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Research Article

RELATIONSHIP BETWEEN SELF-REPORTED HAND HYGIENE BELIEFS AND HAND HYGIENE PRACTICES IN NURSING STUDENTS: A STRUCTURAL EQUATION MODELING

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Abstract: *Hand hygiene practice is very important in preventing health-related infections. It is reported that hand hygiene belief is an important indicator for hand hygiene practice. Determining the relationship between hand hygiene practice and hand hygiene beliefs is extremely important to increase hand hygiene compliance. The objective of this study is to examine the relationship between self-reported hand hygiene beliefs and hand hygiene practices in nursing students. This study used a predictive correlational design and was conducted at a nursing department of a state university in Turkey. A total of 305 nursing students who were selected by convenience sampling, had received at least one year of nursing education, and had clinical practice experience were surveyed. The data were collected by a sociodemographic data collection form, the "Hand Hygiene Beliefs Scale" and the "Hand Hygiene Practice Inventory". Frequency analysis, simple linear regression analysis, correlation analysis, and structural equation modeling were used in data analysis. The total mean scores of the students in the Hand Hygiene Beliefs Scale and the Hand Hygiene Practice Inventory were 92.53±7.58 and 65.36±4.92, respectively. A significant positive correlation was found between hand hygiene beliefs and practices ($r = 0.42$; $p<0.01$). In this study the Hand Hygiene Beliefs Scale score and Hand Hygiene Practice Inventory scores of the students were high. In our study, a highly significant positive relationship was found between hand hygiene beliefs and practices. It is thought that positive hand hygiene beliefs will contribute to the evaluation of hand hygiene practices. It is recommended that students be supported to further develop their hand hygiene beliefs.*

Keywords: *hand hygiene, nursing, students, beliefs, practices, nosocomial infection*

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1. Introduction

Nosocomial infections are one of the most significant factors that increase the length of hospital stay, morbidity and mortality, and healthcare expenses. Ensuring adequate hand hygiene is one of the measures to protect oneself against infections, which cause high morbidity, mortality, and treatment expenses [1]. Nurses, who are most in contact with the patient during the provision of healthcare, are healthcare workers that are working on the very frontlines especially during epidemics of contagious diseases. While they are trying to provide healthcare services by working today at the closest quarters in the fight against COVID-19 on the one hand, on the other hand, they carry the risk of exposure to the pathogen in their working environment and transferring the pathogen [2]. Most infections acquired from healthcare services may be prevented by appropriate hand hygiene compliance, protective equipment usage, and well-trained nurses.

Although it is emphasized in the literature that hand washing is the most important procedure alone in preventing infections, it is known that nurses' compliance with handwashing protocols is

insufficient [1,3–5]. Studies on this issue report that nurses' incompatibility with handwashing depends on several reasons. Many factors such as individual characteristics, level of knowledge on hand hygiene, perception of importance regarding hand hygiene, professional experience, gender, perception of the severity of infectious diseases, work intensity, and lack of role models may affect hand hygiene compliance behaviors [1,6,7]. Although handwashing rates are found to be different in many studies conducted on handwashing, the common point of all studies is that the handwashing rates of nurses are lower than expected [1,8–10]. In addition to the increase in nosocomial infections, this situation is also a factor in the direct and indirect transmission of infections from the hospital environment to society. Microorganisms that cause nosocomial infections may spread to society through discharged patients, employees or visitors. This situation also creates a multifactorial public health problem that is complex to control and prevent [11–13].

Human behavior is affected by biological characteristics, environment, education, and culture [14]. In compliance with hand hygiene behaviors, education is an important factor in terms of reducing and eliminating nosocomial infections and their spread, lowering treatment costs in relation to these infections, and preventing loss of labor [15]. For this reason, investigation of the hand hygiene practices of nursing students who are the healthcare labor of the future carries importance. This is because the nursing training process is an important process that can provide students with behavior change-acquisition by providing them with the opportunity to take on all kinds of factors that lead to non-compliance regarding hand hygiene practices in both clinical and theoretical fields [16]. Lymer et al. (2004) suggested that nursing students are in an ideal position to promote effective hand hygiene as they can act as agents of change in practice by sharing good hand hygiene knowledge and practices with qualified staff [17]. Looking at the literature, a previous study reported that the rate of nursing students believing in the importance of hand hygiene to be 89% [10]. Karadağ et al. (2016) determined the mean total hand hygiene belief scale score of nursing students as 86.39±8.56 (high) and their mean total hand hygiene practice inventory scores as 64.52±4.90 (high) [15]. Van de Mortel et al. reported the mean importance of hand hygiene scores (on a scale of 1-10) in students of nursing and those of medicine in Greece as respectively 9.60±0.008 and 9.29±0.2 [6]. while these were reported in nursing and medicine students in Italy as respectively 9.68±0.71 and 9.59± 0.84 [18].

In the literature; some studies are stating that beliefs are a significant predictor in putting knowledge into practice [15], that there is a low level of relationship between beliefs and practice [19], and that there is no significant relationship between beliefs and practice [20]. It is believed that defining the hand hygiene beliefs of nursing students may affect their hand hygiene knowledge and practices and may help develop a positive point of view towards hand hygiene practice culture. In this sense, it is important to determine the hand hygiene belief and practice statuses of nursing students and the relationship between these. The purpose of this study is to examine the relationship between self-reported hand hygiene beliefs and hand hygiene practices in nursing students.

2. Materials and Methods

2.1. Design and Participants:

This predictive correlational study was conducted among nursing students at Bursa Uludağ University Faculty of Health Sciences in 2020 in Turkey. The population of the study consisted of second, third, and fourth-year nursing students who received at least one year of nursing education and had clinical practice experience (n=431). The study was completed with 305 students who volunteered to participate in the study. After students were informed, verbal approval was obtained from the participants and the sociodemographic data collection form and scale forms were distributed to students in the classroom before the lessons starts. It was stated to the participants that the data collected will only be used for the research and will not be shared with any other institution or person. Before the

application, it was stated that participation in the study was not mandatory and that the study group consisted only of voluntary participants. The time required to apply the scale and the sociodemographic data collection form is 10 minutes.

2.2. Instruments

The data were collected by using a sociodemographic data collection form, the "Hand Hygiene Beliefs Scale" and the "Hand Hygiene Practices Inventory".

2.2.1 Sociodemographic Data Collection Form

The form was developed by the researcher and consisted of 3 questions to determine the socio-demographic characteristics (gender, grade level, type of high school of graduation) and 2 questions to determine the status of training on hand hygiene and the importance of nursing students attach to hand hygiene.

2.2.2 Hand Hygiene Beliefs Scale and Hand Hygiene Practices Inventory

The Hand Hygiene Beliefs Scale (HHBS) and the Hand Hygiene Practices Inventory (HHPI) were developed by Thea Van de Mortel in 2009 to determine the beliefs of individuals regarding hand hygiene and the situations where they practice hand hygiene [7]. The original form of HHBS consists of 23 items including hand hygiene beliefs (20 items) and the importance and perception of hand hygiene (3 items). In the pilot study of the Turkish version of the scale, since the students stated that they had difficulty in filling up the item of *"If I disagree with a guideline, I look for research findings to guide my practice"* due to the lack of application guidelines in the clinical environment, this item was removed from HHBS. The Turkish scale, therefore, consists of 22 items. According to the fit indices stipulated in the confirmatory factor analysis of the scale, it was concluded that the two-factor structure of the original HHBS is not appropriate for the Turkish Scale. Therefore, the Turkish form of HHBS has a one-factor structure [21]. HHBS is scored as a five-point Likert-type scale in the form of: 1 "strongly disagree", 2 "disagree", 3 "undecided", 4 "agree", 5 "strongly agree". In the final assessments, it was decided to perform a reverse evaluation for items 5, 8, 16, 17, 18, 19, and 20. In calculating the score of the scale, the scores of the answers given to the questions are summed up. The total score of HHBS ranges between 22 and 110 points, and a high score refers to a positive belief in hand hygiene. In the Turkish validity and reliability study of the scale, the internal consistency coefficient of the scale was found as 0.76.

HHPI is a 5-point Likert-type scale that consists of 14 items. The scoring of the scale is as follows: 1 "never", 2 "seldom", 3 "occasionally", 4 "usually", 5 "always". In calculating the score of the scale, the scores of the answers given to the questions are summed up. The total score of HHPI ranges between 14 and 70 points, and a high score indicates that hand hygiene practices are performed more frequently. In the Turkish validity and reliability study of the scale, its internal consistency coefficient was found as 0.85. For HHPI, as in the original inventory, the single-factor structure was found to be appropriate in Turkish. As a result, HHBS and HHPI that were adapted into Turkish were found to be valid and reliable measurement tools to measure hand hygiene beliefs and practices [21].

2.3. Statistical Analysis

In the study, Kolmogorov–Smirnov test, histograms, and QQ plots were used to test the normality of the distribution of the variables. Additionally, the homogeneity of the data set and whether there was a linear relationship between the variables were also examined, and it was found that the data set had the basic conditions required for parametric analysis. The relationships between HHBS and HHPI were examined by Pearson's Product-Moment Correlation and Simple Linear Regression Analysis. To determine the common (shared) variance between HHBS and HHPI, the structural equation modeling method was used. Data analysis was carried out using the SPSS 23.00 and SPSS Amos 23.00 programs.

2.4. Ethical Considerations

Ethics committee approval was obtained from the Bursa Uludağ University Health Sciences Research and Publication Ethics Committee (Decision no. 2020/01-08 and dated 29.01.2020) and institution approval of the study was obtained from the Dean of the Faculty of Health Sciences (Decision no. 45226392-605/E.334). During the study, ethical principles (permission to use the scales, informed consent from students, and the confidentiality of information and principles of the Declaration of Helsinki) were taken into consideration.

3. Results

Two hundred and forty-seven (81%) of the students in the sample were female, 109 (35.7%) of them were second-year students, 29 (9.5%) of them were high-school graduates, and 24 of them had graduated from several high schools. Two hundred and sixty-nine (88.2%) of the participants had received training on hand hygiene, and 48 (15.7%) described hand hygiene to be "important". Table 1 shows the sociodemographic characteristics of the sample.

Table 1. Sociodemographic characteristics of the study group

Sociodemographic Characteristics	n (%)
Gender Female Male	 247 (81.0) 58 (19.0)
Class Second Year Third Year Fourth Year	 109 (35.7) 112 (36.7) 84 (27.5)
Graduated High School High School Medical-Vocational High School Private High School Science/Anatolian High School Imam Hatip High School Other High Schools	 29 (9.5) 49 (16.1) 12 (3.9) 174 (57) 17 (5.6) 24 (7.9)
Have you received training on hand hygiene? Yes No	 269 (88.2) 36 (11.8)
How important is hand hygiene to you? Important Very Important	 48 (15.7) 257 (84.3)
Total	305 (100.0)

The mean score of the students on HHBS was 92.53±7.58, and their mean score on HHPI was 65.36±4.92. The mean scores of HHBS and HHPI are given in Table 2.

Table 2. Descriptive statistics of HHBS and HHPI (n = 305)

Scales	X̄±SD	M	Min.	Max.
HHBS	92.53±7.58	93.00	53.00	110.0
HHPI	65.36±4.92	66.00	45.00	70.00

HHPI: Hand Hygiene Practices Inventory, HHBS: Hand Hygiene Beliefs Scale, X̄: Mean, SD: Standard Deviation, M: Median, Min: Minimum, Max: Maximum

Table 3 shows the correlation, arithmetic mean, standard deviation, skewness, and kurtosis values between HHBS and HHPI. Examining Table 3, it is seen that there was a positive and moderate significant relationship between HHBS and HHPI (r = .42; p<0.01). Additionally, it was determined in the study that the skewness and kurtosis values of the variables satisfied the normality hypothesis.

Table 3. Pearson's correlation analysis and descriptive results for the relationship between HHBS and HHPI

Pearson Correlation	HHPI
HHBS	0.42**
X̄	13.8
SS	3.7
Skewness	0.46
Kurtosis	0.26

**p<0.01, HHPI: Hand Hygiene Practices Inventory, HHBS: Hand Hygiene Beliefs Scale

According to the results of simple linear regression analysis, it was determined that the HHBS had a significant positive effect on the HHPI (R^2=0.242; p<0.01). One unit increase in HHBS score increases the HHPI score by 0.41 points. The Simple Linear Regression Analysis Results between HHPI and HHBS are given in Table 4.

Tablo 4. Simple linear regression analysis results between HHPI and HHBS

HHPI	Unstandardized		Standardized	*t*	*p*	*VIF*
	β	*SE*	*β*			
Constant	39.705	3.135	-	12.665	0.000	-
HHBS	0.417	0.034	0.497	8.211	0.000	1100
***R^2*= 0.242; *Durbin Watson*= 1.630**						

HHPI: Hand Hygiene Practices Inventory, HHBS: Hand Hygiene Beliefs Scale

After determining the significant relationships between HHBS and HHPI, the predictive effect of HHBS on HHPI was tested with the structural equation modeling method. Since the data showed normal distribution as a result of the Kolmogorov-Smirnov test, the produced hypothesis was tested using the maximum likelihood method. For this purpose, firstly, the confirmatory measurement model related to the model fit of HHBS and HHPI was hypothesized. A positive and significant relationship (β =.50) was found between HHBS and HHPI in the model, and the findings that were obtained are presented in Figure 1.

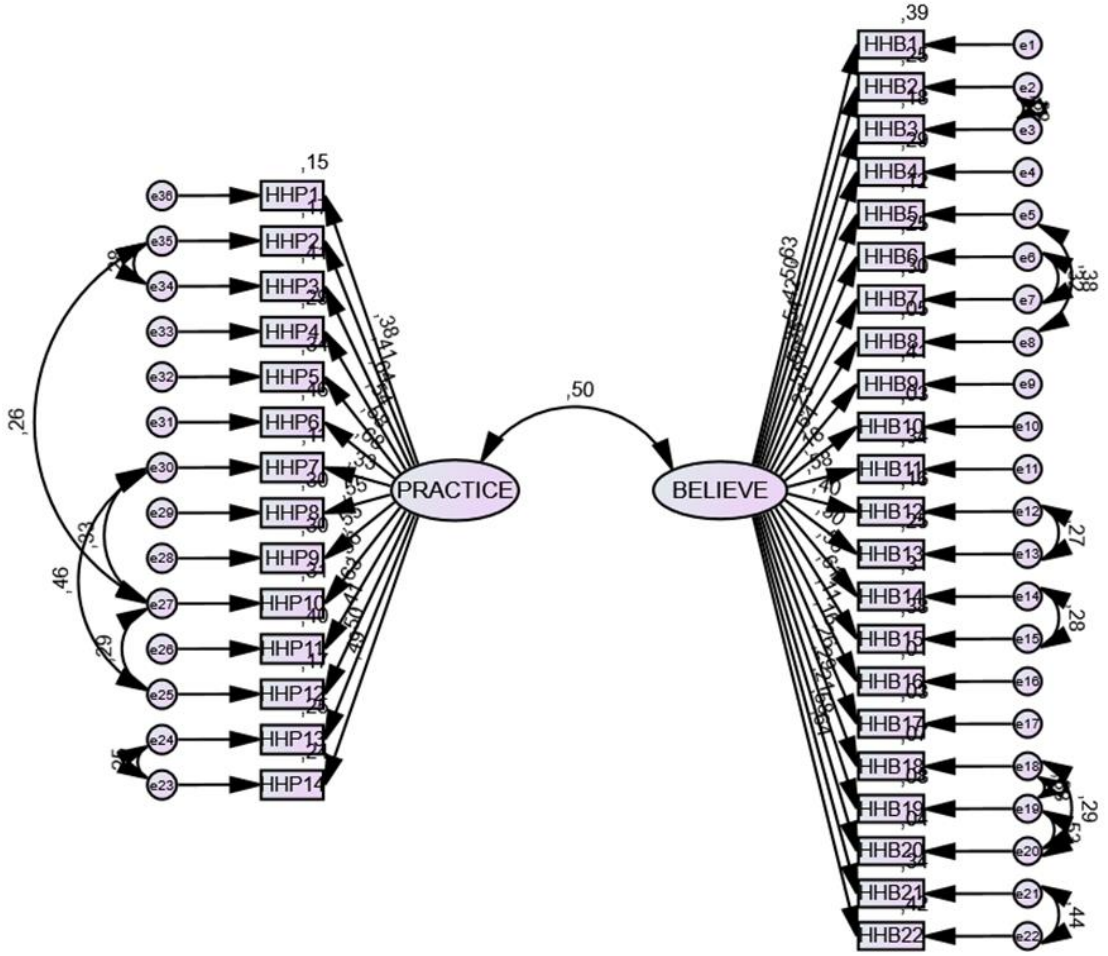

Figure 1. Confirmatory measurement model between HHBS and HHPI

In the study, the model fit indices of the confirmatory measurement model hypothesized between HHBS and HHPI were significant. Table 5 shows the perfect and admissible fit criteria for the fit index values obtained from the model and the results in this direction.

