cancers (KW=14.140 p=0.001) and total GCAS (KW=17.970 p=0.000).

DISCUSSION

In this study in which the relationship between women's health perceptions and their awareness of gynaecological cancer was examined, the total GCAS mean score of women was found to be 153.71±18.79. Other studies on the subject also support the results of the current study and the total GCAS mean scores are similar (Kıyak and Burucu, 2022; Ozcan and Demir Dogan, 2021; Gozuyesil et al., 2020; Kaya Senol et al., 2021). These results show that women's awareness of gynaecological cancer is around moderate. Participation in cancer screening programmes is very important to detect cancer at an early stage. When trainings are planned for women about the necessity of early diagnosis and screening programmes, it is thought that their awareness of gynaecological cancers will also increase. The total PHS mean score of the women participating in the study was 49.87±6.48, which is approximately moderate. In the study of Uysal and Unal Toprak (Uysal and Unal Toprak, 2022), total PHS mean scores of women was found to be 53.33±6.50; in the study of Karakoyunlu Sen and Kılıc Ozturk (Karakoyunlu Sen and Kılıc Ozturk, 2020), it was found to be 50.18±9.86. Health perception supports individuals to take responsibility for their health and develop positive health behaviours (Acıksoz et al., 2013). When individuals practice healthy lifestyle behaviours, they improve a sense of health (Kolac et al., 2018). As can be seen from the results of the study, the current health perceptions of women are not at a high level. Women's health perceptions can be increased by providing them with healthy lifestyle habits and their participation in early screening programmes for cancer can be increased. It is seen that the health perceptions of the women participating in the study advance with the increase in their level of education. In different studies, it was determined that education increased health perception (Karakoyunlu Sen and Kılıc Ozturk, 2020; Uysal and Unal Toprak, 2022; Kolac et al., 2018). It is thought that with the increase in the level of education, people gain awareness of health responsibility and their health perceptions are positively affected.

The total PHS mean score and PHS subscales mean scores were found to be higher in women who work and defined their economic status as high. Similarly, in the study conducted by Kucukberber et al. (Kucukberberber et al., 2011), the health perception of those who perceived their income status as safisfactor was high. In the study conducted by Cihangiroglu and Deveci (Cihangiroglu and Deveci, 2011) on university students, it was specified that those who evaluated their economic status as high had more healthy lifestyle behaviours. It is thought that people with higher economic status show positive health behaviours, do not neglect health checks, can spare money for health expenditures and have a higher quality of life. It was determined that PHS importance of health mean score of women who did not apply to gynaecological examination scored lower than those who applied for examination several times a year and when they had complaints. It has been revealed with the results of the studies that people who care about their health gain healthy life behaviours and have check-ups for control purposes within the scope of primary protection (Karakoyunlu Sen and Kılıc Ozturk, 2020; Ersin et al., 2016; Kulakcı Altıntas and Korkmaz Aslan, 2020). A positive and significant relationship was found between the health perceptions of the women participating in the current study and their awareness of gynaecological cancer. According to this result, women with higher health perception also had higher awareness of gynaecological cancer. The study result of Uysal and Unal Toprak (Uysal and Unal Toprak, 2022) also supports this study. Aydın (Aydın, 2019) also found that gynaecological cancer

awareness of people who have acquired healthy lifestyle behaviours were high. Gynaecological cancer awareness of married women participating in the study is higher than that of single women. In the study of Kulakçı Altıntaş and Korkmaz Aslan (Kulakcı Altıntas and Korkmaz Aslan, 2020), no relationship was found between marital status and attitudes towards early diagnosis of cervical cancer. In Aydın's (Aydın, 2019) study, no significant relationship was found between marital status and awareness of gynaecological cancer. Considering the fact that married women visit health institutions more frequently to benefit from family planning services or because of problems related to the reproductive system, they may have received more information about gynaecological cancers from health professionals.

As the level of education increases, women's awareness of gynaecological cancer risks and early diagnosis increases. In the study of Gozuyesil et al. (Gozuyesil et al., 2020), women's awareness of gynaecological cancer risks and early diagnosis increased as the education level rised. In the study of Kaya Senol et al. (Kaya Senol et al., 2021), although there was no significant relationship between education levels and gynaecological cancer awareness scale, it is seen that awareness increased as the education level increased. Apart from all these results, in the study of Kulakcı Altıntas and Korkmaz Aslan (Kulakcı Altıntas and Korkmaz Aslan, 2020), the attitudes of women with undergraduate and graduate education towards early diagnosis of cervical cancer were found to be lower than women with other education levels. Increasing level of education leads to an increase in women's knowledge about the disease, early diagnosis and screening. Women with low level of education should be considered as a priority group and information about gynaecological cancers should be provided for them. Awareness of early diagnosis and information in gynecological cancers among working women and awareness of protection from gynecological cancers among women who defined their economic status as good were found to be higher. The results of other studies also support this results (Gozuyesil et al., 2020; Sahin and Sayın, 2015). The economic privilage provided by working life facilitates access to health services and supports help-seeking behaviour. Gynaecological cancer awareness of the women who did not apply to gynaecological examination was found to be quite low. In the study by Gozuyesil et al. (Gozuyesil et al., 2020), routine follow-up and awareness of serious disease perception in gynecological cancers was found to be higher in those who regularly applied to gynaecological examinations. In Aydın's (Aydın, 2019) study, no significant relationship was found between the frequency of going to gynaecological examination and awareness of gynaecological cancer. Similarly, in the study of Kulakcı Altıntas and Korkmaz Aslan (Kulakcı Altıntas and Korkmaz Aslan, 2020), no relationship was found between applying to a gynaecological examination and the attitude towards early diagnosis of cervical cancer. Even increased knowledge and awareness of gynaecological cancers encourages women to undergo gynaecological examinations and many problems can be easily detected at an early stage by gynaecological examination.

CONCLUSIONS

There is a positive relationship between health perception and awareness of gynaecological cancer and as women's health perception increases, their awareness of gynaecological cancer also increases. Early diagnosis is important to reduce morbidity and mortality rates related to gynaecological cancers. When women are informed about gynaecological cancers and the importance of early diagnosis and their perception of health is tried to be increased, it can be ensured that they have positive attitudes towards screening programmes.

Limitations

The limitations of the study are that it was conducted with women who can use smartphones and computers and the results cannot be generalised to all women in Türkiye.

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Conflict of Interest Statement

The authors declare that there is no conflict of interests.