Table 5. Perfect and admissible criteria regarding fit indices examined in the research and fit index values obtained from measurement model goodness of fit indices

Fit Indices Reviewed	Perfect Fit Criteria	Admissible Fit Criteria	Fit Indices Obtained	Result
χ^2/df	$0 \leq \chi^2/df \leq 2$	$2 \leq \chi^2/df \leq 3$	1.689	Perfect Fit
GFI	.95≤ GFI ≤ 1.00	.90≤GFI≤95	.90	Admissible Fit
AGFI	.90≤ AGFI ≤ 1.00	.85≤ AGFI ≤ .90	.86	Admissible Fit
CFI	.95≤ CFI ≤ 1.00	.90≤ CFI ≤ .95	.90	Admissible Fit
NFI	.95≤ NFI ≤ 1.00	.90≤ NFI ≤ .95	.91	Admissible Fit
NNFI	.95≤ NNFI ≤ 1.00	.90≤ NNFI ≤ .95	.93	Admissible Fit
IFI	.95≤ IFI ≤ 1.00	.90≤ IFI ≤ .95	.96	Perfect Fit
RMSEA	.00≤ RMSEA ≤ .05	.05 ≤ RMSEA ≤ .08	. 048	Perfect Fit
SRMR	.00≤ SRMR ≤ .05	.05 ≤ SRMR ≤ .10	.06	Admissible Fit

χ2/df: chi-square fit, GFI: Goodness of Fit Index, AGFI: Adjusted Goodness of Fit Index, CFI: Comparative Fit Index, NFI: Normed Fit Index, NNFI: Non-normed Fit Index, IFI: Incremental Fit index, RMSEA: Root Mean Square Error of Approximation, SRMR: Standardized Root Mean Square Residual.

The perfect and admissible fit criteria for the fit indices shown in Table 5 revealed that the proposed model was validated by the data. When the model was hypothesized and tested to determine the predictive effect of HHBS on HHPI, and the fit indices of this model were examined, the tested model was approved, and it showed high goodness of fit. As seen in Figure 2, the implicit variable of "Belief" predicted the implicit variable of "Practice" positively and on a good level (β=.50; t=5.76). This value implied that a 1-point increase in HHBS would lead to an increase of 0.50 points in HHPI, or in the opposite care, a 1-point decrease in HHBS would lead to a decrease of 0.50 points in HHPI. Based on this finding, it may be stated that the hand hygiene beliefs of the nursing students had a positive effect on their hand hygiene practices. It was also found that HHBS explained 25% of HHPI and on the significance level of 0.001 (R^2 =0.25; p <0.01). The findings related to the model are given in Figure 2, and the findings regarding the fit indices of the model are given in Table 6.

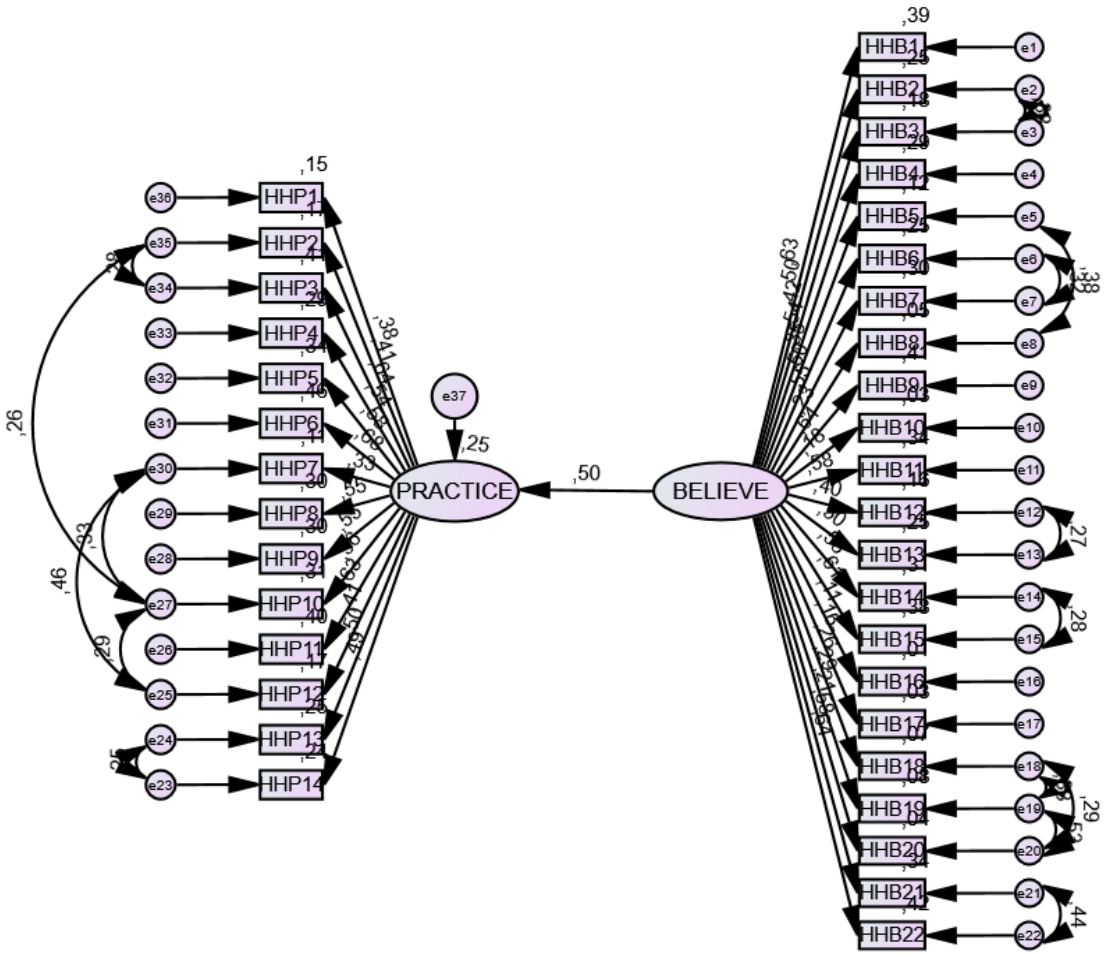

Figure 2. Structural equation model between HHBS and HHPI

Table 6. Model goodness of fit related to structural equation model

χ^2	df	χ^2/ df	GFI	AGFI	NFI	NNFI	CFI	IFI	RMSEA	SRMR
9.76	5.78	1.68	0.90	0.86	0.91	0.93	0.90	0.95	0.048	0.06

χ2/df: chi-square fit, GFI: Goodness of Fit Index, AGFI: Adjusted Goodness of Fit Index, CFI: Comparative Fit Index, NFI: Normed Fit Index, NNFI: Non-normed Fit Index, IFI: Incremental Fit index, RMSEA: Root Mean Square Error of Approximation, SRMR: Standardized Root Mean Square Residual.

4. Discussion

Hand hygiene practices are practices that have a tendency to be affected by personal beliefs and attitudes. Positive hand hygiene beliefs are expected to affect hand hygiene practices positively. [10,22]. The mean HHBS score of the students in this study was found as 92.53±7.58 (high) (Table 2). Similar results were reported in the literature [6,15,18,23]. It is thought that high hand hygiene belief scores of students will affect their hand hygiene practices positively, and positive hand hygiene beliefs will allow evaluation of hand hygiene practices and improvement of learning outcomes.

In line with the theoretical and clinical skills provided by nursing training, it is expected for nursing students to have high hand hygiene practice and handwashing behavior levels [24]. According to the results of this study, the mean HHPI score of the students was found as 65.36±4.92 (high) (Table 2). Bayram et al. (2019) reported the mean HHPI score of students as 64.26±5.33 [24]. Karadağ et al. (2016) stated the mean HHPI score of students as 64.52±4.90 [15]. Another study by Karadağ et al. (2016) determined that the mean HHPI score of students was high [21]. Similar results were obtained in studies conducted in Australia by van de Mortel (2009) [7] and in Greece [6] and Italy [18] by van de Mortel et al. (2010). The result of our study supported the literature.

It is thought that determining hand hygiene beliefs may be an important parameter in guiding the hand hygiene practices of students [21]. In this study, it was determined that there was a positive significant relationship between HHBS and HHPI ($p<0.05$; Table 3). According to the results of simple linear regression analysis, it was determined that the HHBS had a significant positive effect on the HHPI ($p<0.05$; Table 4). One unit increase in HHBS score increases the HHPI score by 0.41 points. Hand hygiene beliefs predicted hand hygiene practices in a positive direction and on a good level (Figure 2). This result proved that an increase in the hand hygiene beliefs of nursing students would affect their hand hygiene practices in a positive direction. There are similar studies in the literature where the positive relationship between hand hygiene beliefs and practices was discussed [5,6,21,25]. Nevertheless, it is believed that this study will contribute to the literature in terms of structurally testing the relationship between hand hygiene beliefs and hand hygiene practices.

5. Conclusion

According to the results of the study, the HHBS and HHPI scores of the students were high. In our study, a positive and highly significant relationship was found between HHBS and HHPI. In line with these results:

- It carries importance to prepare the appropriate curriculum for increasing and achieving the sustainability of the hand hygiene beliefs of nursing students. Especially in pandemic processes such as COVID-19, the position of nurses equipped in terms of hand hygiene compliance is important in healthcare services in terms of preventing the spread of infections and reducing hospital infections. It is believed that the nursing training process is an opportunity for this.

Limitation

The fact that this study was carried out only on students of the faculty of health sciences at one university in Turkey may be considered as a factor limiting the generalizability of the findings obtained from the research. It is thought that conducting studies with larger samples in different cultures and populations will contribute to the literature. Another limitation of the study is that there is potential for bias in that the students know what is the 'right' answer and they may be over-reporting either their beliefs and/or their behavior.

Ethical Consideration

Ethics committee approval was obtained from the Bursa Uludağ University Health Sciences Research and Publication Ethics Committee (Decision no. 2020/01-08 and dated 29.01.2020) and

institution approval of the study was obtained from the Dean of the Faculty of Health Sciences (Decision no. 45226392-605/E.334).

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Conflict of Interest

The author declares no conflict of interest.

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Research Article

EXAMINATION OF COVID-19 FEAR IN TERMS OF ITS DEFINING CHARACTERISTICS

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Abstract: *The study aims to determine the fear of coronavirus and its affecting factors. It was conducted as a cross-sectional study. Data on participants were collected using an online questionnaire spread throughout social media, e-mail, and WhatsApp groups. Socio-demographic questionnaire form, COVID-19 Fear Scale, and Visual Analogue Scale (VAS) were used to collect data. Number, percentage, mean, t-test, One-Way ANOVA, and Pearson correlation analysis were used to evaluate the research data. The research was completed with 727 people. A statistically significant relation was found between the COVID-19 fear with age, gender, marital status, having children, having a chronic disease, working status and being health personnel, watching coronavirus news, and always talking about coronavirus at-home settings. Accordingly, it is recommended to determine the fear of coronavirus in society, to identify high-risk individuals by performing community screenings, and to provide psychological support. It is very important to diversify and implement protective intervention programs to reduce some of the psychological consequences of fear and fear.*

Keywords*: COVID-19, Fear, Pandemic*

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1. Introduction

COVID-19, which was declared as a pandemic by the WHO on March 11, caused fear all over the world. Although measures have been taken to prevent the spread of the disease, the number of cases has increased day by day and the disease has spread rapidly all over the world [1]. While the whole world is trying to stop the physiological effects of COVID-19, the psychological effects of the disease have started to reach quite terrible dimensions. As well as threatening the physical health and lives of people, the COVID-19 outbreak is expected to trigger psychological problems such as anxiety, depression, panic attacks, and post-traumatic stress disorder, obsessive-compulsive disorder by increasing the stress and fear levels of people [2-4]. The news focused on the number of deaths in the media and the uncertainty about the course of the epidemic increases the fear and stress that people experience [2]. Cases of people who could not handle this pandemic course anymore and committed suicide were also recorded [5].

In infectious disease outbreaks, many factors such as individuals considering themselves as a risk for their close surroundings, death, quarantine course, sense of limitation, stigmatization, and financial problems may increase the fear [6]. Fear is often a primitive emotion and can be described as a real or perceived threat. The rising level of fear affects the individual not only psychologically, but also physiologically. It causes a stress response. The emergence of stress responses creates many physiological changes in the body. An increase in the level of stress causes an increase in the level of cortisol, also known as the stress hormone in the body. Cortisol is an important part of the body's stress

response and has a very significant effect on metabolism, cardiovascular function, and immune regulation [7]. The study on the level of cortisol in patients with COVID-19 showed that patients with high cortisol levels had a shorter survival time [8]. Fear weakens the immune system, making the person more susceptible to the disease and causing the prognosis of the disease to worsen after the disease [9].

Adding mental health problems to physical health problems caused by the outbreak will significantly worsen the situation. It can be said that any research on this subject is vital to prepare experts for possible mental health problems. Therefore, to minimize the problems experienced after the pandemic, it is very important to make plans according to all the research conducted in this period. It is essential that individuals prone to psychological disorders in the different groups are determined in order to minimize problems [10]. Especially, COVID-19 fear is studied in various countries and groups. The fact that case numbers and death rates are different among countries, together with the application of different sociocultural policies gave rise to varying levels of fear rates [11]. There are relevant studies in the local and international literature on this issue [12-17]. In these studies, it was determined that there are social and economic factors affecting COVID-19 fear. In these studies, it was also determined that individual characteristics are effective on COVID-19 fear. For instance, in many studies, it was established that the level of fear in women was higher than the level of fear in men. In addition, results indicated that individuals with chronic health conditions who lost someone they are close to due to COVID-19 have higher levels of fear [11-17]. Such results demonstrate that while experienced events are similar, every individual has a different level of being affected by them.

2. Methods

2.1. Study design and purpose

This study was planned to examine COVID-19 fear in terms of its defining characteristics.

2.2. Population and sample of the study

A cross-sectional study with a web-based survey design was used. A simple random sampling method was used in the determination of the study sample and it was not restricted based on cities. It remained limited to the area of influence of online platforms. Participant data were collected between 10.08.2020-01.09.2020 using an online questionnaire that was prepared via google forms and distributed throughout social media, e-mail, and WhatsApp groups. Participation was voluntary and online consent was obtained from the participants. Adults who have Turkish understanding and reading ability and are over 18 age were included in the study. Collection of data on online platforms limited data to subjects under the age of 65. The study was completed with 727 people. Post-hoc power analysis was performed using the correlation coefficient between COVID-19 Fear scale score and Visual Analogue Scale scores (r=0.533) over the last sample number. The power of the study (effect size: 0.743) was found to be 100%.

2.3. Data collection

The data of the research were obtained using the sociodemographic information form prepared by the researchers, the COVID-19 Fear Scale, and the Visual Analogue Scale (VAS).

2.3.1 Socio-demographic Information Form

This form includes questions about the participant's introductory information such as age, gender, marital status, employment status, and home life [10,11].

2.3.2 COVID-19 Fear Scale

This scale was developed by Ahorsu et al. The scale is a 7-item and five-point Likert type scale. The responses were recorded on a five-point Likert scale ranging from Strongly Disagree (1) to Strongly Agree (5). The minimum score that can be taken from each question is 1, the maximum score is 5. A total score is calculated by adding the scores given to each item (between 7 and 35). The increase in the

score indicates that the fear of COVID-19 is increasing [18]. The Turkish validity and reliability study of the scale was conducted by two different researchers [19]. In the studies conducted, it has been determined that the scale is a single factor, highly valid, and reliable measurement tool in Turkish society (Cronbach's Alpha = 0.86) [12]. In this study, scale factor loadings were 0.66-0.74, corrected item-total correlation was 0.47-0.56, and Cronbach's Alpha value was determined as 0.886.

2.3.3 Visual Analogue Scale (VAS)

It is a measurement tool frequently used in objective evaluations in all groups. Many evaluations can be made using VAS [20-22]. In this study, VAS was used to determine the level of fear perceived by individuals [23-25]. It is easy to use and common. A rating between 0 and 10 can be made using VAS [26].

2.4. Data analysis

SPSS 21.0 (The Statistical Package for the Social Sciences-PC Version 21.0) package program was used for the statistical analysis of the data. Number (n), percentage (%), mean and standard deviation (SD) were used as descriptive statistical methods. The compatibility of the data for normal distribution was evaluated using the Shapiro-Wilk test. The t-test was used to compare two independent groups according to the distribution characteristics of the data, and the One-Way ANOVA test was used to compare three or more independent groups. Tukey multiple comparison tests were used for further analysis. Correlation between scale scores was evaluated with Pearson correlation analysis ($p<0.05$).

Ethical approval: Ethical approval for this study was obtained from the Ethics Commission of Yozgat Bozok University (Date: 25/08/2020; Number 95799348-050.0104-E.200). Consent was obtained from the individuals who participated in the study.

3. Results

Table 1 shows the distribution of individuals' COVID-19 Fear Scale and VAS scores by sociodemographic variables. In the study, it was determined that 48.8% of individuals were 26 years old and over, 44.3% were married, 34.6 % had children, 18.7% had a chronic illness, and 29.2% were healthcare professionals. A statistically significant relation was found between the COVID-19 Fear Scale and the score distributions obtained from VAS with age, gender, marital status, having children, having a chronic disease, working status, and being health personnel ($p<0.05$). COVID-19 Fear Scale and VAS scores were found to be significantly higher in individuals aged 26 years and older, women, married, having children, with a chronic disease, active workers, and healthcare professionals than other groups (Table 1). According to Tukey Post-Hoc analysis, the 18-25 age group has statistically significantly lower COVID-19 Fear Scale scores and VAS values compared to other groups (a<b).

Table 1. Distribution of VAS scores and COVID-19 fear scale scores according to the descriptive features of individuals

Features	Number (%)	COVID-19 Fear Scales X±SD	Test	p	VAS X±SD	Test	p
Age Min-Max(18-63 years)							
18-25 year	372(51.2)	18.56±6.75[a*]	F:5.247	**0.05**	5.45±2.79	F:12.219	**<0.001**
26-35 year	165(22.7)	19.95±6.70[b]			6.30±2.78		
36 years and over	190(26.1)	19.34±6.78[b]			6.59±2.86		
Gender							
Female	583(80.2)	20.05±6.76	t:5.808	**<0.001**	6.22±2.75	t:5.444	**<0.001**
Male	144(19.8)	16.46±6.11			4.81±2.97		
Marital status							
Married	322(44.3)	20.19±6.75	t:3.039	**0.002**	6.46±2.82	t:4.416	**<0.001**
Single	405(55.7)	18.66±6.74			5.53±2.81		
Having a child							
Yes	298(59.0)	20.21±6.77	t:4.731	**<0.001**	6.53±2.80	t:4.731	**<0.001**
No	429(41.0)	18.73±6.73			5.53±2.81		
Have chronic illness							
Yes	136(18.7)	20.75±6.99	t:2.708	**0.007**	6.58±2.95	t:2.911	**0.004**
No	591(81.3)	19.01±6.70			5.80±2.81		
Working status							
Yes	300(41.3)	20.12±6.95	t:2.599	**0.010**	6.37±2.81	t:3.393	**0.001**
No	427(58.7)	18.79±6.62			5.64±2.84		
Working as a medical staff							
Yes	212(29.2)	20.31±7.04	t:2.478	**0.013**	6.70±2.59	t:4.649	**0.001**
No	515(70.8)	18.94±6.64			5.63±2.89		

t: t-test F:One Way ANOVA *This group is different from the others

Table 2 shows the distribution of the COVID-19 Fear Scale and VAS scores according to family information. When the table was analyzed, it was found that the individuals who stated that they had healthcare personnel and people with a chronic disease in the family had higher mean scores on the COVID-19 Fear Scale and VAS than other groups had, and this difference was statistically significant ($p<0.05$). However, no significant relationship was found between living with an individual with a chronic disease, living with an individual over 65, frequency of going out of the home, and the mean scores of the COVID-19 Fear Scale and VAS. In the study, it was found that the individuals who always watch COVID-19 news and always talk about COVID-19 at-home settings, received higher mean scores on the COVID-19 Fear Scale and VAS, and this difference is found statistically significant ($p <0.05$). According to Tukey Post hoc analysis, individuals that always watch COVID-19 news and discuss COVID-19 at home have statistically significantly higher COVID-19 fear scales and VAS scales compared to other groups ($a<b<c$).

Table 2. Distribution of VAS scores and COVID-19 fear scales cores according to family information

Features	Number (%)	COVID-19 Fear Scale X±SD	Test	p	VAS X±SD	Test	p
Health staff in the family							
Yes	190(26.1)	20.28±6.93	t:2.232	**0.026**	6.71±2.63	t:4.343	**<0.001**
No	537(73.9)	19.00±6.70			5.67±2.87		
Living with a healthcare professional							
Yes	127(17.5)	19.78±6.82	t:0.813	0.416	6.62±2.65	t:2.972	**0.003**
No	600(82.5)	19.24±6.78			5.80±2.87		
Individuals with a chronic disease in the family							
Yes	439(60.4)	20.02±6.80	t:3.372	**0.001**	6.21±2.80	t:3.085	**0.002**
No	288(39.6)	18.30±6.63			5.54±2.87		
Living with an individual with a chronic disease							
Yes	291(40.0)	19.83±6.74	t:1.592	0.112	6.00±2.77	t:0.446	0.656
No	436(60.0)	19.01±6.80			5.90±2.90		
People over 65 years present in the family							
Yes	349(48.0)	19.79±7.14	t:1.747	0.081	6.37±2.88	t:3.947	**<0.001**
No	378(52.0)	18.92±6.42			5.54±2.76		
Living with an individual over the age of 65							
Yes	100(13.8)	19.52±6.98	t:0.281	0.778	5.88±2.79	t:0.235	0.814
No	627(86.2)	19.31±6.76			5.95±2.86		
Frequency of watching news about coronavirus at home							
Sometimes	110(15.1)	17.25±6.15[a]*	F:22.931	**<0.001**	4.56±2.92	F:30.226	**<0.001**
Usually	354(48.7)	18.40±6.69[b]			5.69±2.76		
Always	263(36.2)	21.47±6.63[c]			6.86±2.62		
The frequency of talking about coronavirus at home							
Sometimes	176(24.2)	16.59±6.27[a]*	F:37.482	**<0.001**	4.57±2.96	F:39.892	**<0.001**
Usually	394(54.2)	19.21±6.42[b]			6.05±2.64		
Always	157(21.6)	22.73±6.78[c]			7.21±2.59		
How often do you leave your home							
Sometimes	176(24.2)	19.69±6.94	F:1.923	0.147	5.98±3.05	0.515	0.598
Usually	416(57.2)	18.93±6.49			5.86±2.75		
Always	135(11.8)	20.14±7.38			6.14±2.87		

t: t-test F: One-way ANOVA *This group is different from the others

In Table 3, the relationship between the COVID-19 Fear Scale total score and the VAS score is given. As a result of the analysis, a moderate positive correlation was found between the COVID-19 Fear Scale total score and VAS score ($p < 0.05$).

Table 3. Relationship between COVID-19 Fear Scale total score and VAS score

Scales	VAS	
	r	p
COVID-19 Fear Scale	0.533	<0.01**

** Correlation is significant at the 0.01 level (2-tailed).

4. Discussion

COVID-19 pandemic is a medical phenomenon as well as a social phenomenon affecting individuals and societies on various levels, causing disruptions in many ways. In this study, the fear of COVID-19 and related factors in Turkish society were analyzed. In this study, the COVID-19 Fear Scale score and VAS score were found to be significantly lower in individuals under 18-25 years of age. In addition, the COVID-19 Fear Scale score and the VAS fear score are significantly higher in people with chronic diseases and those with a family history of chronic disease and a relative over 65 years of age (Table1, Table2). In several studies, there was no significant relationship between age and fear of coronavirus [12,27,28]. COVID-19 Fear Scale report, death cases were generally seen in older individuals with a systemic disease (hypertension, diabetes, cardiovascular diseases, cancer, and other immunosuppressive conditions; chronic lung diseases in particular) [29]. For this reason, it is thought that the fear of COVID-19 is higher in people who are in the at-risk group or who have a relative in it. In the study of Bakioğlu et al., it was found that people with chronic disease had higher fear scores, similar to the findings in this study [30].

Gender is one of the factors that affect fear. Although there are different results in the literature, there are findings of women being affected by fear or phobia more frequently than men in a ratio of 2:1 [22]. In this study, women's COVID-19 fear were found to be significantly higher than man. In studies conducted domestically and abroad, similar results to this study were found [12,13,30-32]. A study by Lin et al. assessed results of studies conducted in 10 countries using the COVID-19 fear scale and found that in all these countries women had higher fear scores compared to men [11]. This result shows that the coronavirus pandemic causes more psychological effects in women [14] and is parallel with the findings of previous studies on mental health in women [33].

According to this study, being married and having children are factors that increase the fear of COVID-19. The high fear scores of individuals who are married and have children may be due to their sense of responsibility and concern about losing their loved ones. According to the results of a study conducted in India, it is stated that married people have a higher fear of COVID-19 [13], oppositely, in another study conducted in the Philippines, there was no relationship between marital status and fear of COVID-19. In a study conducted with soccer players, a statistically significant difference was not established between marital status and COVID-19 fear [34]. In a study conducted in Turkey, single people were found to have higher fear levels [17]. In a study, it was established that individuals who had chronic diseases, who had someone close to them had COVID-19, and who experienced death due to the disease had higher fear levels [16].

In this study, having family members over the age of 65 with chronic diseases increased COVID-19 fear. However, living in the same house with such individuals did not affect fear scores. This result, having a family member in a risk group causes the person to experience fear at the same level even if they do not live in the same house.

In this process, media lead people to face their fears over and over [2,35]. In this study individuals that always watch the news on and discuss COVID-19 at home were found to have higher fear scores. It is considered that this is related to repetitive exposure of people to news and discussions that increase their anxiety.

Healthcare providers are at the forefront of struggling with coronavirus worldwide. For this reason, people at risk the most for COVID-19 transmission are healthcare providers. In this period, lots

of healthcare providers were infected and many of them died. In this study, it is found that being a healthcare provider and having a healthcare provider relative creates a significantly higher COVID-19 Fear Scale and VAS scores than it does for other groups of people. In the study carried out in India, the level of fear of healthcare providers was found higher [31]. The reason behind this finding is thought to be a result of their direct close contact with COVID-19 positive patients and the risk of disease transmission to their families.

The pandemic announced by the emergence of COVID-19 and the struggle of the countries with this pandemic constituted the agenda of the world press. People are watching the news about this recently defined virus, the disease it causes, the causes of the disease and prevention methods, and making research on the internet thousands of times every day. In this period, the content of daily conversations was frequently dominated by COVID-19. This is thought to affect people's mental health. There is evidence that repeatedly interacting with trauma-related media content for several hours after social trauma, can prolong acute stress experience [36]. Also, in the previous epidemic outbreaks (e.g., H5N1 avian flu), more media exposure is associated with increased fear [37]. In this study, it was found that people who always watch and talk about coronavirus at home setting have higher fear scores. The results of the study of Mertes et al. consisting of participants in 28 countries show similar results with our study. In this study, the data supporting the literature were obtained in this respect [29].

In the study, there is a moderate positive relationship between VAS and the scale mean score. Accordingly, it can be said that VAS is a measurement tool that can be used to evaluate COVID-19 fear. In the literature, there are studies conducted using VAS to assess fear [23-25]. However, no studies were found that used VAS to assess COVID-19 fear. In this context, the study is a first. Further studies demonstrating the effectiveness of VAS in assessing fear of COVID-19 are recommended.

There are many studies in the literature using the COVID-19 Fear Scale. In these studies, COVID-19 Fear Scale mean scores are similar to the results in this study [,30,13,15, 27, 38]. In a study conducted with the Iranian people, the COVID-19 fear scale score was found as 27.39 [10]. Increasing numbers of cases and death rates after the first incident in Iran, are thought to have an impact on this situation. In a study conducted by Lin et al., Iran was found to be the country with the highest level of fear among 10 countries while New Zealand was found to be the country with the lowest level of fear [11]. Island countries applied more successful strategies to protect their boundaries [11]. Differences among countries in fear levels are based on different measures employed by every country. The fact that scales were applied at different times and different applications were put in place during these times (applications such as full closure, curfews, discontinuing education) and different case and death numbers were the effective levels of fear. Different start dates of vaccine applications in countries, problems with the supply of vaccines might also cause changes in the level of fear.

5. Conclusion and Recommendations

As a result, it was determined that age, gender, marital status, being at high-risk work, and having a highly at-risk relative are the factors that increase the fear of COVID-19. It is recommended to detect coronavirus fear of society, make public surveys to find out highly at-risk individuals, and also, provide psychological support. It is very important to diversify and implement protective intervention programs to reduce some of the psychological consequences of fear and fear. The proliferation of vaccination might contribute to decreasing fear. It could be suggested that studies are conducted to compare fear levels between countries with high vaccination levels and countries with low vaccination levels.

Limitations and Suggestions for Future Studies

The sample size of this study and its representation of different groups are its strengths. However, the study's weaknesses are that data were collected within a certain period, the possibility of self-reporting of individuals causing potential bias, the high number of young population and low numbers

of elderly among the participants. Because the study was limited to online platforms, the population above the age of 65 could not be reached. Future studies that focus on certain groups and show comparisons between different periods to reach more specific findings are required.

Conflict of Interest

Authors declare that they have no conflict of interest.

Ethical approval

Ethical approval for this study was obtained from the Ethics Commission of Yozgat Bozok University (Date: 25/08/2020; Number: 95799348-050.0104-E.200). Consent was obtained from the individuals who participated in the study.

Authors' Contributions

S. Ç: Conceptualization, Methodology, Resources, Investigation Formal Analysis Writing - Original draft preparation (% 40)

D. Y. G: Conceptualization, Methodology, Resources, Writing - Original draft preparation (% 35).

D. E: Methodology, Resources, Writing - Original draft preparation (%25)

All authors read and approved the final manuscript

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Research Article

ATTITUDES OF PEDIATRIC NURSES AND TEACHERS TOWARDS CHILDREN'S RIGHTS AND THEIR PARENTAL ATTITUDES

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Abstract: *All professional disciplines working with children have important responsibilities for raising healthy generations. Nurses and teachers have responsibilities in the healthy growth and development of children within the family and society in physical, cognitive, emotional, and social aspects. The study aims to determine the attitudes of pediatric nurses and elementary school teachers working in the northern part of Turkey towards children's rights and their parental attitudes. This was a descriptive and cross-sectional study that was completed with a total of 258 individuals including 135 nurses and 123 teachers. 'Personal Information Form', "Children's Rights Attitude Scale (CRAS)" and "Parental Attitude Scale (PAS)" were used to evaluate sociodemographic characteristics of the nurses and teachers and their parental attitudes and attitudes towards children's rights. The data obtained from the study were analyzed by SPSS 21.0 program. Of the individuals who participated, 52.1% were nurses and 47.9% were teachers. It was found that the mean CRAS score was 37.8±9 for nurses and 31.4±9 for teachers. A statistically significant difference was found between the mean CRAS scores of the nurses and teachers ($p<0.05$). The mean PAS score was 22.0±5 for nurses and 18.8±5 for teachers, and a statistically significant difference was found between them ($p<0.05$). In the correlation studies between mean CRAS and PAS scores of the nurses and teachers, mean CRAS scores were found to be negatively correlated with PAS-democratic attitude. It was found that nurses and teachers showed positive attitudes towards children's rights, most of them did not get any training on this subject, and nurses who took education on children's rights exhibited more positive attitudes. It was also found out the attitudes of the nurses and teachers, who thought that children's rights were violated, were more positive.*

Keywords: *child right, teacher, pediatric nurse, parental attitude*

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1. Introduction

Children's rights can be described as the rights that foresee to protect children from harm and abuse, to give them a chance to be grown up in an emotionally appropriate manner, and to provide the basic needs such as health, housing, and education [1]. Children's rights refer to a childhood where every child develops to reach optimal potential, stays healthy, away from violence and poverty, and is raised in a safe environment [2-4]. Geneva Declaration of the Rights of the Child has stated that children have different physical, psychological, and behavioral characteristics than adults, their consciousness shows continuous growth and improvement, children's care is a social problem and everyone has to assume this responsibility by scientific approaches [1,5]. Today, the international document on children's rights is the United Nations Convention on the Rights of the Child, which was approved by the United Nations on November 20, 1989, and confirmed by 193 countries. Convention on the Rights of the Child emphasizes the philosophy of respect for children [6,7]. It is highly important to educate

professionals working with children in this field in generating a culture foreseeing respect to the rights of the children [8].

Parental attitudes constitute the set of behaviors resulting from the interaction between the child and the parents [9]. Parental attitudes are important for the psychological, physical, sexual, cognitive, and lingual development of children. They are a good tool for the transmission of cultural values during the socialization of the child [10-12]. The classification of parental attitudes emerges through behaviors. Previous studies addressed four attitudes including authoritarian, democratic, protective, and permissive. Each attitude has different effects on the lives of children. Parents having a democratic attitude enable their children to develop a free, self-standing and self-confident personality. Authoritarian parents, on the other hand, cause children to be more suppressed and withdrawn. In a permissive (overly tolerant) attitude, limits and rules are not clear for the child; and children raised with this attitude appear to be individuals who have not decided what to be and who are insatiable, incompliant with rules, and lacking skills such as sharing and collaboration. Moreover, parents give the child more control and care than necessary in a protective attitude; and as a result, the child becomes an emotionally sensitive and insecure individual who is heavily dependent on others [11,13]. In other words, parental attitudes play an important role in shaping children's lives in all aspects, their behaviors, and relationships with people.

All professional disciplines working with children have important responsibilities for raising healthy generations. Nurses and teachers have responsibilities in the healthy growth and development of children within the family and society in physical, cognitive, emotional, and social aspects. The physical, economic and social environment where children live has a significant effect on their well-being [14-16]. In this context, it is crucial to know own parenting attitudes of pediatric nurses and teachers and their attitudes towards children's rights. There is a limited number of studies conducted in our country regarding parental attitudes of the members of these two professions and their attitudes towards children's rights.

1.1. The aim of the study

This study was carried out to determine the attitudes of pediatric nurses and elementary school teachers working in the northern part of Turkey towards children's rights and their parental attitudes.