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Research Article

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Patient Privacy Attitude Scale: A Scale Development Study

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ABSTRACT:
Purpose: The aim of this study was to develop a measurement tool to determine the attitudes of health professionals towards patient privacy.
Material and Methods: First, an item pool of 42 items was created by the researchers and expert opinion was presented. The scale form, whose language and content validity was ensured, was applied to the sample group, and the data obtained were analyzed through LISREL 8.54 and SPSS 22.0 package programs. The validity of the scale was evaluated using exploratory and confirmatory factor analyses and reliability was evaluated using Cronbach's Alpha reliability coefficient, test-retest method and item analysis.
Results: Exploratory factor analysis yielded a 27-item structure with 5 factors explaining 57.483% of the variance, eigenvalues above 1, and factor loadings above 0.53. Confirmatory factor analysis revealed that the scale showed a theoretically and statistically acceptable level of fit. The reliability of the scale was examined by test-retest method and internal consistency analysis. The total Cronbach's alpha coefficient of the scale was 0.91. There was no statistical difference between the test-retest means of the total and five sub-dimensions of the scale ($p>0.05$).
Conclusion: The analysis shows that the scale is a reliable and valid measurement tool that can be used to determine the attitudes of health professionals towards patient privacy.
Keywords: *Patient, Privacy, Attitude, Scale Development*

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INTRODUCTION

Patient privacy is one of the fundamental ethical principles of modern medicine. Patient privacy, which is also an abstract, complex and value-laden concept, is defined as an individual's desire or ability to control data about him or herself (Wilen Berg, 2011; Shen et al., 2019). According to another definition, patient privacy is the right to keep confidential personal and private information about a person's health status and treatment. This information covers a wide range of topics from the patient's health status to treatment plans and medical history (Wilen Berg, 2011). The protection of patient privacy in the provision of health services is a right provided by law. The right to privacy requires the protection of not only physical privacy but also personal data. Health data is a type of personal data that benefits from the protection of patient privacy and is closely linked to the right to privacy (Akyürek, 2013; İzgi, 2014; Atalay, 2021). The private lives of individuals include their identities, secrets, private documents, correspondence, lifestyles, physical and mental conditions, sexual lives, and all kinds of documents, information, and symptoms that constitute their content are personal data (Aydin, 2013; Atalay, 2021). Ensuring the confidentiality of the patient's data and protecting the patient's body privacy is a requirement of respect for the patient's right to privacy (Sert, 2018). Protecting the patient's health data is also a requirement for patients to trust

healthcare institutions and healthcare providers (Badur, 2012). At this point, the obligation to keep patient information confidential is the responsibility of healthcare providers and all health professionals. In order to fulfill this responsibility, it is essential that both service providers and health professionals have a high level of professionalism and ethical responsibility. Furthermore, collaboration and coordination between healthcare providers, professionals and other interested parties is necessary to ensure the security of patients' personal health information (Blightman et al., 2014; Shen et al., 2019).

There are many factors that may lead to breaches of patient privacy. For example, today's dizzying pace of technological developments has made it almost impossible to store information and protect personal privacy (Wilen Berg 2011; Blightman et al. 2014). When the infrastructure and physical problems of healthcare organizations are added to this, it can be quite difficult to ensure patient privacy. In addition, various factors related to health professionals also lead to violations of patient privacy. Health professionals sometimes share patients' personal information with other health professionals/interested parties without taking the necessary precautions to protect the patient's privacy, which may lead to breaches. Or some health professionals may access the patient's personal information in a malicious way and may want to use this information in various ways (such as blackmail or for personal gain). Lack of adequate knowledge on the subject may also lead to violations of patient privacy. Patient privacy may also be violated due to negative attitudes of health professionals. For example, some health professionals may not have sufficient awareness about respecting the privacy of their patients. In this case, they may talk about the patient's personal information or health condition with unrelated people or share information without authorization. Or health workers may not focus sufficiently on the privacy of their patients when providing services. For example, they may forget to pay attention to the patient's privacy while they are busy providing emergency care in an emergency situation.

Protecting patient privacy is one of the fundamental ethical and legal responsibilities of healthcare providers. Violation of patient privacy, regardless of the reason, leads to serious ethical, legal and legal consequences. Therefore, health professionals should be aware of patient privacy and should be trained appropriately. At this point, it is important to first determine the attitudes of health professionals towards patient privacy. In the literature review, it was determined that there are limited number of measurement tools to objectively measure the attitudes of health professionals towards patient privacy (Ozturk et al., 2014; Ozturk et al., 2019; Xu et al., 2022). However, there are scales to measure patients' attitudes towards patient privacy (Eskici et al., 2022). The aim of this study is to develop a measurement tool to determine the attitudes of health professionals towards patient privacy. This measurement tool can be used in the structuring of training contents in the trainings planned to be given to health professionals and in the evaluation of training effectiveness.

MATERIAL and METHODS

Purpose and Type of the Study

The aim of this methodological research is to develop a measurement tool to determine the attitudes of health professionals towards patient privacy.

Sampling and participant

There is no consensus in the literature regarding the determination of sample size in scale development, validity and reliability studies. However, when the number of variables is not too large and the factors are strong and significant, it is accepted that a sample size between 100 and 200 is sufficient (Buyukozturk 2013). Tavsancil (2002) states that the sample size should be between 5 or 10 times the number of items. In this study, 325 health professionals (doctors, nurses, midwives, health technicians) working in a university hospital constituted the sample of the study. Convenience sampling method was used to determine the study group.

Data Collection Tools

First, the items to be included in the item pool of the scale were created by the researchers. The literature

on the subject of the scale to be developed was reviewed and a limited number of sample scales were utilized. In this way, the scale item pool consisting of a total of 42 items was formed. In order for a scale to have content validity, all of the items included in the measurement tool should measure the measured characteristic and each detail of the measured characteristic should be questioned by the items in the scale. In other words, it can be said that a measurement tool has content validity to the extent that it measures the conceptual infrastructure of the trait it aims to measure in all aspects (Kartal and Bardakcı, 2018). In the second stage, the scale item pool was presented to 5 faculty members who are experts in the field of health sciences to be evaluated in terms of content validity. The experts evaluated each item in the item pool in terms of whether it should be included in the scale or not, and as a result of this process, the items that were out of the scope of the scale in line with the recommendations of the experts were removed from the scale item pool, and a draft scale consisting of a total of 37 items was obtained. The expressions in the scale were rearranged and the draft scale was finalized by consulting the information of an academician who is an expert in the field of Turkish Language about whether the item expressions in the draft scale were appropriate in terms of expression and spelling rules. The draft scale form was applied face-to-face by the researchers to the participants in line with the principle of voluntary participation. The scale is a 5-point Likert type scale. The items in the scale are scored as "5= Strongly Agree", "4= Partially Agree", "3= Undecided", "2= Partially Disagree" and "1= Strongly Disagree". As the scores obtained from the scale approach five, it shows that the level of agreement of the individuals with the proposition in that item is high, and as it approaches one, it shows that the level of agreement is low. There are no reverse-scored items in the scale.