1.2. Following questions were seeking answers for this purpose

- What are the attitudes of nurses and teachers towards children's rights?
- What are the parental attitudes of nurses and teachers?
- Is there a relationship between sociodemographic characteristics of nurses and teachers and their attitudes towards children's rights?
- Is there a relationship between sociodemographic characteristics of the nurses and teachers and their parental attitudes?
-

2. Methods

2.1. Sample and Design of the Study

This was a descriptive and cross-sectional study. It was carried out with the nurses working in the pediatric clinics of a university hospital, a research and training hospital, and teachers working in the kindergarten and elementary schools located in a metropolitan city in the northern part of Turkey at March-May, 2021. Nurses and teachers who have been working in this field for more than at least one year, who had a child, and who approved to participate constituted the sample of the study. It was tried to attain the whole universe, but the study was completed with a total of 258 individuals including 135 nurses (the participation rate was 72%) and 123 teachers (the participation rate was 67%).

2.2. Research Instrument

'Personal Information Form' which was generated by the researchers in line with the literature and evaluating sociodemographic characteristics of the nurses and teachers, "Children's Rights Attitude Scale (CRAS)" which evaluate attitudes towards children's rights, and "Parental Attitude Scale" which evaluate parental attitudes were used for data collection [6,11].

2.2.1 Personal Information Form

This form included 11 questions regarding sociodemographic characteristics of the nurses and teachers (age, sex, education status, number of children), their professional characteristics (period of their professional experience, working department/school, their state of willingness in choosing their profession) and their thoughts about the attitudes adopted by their parents and for children's rights (status of having any education concerning children's rights, the status of thinking that children's rights are violated in our country, child-rearing attitudes of the participants at home and their parents' child-rearing attitudes) [6,11].

2.2.2 Children's Rights Attitude Scale

Children's Rights Attitude Scale (CRAS), which was developed by Karaman Kepenekci in 2006 to determine the attitudes of nurses towards children's rights, was used in the study [6]. There were 22 items in this 5-point Likert-type scale regarding the vital, developmental, protection, and participation rights of the children. The response options for these statements included "Totally agree", "Agree", "Neither agree nor disagree", "Disagree", and "Totally disagree". Responses given to the statements were scored in the same order as 1, 2, 3, 4, and 5, respectively; and a high score taken from the scale indicated a negative attitude. On the scale, 19 statements were positive and 3 were negative. Responses given to the negative statements (items 2,14 and 15) were reverse scored. In the validity and reliability study by Karaman Kepenekci (2006), Cronbach Alpha internal consistency coefficient was found as 0.85. [6]. Cronbach Alpha internal consistency coefficient was found as 0.86 in this study.

2.2.3 The Parental Attitude Scale (PAS)

The Parental Attitude Scale was developed by Karabulut Demir and Sendil (2008) to measure the child-rearing behaviors of the parents [11]. This Likert-type scale was composed of four subscales including "Democratic", "Authoritarian", "Permissive" and "Protective"; and consisted of 46 items. There were 17 items for democratic attitude, 11 items for authoritarian, 9 items for protective, and 9 items for permissive attitude. These items were as behavior styles, and there were "5" options across each behavior style varying depending on their frequencies. In scoring, scores and corresponding responses were 5 for "always", 4 for "most of the time", 3 for "sometimes", 2 for "rarely" and 1 for "never". There were no reverse-coded items. Scores obtained from each subscale were calculated separately, and a score was retrieved for each subscale. Having a high score meant to adopt the behavior style represented by that domain. At the end of reliability analyses conducted for PAS, Cronbach's alpha values were found as 0.83 for "democratic attitude", 0.76 for "authoritarian attitude", 0.75 for "protective attitude" and 0.74 for "permissive attitude" [11]. Cronbach's alpha values were found as 0.90 for "democratic attitude", 0.80 for "authoritarian attitude", 0.71 for "protective attitude" and 0.54 for "permissive attitude

2.3. Data Collection

Since the study was conducted during the COVID-19 pandemic, the authors decided to collect data online. Data collection instruments were designed as an online survey tool from Google Forms; thus, it became possible to complete them not only from a computer but also from any other electronic devices having internet access. The researcher informed the nurses and teachers about the aim and the scope of the study through e-mail and invited them to participate in the study. The tools were sent as an online link to the volunteer nurses and teachers. The scales lasted for approximately 10 minutes.

2.4. Statistical Analysis

The data obtained from the study were analyzed by SPSS 21.0 program (SPSS Inc, ChicagoIl, USA). The frequencies and percentages of nurses and teachers were used to analyze their sociodemographic characteristics during data analysis. Firstly, the Shapiro-Wilk test was used to determine whether the data were distributed normally or not. Number, percentage, mean, standard deviation, and median values were used as descriptive statistics; and parametric tests (such as independent samples t-test and one-way analysis of variance (ANOVA)) were used to analyze data with normal distribution. Besides, the Mann Whitney U test and Kruskal Wallis test were used to analyze the data with the abnormal distribution. Spearman correlation analysis was performed to investigate possible correlations between CRAS and PAS. For all the analyses, $p<0.05$ was considered statistically significant.

Ethical Consideration

Ethics approval to conduct the study was taken from the Ondokuz Mayis University Ethics Committee of Social Sciences and Humanities Research and Publication (Decision no: 2020/127, Date: 28.02.2020). Before starting the research, written permission (Google survey) was obtained from the nurses who agreed to participate in the study.

3. Results

Sociodemographic characteristics of the nurses and teachers were shown in Table 1. Among the individuals who participated, 52.1% were nurses and 47.9% were teachers. 61.9% of the nurses and 64.2% of the teachers were between 41-60 years old. 93.3% of the nurses and 70.7% of the teachers were females. In addition, 91.8% of the nurses and 89.4% of the teachers included in the study had an undergraduate degree. It was again found that 75.4% of the nurses and 62.6% of the teachers have not taken any education on children's rights. 65.7% of the nurses and 85.4% of the teachers stated that children's rights were violated.

Table 1. Sociodemographic Characteristics of the Nurses and Teachers

Sociodemographic Data		Nurse		Teacher	
		n	(%)	n	(%)
Age	20-40	51	38.1	44	35.8
	41-60	83	61.9	79	64.2
Sex	Female	129	96.3	87	70.7
	Male	5	3.7	36	29.3
Education	Undergraduate	125	93.3	110	89.4
	Graduate	9	9.7	13	10.6
Working years	1-10 years	36	26.9	16	13.0
	11-20 years	43	32.1	46	37.4
	20 years and more	55	41.1	61	49.6
Status of having an education on children's rights	Yes	33	24.6	46	37.4
	No	101	75.4	77	62.6
Status of thinking that children's rights are violated	Yes	88	65.7	106	85.4
	No	46	34.3	18	14.6
The attitudes of their parents towards the participants	Democratic	11	8.2	22	17.9
	Authoritarian	44	32.8	46	37.4
	Protective	72	53.7	45	36.6
	Permissive	7	5.2	10	8.1
Total		130	100	123	100

Mean scores of the nurses and teachers from the scales and their statistical comparisons were given in Table 2. It was found that the mean CRAS score was 37.8±9 for nurses and 31.4±9 for teachers. A statistically significant difference was found between the mean CRAS scores of the nurses and teachers ($p<0.05$). The mean PAS- authoritarian score was 22.0±5 for nurses and 18.8±5 for teachers, and a statistically significant difference was found between them ($p<0.05$).

Table 2. Mean CRAS and PAS Scores of The Nurses and Teachers

Mean Scale scores	Nurse		Teacher		Statistical Analysis
	X±SD	Min-Max	X±SD	Min-Max	
CRAS[b]	37.8±9	22-78	31.4±9	22-80	u=4609.00 Z=-6.109 p=0.00
PAS-democratic[b]	71.3±8	50-85	73.1±7	47-85	u=7333.50 Z=-1.526 p=0.127
PAS-protective[a]	31.0±4	19-42	30.2±5	19-44	t=1.231 p= 0.219
PAS-permissive[a]	22.4±4	11-35	21.0±4	9-33	t=2.500 p= 0.013
PAS-authoritarian[b]	22.0±5	11-43	18.8±5	11-43	u=5601.50 Z=-4.44 p=0.00

[a]Independent Samples t-test [b]Mann Whitney U test

When mean CRAS scores of the nurses were compared based on their sociodemographic characteristics, a statistically significant difference was detected between their states of having an education on children's rights and thinking that children's rights are violated ($p<0.05$). The mean CRAS score was 39.0±10 for the ones who had training on children's rights and 34.2±7 for those who did not. Besides, the mean CRAS score was found to be 36.3±13 among the ones who thought that children's rights were violated and 38.6±7 among the ones who did not (Table 3).

Table 3. Mean CRAS and PAS Scores of The Nurses Based on Their Sociodemographic Characteristics

Sociodemographic Data		CRAS	PAS Protective	PAS Permissive	PAS Authoritarian	PAS Democratic
Age	20-40	37.5±11	31.3±4	22.7±4	21.6±5	72.3±8
	41-60	38.0±9	30.7±4	22.2±4	22.3±6	70.7±8
	p	0.48[b]	0.49[b]	0.57[a]	0.53[b]	0.28[b]
Sex	Female	37.8±9	30.9±4	22.3±4	21.8±5	71.3±8
	Male	38.4±10	31.2±4	23.8±4	27.2±8	70.8±8
	p	0.43[b]	0.91[a]	0.52[a]	0.10[b]	0.65[b]
Education	Undergraduate	38.1±9	30.9±4	22.2±4	21.9±5	71.1±8
	Graduate	33.4±9	31.5±4	25.3±5	23.5±7	74.4±7
	p	0.17[b]	0.95[b]	0.12[a]	0.61[b]	0.37[b]
Working years	1-10 years	38.5±11	31.1±4	22.7±3	22.3±5	70.5±9
	11-20 years	38.1±8	31.4±4	22.4±4	22.3±5	71.7±8
	>20 years	37.6±9	30.4±4	22.3±4	21.8±6	71.4±8
	p	0.66[c]	0.54[d]	0.90[d]	0.90[d]	0.92[c]
Status of having an education on children's rights	Yes	34.2±7	30.9±4	22.5±4	22.3±6	71.0±8
	No	39.0±10	31.1±4	22.0±3	21.2±4	72.3±8
	p	**0.00[b]**	0.80[a]	0.53[a]	0.41[b]	0.45[b]
Status of thinking that children's rights are violated	Yes	36.3±13	31.3±4	22.8±4	22.7±5	70.6±9
	No	38.6±7	30.8±4	22.2±4	21.6±5	71.7±8
	p	**0.00[b]**	0.56[a]	0.40[a]	0.32[b]	0.86[b]
The attitudes of their own parents' towards the participants	Democratic	38.8±9	31.4±4	22.4±4	22.9±4	68.2±10
	Authoritarian	37.2±9	30.2±4	22.1±4	22.1±6	72.6±9
	Protective	38.1±10	31.6±4	22.4±3	21.7±5	71.2±8
	Permissive	37.5±10	28.2±3	23.8±5	23.0±4	69.0±7
	p	0.96[c]	0.15[c]	0.62[c]	0.64[c]	0.36[c]

[a]Independent samples t-test; [b]Mann Whitney U test; [c]Kruskal Wallis Test; [d]One-way Anova test

When mean CRAS scores of the teachers were compared based on their sociodemographic characteristics, a statistically significant difference was found between their states of thinking that children's rights were violated ($p<0.05$). The mean CRAS score of the ones who thought that they were violated was 30.9±8, and it was 35.6±9 for the ones who did not (Table 4).

Table 4. Mean CRAS and PAS Scores of the Teachers Based on Their Sociodemographic Characteristics

Sociodemographic Data		CRAS	PAS Protective	PAS Permissive	PAS Authoritarian	PAS Democratic
Age	20-40	29.8±6	29.8±5	20.4±4	18.2±4	74.8±7
	41-60	32.4±9	30.4±5	21.4±4	19.1±5	72.2±8
	p	0.19[b]	0.58[a]	0.19[b]	0.65[b]	0.08[b]
Sex	Female	31.1±9	30.0±5	21.1±4	18.6±5	74.0±7
	Male	32.3±8	30.6±5	20.9±4	19.0±5	71.1±8
	p	0.32[b]	0.57[a]	0.84[a]	0.69[b]	0.07[b]

Table 4. *continued*

Sociodemographic Data		CRAS	PAS Protective	PAS Permissive	PAS Authoritarian	PAS Democratic
Education	Undergraduate	31.6±9	30.4±5	20.8±4	18.6±5	73.1±7
	Graduate	30.1±7	28.2±4	22.8±5	20.2±4	73.3±6
	p	0.63[b]	0.14[a]	0.21[a]	0.16[b]	0.94[b]
Working years	1-10 years	30.2±5	28.8±4	20.2±4	17.7±3	72.8±7
	11-20 years	30.0±7	30.3±5	20.6±4	19.1±5	74.4±7
	>20 years	32.8±10	30.5±5	21.6±4	18.7±5	72.2±7
	p	0.45[c]	0.56[d]	0.39[d]	0.63[c]	0.25[c]
Status of having an education on children's rights	Yes	30.7±6	29.4±4	21.8±4	18.4±5	73.3±7
	No	32.0±10	30.5±5	20.6±4	19.0±5	72.9±7
	p	0.90[b]	0.27[a]	0.16[a]	0.40[b]	0.84[b]
Status of thinking that children's rights are violated	Yes	30.9±8	30.2±5	21.4±4	18.8±5	73.3±7
	No	35.6±9	29.9±6	19.0±4	18.4±5	71.8±9
	p	**0.02[b]**	0.59[b]	0.06[a]	0.64[b]	0.76[b]
The attitudes of their own parents' towards the participants	Democratic	31.2±6	29.8±7	20.0±4	17.6±3	75.2±7
	Authoritarian	30.8±7	29.4±5	21.1±4	19.5±5	72.7±8
	Protective	32.7±11	30.5±4	20.7±4	18.2±4	72.9±7
	Permissive	29.2±9	33.0±6	24.5±3	20.8±9	71.4±10
	p	0.57[c]	0.33[d]	0.06[d]	0.55[c]	0.51[d]

[a]Independent samples t-test; [b]Mann Whitney U test; [c]Kruskal Wallis Test; [d]One-way Anova test

In the correlation studies between mean CRAS and PAS scores of the nurses, mean CRAS scores were found to be negatively correlated with PAS-democratic attitude and PAS-protective attitude, respectively, and it was found to be positively correlated with PAS-authoritarian attitude (r=-0.392 p=0.000; r=-0.247 p=0.004; r=0.250 p=0.004) (at a significance level of p<0.01) (Table 5).

Table 5. Correlation Between Mean CRAS And PAS Scores Of The Nurses

For Nurses		CRAS	PAS Protective	PAS Permissive	PAS Authoritarian	PAS Democratic
CRAS	**r**	1.000	-.247	.102	.250	-.392
	p	.	**.004**	.240	**.004**	**.000**
	z	134	134	.134	134	134
PAS Protective	**r**	-.247	1.000	.143	-.170	.450
	p	**.004**	.	.099	.050	.000
	z	134	134	.134	134	134
PAS Permissive	**r**	.102	.143	1.000	.283	-.080
	p	.240	.099	.	.001	359
	z	134	134	.134	134	134
PAS Authoritarian	**r**	.250	-.170	.283	1.000	-.529
	p	**.004**	.050	0.001	.	.000
	z	134	134	.134	134	134
PAS Democratic	**r**	-.392	.450	-.080	-.529	1.000
	p	**.000**	.000	.359	.000	.
	z	134	134	.134	134	134

In the correlation analysis between mean CRAS and PAS scores of the teachers, the mean CRAS score was found to be negatively correlated with PAS-democratic attitude and positively correlated with

PAS-authoritarian attitude (r=-0.394 p=0.000, r=0.308 p=0.001) (at a significance level of p<0.01) (Table 6).

Table 6. Correlation Between Mean CRAS And PAS Scores Of The Teachers

For Teachers		CRAS	PAS Protective	PAS Permissive	PAS Authoritarian	PAS Democratic
CRAS	**r**	1.00	-.037	.057	.308	-.394
	p	.	.681	534	**.001**	**.000**
	z	123	123	123	123	123
PAS Protective	**r**	-.037	1.00	.269	.059	.007
	p	.681	.	.003	.516	.943
	z	123	123	123	123	123
PAS Permissive	**r**	.057	.269	1.00	.270	-.185
	p	.534	.003	.	.003	0.41
	z	123	123	123	123	123
PAS Authoritarian	**r**	.308	.059	.270	1.00	-.563
	p	**.001**	.516	.003	.	.000
	z	123	123	123	123	123
PAS Democratic	**r**	-.394	.007	-.185	-.569	1.00
	p	**.000**	.943	.041	.000	.
	z	123	123	123	123	123

4. Discussion

In this study, most of the nurses and teachers were observed to show positive attitudes towards children's rights although they did not have any education on them; and teachers were found to exhibit more positive attitudes (Table 3 and 4). No relevant study was found in the literature addressing nurses and teachers together, but attitudes of both professions towards children's rights were found to be positive in the previous studies in general [2,4,7,17-21]. Again, in the study, age, sex, professional experience periods, and education levels of the nurses and teachers were not found to affect their attitudes towards children's rights. In the previous studies, the attitudes of the individuals towards children's rights were determined to be more positive and they were found to give children more freedom as their education levels increased [20,22]. Moreover, the sex of the participants was not found to affect their attitudes towards the rights of the children. In some studies conducted with teachers and candidate teachers, it was determined that women exhibited more positive attitudes compared to men [23-25]. In some other studies with nurses, sex was not found to affect attitudes towards children's rights [20-26]. Moreover, female students were found to show more positive behaviors compared to the males in a study that was carried out with nursing students [4].

In this study, it was determined that attitudes towards children's rights among the nurses, who have taken education on children's rights and thought that they were violated, were positive (Table 3). It was found to be in the same manner in the studies which were carried out with the nurses and nursing students who were thinking in the same way [2,4,27]. In the study, it was also observed that the status of having an education on children's rights did not affect the attitudes of teachers; but, attitudes of the teachers, who thought that children's rights were violated, were found to be positively affected. Among the other relevant studies conducted with teachers, some reported an effect of prior education on children's rights on the attitudes [6,7,25] whereas others reported no effect [2,23,24,28].

In the study, it was determined that nurses exhibited more authoritarian and permissive attitudes compared to the teachers (Table 2). Previous studies have shown various results, and studies addressed both occupations separately. While some studies reported democratic attitudes within the families mostly [29,30], some others mostly reported authoritarian attitudes [31,32].

No correlation was found between the sociodemographic characteristics of the nurses and their parental attitudes (Table 5 and 6). In the literature, it has been reported that parental attitudes are influenced by many factors such as age, sex, education level, and income level of the parents [9,10,13,33]. Also, some studies determined that families were tended to show more protective attitudes as their education levels increased [30,31,33]. Again in another study, it was determined that families became more authoritarian or more permissive as their ages increased [13].

It was also determined in this study that teachers, who thought that children's rights were violated and stated that their families showed a permissive attitude to themselves, presented a permissive attitude. Parents indicated that the factors affecting their parenting attitudes were their upbringing and their psychological states [13]. Therefore, the results of our study suggest that parents showing a permissive attitude may also have been raised within such an environment.

Nurses were found to show more democratic and permissive attitudes and less authoritarian attitudes as their positive attitudes were enhanced towards children's rights. Moreover, it was seen that teachers showed more democratic and less authoritarian attitudes as their positive attitudes towards children's rights increased. Democratic attitude involves accepting the child as an individual, taking his/her opinions in family decisions, and valuing the emotions and ideas of the child. Thus, it is possible for the families exhibiting this attitude to show more positive attitudes towards children's rights. There may be an inadequacy in limiting or controlling the child in a permissive attitude. Their sensitivity to children's rights might have been associated with their inability to limit their children. In a previous study, it was observed that parental authority types were effective on the attitudes towards children's rights; free and authoritative (perfectionist) parents exhibited attitudes in favor of "care and protection" whereas democratic parents showed attitudes favoring "self-decision" [34]. In the study by Ozcan Saglamer and Kose (2020), it was determined that nurses presented more democratic attitudes as their child liking levels increased [29]. Also, Acary et al. (2020) found in their study that special education teachers, who took a special education law course, had more positive opinions regarding children's rights and democratic tendencies [28].

4.1. Study limitations

There are two limitations to the current study. Firstly, only people with children were included in the study. Secondly, only those who teach in kindergarten and primary school were recruited from the teachers. Finally; the study sample included only the Northern Anatolia region of Turkey; therefore, study findings cannot be generalized in terms of pediatric nursing in other regions.

5. Conclusion and Suggestions

In the study, it was found that nurses and teachers showed positive attitudes towards children's rights, most of them did not get any training on this subject, and nurses who took education on children's rights exhibited more positive attitudes. It was also found out the attitudes of the nurses and teachers, who thought that children's rights were violated, were more positive.

Nurses were found to show more authoritarian and permissive attitudes compared to the teachers in the study. It was also pointed out that teachers, who thought that children's rights were violated and who were raised with permissive attitudes, showed a permissive parental attitude. It was determined that teachers' democratic attitudes and nurses' democratic and permissive attitudes were increased as their positive attitudes towards children's rights increased. In addition, sociodemographic characteristics of the nurses and teachers were not found to affect their attitudes towards children's rights and their parental attitudes.

Parents adopting democratic attitudes see the child as an individual. Besides, they care about and respect the emotions and thoughts of the children and they include them in the decision-making process. This situation gives children the opportunity to take responsibility and fulfill them. Thus, their

attitudes towards children's rights are affected positively. Pediatric nurses and elementary school teachers become role models for the children and their families with their attitudes and behaviors. Therefore, it is important for these two professions which may have significant effects on the children and parents to be aware of their parental attitudes. Moreover, it is recommended to include parents in the awareness activities and to provide necessary information about appropriate attitudes to enhance healthy parental attitudes of the members of these two professions. It is also thought to be important for the nurses and teachers to have an active role in the determination of parents having parental attitudes that may negatively affect the development of the child and in early intervention programs. Additionally, it is recommended to pay attention to include the subject of "Children"s Rights" within in-service education programs for all occupations working in the pediatric field and to make these training common. It is also suggested to conduct similar studies with larger samples including different occupational groups since the number of studies concerning children's rights and parental attitudes are quite low in our country as well as worldwide.

Ethical Consideration

Ethics approval to conduct the study was taken from the Ondokuzmayıs University Ethics Committee of Social Sciences and Humanities Research and Publication (Decision no: 2020/127, Date: 28.02.2020). Before starting the research, written permission (Google survey) was obtained from the nurses who agreed to participate in the study.

Conflict of Interest

Authors have no conflicts of interest to declare.

Financial Disclosure

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The compliance to Research and Publication Ethics

This work was carried out by obeying research and ethics rules.

Authors' Contributions

Tural Büyük, Odabasoğlu**:** Conceptualization, Methodology, Software. Tural Büyük, Odabasoğlu, Uzsen, Koyun**:** Data curation, Writing-Original draft preparation. Tural Büyük, Odabasoğlu, Uzsen, Koyun: Visualization, Investigation. Tural Büyük: Supervision, Writing-Reviewing and Editing.

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Research Article

THE RELATIONSHIP BETWEEN SMARTPHONE ADDICTION, PSYCHOLOGICAL WELL-BEING AND ANXIETY IN MIDWIFERY STUDENTS RECEIVING DISTANCE EDUCATION

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Abstract: *It is obvious that during the COVID-19 pandemic period, the use of smartphones has increased due to the continuing distance education in our country. This study, therefore, aimed to examine the relationship between smartphone addiction, psychological well-being, and anxiety in midwifery students receiving distance education. Information of 759 midwifery students studying in midwifery undergraduate programs and receiving distance education was collected and analyzed with web-based query forms. For the collection of the data of the research, the Personal Information Form (PIF), which included 14 questions, including socio-demographic characteristics, and was created with online form tools and prepared by the researchers by scanning the literature, was used along with Smartphone Addiction Scale (SAS), Psychological Well-being Scale (PWBS) and Beck Anxiety Inventory (BAI). While the mean score of the smartphone addiction scale of the students was calculated as 30.29 ± 12.42, their high addiction level (> 33 points) was found to be 36.4% (n = 276). It was determined that smartphone addiction was the most important independent factor (β= 0.32, t = 10.01, p = <0.001) affecting students' beck anxiety level. Smartphone addiction increased students' anxiety and decreased their psychological well-being.*

Keywords: *Smartphone addiction, anxiety, psychological well-being, midwifery students, distance education*

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1. Introduction

Technological tools have led to a groundbreaking change in society and increased behavioral addictions with the development of technology. One of these technological tools that have created a great change in society is smartphones. The use of smartphones is becoming more and more important for people every day. The widespread and excessive use of smartphones has become a major public health problem. [1,2]. The level of smartphone use in the world is 67% [3]. In Turkey, the smartphone/mobile phone use rate was 98.7% in 2019 [4].

Sending messages, visiting social networks, taking photos and videos, sharing pictures and messages on social media, playing games, shopping online, and surfing the Internet can be done anywhere and anytime via a smartphone. In studies on smartphones, the use of smartphones is stated to be common among young people, and this situation is associated with addictive behavior. It is reported that when smartphones are used excessively, they can negatively affect learning in the classroom and interpersonal communication, and cause security problems [5-8]. The adolescent, who tries to socialize with a smartphone and reduce the problems s/he experiences, actually becomes more individualized and disconnects from real life [2]. Adolescents' focusing all their time and attention on friendships leads to

a decrease in their interest in lessons, to the deterioration of their sleep quality, to inefficiency in their lessons, to low academic success, and depression [8-10].

Long-term use of smartphones reveals many negative physical and psychosocial problems in users, which includes dry eyes; carpal tunnel syndrome; wrist, neck, back, and shoulder pain; loss of concentration; tension; migraine headaches; thumb and middle finger pain; the risk of being drawn to unhealthy and illegal environments due to easy communication with everyone; asociality; and obesity [11,12].

Individuals, who feel good psychologically, maintain good social relationships with other people, feel good spiritually and physically, and increase their job performance and earnings [13]. Psychological well-being arises from the possible tension balance between a person's happiness and development. People participate in activities, such as the internet, social media, listening to music, and social activities, to reduce tension in their lives and to be happy. However, various applications on the internet and time spent on social media often do not relieve the person psychologically as they wish; on the contrary, they can cause problems [14]. In this context, it is important for public health to protect students, who are the future of society, against technological addictions, which is one of the most vulnerable problems [10]. The coronavirus disease (COVID-19) has become a pandemic, causing unprecedented biopsychosocial, mental, and economic problems worldwide. In this process, many people have faced home confinement and physical and social distancing that can worsen their mental health problems and lead to technology and internet addiction. [15]. It is obvious that during the COVID-19 pandemic period, the use of smartphones has increased due to the continuing distance education in our country. This study, therefore, aimed to examine the relationship between smartphone addiction, psychological well-being, and anxiety in midwifery students receiving distance education.

2. Materials and Methods

2.1. Design, Data Collection, and Sample

The population of this cross-sectional study included female midwifery students who were registered to an undergraduate midwifery degree program in Turkey between 5 April 2021 and 5 May 2021 during the spring semester of the 2020-2021 academic year and who received distance education. The d-value method was used to calculate the sample size. In order to ensure that the effect size value is 0.10, that the margin of error is 0.05, and that the power is 80%, with the help of the G-power (version 3.1) package program, a minimum of 614 midwifery students were calculated as the sample group in accordance with the specified criteria. A midwife student voluntarily started to share an online questionnaire via online platforms (Facebook, WhatsApp, and Instagram) and asked for it to be shared again. The research was completed with a total of 759 midwifery students.

Inclusion criteria of the study

- Being a female midwifery student
- Being a Facebook, WhatsApp, or Instagram user

Exclusion criteria of the study

- Unwillingness to participate in the study

2.2. Measurements

For the collection of the data of the research, the Personal Information Form (PIF), which included 14 questions, including socio-demographic characteristics, and was created with online form tools and prepared by the researchers by scanning the literature, was used along with Smartphone Addiction Scale (SAS), Psychological Well-being Scale (PWBS) and Beck Anxiety Inventory (BAI). The data were collected through online platforms (Facebook, WhatsApp, and Instagram) with online forms. The students answered the questions completely, and the missing data were, therefore, not recorded.

Personal Information Form:

The Personal Information Form, which was prepared by the researchers by scanning the literature [5,11] contains information about students' socio-demographic characteristics (age, class, chronic disease, etc.) and consists of 14 questions.

Smartphone Addiction Scale (SAS):

The 33-question form of the Smartphone Addiction Scale (SAS) was created by Kwon, Lee, Won, Park, and Min (2013) in order to measure the risk of smartphone addiction in adolescents. It was, then, reduced to 10 questions for ease of implementation, and the Short Form (SAS -SF) was created [16]. The validity and reliability studies of the Short Form of the Smartphone Addiction Scale (SAS -SF), which consists of 10 questions, were carried out by Noyan, Enez Darçın, Nurmedov, Yılmaz, and Dilbaz (2015). The Cronbach alpha coefficient, whose lower limit was determined as 0.70, was found to be 0.867 [17]. In this study, the Cronbach alpha coefficient of the scale was determined to be 0.927.

Psychological Well-Being Scale (PWBS):

The Psychological Well-being Scale was developed by Diener et al., (2010) in order to measure socio-psychological well-being and to complement existing well-being measures [18]. The adaptation study of the scale into Turkish was conducted by Telef (2013) [19]. The Psychological Well-Being Scale, which includes eight items, identifies important elements of human function such as positive relationships, feelings of competence, and having a meaningful and purposeful life. The Cronbach alpha internal consistency coefficient of the scale was found to be .87 [18]. In this study, the Cronbach alpha coefficient of the scale was determined to be 0.928.

Beck Anxiety Inventory (BAI):

It is a self-assessment scale developed by Beck, Epstein, Brown, and Steer (1988) in order to determine the frequency of anxiety symptoms experienced by individuals. It is a 4 Likert-type scale with 21 items scored between 0 and 3 [20]. Its validity and reliability in Turkey were performed by Ulusoy Turkey, Sahin, and Erkmen (1998) [21]. In this study, in the internal consistency analysis, the Cronbach alpha coefficient was found to be .90, whereas the Cronbach alpha coefficient of the scale was determined to be 0.935.

2.3. Statistical analysis

While evaluating the findings obtained in the study, SPSS (Statistical Package for the Social Sciences) version 25.0 (IBM Corp., Armonk, NY, USA) was used for statistical analysis. Descriptive statistical methods (mean, standard deviation, median number, percentage, etc.) were used for the evaluation of the study data. One-way ANOVA analysis and Independent Samples T-Test was used to test the difference between the groups. Multiple comparisons were made using the Tukey test in the groups where the difference was significant as a result of the
ANOVA analysis. The correlation level between the two continuous variables was measured using the Spearman correlation test. Multiple linear regression analysis was used for the determination of independent factors which affected students' smartphone addiction, psychological well-being, and beck anxiety levels. The results were evaluated at a 95% confidence interval, whereas the significance was evaluated below $p < 0.05$.

Ethical statement

For the application of the study, the ethical approval of the Scientific Research Ethics Committee of Canakkale Onsekiz Mart University (Ethics Committee No: 2021-YÖNP-0137, Decision No: 05/19, Decision Date: 11.03.2021) and the electronic consent of the students, who participated in the study, were obtained.

3. Results

The average age of 759 undergraduate midwifery students included in the study was found to be 20.75 ± 2.53, and distributed between the ages of 17 and 40. It was determined that 29.5% of the students were in the first grade, that 33.1% were in the second grade, that 17.5% were in the third grade, and that 19.9% were in the fourth grade. It was found out that 97.2% of them were single and that 83.9% had a nuclear family. 60.3% of the students had primary school graduate mothers, whereas 36.8% had primary school graduate fathers. 66.3% had a middle-income level. It was determined that 8.4% of the students had a chronic disease, that 12.6% used cigarettes, that 12.6% alcohol, and that 53.8% did not do any sports activities. While 30.3% of the students defined their sleep duration and quality as poor and very poor, 79.6% stated that they had vision problems during the distance education process (Table 1).