Statistical Analysis

After the application of the scale to the participants, the data were transferred to the computer environment through LISREL 8.54 and SPSS 22.0 package programs and psychometric analysis of the scale was performed.

Validity: In order for a measurement tool to be valid, it is expected to be able to measure the characteristics to be measured without confusing them with different parameters. Kendall's Concordance Coefficient (W) was calculated to determine whether the scale was valid in terms of content. Exploratory factor analysis (EFA) was used to test the construct validity of the scale and confirmatory factor analysis (CFA) was used to examine the relationship between factors.

Reliability: "Reliability" and "validity" are very important issues in scale studies. In order for a measurement tool to be reliable, it should give similar results even if it is applied at different times (Akgul, 2005, Karagoz and Ekici 2004). In this study, item- total score correlation was used to test the reliability of the scale being developed, internal consistency was evaluated and test-retest analysis was performed.

Ethical Approval

In the development of the scale, approval was first obtained from the ethics committee of the university where the authors are affiliated (Decision No: 2018-02/61). The participants who participated in the scale study were informed about the purpose of the study and their contact information and consent were obtained. It was explained to the participants that the security of personal data would be protected and that the data would only be used for scientific purposes.

RESULTS

The mean age of the participants was 32.4 years (8.4), 79.1% were female, 62.5% were married, 76.3% had undergraduate/graduate education. 59.7% of the participants were nurses, 15.4% were doctors, 17.2% were health technicians, and 7.7% were midwives. 30.2% worked in internal clinics, 20.6% in surgical clinics and 49.2% in other clinics (such as emergency services, intensive care, administrative services). The mean working years of the participants was 10.1 (8.45) years, 87.7% received training on patient privacy, 48.3% of those who received training received training on patient privacy during their professional training. 52.5% of the participants found their knowledge sufficient.

Table 1. Explanatory factor analysis

Factors	Item		Load Factor	Eigen values	Variance (%)	Cumulative variance (%)
Factor 1	i 16	Protecting privacy affects patient satisfaction.	.603	8.588	31.806	31.806
	i 17	In mandatory reporting situations, health professionals take measures to protect patient privacy.	.616			
	i 18	Health professionals inform the patient about the limits of privacy.	.536			
	i 21	There are legal and criminal responsibilities for disclosing patient information.	.650			
	i 22	The patient decides whether patient information is used for medical research.	.668			
	i 23	Health professionals perform medical interventions while respecting the patient's privacy.	.726			
	i 24	It is the responsibility of health professionals to assess the patient's privacy needs.	.614			
	i 25	The patient may request to be accompanied by a relative in cases where it is not medically inconvenient.	.563			
	i 26	The patient may not want people who are not directly related to his/her treatment to be present during medical intervention.	.625			
	i 27	The patient's personal and family life does not be interfered with unless the nature of the disease requires it.	.578			
	i 31	Death does not give health professionals the right to violate patient privacy.	.632			
Factor 2	i 6	The patient can demand that his/her privacy is protected.	.811	2.836	10.505	42.311
	i 7	The patient has the right to expect respect for his/her privacy.	.837			
	i 8	The patient's medical records are privacy.	.750			
	i 10	Medical records are the patient's property in every way.	.730			
	i 12	The patient can share information about himself/herself as much as he/she "wants" to.	.585			
	i 15	The patient can decide for himself/herself with whom his/her information will be shared.	.536			
Factor 3	i 11	The principle of privacy is applied in keeping and storing patient records.	.682	1.693	6.269	48.580
	i 19	If legally required, patient information may be shared with relevant units.	.675			
	i 30	Patients retain their right to privacy even if they leave the health institution.	.765			
Factor 4	i 28	Access to patients' medical records by unrelated persons is a violation of rights.	.652	1.244	4.608	53.188
	i 29	Patients and their relatives have the right to complain and sue in case of breach of privacy.	.763			
	i 33	In health institutions, the job descriptions of employees should specify who can access what kind of data.	.569			
	i 37	Health professionals should be periodically trained on patient privacy.	.649			
Factor 5	i 1	Privacy is a fundamental human right.	.619	1.160	4.296	57.483
	i 3	Respect for privacy is a moral responsibility.	.739			
	i 9	Protecting patient privacy is as important as treating the patient.	.693			

Validity Construct Validity

In this study, the KMO statistic for the data of the 37-item draft scale was calculated as .904. Bartlett's test ($\chi 2$= 3752.997, p=0.000) was found to be significant and it was decided that the data were suitable for factor analysis.

Explanatory Factor Analysis

At this stage, exploratory factor analysis (EFA) was applied to 37 items in the draft scale using Principal Component Analysis and Varimax Rotation methods to determine the measurement structure of the scale. Ten items that did not fit under any factor and

whose factor loadings were very close in two or more factors and which could be characterized as overlapping were removed from the scale. EFA was applied for the last time to the remaining 27 items in the scale; a 5-factor structure explaining 57.483% of the variance, with an eigenvalue above 1 and a factor loading above 0.53 emerged (Factor 1: 31.806%; Factor 2: 10.505%; Factor 3: 6.269%; Factor 4: 4.608%; Factor 5: 4.296%). The eigenvalues of the factors are Factor 1: 8.588, Factor 2: 2.836, Factor 3: 1.693, Factor 4: 1.244, Factor 5: 1.160. After factor rotation, eleven items were collected under the first factor, six items under the second factor, three items under the third factor, four items under the fourth factor, and three items under the fifth factor (Table 1).

Confirmatory Factor Analysis

The scale with a 5-factor structure based on EFA was tested through confirmatory factor analysis (CFA). The compatibility of the measurement model established as a result of CFA with the data was determined with the help of fit indices. The critical values that the fit indices should provide and the values obtained within the scope of this study are given in Table 2. As a result of CFA, the fit index values of the model were calculated as $\chi 2/df=4.02$, GFI=0.87, AGFI=0.86, CFI=0.95, NFI=0.90, SRMR=0.82 and RMSEA=0.062, respectively. According to the data, it was determined that there was a good fit between the model and the observed data in terms of fit index values, and the scale showed an acceptable level of fit (Table 2).

Table 2. Standard fit index values and scale's fit index values *

Fit Measure	Good Fit Values	Acceptable Fit Values	Scale Fit Values
RMSEA	0 ≤ RMSEA ≤ 0.05	0.05 < RMSEA ≤ 0.08	0.062
SRMR	0 ≤ SRMR ≤ 0.05	0.05 < SRMR ≤ 0.10	0.82
NFI	0.95 ≤ NFI ≤ 1.00	0.90 ≤ NFI < 0.95	0.90
CFI	0.97 ≤ CFI ≤ 1.00	0.95 ≤ CFI < 0.97	0.95
AGFI	0.90 ≤ AGFI ≤ 1.00	0.85 ≤ AGFI < 0.90	0.86
GFI	0.90 ≤ GFI ≤ 1.00	0.85 ≤ GFI < 0.90	0.87
x2/df	0 ≤ x2/df ≤ 2	2 < x2/df ≤ 5	486.06 / 121 = 4.02

Abbreviations: AGFI, adjusted goodness-of-fit index; CFI, comparative fit index; GFI, goodness-of-fit index; NFI, normed fit index; NNFI, nonnormed fit index; S-RMR, standardized root-mean square residual; RMSEA, root-mean-square error of approximation (Schermelleh-Engel, K., Moosbrugger, H., and Müller, H. 2003; Meydan and Sesen, 2015)

Table 3. Test-retest reliability

		Mean	ss	t	p
Factor 1	Test	32.26	6.42	.756	.258
	Retest	32.17	6.56		
Factor 2	Test	24.16	5.48	.158	.326
	Retest	24.32	5.42		
Factor 3	Test	12.02	4.06	.712	.456
	Retest	11.98	4.06		
Factor 4	Test	16.00	6.18	1.126	.324
	Retest	16.06	6.12		
Factor 5	Test	12.18	4.12	.402	.943
	Retest	12.24	4.82		
Total	Test	128.14	16.48	1.000	.486
	Retest	127.58	16.32		

Reliability

Item analysis based on item-total score correlation, internal consistency and test-retest methods were used to evaluate the reliability of the scale consisting of 5 sub-dimensions and 27 items, which were determined to have construct validity.

Item total and correlations

In this study, item-total score correlations of the 27-item scale were evaluated. It was found that there were no items with a correlation coefficient below r=0.30 and the item-total score correlation coefficients ranged between 0.34 and 0.65. These

data show that the scale items have adequate representation power.

Test-retest reliability

At this stage, the stability of the scale was evaluated by test-rest reliability analysis. It was observed that there was no difference between the first and second measurement results of both the whole scale and its sub-dimensions (p>0.05). In this way, the fact that similar results emerged in two applications is an indicator of the reliability of the scale (Table 3).

Internal consistency

At this stage, the Cronbach α coefficients of the total and sub-dimensions of the scale being developed were calculated and analyzed. The 27-item scale has a Cronbach's Alpha coefficient of 0.915 and the internal consistency of the scale is highly reliable. The Cronbach Alpha coefficient of the 5 sub-dimensions of the scale is higher than 0.70.

DISCUSSION

In scale development studies, factor analysis is the most widely used method to reveal the measurement structure of the scale. As a result of factor analysis, information is obtained about the general factor of the scale, its sub-dimensions and the number of sub-dimensions. The existing sub-dimensions are named and the scale structure is created (Tavsancil, 2002). The first criterion for applying EFA to a data set is whether the sample size is sufficient. In scale studies, if the Kaiser-Meyer-Olkin (KMO) value is above 0.60 and Bartlett's test is significant, it is accepted that the sample is sufficient and the data are suitable for factor analysis (Buyukozturk 2013; Karagoz 2016; Karagoz 2017). In this study, the KMO value was calculated as .904, Bartlett's test (χ2= 3752.997, p=0.000) was found to be significant and it was decided that the data were suitable for factor analysis.

Then, exploratory factor analysis was applied on the data to determine the measurement structure of the scale. Rotating the factor loadings matrix helps to find a more interpretable factor structure (Buyukozturk, 2013). The most frequently used technique in rotation is varimax. In the varimax method, rotation can be performed in a way to maximize factor variances with fewer variables (Çakır 2014; Karagoz 2016; Karagoz 2017). In this study, EFA was applied to 37 items in the draft scale using the "varimax" method as a factor rotation method. A 5-factor structure explaining 57.483% of the variance, with an eigenvalue above 1 and a factor loading above 0.53 was obtained (Table 1). According to Kline (2014), it is sufficient for the explained variance to be 40% or more. There are opinions in the literature that the lower limit for the total variance explained should be between 40% and 60% (Karagoz, 2016). Accordingly, it can be said that the variance explained by the construct is sufficient in terms of construct validity. According to Buyukozturk (2013), factor loading values of the items obtained as a result of EFA are considered sufficient if they are above 0.45. It was determined that the factor loading values of the items of the developed scale varied between 0.53-0.83. In this context, it can be stated that the factor loading values of the items are quite high and sufficient. Eigenvalue is an important coefficient used to determine the appropriate number of factors and in practice, factors with an eigenvalue of 1 or greater than 1 are generally taken as appropriate factors (Buyukozturk, 2013). In this study, 5 sub-dimensions with eigenvalues greater than 1 were obtained. As a result of CFA conducted on another independent sample after EFA, it was determined that the model consisting of 5 sub-dimensions and 27 items showed an acceptable level of fit with the data. Whether the measurement model established as a result of CFA is compatible with the data is determined with the help of fit indices. In the literature, values such as χ2/sd, GFI, AGFI, CFI, NFI, SRMR, RMSEA, etc. are widely used (Karagoz, 2016). The critical values that these indices should provide are given in Table 2. In this study, it was determined that there was a good fit between the model and the observed data in terms of fit index values, and the developed scale showed an acceptable level of fit (Table 2).

Item-total score correlation is an objective measure that reveals the correlation relationship between the scores obtained from each item in a scale and the total score obtained from the scale (Tezbasaran, 1996). The limit value for item-total correlation is 0.30 (Buyukozturk 2013). Items with an item-total

correlation higher than 0.30 are considered to move in a similar direction with the overall scale (Buyukozturk, 2013). In this study, item-total score correlation coefficients ranged between 0.34-0.65. These data show that the scale items have sufficient representation power. Stability is a reliability criterion sought in measurement tools that aim to measure characteristics such as attitudes that are continuous and do not change easily (Tavsancil, 2002; Aksayan and Gozum, 2002). The stability of the scale was evaluated by test-retest method. No statistically significant difference was found between the scores of the scale and its sub-dimensions administered two weeks apart (Table 4). In Likert-type scale development studies, there is an assumption that each item should basically measure the same attitude (Tavsancil, 2002). In order to check this assumption and to determine the level of reliability, it is considered appropriate to use Cronbach's α coefficient in the literature. The higher the α coefficient of the scale, the more consistent the items in the scale are with each other (Tezbasaran, 1996). Cronbach's α internal consistency coefficient, like other reliability coefficients, can be interpreted as reliable if it takes a value greater than 0.70. The total Cronbach's Alpha coefficient of the 27-item scale is .915, and the internal consistency of the scale is highly reliable. The Cronbach Alpha coefficient of the 5 sub-dimensions of the scale was found to be higher than 0.70.