Table 1. Students' Smartphone Addiction, Psychological Well-being, and Beck Anxiety Mean Scores According to Their Sociodemographic Characteristics (N:759)

			Smartphone Addiction Scale			**Psychological Well-Being Scale**			**Beck Anxiety Inventory**		
Variable	**Category**	**n (%)**	**Mean±SD**	**Test**	***p***	**Mean±SD**	**Test**	***p***	**Mean±SD**	**Test**	***p***
Age Group	≤20	401 (52.8)	30.38±11.99	0.21[a]	0.834	37.43±10.44	2.41[a]	**0.016**	18.92±13.34	1.08[a]	0.279
	>20	358 (47.2)	30.19±12.89			39.28±10.68			17.87±13.42		
Grade	I	224 (29.5)	30.19±12.21	0.26[b]	0.851	37.21±10.78	2.07[b]	0.103	17.76±12.65	0.29[b]	0.831
	II	251 (33.1)	30.70±12.31			37.97±10.07			18.75±13.16		
	III	133(17.5)	29.53±12.39			39.77±10.78			18.42±13.33		
	IV	151(19.9)	30.42±13.00			39.16±10.86			18.88±14.87		
Marital status	Married	21(2.8)	23.62±11.89	2.51[a]	**0.012**	41.81±12.54	1.54[a]	0.124	14.29±13.30	1.44[a]	0.151
	Single	738(97.2)	30.48±12.39			38.20±10.52			18.54±13.37		
Family type	Extended	122(16.1)	27.73±11.41	2.49[a]	**0.013**	39.57±10.62	1.44[a]	0.150	18.07±13.27	0.32[a]	0.752
	Nuclear	637(83.9)	30.78±12.55			38.06±10.57			18.49±13.41		
Mother's Education	Primary S.	458(60.3)	30.69±12.36	0.45[b]	0.715	38.02±10.58	2.14[b]	0.094	18.41±13.10	0.67[b]	0.569
	Secondary S.	103(13.6)	30.03±13.22			36.77±10.69			19.75±15.39		
	High S.	137(18.1)	29.45±12.40			39.50±10.29			18.25±12.84		
	University	61(8.0)	29.56±11.58			40.30±10.82			16.72±13.16		
Father's Education	Primary S.	279(36.8)	31.25±12.58	1.78[b]	0.150	37.56±10.02	0.99[b]	0.396	19.31±13.19	0.98[b]	0.400
	Secondary S.	156(20.6)	30.05±12.16			38.60±10.88			18.15±13.12		
	High S.	209(27.5)	28.76±12.22			38.42±11.03			17.26±13.43		
	University	115(15.2)	31.05±12.59			39.49±10.71			18.78±14.10		
Income	Low	173(22.8)	31.94±13.39	2.13[b]	0.120	36.34±10.88	8.01[b]	**<0.001**	21.14±13.79	4.95[b]	**0.007**
	Moderate [2]	503(66.3)	29.91±12.08			38.38±10.45	*1<3*		17.80±13.26	*3,2<1*	
	High[3]	83(10.9)	29.12±12.18			41.93±9.92			16.58±12.61		
Chronic Disease	Yes	64(8.4)	31.44±12.24	0.77[a]	0.439	37.03±9.62	1.00[a]	0.317	25.33±13.85	4.36[a]	**<0.001**
	No	695(91.6)	30.18±12.44			38.42±10.67			17.79±13.17		
Smoking	Yes	96(12.6)	31.53±14.70	0.91[a]	0.367	38.07±10.82	0.22[a]	0.822	21.63±14.44	2.52[a]	**0.012**
	No	663(87.4)	30.11±12.05			38.33±10.56			17.96±13.17		
Alcohol	Yes	96(12.6)	33.21±14.40	2.17[a]	**0.032**	35.94±11.00	2.35[a]	**0.019**	23.77±14.15	4.23[a]	**<0.001**
	No	663(87.4)	29.86±12.06			38.64±10.49			17.65±13.10		
Doing sports	Yes	351(46.2)	27.96±12.09	4.87[a]	**<0.001**	40.77±9.77	6.15[a]	**<0.001**	17.25±13.20	2.26[a]	**0.024**
	No	408(53.8)	32.29±12.36			36.17±10.81			19.44±13.47		
Sleep quality	Very poor[1]	32(4.2)	40.59±13.85	18.79[b]	**<0.001**	30.25±10.23	21.82[b]	**<0.001**	31.69±13.52	40.42[b]	**<0.001**
	poor[2]	198(26.1)	33.75±12.19	*4<3<2<1*		34.64±10.54	*1<2<3<4*		24.37±13.48	*4<3<2<1*	
	Good[3]	471(62.1)	28.67±11.98			39.93±9.88			15.95±12.07		
	Very good[4]	58(7.6)	25.91±10.35			42.00±11.22			10.93±11.09		
Vision problem	Yes	604(79.6)	31.68±12.37	6.69[a]	**<0.001**	37.38±10.47	4.81[a]	**<0.001**	20.14±13.43	8.17[a]	**<0.001**
	No	155(20.4)	24.86±11.04			41.90±10.29			11.73±10.88		

[a]Independent samples *t* test, [b]One-way ANOVA test

3.1. Beck Anxiety Inventory Scores

The students' anxiety score was calculated as 18.43 ± 13.38. In the analysis performed for the internal consistency of the scale, it was determined that the Cronbach alpha reliability coefficient was α = 0.935. In the comparisons between the groups, it was found out that the anxiety level of the students, who had low income (F = 4.95; p = 0.007) and a chronic disease (t = 4.36; p = <0.001), smoked (t = 2.52; p = 0.012), used alcohol (t = 4.23; p <0.001), had poor/very poor sleep duration and quality (F = 40.42; p <0.001), and experienced vision problems during distance education (t = 8.17; p <0.001), was statistically significantly higher. The students who did sports had lower anxiety levels (t = 2.26; p = 0.024) than the students who did not do sports. When the variables, which were statistically significant in the single analyzes, were included the linear regression model, it was determined that chronic disease (β= 0.12, t = 4.01, p <0.001), alcohol use (β= 0.09, t = 2.64, p = 0.009), poor/very poor sleep quality (β= 0.19, t = 5.84, p <0.001), vision problems during the distance education period (β= 0.11, t = 3.36, p = 0.001), and smartphone addiction (β= 0.32, t = 10.01, p = <0.001) and psychological well-being levels (β= -0.18, t = -5.57, p = <0.001) were the independent factors related to the students' anxiety levels (Adjusted R2 = 0.32; F = 40.02; p = <0.001). In addition, as a result of the Spearman correlation analysis, it was found that there was a positive (r = 0.432; p = <0.001) relationship between the students 'anxiety and smartphone addiction levels and that there was a negative relationship (r = -0.319; p = <0.001) between the students' anxiety and psychological well-being levels (Table 2).

3.2. Smartphone Addiction Scores

While the mean score of the smartphone addiction scale of the students was calculated as 30.29 ± 12.42, the high addiction level (> 33 points) of the students was found to be 36.4% (n = 276). In addition, the Cronbach alpha reliability coefficient of the smartphone addiction scale was determined to be α = 0.927. In the comparisons between the groups, it was determined that the smartphone addiction level of the students, who were single (t = 2.51; p = 0.012), had a nuclear family (t = 2.49; p = 0.013), used alcohol (t = 2.17; p = 0.032), had poor/very poor sleep quality (F = 18.79; p = <0.001), and experienced vision problems during distance education (t = 6.69; p = <0.001), was statistically significantly higher. It was also found out that the students who did sports had lower smartphone addiction (t = 4.87; p = <0.001) than the students who did not do sports. When the variables, which were statistically significant in the single analyzes, were included in the linear regression model, it was found that all significant variables were independent factors associated with the students' smartphone addiction. (Adjusted R^2 = 0.07; F = 12.04; p <0.001). In addition, as a result of the Spearman correlation analysis, a negative correlation (r = -0.188; p <0.001) was found between the students' smartphone addiction and psychological well-being levels (Table 2).

3.3. Psychological Well-being

The psychological well-being mean score of the students was 38.30 ± 10.59, and the Cronbach's alpha reliability coefficient of the scale was α = 0.928. In the comparisons between the groups, it was found that the psychological well-being level of the students, who were over 20 years old (t = 2.41; p = 0.016), had medium/high income level (F = 8.01; p = <0.001), were non-alcoholic (t = 2.35; p = 0.019), did exercising (t = 6.15; p = <0.001), had good/very good sleep quality (F = 21.82; p = <0.001), and experienced no vision problems during distance education (t = 4.81; p = <0.001), was statistically significantly higher. When the variables, which were statistically significant in the single analyzes, were included the linear regression model, it was determined that being over 20 years old (β= 0.08, t = 2.28, p = 0.023), doing sports (β= 0.18, t = 5.26, p = <0.001), having good/very good sleep quality (β= 0.14, t = 3.81, p = <0.001), not experiencing visual problems during distance education (β= 0.08, t = 2.38, p

= 0.018), and beck anxiety level (β= -0.22, t = -5.58, p = <0.001) were the independent factors associated with the students' psychological well-being levels (Adjusted R2 = 0.18; F = 19.97; p <0.001) (Table 2).

Table 2. Factors Associated with Students' Smartphone Addiction, Psychological Well-Being and Beck Anxiety Level (Multiple Linear Regression Analysis Results)

		Unstandardized Coefficients		Standardized Coefficients			
	Factors	**B**	**SE**	***β***	**t**	**p**	**Model[a]**
Beck Anxiety	**Income**	-1.327	0.977	-0.042	-1.359	0.175	R^2=0.325
	Chronic Disease	5.846	1.460	0.121	4.005	**<0.001**	Adjusted R^2=0.317
	Smoking	0.769	1.354	0.019	0.568	0.570	F=40.024
	Alcohol	3.565	1.352	0.089	2.636	**0.009**	p=<0.001
	Sports	0.915	0.843	0.034	1.085	0.278	
	Sleep quality	5.554	0.950	0.191	5.844	**<0.001**	
	Vision Problems	3.510	1.043	0.106	3.364	**0.001**	
	Smartphone Addiction	0.346	0.035	0.321	10.014	**<0.001**	
	Psychological Well-Being	-0.228	0.041	-0.180	-5.572	**<0.001**	
Smartphone Addiction	**Marital Status**	7.221	2.667	0.095	2.708	**0.007**	R^2=0.074
	Family Type	2.585	1.190	0.077	2.171	**0.030**	*Adjusted* R^2=0.068
	Alcohol	2.827	1.317	0.076	2.147	**0.032**	F=12.043
	Sports	-3.579	0.896	-0.144	-3.994	**<0.001**	p=<0.001
	Psychological Well-Being	-0.166	0.042	-0.141	-3.911	**<0.001**	
Psychological Well-being	**Age group**	1.628	0.714	0.077	2.282	**0.023**	R^2=0.176
	Income	1.047	0.852	0.042	1.229	0.219	*Adjusted* R^2=0.167
	Alcohol	-1.725	1.078	-0.054	-1.600	0.110	F=19.966
	Sports	3.799	0.722	0.179	5.260	**<0.001**	p=<0.001
	Sleep quality	-3.180	0.834	-0.138	-3.814	**<0.001**	
	Vision Problems	-2.177	0.916	-0.083	-2.378	**0.018**	
	Smartphone addiction	-0.003	0.032	-0.004	-0.096	0.923	
	Beck anxiety level	-0.173	0.031	-0.218	-5.578	**<0.001**	

[a]Multiple Linear Regression Model

4. Discussion

In the study, it was observed that 36.4% of the students had high smartphone addiction. Similarly, in the study conducted by Alhazmi, Alzahrani, Baig and Salawati (2018) [22] with medical students, 36.5% of the students were found to be smartphone addicts. In a study conducted by Alsalameh, Harisi, Alduayji, Almutham, and Mahmood (2019) [23] with medical students, 60.3% of the students were reported as smartphone addicts. According to another study conducted by Elserty, Helmy, and Mounir (2018) [24] on physical therapy students, the rate of smartphone addiction was found to be 62.4% higher in women than men. The rate in those studies is higher than the rate in this study. In another study carried out with medical faculty and nursing students, smartphone addiction scores for nursing students were determined to be significantly higher than those for medical students. Since most of the participants from the nursing department were female, it was concluded that this difference may also be due to gender [5]. It is thought that the findings of the study will contribute to the literature, because midwives, who

have important roles in both women's health and community mental health, will be the health professionals of the future.

In a large sample of university students, a study found that problematic smartphone use was common and associated with lower Grade Point Average (GPAs), worse self-esteem, higher impulsivity, mental health problems, and symptoms of alcohol use disorder [25]. In the study, it was reported that the smartphone addiction level of the students who used alcohol was statistically significantly higher. It was emphasized in different studies that excessive use of smartphones could cause smartphone addiction, as well as a public health problem equivalent to alcohol, cigarette, and drug addiction [5,26]. The results of the study support those in the literature.

In the study, it was found that most of the students had vision problems. While the smartphone addiction and anxiety levels of the students with vision problems were statistically significantly higher, their psychological well-being level was lower. In other studies conducted on this subject, it was emphasized that vision problems (burning, dryness) were also experienced [5, 24]. It is thought that the pandemic period also increased the problems caused by this situation due to the continuation of distance education.

The students who did sports had lower anxiety and smartphone addiction levels compared to the students who did not do sports, whereas their psychological well-being levels were higher. A meta-analysis study concluded that exercise interventions could have positive effects on the treatment of smartphone addiction and that longer intervention times could produce greater intervention effects [27]. These results confirm that regular sports reduce anxiety and depression since it causes an increase in the secretion of happiness hormones, such as dopamine and endorphins, and that sports have positive effects on human psychology.

In the study, a positive relationship was found between the students' anxiety and smartphone addiction levels. Similar studies also found a relationship between depression, and anxiety, and smartphone addiction [28,29]. Excessive use of digital devices and mobile phones decreases students' academic success and satisfaction with life disrupts their sleep quality, negatively affects them and isolates their social life and verbal communication [8,30]. In the study, it was found that the level of smartphone addiction was statistically significantly higher in the students with poor/very poor sleep time and quality. A negative relationship was found between smartphone addiction and psychological well-being. The results support those in the literature. These results suggest that smartphone addiction threatens public health because it creates negative consequences for the mental health of the community.

In the study conducted by Battashi et al. (2020), a significant positive relationship was found between excessive use of smartphones, insomnia, anxiety, and stress among university students. In the study, it was concluded that it was important to encourage healthy ways of using smartphones and to develop an awareness plan for the identification of these problems and that students should be supported in reducing their anxiety levels [11]. In other studies, it was stated that addiction could be prevented by providing guidance services by increasing self-awareness and peer education programs [31,32]. The results of the study are similar and support the importance of education programs to improve psychological symptoms, such as sleep and anxiety, in terms of reducing smartphone addiction among university students.

In the study of Çiçek, Tanriverdi, Şanlı, and Buluş, (2021), there was a negative and significant relationship between democratic and authoritarian parental attitudes and smartphone addiction in university students, while a positive and significant relationship was found between protective parental attitudes and smartphone addiction [33]. A positive and significant relationship between high levels of internet addiction and loneliness in university students was also emphasized in studies [34,35]. The results show that smartphone addiction may be related to family structure and loneliness.

In the study conducted among Italian children and adolescents, it was stated that smartphone use was more frequent during the COVID-19 pandemic compared to the pre-epidemic period. It was reported that the increase in smartphone addiction led to sleep and musculoskeletal disorders, and psychological and social negativities. It was emphasized that negative effects should be monitored in cooperation with parents in order to recognize signs and symptoms early and to reduce addiction [36]. In a similar study conducted with medical students during the pandemic period, a relationship was found between smartphone use and anxiety and sleep disorders. It was thought that the harmful effect of problematic smartphone use and the importance of sleep health in reducing anxiety should be emphasized and included in medical education [37]. The results of the study are similar, which confirms that the addiction has been caused by social distancing measures, which have been applied for months, and distance education.

5. Conclusions and Recommendations

In this study, it was concluded that smartphone addiction increased students' anxiety and decreased their psychological well-being. However, it was found that the level of smartphone addiction was statistically significantly higher in those students who used alcohol, had poor/very poor sleep duration and quality, and experienced vision problems during distance education. It was also determined that those students who did sports had lower smartphone addiction than those who did not do sports. Students can get rid of the addiction that negatively affects and isolates their social lives and verbal communication by being directed to arts, sports, and social activities, which would be provided through the social support of their families. Due to the restrictions during the pandemic period, students can be supported to adopt a hobby to protect their mental health. Smartphone addiction can be managed by strengthening self-control to encourage the healthy use of smartphones. In order to prevent the problem of addiction, specialist psychiatric nursing educators and psychotherapists advise students to organize distance education programs during distance education about the potential harms of smartphone addiction and its negative impacts on school success and mental health. It is recommended to increase studies on etiological factors and psycho-social problems in determining the risk of smartphone addiction in students. By conducting interventional research and providing online counseling, students' anxiety and depression levels can be reduced. It is also recommended to make awareness-raising education programs to prevent health problems caused by smartphone addiction and to encourage the appropriate use of smartphones.

Ethical statement

For the application of the study, the ethical approval of the Scientific Research Ethics Committee of Canakkale Onsekiz Mart University (Ethics Committee No: 2021-YÖNP-0137, Decision No: 05/19, Decision Date: 11.03.2021) and the electronic consent of the students, who participated in the study, were obtained. The students were informed about the objective of the study at the beginning of the questionnaire form on online platforms. In order to ensure the confidentiality of participant information, we did not include any identifying information in the online questionnaire.

Conflict of interest

The authors report no actual or potential conflicts of interest.

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Limitations of the Study

The sample of the study is limited to midwifery students who received distance education at the time of the study and could be reached only through online platforms.

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The compliance to the Research and Publication Ethics

This study was carried out in accordance with the rules of research and publication ethics.

Authors' Contributions

E.C: Conceptualization, Methodology, Formal analysis, Resources, Investigation, Writing - Original draft preparation (%50)

S.S: Conceptualization, Methodology, Formal analysis, Resources, Investigation, Writing - Original draft preparation (%50)

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Research Article

SEXUAL ORIENTATION MYTHS: DOES THEOLOGICAL EDUCATION AFFECT SEXUAL ORIENTATION MYTHS?

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Abstract: *Sexual myths differ from one culture to the next, and one society to the next and they can even differ regionally within the same culture. The aim of this study is to determine the sexual orientation myths of university students studying theology. The study was conducted between February and June 2020 at three faculties of a state university in Eastern Anatolia, Turkey. This descriptive study was conducted with 582 students studying at three faculties. The data were collected by using the Personal Information Form, Sexual Orientation Myths Scale. In our study, there was no significant difference between the sociodemographic characteristics of the students who received and did not receive religious education in terms of sexual myths ($p<0.05$). It was determined in the study that there was a statistically significant difference between the sexual orientation myths of the students studying and not studying theology ($p<0.001$). This study's findings are important because they would guide future studies.*

Keywords: *LGBT, Religion, Sexuality, Sexual Orientation*

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1. Introduction

Myths regarding sexuality are exaggerated and incorrect stereotypes. They are not based on science, they are often spread through hearsay, and it is society's imagination that shapes them [1,2]. Sexual myths differ from one culture to the next, and one society to the next, and they can even differ regionally within the same culture. The most important factors leading to sexual myths are that sexuality subjects are taboo subjects within families, schools, and society, and the number of related studies and publications is limited. Sexuality is taboo in Turkish culture. Islam, likewise, strongly influences Turkey's social values and norms. The vast majority of Turkey is Muslim. Islamic values stigmatize and marginalize anyone who does not comply with hetero-normative sexual and gender roles [3]. Religious belief systems tend to cause religious individuals to treat LGBT individuals negatively [4]. Many Islamic scholars and Muslims accept that homosexual behaviors are forbidden by religion, therefore they are not tolerated [5, 6]. Muslim societies only accept lesbian, gay, bisexual, and transsexual (LGBT) individuals if they feel that they can change them [7]. In their study, Sebastian Jäckle & Georg Wenzelburger (2015) found that Islam was the world's most homonegative religion [8]. There are many articles that prevent the evaluation of sexual health, one of them is sexual myths. Although there are many studies evaluating sexual myths, there is no study comparing sexual orientation myths among young people receiving religious education and health education. Therefore, studies that objectively present how young people view sexual orientation myths as well as what they know about sexual health are highly valuable. This study was conducted to determine the sexual orientation myths of university students studying theology.