CONCLUSION

In line with the data obtained, it can be said that the Patient Privacy Attitudes Scale is a valid and reliable measurement tool that can be used to determine the attitudes of health professionals towards the subject.

Limitations

This study has some limitations. The item pool of the scale consisted of 42 items. In future studies, the item pool can be expanded by adding new items to reflect different attitudes and more comprehensive measurement tools can be developed. The findings of the study are limited to the data obtained from the sample. Discipline-specific measurement tools can be developed in future studies.

Conflict of Interest

There is no conflict of interest.

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The Role of Captopril on Pentylenetetrazole-Induced Seizures in Rats

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ABSTRACT:
Purpose: In recent years, experimental studies have shown that some angiotensin-converting enzyme (ACE) inhibitors with antihypertensive effects have anticonvulsant effects against seizures. After the seizure, the process of inflammation begins in the brain and body, with the production of free radicals. Renin has some effects on the central nervous system of the angiotensin system. The current study's objective was to examine how captopril, an ACE inhibitor, affects neuroinflammation in the hippocampus and cortical areas in acute epileptic seizures and post-seizures induced by pentylenetetrazole (PTZ).
Material and Methods: Eighteen Wistar Albino rats were separated into three groups: control, PTZ (serum physiologic 1 ml/kg as solvent), and captopril (50 mg/kg/day for 7days). To produce epileptic seizures, PTZ (45 mg/kg) was delivered thirty minutes after the drug was administered. The animals were monitored during 30 minutes to record seizures scoring scale and the onset time of first myoclonic jerk (FMJ). In the brain tissue, the activity of TNF- α, IL-1 β, NF-kB, COX-1, and COX-2 were examined.
Results: Captopril increased FMJ onset time and reduced seizure stage as compared to the PTZ group ($p<0.05$). Additionally, captopril treatment dramatically decreased the expression of TNF- α, IL-1 β, COX-2 and NF-kB in the hippocampus and cortex, while, it enhanced the level of COX-1.
Conclusion: Captopril improves epileptic seizure parameters and attenuated its effect on neuroinflammatory damage caused by PTZ. In epileptic patients with hypertension, captopril may be a supportive drug.
Keywords: *Captopril, Epilepsy, Pentylenetetrazole, Neuroinflammation, Rat*

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INTRODUCTION

Epilepsy is a chronic brain disease characterized by excessive synchronous and spontaneous seizures A seizure is a short brain malfunction caused by abnormal and excessive cortical neuron firing (Karabulut and Taşkıran, 2021). Patients suffering from epilepsy frequently experience spontaneous seizures, which are characterized by synchronous and excessive cortical neuron discharges (Chen et al., 2018). Over the last two decades, various researches have been handled to uncover the mechanisms underlying causes of the epileptogenesis process. It has been found that apoptosis, inflammation, and oxidative stress play a significant role in the mechanisms underlying epilepsy (Vezzani et al., 2011). The goal of developing experimental epilepsy models is to better understand and reveal the underlying mechanisms that cause epileptic seizures. To generate experimental seizures, the pharmacological drug pentylenetetrazole is a selectively inhibits the GABAA receptor. PTZ damages neuronal membranes, closes potassium channels, opens calcium channels, activates intracellular calcium ion storage, and inhibits opening of Cl^- channels (Kandratavicius et al., 2014). The conversion of circulating angiotensin I to

angiotensin II, a strong vasoconstrictor and one of the key actors in remodeling processes, is carried out by angiotensin-converting enzyme (ACE) (Johnston, 1990). As an ACE inhibitor, captopril is a routinely used as antihypertensive drug that selectively inhibits ACE. Furthermore, it has been hypothesized that ACE inhibitors, such as captopril, improve human learning processes (Braszko et al., 2003). Neuroinflammation is a reaction of pro-inflammatory or anti-inflammatory mediators (Taşkıran and Taştemur, 2020) triggered by microglia, astrocytes, activation of the blood-brain barrier endothelial cells, infiltration of plasma proteins and immune cells. It is widely accepted that pathways in the neuroinflammation process cause the development of some brain diseases (Glass et al., 2010). Increasing evidence suggests an association between inflammation and epilepsy in line with the outcomes of both epileptogenesis and epileptic seizures (Vezzani et al., 2011). Reactive oxygen species (ROS) buildup has been linked to the development and progression of inflammatory diseases by either oxidizing biomolecules or altering the structural makeup of proteins and genes. The activation of transcription factors and pro-inflammatory genes called ROS results in inflammation. Captopril has been shown to scavenge free radicals in several tissues (Karimani et al., 2018; Mowry and Biancardi, 2019). Captopril has also been demonstrated to boost enzymatic and nonenzymatic defenses in a variety of tissues (de Cavanagh et al., 2000). Captopril has been demonstrated to reduce oxidative/nitrosative stress in the brain, hence preventing neuronal damage (Abbassi et al., 2016). However, ameliorative effects of captopril on neuroinflammation in PTZ-induced acut epileptic seizures have yet to be study. Therefore the purpose of currrent research was to examine the protective effects of captopril on PTZ-induced acut epileptic seizures in rats.

MATERIAL and METHODS

Animals

The research was carried out in the Laboratory of Experimental Animals of the Faculty of Medicine of Sivas Cumhuriyet University. Eighteen male Wistar Albino rats (230–250 g) used in the study were procured from the Experimental Animals Application and Research Center of the Republic University of Sivas. All rats were housed on a 12-h light/dark cycle and standard ambient conditions at 21-23°C. Rats were fed with water and standard food. Prior to the experiment, the rats were acclimated to laboratory conditions. All work was carried out from 09:00 to 16:00. The light and sound levels of the experimental environment were kept constant. All experimental programs have been approved by the Sivas Cumhuriyet University Animal Experiments Local Ethics Committee (2020/326).

Chemicals

Pentylenetetrazole and captopril (Sigma-Aldrich Co., St. Louis, MO, USA) were dissolved in physiological saline and prepared freshly on the day of the experiment.

Experimental Design

The rats were randomly classified control, PTZ, and captopril (n=6). 1 ml/kg physiological saline was given to the control group and PTZ group, and 50 mg/kg captopril was given to the captopril group intraperitoneally (i.p) for 7 days. Excluding the control group, PTZ and captopril groups were given 45 mg/kg PTZ i.p to induce seizures.The captopril and PTZ doses were determined based on the results of a prior study (Abareshi et al., 2016; Taskıran et al., 2021). The intensity of the seizure was determined using Racine's Convulsion Scale (RCS), which has the following seizure stages: 0. No seizure response, 1. No motion, eye closure, ear twitching, whisker trembling, sniffing motion; 2. Nodding added to more severe fascial clonus; 3. Clonus of one of the anterior extremities, myoclonic jerk no rearing-up; 4. Clonus of bilateral anterior extremity, rearing-up; 5. Falling on one side due to rearing-up and generalized clonic seizure; 6. Lethal seizure (Ciltas¸ et al., 2022). The rats were monitored during 30 minutes after receiving PTZ to determine the onset time of first myoclonic jerk (FMJ)and to score their behavior according to the RCS. The animals were decapitated 24 h after receiving PTZ injection. Animal brain tissue was taken for biochemical analysis, and the cortex and hippocampus were separated. Figure 1 illustrates the detailed experimental design.

Biochemical Assays

Nuclear Factor kappa B (NF-kB), tumor necrosis factor alpha (TNF-α), interleukin-1 beta (IL-1β), cyclooxygenase 1 (COX-1) and cyclooxygenase 2 (COX-2) levels of brain supernatants were measured with Rat ELISA kits (BT LAB, Shanghai, China). After cervical dislocation was applied to the animals, their brain tissue was removed under cold chain conditions. The cortex and hippocampus were separated. Brain tissues taken into the ependorf under cold chain conditions were weighed and homogenized with the help of a manual blade homogenizer in a 1:9 phosphate buffer solution (PBS, pH: 7,4). The obtained homogenates were placed in 15 ml falcon tubes and centrifuged at 4000 rpm for 10 minutes. Levels of NF-kB, TNF-α, IL-1β, COX-1 and COX-2 from the obtained brain supernatates were measured using specific rat ELISA commercial kits. According to the manufacturer's instructions. The standard and tissue samples in the kit were loaded and incubated at 37 °C for 60 min. Then the washing process was done and the dyeing solutions were added and left to incubate again for 15 min at 37 °C. The stop solution was added and scanned at a wavelength of 450 nm. A linear graph was created according to the absorbance of the standards. The values of the samples were calculated with the help of the equation obtained with this graph. Total protein determination was performed in the samples to standardize the results obtained. For this purpose, the Bradford protein assay kit (Biosciences, Beltsville, ABD) was used (Ernst and Zor, 2010). Parameter levels were presented as pg/g and ng/g tissue.

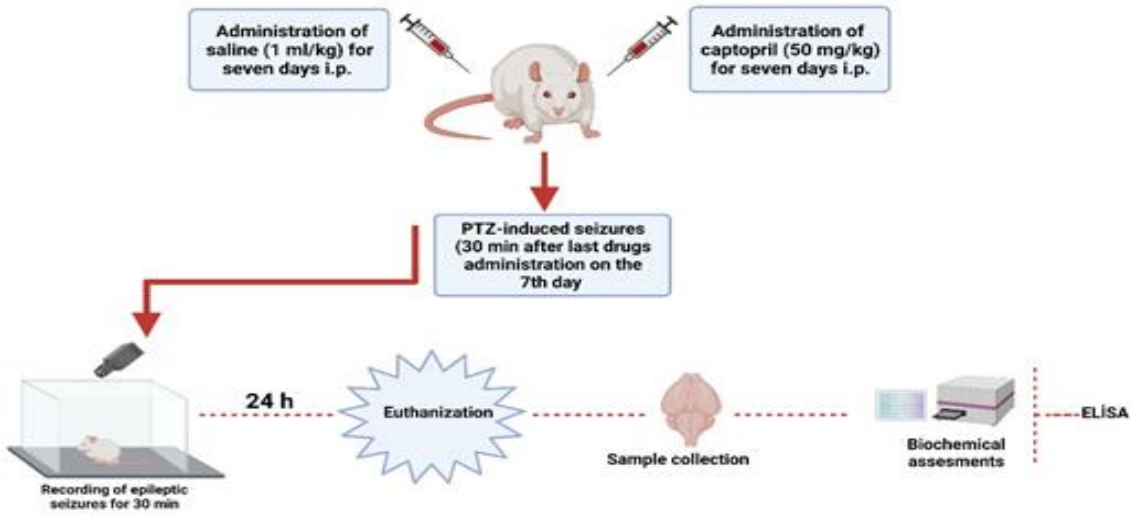

Figure 1. The experimental protocol is presented as a diagram (formed by BioRender).

Statistical Analysis

Data were expressed as mean ± standard error of the mean (SEM). Since the data showed a normal distribution, they were evaluated by Shapiro Wilk's test and analysis of variance (One-way ANOVA) was used in the comparison between the groups, followed by Tukey test (post-hoc test). P values ($p<0.05$) were regarded as significant. Statistical analyses were performed using GraphPad Prism software version 7 (GraphPad Software, San Diego, CA, USA).

RESULTS

Seizure Stage and First Myoclonic Jerk Status

Captopril showed significantly decrease the seizure stage compared to the PTZ group, while significantly increasing the FMJ (Table 1).

Effect of Captopril on Proinflammatory Cytokines in Acute PTZ Models

As shown in Figures 2A-B-C-D treating the rat with 50 mg/kg doses of captopril significantly reduced both hippocampus and cortex TNF-α and IL-1 β expression compared to the PTZ group rats.