2. Material and Method

2.1. Design and Participants

This is a descriptive study. The study was conducted between February and June 2020 at three faculties of a state university in Eastern Anatolia, Turkey. This study's population included 2.500 students from two faculties determined by drawing lot among 14 faculties of the mentioned state university (Health Sciences (child development, midwifery, physical therapy and rehabilitation, audiology) and Nursing Faculties) and the Faculty of Theology which provides only theological education. There are courses on sexual health in the education curriculum of the faculty of health sciences and nursing, and there is training on sexual health. When the power analysis was performed, the sample size was calculated as at least 335 students with a significance level of 5%, a confidence interval of 95%, and the ability to represent the population of 80%. The students were selected from the class list by using a simple random sampling method and entered onto a digital table. Due to possible incomplete answers, 600 students were included in the study. However, 28 students were excluded for failing to answer all of the questions, and the study was completed with 582 students. In the Faculty of theology, individuals who have basic knowledge and skills in the fields of Basic Islamic Sciences, Islamic History and Arts, Philosophy and Religious Studies are raised. In the faculty of health sciences, individuals who have basic knowledge and skills in the field of health are raised. No religious education is given. Students who were self-identified as heterosexual and Muslim were included in the study.

2.2. Data Collection Instruments

Personal information form: This form includes 11 questions that asked students their age, gender, level of education, their parents' level of education, their marital status, and their income status.

Sexual Orientation Myths Scale: The scale was developed by Evcili F. [2]. It has 19 items and 5 subscales (disease perception, etiology, sexual behavior, social perception, and general view). The disease perception subscale is rated with items 1-4, the etiology subscale with items 5–10, the sexual behavior subscale with items 11-13, the social perception subscale with items 14-17, the general view subscale with items 18-19. The scale's total score is the sum of all of the items. Each subscale's total score is the sum of all items in that subscale. This scale lacks a cut-off point. This scale's minimum and maximum scores are 19 and 95, respectively. The higher the score individuals get, the more myths about sexual orientation they have. Cronbach's alpha value was found at 0.85 [2]. This study found Cronbach's alpha value of 0.82.

2.3. Ethical Considerations

Written permission was obtained from the relevant faculties. Ethical approval was obtained from the Non-invasive Clinical Trials Ethics Committee of Health Sciences of the İnönü University (Date: 07/01/2020; Number: 2020/243). All of the students were informed about the study before the study. Only those who volunteered to participate were included in the study.

2.4. Statistical Analysis

Analyzes were carried out in a statistical program. Statistical analysis procedures started with Kolmogorov-Smirnov" analysis for testing homogeneity of the available data. Parametric tests were used to evaluate the data ($p>0.05$). Number, percentage, independent samples *t*-test, and linear regression analysis were used for statistical analysis.

2.5. Limitations

The first limitation of the study is that the sample consists of heterosexual individuals. Another limitation is this study looked at the correlation between theological education and myths about sexual orientation. However, sexual orientation myths aren't just associated with religion and religiosity. One should remember that homonegativity goes hand in hand not only with religious training but also with other factors that influence religion and religiosity. It is considered that the most important factor may be related to the dominant traditional values in Turkey. It may be expected that such values are about

why people disapprove of LGBT individuals. Nevertheless, this study only attempted to examine the correlation between theological education and sexual orientation myths. Further studies are needed that investigate what sociological and psychological factors might be associated with sexual orientation myths. In addition, the inclusion of students from another faculty who did not receive training in sexual health revealed another limitation of the study.

3. Results

It was determined that the age average of the theology students was 20.93±1.41, 78.9% were female, 32.1% graduated from "Anatolian" high school, 35.4% were 3rd -year students, 72.3% had a nuclear family, 54.5% had a moderate income level, 96.2% were single, and 98.6% were living in the city center. 88 % of the students had knowledge about LGBT people/issues; 63.2% had learned what they knew about LGBT people/issues from either TV and/or the Internet, and 86.6% were acquainted with LGBT individuals within their close circle (Table 1).

It was determined that the age average of the health sciences and nursing students was 20.52±; 84.2% of the students were female, 57.6% graduated from "Anatolian" high school, 35.7% were 3rd-year students, 79.4% had a nuclear family, 64.6% had a moderate income level, 96.8% were single, and 98.9% were living in the city center. 89.8% of the students had knowledge about LGBT people/issues; 51.7% had learned what they knew about LGBT people/issues from either TV or the Internet, 81.2% were acquainted with LGBT individuals within their close circle (Table 1). In terms of sociodemographic characteristics, there was no statistically significant relationship between the students who were in the theology department and those who were not ($p>0.05$).

Table 1. Distribution of the Descriptive Characteristics of the Theology, Nursing, and Health Sciences Students (N=582)

Demographic characteristics	Theology students n=209	Nursing and Health Sciences students n=373	Test	*p*
Age in years, M ± SD	20.93±1.41	20.52±0.96	t= -1.021	0.308
Gender *n* (%)				
Male	44 (21.1)	59 (15.8)	χ^2= 2.520	0.112
Female	165 (78.9)	314 (84.2)		
Grade *n* (%)				
1st year	29 (13.9)	64 (17.2)	χ^2= 1.492	0.684
2nd year	65 (31.1)	113 (30.3)		
3rd year	74 (35.4)	133 (35.7)		
4th year	41 (19.6)	63 (16.9)		
Income status *n* (%)				
Income less than expenses	51 (24.4)	74 (19.8)	χ^2= 5.838	0.054
Income equal to expenses	114 (54.5)	241 (64.6)		
Income more than expenses	44 (21.1)	58 (15.5)		

***Table 1**. continued*

Demographic characteristics	Theology students n=209	Nursing and Health Sciences students n=373	Test	p
Residence place *n* (%)				
Village	1 (0.5)	2 (0.5)	χ^2= 0.355	0.837
Town	2 (1.0)	2 (0.5)		
Province	206 (98.6)	369 (98.9)		

Knowledgeable with LGBT people/issues *n* (%)				
Yes	184 (88.0)	335 (89.8)	χ^2= 0.437	0.509
No	25 (12.0)	38 (10.2)		
Information source *n* (%)				
Friend	28 (13.4)	73 (19.6)	χ^2= 7.573	0.056
Family	18 (8.6)	36 (9.7)		
Book, University	31 (14.8)	71 (19.0)		
TV / Internet (Social media etc.)	132 (63.2)	193 (51.7)		
Presence of LGBT individual *n* (%)				
Yes	28 (13.4)	70 (18.8)	χ^2= 2.758	0.097
No	181 (86.6)	303 (81.2)		

It was determined that the total mean score of the health sciences and nursing students for the sexual orientation myths scale was 55.09 ± 11.00. The total mean score of the theology students for the sexual orientation myths scale was 58.33 ± 10.13 (Table 2).

The difference between the disease perception and sexual behavior subscales, and scale total mean scores for both groups (theology versus health sciences and nursing students) was statistically significant ($p<0.05$, Table 2). This difference stemmed from the theology students.

Table 2. Sexual Orientation Myths Scale Subscale and Total Mean Scores of the Theology, Nursing, and Health Sciences Students (N=582)

Scale subscale and total mean scores	Nursing, and Health Sciences Students (n=373)	Theology students (n=209)	Test	p
	Mean ± SD	Mean ± SD		
Perception of illness	12.52 ± 3.03	13.90 ± 3.02	t= -5.284	**0.000****
Etiology	17.72 ± 3.97	18.41 ± 4.26	t= -1.948	0.052
Sexual Behavior	9.14 ± 2.55	9.79 ± 2.40	t= -3.001	**0.003***
Social Perception	9.71 ± 3.68	9.91 ± 3.72	t= -0.651	0.515
General view	5.99 ± 1.88	6.30 ± 1.98	t= -1.877	0.061
Scale total score	55.09±11.00	58.33±10.13	t=-3.505	**0.000****

**p* <0 .01; ***p* <0 .001

The religious education of the student was found to be statistically significant in explaining the myths of sexual orientation ($p<0.001$).

Table 3. Explanation of the effect of religious education and sexual orientation myths scale total score through correlation and regression analysis

Sexual Orientation Myths Scale Total Score									
	Regression							Correlation	
Religious education	**R**	**R^2**	**β**	***t***	**p**	**df1, df2**	**F**	r	p
	0.144	0.021	0.144	3.505	0.000*	1, 137	12.285	.144	0.000*

*Correlation is significant at the 0.001 level (2-tailed)

4. Discussion

The results of the study conducted to determine the sexual myths of university students based on receiving or not receiving religious education were discussed based on the literature. In our study, there was no significant difference between the sociodemographic characteristics of the students who received

and did not receive religious education and sexual myths ($p<0.05$). Similarly, in the studies conducted by Örüklü et al., (2021), Aker et al., (2019), similar results were found in our study [9, 10].

In the study, it was determined that the mean score of perception of illness, which is the subscale of sexual orientation myths, was higher in students who received religious education than students who did not receive religious education, and the difference between the groups was statistically significant.

It is thought that this difference stems from having information about sexual orientation. As a matter of fact, it is seen that education about sexuality is important during the education life of the students of health sciences and nursing faculties. The fact that health professionals, who are the key figures in the development of sexual health, have low sexual myths will increase the quality of treatment and care and positively affect the sexual health level of society [11].

This study revealed that there was a statistically significant difference between theology students and health sciences and nursing students in terms of sexual orientation myths. This difference stemmed from the group studying theology. Sarac (2015)'s study on the correlation between Turkish university students' level of religiosity and their attitudes toward LGBT individuals revealed the more religious the students were, the more likely they were too negative attitudes toward LGBT individuals [12]. Harbaugh and Lindsey (2015) conducted a study featuring young adult college students to examine the differences in their attitudes toward homosexuality [13]. They found that there was a strong correlation between being very religious and being highly homophobic and heteronormative [13]. Likewise, in their study, Patrick et al. discovered a negative correlation between religiosity and people's attitudes toward LGBT individuals [14]. Among university students in Germany and Poland, Polish students were found to be more religious and to have a higher level of sexual orientation myths (15). The present study's findings are parallel with the literature. Religious belief systems are a major reason for having negative attitudes of religious individuals toward LGBT individuals/issues [4]. As a matter of fact, as a result of the further analysis made in the research, a positive correlation was determined between religious education and sexual orientation myths, and religious education explains sexual orientation myths at a rate of 2%.

5. Conclusion

This study concluded that Islamic theological education influenced sexual orientation myths. It was observed that sexual orientation myths were at a lower level in students who received health education. It is recommended that sexual health education should be given not only to students of health sciences and nursing faculties but also to all young people studying at the university. For future studies, it is recommended to evaluate other factors besides belief and health education on sexual orientation myths.

Conflict of interest

The author declares no conflict of interest.

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The authors would like to thank all the students who participated in this study.

Ethical statements

Written permission was obtained from the relevant faculties. Ethical approval was obtained from the Non-invasive Clinical Trials Ethics Committee of Health Sciences of the İnönü University (Date: 07/01/2020; Number 2020/243). All of the students were informed about the study before the study. Only those who volunteered to participate were included in the study.

Authors' Contributions

H. Ü: Study conception and design, data analysis and interpretation, critical revision of the article, Drafting of the article.

İ. T: Study conception and design, data collection, data analysis and interpretation, drafting of the article.

All authors read and approved the final manuscript.

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Research Article

CHALLENGES AND FACILITATORS TO THE SECONDARY USE OF ROUTINELY COLLECTED ORAL HEALTH DATA FROM MULTIPLE EUROPEAN COUNTRIES

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Abstract: *This research aimed to identify and explore perceived challenges and facilitators to acquiring routinely collected oral healthcare data for research in six European countries with the aim of generating practical solutions for future initiatives. Seventeen participants from the UK, Denmark, Germany, Hungary, Ireland and the Netherlands participated who were either data requestors or data providers for the ADVOCATE project. Focus groups using the nominal group technique were undertaken using PESTLE as a theoretical framework to guide the discussion. The data were analysed using content analysis. Four main challenges were identified: 1) legality rules influencing the data available, 2) variations in data standardization/coding between countries, 3) relationships and responsibilities between stakeholders, and 4) data not available for secondary use. The facilitators included: 1) having a framework in place to guide the process, 2) having strong relationships between stakeholders, 3) having technical elements in place to support the process, and 4) taking a pragmatic approach to the available data. It is hoped that identifying these challenges will raise awareness of potential issues for undertaking such research and that tackling these and building on the facilitators will establish stronger foundations for the sharing of data within and across disciplines and countries.*

Keywords: *Public health, Secondary data analysis, Health information technology, Health services research, Oral health*

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1. Introduction

The transition from paper to electronic dental records is accelerating and is driven by the need to modernize our healthcare systems [1]. This development has seen a huge growth in the quantity of clinical data being collected in electronic form [2-4] and presents a significant opportunity for the (secondary use of these data, often termed 'big data'. Big data can be used to inform commissioning decisions, for clinical audit, understand and stratify risk, monitor outcomes and costs, and performance manage payment controls [5]. The EU recognises the value of routinely collected data in medical and clinical research [6] and detailed this in its eHealth Action Plan [7]. Additionally, the EU's study on big data in public health [6, 8] recommended the expansion of existing sources of big data in health and the promotion of sharing data and improving analytics methods and interoperability. The EU funds many

big data initiatives [9] and is also a partner in the Big Data for Better Outcomes [10] initiative, a project which is creating a standardised, federated research data network through the European Health Data for Evidence Network [11]. In the US, the National Institute of Health, launched the 'Big Data To Knowledge' (BD2K) program [12] in 2014. BD2K aims to facilitate the use of biomedical big data, develop and disseminate analysis methods and software, and to establish centres of excellence for biomedical big data.

Against this backdrop, the four-year ADVOCATE (Added Value for Oral Care) project was developed and funded by the European Commission's Horizon 2020 program. Its global aim was to determine how to influence oral healthcare systems towards effective disease prevention, with the aim of making preventive treatments more preferred. Six European countries were partners in the project: The UK (England, Scotland), Ireland, the Netherlands, Germany, Hungary and Denmark. ADVOCATE work-streams implemented a number of parallel approaches to facilitate this change [13]. One such work-stream investigated whether routinely collected oral health data from health insurance companies in the Six European countries could be used to encourage preventive care, as well as highlight best care practices observed in the data. ADVOCATE explored the feasibility and utility of international comparisons between different healthcare systems, both at country level and at the level of individual dentists [13]. Crucially, harnessing the knowledge and value from these datasets depended on successful data acquisition. Negotiating access to data in these countries required a broad understanding of the oral health systems in each location and also necessitated detailed approaches to the various governance systems in place. ADVOCATE encountered many such challenges to its efforts and this case-study aims to enumerate and categorise these using PESTLE [14] analysis as a theoretical framework in the context of prior wider health research. PESTLE focuses on the impact on systems or organisations of six factors: Political, Economic, Sociological, Technological, Legal and Environmental. PESTLE is more often used to analyse external influences on a business [15], but its use within this aspect of the ADVOCATE project was seen to provide a useful framework to classify issues and identify outliers to this framework. Previous research by Van Panhuis and colleagues has explored existing literature to classify the challenges to data sharing and identified six key categories: Political, Economic, Motivational/social, Technical, Legal and Ethical- similar to those used in PESTLE [16]. Later work expanded on the underlying causes of these factors, identifying political, economic and legal obstacles as the most challenging issues to overcome [17]. Consequently, Edelstein and Sane [17] proposed strategies and solutions for these, e.g. trust-building measures, local data governance agreements and data standardisation. Related work in ADVOCATE has proposed process models for acquiring administrative routine data for health services research [18] and alludes to some of the barriers experienced in the data acquisition process. The current research complements this by eliciting and analysing the experiences of a broader range of ADVOCATE stakeholders and relating them to prior similar investigations.

This case-study aims to identify and categorise the challenges encountered by ADVOCATE participants when acquiring routinely collected oral healthcare data for research in six European countries and explores utilised facilitators or potential solutions to these in the data acquisition process. It is anticipated that this will generate fresh insights and practicable learnings applicable to future initiatives.

2. Method

2.1. Participants

Participants were recruited using purposeful sampling, selected due to their role in data acquisition or data provision for the ADVOCATE project across the six partner countries.

Ethical statement

Ethical approval was granted from the Dental Research Ethics Committee at the University of Leeds (Date: 5 April 2017; Number: 051115/HL/182).