Table 1: Effect of captopril on Seizure Stage and FMJ in PTZ-induced seizures in rat

Groups	Seizure stage	Onset time of FMJ (sec)
Control	None	None
Saline +PTZ	5,23±0,16	35,09±6,23
Captopril + PTZ	3,66±0,20*	53,16±10,73*

Data are reported as mean SEM; *p < 0.05 in compared to the PTZ group

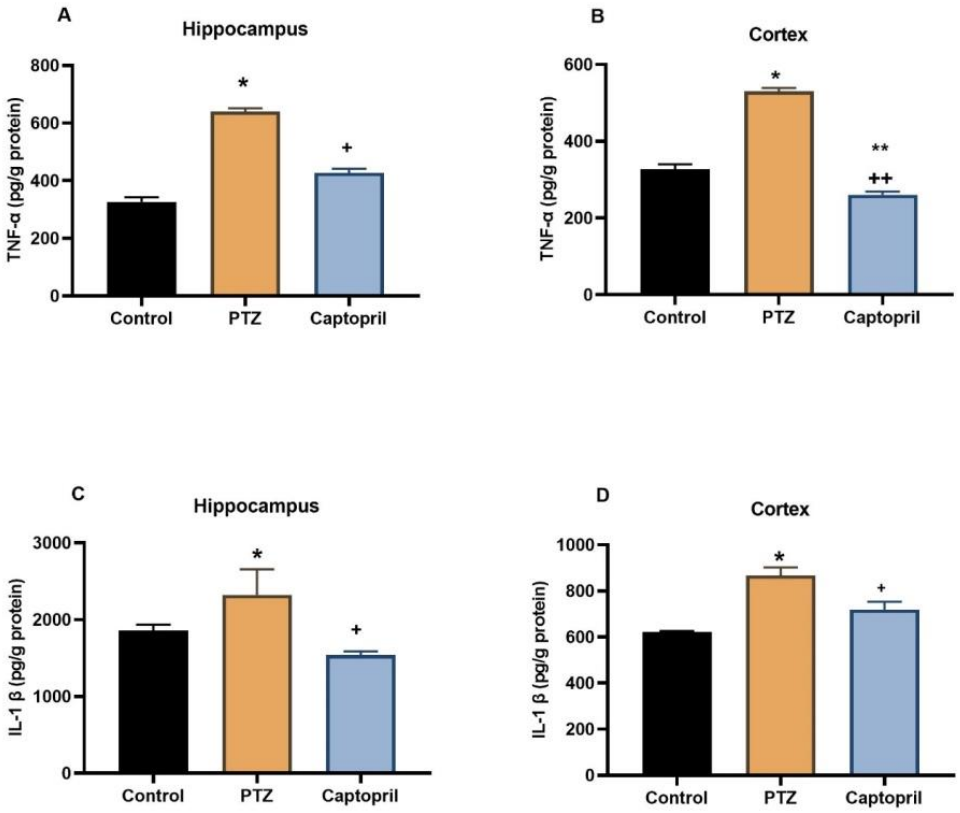

Figure 2. Effects of captopril on proinflammatory cytokines levels in the hippocampus (**A, C**) and cortex (**B, D)** after PTZ-induced seizure in rats (*n*=6). Values are presented as mean ± SEM; *p<0.05 compared to cntrl; $^{+}$p<0.05 compared to PTZ.

Effect of Captopril on inflammatory enzyme in Acute PTZ Models

Inflammatory enzyme levels in the hippocampal and cortex are displayed in Figure 3. There was a significant decrease in the levels of COX-1 in the hippocampal and cortex of the PTZ group in comparison to the control group (Figure 3A, 3B). However, COX-1 levels significantly enhanced in hippocampal and cortex of the captopril group as compared to the PTZ group (Figure 3A, 3B). COX-2 levels of the PTZ group significantly enhanced as compared to the control group in hippocampal and cortex (Figure 3C, 3D). Moreover, COX-2 levels of the captopril group were found to be lower in both the cortex and hippocampal than in the PTZ group (Figure 3C, 3D).

Effect of Captopril on NF-kB in Acute PTZ Models

Measurement of NF-kB levels in brain tissues revealed that animals treated with PTZ had higher level of this enzyme compared to the control group (Figure 4A, 4B). In the Captopril group, NF-kB levels significantly decreased in both the hippocampal and cortex in compare to the control and PTZ group (Figure 4A, 4B).

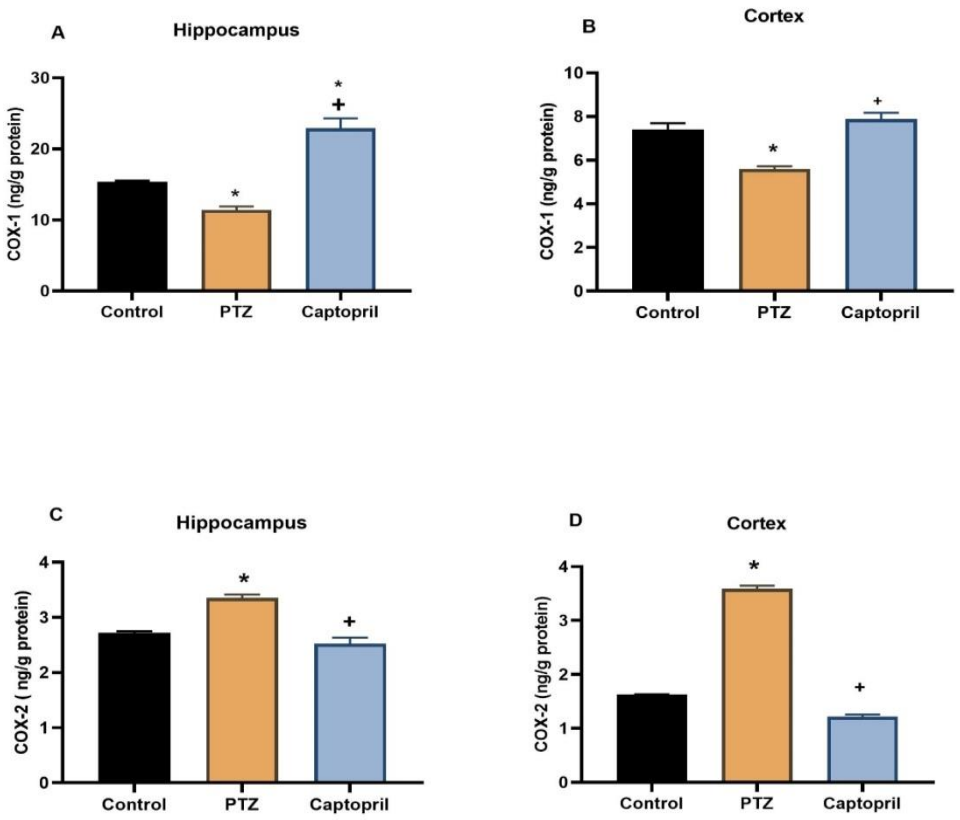

Figure 3. Effects of captopril on inflammatory enzymes levels in the hippocampus (**A, C**) and cortex (**B, D)** after PTZ-induced seizure in rats (*n*=6). Values are presented as mean ± SEM; *p<0.05 compared to ctrl; +p<0.05 and compared to PTZ.

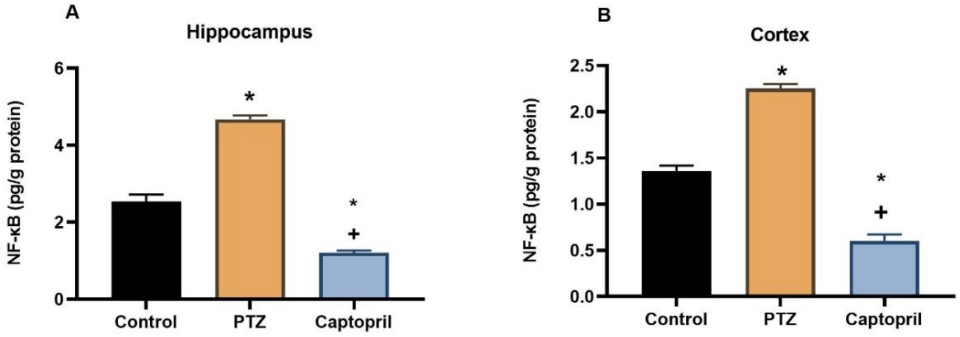

Figure 4. Effects of captopril on NF-kB levels in the hippocampus (**A**) and cortex (**B**) after PTZ-induced seizure in rats (*n*=6). Values are presented as mean ± SEM *p<0.05 compared to ctrl; +p<0.05 compared to PTZ.

DISCUSSION

The findings of the study revealed that captopril reduced the levels of cortex IL-1 β and TNF-α, COX-2 and NF-kB in a PTZ-induced epilepsy model, while enhanced the COX-1 levels in both the hippocampal and cortex. There are signs of neuroinflammation under various diseases of the central nervous system. It has been proven in studies that neuroinflammation triggers the formation of epilepsy. Clinical and experimental studies have shown that neuroinflammation increases the frequency and severity of seizures (Vezzani et al., 2011). In the process of persistence of inflammation, IL-6, IL-1β, TNF-α are secreted from microglial cells

and astrocytes and cause a detrimental effect (Kruger, 1992). Additionally, experimental studies have shown that NF-kB is associated with various diseases (Dingledine et al., 2014), myocardial infarction (Campolo et al., 2017), atherosclerosis, and experimental autoimmune encephalomyelitis (Meili-Butz et al., 2008). In the hippocampus, the brain region most affected in the epileptogenesis process according to the studies, the changes such as hippocampal sclerosis, neuronal cell death, short- and long-term synaptic plasticity have occurred (Singh et al., 2018; Vezzani et al., 2013). Activity of COX-2, one of the inflammatory enzymes, has been found to increase in humans and experimental animals after seizures of epilepsy (Pitkanen et al., 2015). It has been shown in experimental studies that neuronal over-induction of COX-2 simplifies kainate-triggered convulsions and enhances seizure-related mortality in mice (Desjardins et al., 2003). The threshold for seizures enhanced in COX-2 knockout mice and the severity of seizures decreased suggesting role of COX-2 in the pathogenesis of epilepsy (Takemiya et al., 2003). In another study, nimesulide, a COX-2 inhibitor, has been shown to provide protect against PTZ-induced toxicity in mice (Dhir et al., 2007). COX-inhibitors have been demonstrated to be neuroprotective after brain damage in experimental studies of localized ischemia in rats, concussive brain injury in cats, preconcussion-induced neurotrauma in rats, and clinical neurosurgery (Cernak et al., 2011). In our study, captopril, an ACE inhibitor, reduced hippocampal and cortex COX-2 levels while causing a significant enhance in COX-1 levels compared to PTZ group.

Several studies have recently revealed that inflammation and oxidative stress play a key role in epilepsy pathophysiology. In many studies, angiotensin-converting enzyme (ACE) inhibitors were shown to have antioxidant activities (Vahidirad et al., 2018). Captopril's ability to prevent PTZ-induced seizures in the current study may be related, at least in part, to the antioxidant defense system being enhanced and oxidative stress and inflammation in the brain being reduced (Gurer et al., 1999; Ciobica et al., 2011). As a result of various studies, it has been suggested that captopril therapy may protect neurons from neuroinflammation caused by the gathering of β amyloid plaque in the brain (de Cavanagh et al., 2000). Another study reported its protective effects on dopaminergic neurons in the nigrostriatal pathway in Parkinson-like rats (Sonsalla et al., 2013). According to past research, our data showed that captopril decreased cortex TNF-α and IL-1 β levels, but also reduced both hippocampus and cortex COX-2 and NF-kB levels. Similarly, captopril has been reported to reduce oxidative stress and inflammation levels in tissues and significantly increase the epileptic seizure threshold (Abraham et al., 2012). Taştemur et al. (2020) showed that captopril prevented dark neuron formation in the hippocampal tissue after PTZ, relieving brain oxidative stress. In addition, it has been shown to protect hippocampal neurons by increasing GABA influx to neurons. In a study, captopril was shown to positively affect memory function by reducing oxidative stress in the hippocampus (Bild et al., 2012). Asgharzadeh et al. (2019) reported that captopril (50 and 100 mg/kg) reduced malondialdehyde in PTZ-induced hippocampus and cortex tissues in mice, and enhanced the activity of superoxide dismutase, and catalase. In this study, captopril at 50 mg/kg i.p. dose reduced inflammation markers, and COX-2 levels compared to the PTZ group, while enhanced COX-1 level in comparison to the PTZ group.

A study carried out on diabetic patients revealed that captopril prevented oxidative stress by reducing level of lipid peroxidation (Ha and Kim, 1992). Captopril has also been shown to protect hepatocytes against oxidative stress induced by paraquat (Pourahmad et al., 2011; Mansoor et al., 2018). Abareshi et al. (2016) showed that captopril reduced levels of IL-6, TNF-α, malondialdehyde (MDA), and nitric oxide (NO) in rats, improving learning and memory deficits. The changes in the expression of inflammation markers in different parts of the brain have been demonstrated in induced seizure models with PTZ (Vezzani et al., 1999), kainate, and lithium-pilocarpine, in epilepsy types such as the WAG/RIJ rat and the electroshock model. Inflammation markers levels enhanced with the damage caused after this seizure (De Luca et al., 2004). Consistent with other studies, a significant

increase was observed in the hippocampus and cortex IL-1β, TNF-α levels of rats given PTZ in our study.

CONCLUSION

As a result, captopril treatment, known as an ACE inhibitor, may have a protective effect on neurons by reducing IL-1β, TNF-α, NF-kB, COX-2 levels in different brain tissues (hippocampus, cortex) of rats.

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Conflict of Interest

The authors declare no conflicts of interest.

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