2.2. Design

The key step in this study was a focus-group workshop using the Nominal Group Technique (NGT) to explore participants' perceptions of the main challenges and facilitators (C&F) to data acquisition and its usage (Figure 1). Prior to the workshop, a pre-study phase was undertaken through participant online engagement in a tool called Well Sorted® (Step 1); participants were invited to individually give their ideas, thoughts and comments on data acquisition and its usage. This enabled us to gain preliminary insights of the participants' experiences of acquiring or providing data. This pre-study phase helped to develop a qualitative topic guide to support the focus group discussions at the NGT focus-group workshop alongside the PESTLE framework (Step 2). This led to the identification of participant's 3 top C&F's (Step 3). The workshop was followed by re-engagement with Well Sorted® two months later to provide verification of the C&Fs identified by participants at the workshop (Step 4).

The techniques used in this study are described below:

PESTLE: The modified version of the PESTLE technique was used as a theoretical framework to guide the exploration of the challenges and facilitators to data acquisition and its use[16]. In line with Van Panhuis' approach we omitted the 'Environmental' factor and instead used the 'Ethical' factor. We believed that the sharing of computer based oral healthcare data between providers and countries would have a greater ethical rather than environmental impact. As such, asking participants to discuss the ethical aspects of data sharing was more applicable/meaningful to our research aims than discussing the environmental aspects.

Nominal Group Technique (NGT): A structured approach to group decision-making using focus groups. It fosters the generation of ideas and supports equal group-member participation to produce a rank-ordered set of decisions or outcomes [19, 20]. Participants are asked questions in small groups by a moderator to generate ideas as individuals. The ideas are then prioritised in order of importance within the group. NGT is recommended when group consensus is important, in particular when there are several similar ideas or suggestions [21].

Well Sorted®: An online resource which was used to facilitate participant led, thematic development of ideas and to verify the findings from the focus group workshop through triangulation.

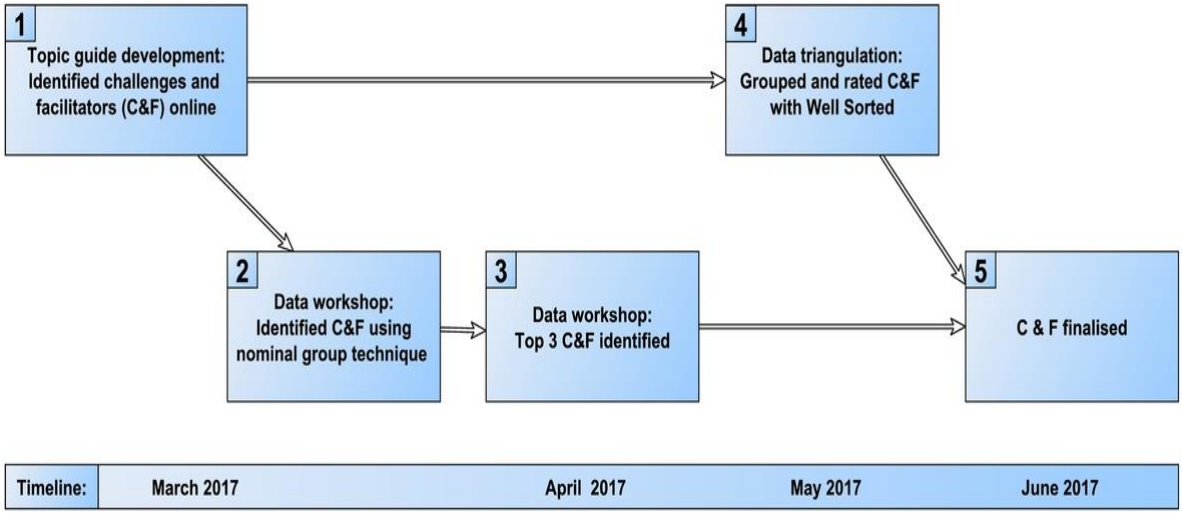

Figure 1. Diagram of the procedure

2.3. Procedure

Ethical approval was granted from the Dental Research Ethics Committee at the University of Leeds (051115/HL/182). Participants were sent an information sheet to read before participating and asked to sign the consent form if they agreed to participate.

Of 20 invited participants, 17 agreed to participate and attended the workshop (Table 1). All participants were involved in the data acquisition process for ADVOCATE. Participants represented four groups: (1) organisations who held/owned the data (data provider), (2) those involved in requesting data from a data provider (data requestor), (3) those involved in organising, consolidating and analysing data collected (data analyst), or (4) those hosting the data on a secure platform (data host). The data providers were from private insurance companies (Germany, Ireland and the Netherlands) or national insurers (England, Scotland, Denmark, Hungary). The data requestors for Denmark, Ireland, Hungary, and Germany were researchers from the ADVOCATE project. ADVOCATE researchers from the University of Heidelberg (Germany) acted as data requestors for data from Scotland and the Netherlands as well as the data analysts for the project.

A focus-group workshop was held in April 2017 with the 17 participants (Table 1) where they were spilt into three groups. Each group had two researchers (not involved in the data acquisition process); one led the discussion and the other took notes and moderated the meeting; this ensured that the discussion stayed on track and that everyone had the chance to participate. Each participant was asked to talk through their experiences of where the C&F occurred during data acquisition and/or provision. A top-down, theory driven approach was adopted using the modified PESTLE technique with the topic guide, to facilitate the discussion and ensure that all areas received consideration. This created group discussion between participants on the key C&F (Figure 1. Step 2). The focus groups were audio-recorded and the C&Fs discussed were captured on post-it notes during the session to enable the participants to see what had been discussed. The participants were also encouraged to note any thoughts or ideas on their own post-it-notes. After discussing their thoughts around C&Fs to data acquisition/provision, the participants were asked (within each of the three groups) to agree on what they saw to be the three main challenges and three main facilitators/solutions to data acquisition.

The nine challenges and nine facilitators/solutions identified through the three group discussions were presented to the whole group. Participants picked their top three challenges and top three facilitators and those with the most votes were named the most important/influential. The sub-groups came back together and reviewed the top 9 C&Fs and through a group discussion consensus was reached on the top 3 C&Fs (Figure 1. Step 3).

Table 1. Demographics of participants

Country	Number of participants	Organisation	Role
The UK: England	3	NHS England n=1 NHS Business Service Authority (National insurer) n= 2	Requestor Provider
The UK: Scotland	3	NHS Scotland n=1 (National insurer) Aridhia n=2	Provider Data host
Netherlands	1	Achmea (Private insurer)	Provider
Hungary	1	Semmelweis University	Requestor
Germany	5	University of Heidelberg n=4 SpectrumK n=1 (Private insurer)	Requestor/ Data analyst Provider
Denmark	1	University of Copenhagen	Requestor
Ireland	3	University College Cork n=2 Decare (Private insurer) n=1	Requestor Provider

2.4. Analysis

The audio recordings, notes taken and post-it notes from the focus groups were analysed using content analysis [22] to describe each C&F based on the participants' experiences. C&Fs were explored across countries rather than on a country level. This was to ensure anonymity and because most challenges and facilitators were present across countries rather than being specific to any one country. Categorization matrices are used to organise qualitative data when undertaking content analysis. The identified C&Fs were utilised as categories in a primary categorization matrix around which the audio recordings, notes and post-it-notes were analysed [23]. The PESTLE categories were also used as a secondary categorization matrix and were mapped onto the C&F. In this instance, each identified C&F was a category in the table illustrated by a row. The data from the audio recordings, notes and post-it notes were reviewed for content and coded into columns for the corresponding category with exemplification of that category through the identification of phrases, sentences or words which fitted under the categorization matrix and were coded accordingly. Any data which did not fit the categorisation matrix was held separately and analysed for relevant additional information. After the categorisation matrix was populated the analysis became iterative and the categories underwent constant refinement as more data were read and analysed. The notes and post-it notes were analysed by one researcher and checked with another two. Any differences were resolved through discussion within the research team. As the detailed notes and the information in the post-it notes were comprehensive, the audio recordings were not transcribed but referred to if clarification or extra information was required on any points raised by the participants.

Data triangulation is often used in qualitative research as a method of validating findings by comparing data from different sources or approaches at different times and places, or from different people [24]. We used Well Sorted® as a method of triangulating our findings from the group workshop with the same participants two months later. At this point, participants were re-sent the list of important C&F they had generated in the topic guide development task using Well Sorted®. The participants were asked to sort all these items into groups of similarity. They were asked to complete this twice, once focussing upon the challenges items and once again for the facilitator/solution items. One set of groups was created for the challenges items and another set was created for the facilitator/solution items. The groups that were created via Well Sorted® approximated the C&F identified from the workshop and were included in the analysis.

3. Results

Four main challenges and four main facilitators/solutions were identified (Table 2). The challenges were mostly political, with one technical and one social/motivational barrier. Ethical issues were touched upon but within the content of other issues. Facilitators were largely technical and social/motivational. The C&Fs are discussed below in more detail; their corresponding PESTLE code is found after the title in brackets. Exemplar quotes placed under each category from the analysis can be found in Appendix 1.

Table 2. Challenges and facilitators to data acquisition

Challenges to data acquisition
Legality, including privacy rules influencing data available (Political/legal)
Variations in data standardisation and coding between countries (Technical)
Relationship and responsibilities between stakeholders (Social/motivational)
Data is collected but not made available for secondary use (Political)
Facilitators to data acquisition
Having clear detailed roles within the data collection process, rules and a framework in place to guide the process (Technical / Social/motivational)
Having strong relationships between stakeholders (Social/motivational)
Technical elements in place to support the process (Technical)
Taking a pragmatic approach to the available data (Social/motivational)

3.1. Challenges

3.1.1 Legality, including privacy rules influencing data available (Political/legal)

Legal restrictions focusing around privacy rules were a substantial barrier to obtaining and sharing routinely collected dental activity data. The restrictions prevented data providers from sharing the requested data or from allowing direct access to the data, it also resulted in anonymising the data to a point where it lost its value. The requirement of a third party for anonymisation caused issues, as did ongoing legislative changes. In one case, pre-2006 data became unavailable when the commissioning system changed how dental activity was recorded and reimbursed. Being able to compare treatment patterns before and after this policy change would have been valuable. In another case, it was not always possible to link up patients' information, this hindered more detailed analysis due to the low level of data provided.

3.1.2 Variations in data standardisation and coding between countries (Technical)

Comparison of datasets was often difficult due to lack of a consistent, harmonised data collection and storage system between countries. These factors made it difficult for those analysing the data to conduct effective cross-country comparisons. A lack of clarity among some data providers regarding which variables were required and which were available hindered the data sharing process. Navigating one data authority's website (responsible for permissions) was reported to be difficult. Technical matters were not always defined in advance leading to problems with data supply/transfer, software compatibility or hardware requirements.

3.1.3 Relationship and responsibilities between stakeholders (Social/motivational)

There were difficulties building a rapport between the data providers and requestors when communication was undertaken via email. Staff turnover in some organisations was high and this negatively impacted relationship continuity; frequently 'old ground' had to be covered again with each new individual. Relationship development was often needed which proved time-consuming. Some providers queried the benefits to them of giving their data to the ADVOCATE project. One felt that demands were placed on overworked staff with low motivation, contributing to delays.

3.1.4 Data are collected but not available for secondary use (Political)

Data are most often collected for administration purposes not for research. Participants felt that this exacerbated the issues surrounding how and why data were collected, coded and stored. Thirteen of the participants explicitly shared views that they believed it was vital to lobby for legislation mandating that routine data be made available for health improvement research. Furthermore, private health insurance companies are not obliged to deliver data on health or health services and therefore need a clear incentive to do this.

3.2. Facilitators

3.2.1 Having clear detailed roles within the data collection process, rules and a framework in place to guide the process (Technical /Social/motivational)

A number of suggestions revolved around organisational matters such as roles, standards and procedures. Suggestions were given for how a framework could be developed to make the technical side of the process simpler in the future including the use of standard coding systems such as SNOMED/SNODENT [24]. Agreeing the required data elements and their formats in advance was seen as a solution to some of the issues surrounding getting different levels of data in different countries. A harmonisation table was created by data requestors to allow comparison of dental care indicators, based on claims codes from different countries. The use of standard procedure codes could allow for more accurate comparison of their own data with peer data. One provider felt confident that they could provide data for several of the indicators in the harmonisation table. A practical manual developed by the data handlers and requestors from the ADVOCATE team was highlighted as important as it helped to offer guidance and a basis for communication.

3.2.2 Having strong relationships between stakeholders (Social/motivational)

A strong relationship with the others in the process helped to facilitate the acquisition of the data. Having face to face meetings with colleagues was seen as one way to build this working relationship. A secure online research workspace and online data platform was utilised which was seen as strengthening the trust between the requestors and providers. Another facilitator was the providers' experience with the specific claims data. It was seen to make things easier as they would be knowledgeable on data quality, the variables and technical processing of the data, and were more likely to have the necessary trained staff. Similarly, the researcher having experience of the data was also a facilitator where they could more easily predict and resolve potential problems in advance.

3.2.3 Technical elements in place to support the process (Technical)

Participants reported on technical elements supporting the process and also suggested some that would aid the process further. Detailed data agreements should be in place regarding elements such as sample size, variables provided, aggregation level and any data protection regulations. Legal and ethical issues should be researched in advance to expedite releasing the data.

It was thought that it would be advantageous to have a central data repository which would cover the provision of public data to third level institutions for research purposes. Participants suggested that raising awareness of the importance of using data within research to increase and encourage the availability of data for research purposes would also be advantageous. Having a data controller with a standard process for giving data access approval which balanced the public health benefit with privacy concerns was also considered to be an important element.

3.2.4 Taking a pragmatic approach to the available data (Social/motivational)

The data analysts and requestors found that a useful approach was to be pragmatic with what they could get, accepting what could be shared with them, even if it was not what had initially been agreed. This enabled them to progress with their analysis despite the setbacks.

4. Discussion

This research explored the real-life experiences of those involved in requesting or providing healthcare data in the ADVOCATE project. The objective of this case-study was to pinpoint the key C&Fs to successful data acquisition and exploitation. These findings provide preliminary insights into identifying and understanding the perceived C&Fs to using routinely collected oral healthcare data for research in six European countries.

Most challenges were found to be due to Political, Social/Motivational or Technical issues, which were also found to be key categories in earlier research [16]. Issues with the relationships between data providers and data requestors were found to be detrimental to the success of the process. The corollary of this was also true: when technical elements worked well and there were strong working relationships between providers and requestors, the process ran more smoothly. Accordingly, technical competencies and settled mature relationships between the data requestors and providers were key facilitators to data access. Several of the challenges encountered related to the fundamental infrastructure necessary for the sharing of healthcare data. A legislative basis for routine accessing of such data for research was lacking and, in some participants' experience, the existing legal regimes on data protection and privacy were used as justifications for denying or restricting access to the requested data. This agreed with earlier work [25, 26] where it was suggested that if challenges of privacy and data protection can be adequately addressed, oral health related data contained in electronic health records and claims databases could reveal a huge potential in significant clinical knowledge collection and better understanding of patient disease patterns. Furthermore, clear definitions of the employee project roles and their responsibilities were lacking in many cases. This lack of fundamental infrastructure is not surprising given that the secondary use of oral health data for research on the scale undertaken in ADVOCATE has not been attempted before in a European setting. It was suggested that health policies focusing on health rather than finance would help alleviate this issue. Furthermore, political lobbying would be required to highlight the benefits gained from providing the necessary infrastructure and organisational competencies to facilitate this and to put the necessary legislation in place to mandate data sharing. A lack of consistency in the data collected, and their availability in different countries added further complications to the process. In ADVOCATE, the additional complexity of pan-European cooperation, incorporating language, cultural, and legislative variety added to these challenges and further compounded the local challenges of the lack of data standardisation, diverse coding systems and data incompatibility. This key finding - the need for an established research infrastructure - agreed with developments at Vanderbilt University Medical Centre (USA) [1], emphasising that such an infrastructure enabled better access for the research community. The participants prioritised strong policies and legislative measures to mandate collection and sharing of data. Clear definitions of the legal and ethical basis for using the data for research would help facilitate this. Technical preparation and unambiguous data requests would help to ensure that the data were of appropriate detail and quality and that its sharing would be standardised and automated.

Using PESTLE to guide the focus group discussion was a useful scaffold and enabled the classification of the final C&F identified. However, it was found that some items fitted into more than one category; further discussion of these may have defined them more and enabled them to be aligned into one specific category. As outlined in the design section we modified the PESTLE framework to explore ethical rather than environmental issues, as in previous research [16]. The process we adopted of initial individual idea generation through Well Sorted® to develop the topic guide followed by face-to-face group discussion and concluding with individual sorting of the whole group responses, utilises approaches similar to the Delphi technique [27] and Q-sort methodology [28] and enabled back-checking and triangulation of the results. By allowing the participants to consider the C&F individually before having a group discussion enabled the development of a specific and participant relevant topic guide. It also prompted the participants to think about the C&Fs they experienced and it was hoped to elicit more holistic views and address the potential limitations of 'group think' or 'researcher bias'. This may have facilitated a more detailed/in-depth discussion of these factors during the NGT.

The use of individual interviews or less structured focus groups may have led to richer findings with greater in-depth exploration of participant's experiences and attitudes towards data acquisition. However, the method we adopted led to the identification of C&Fs to data acquisition by the group as a

whole rather than being drawn out by the researchers during analysis as would be the approach with more traditional qualitative research. A collegiate approach such as this was important as we were exploring data sharing issues across a wide footprint. Although our method is transparent and offers credibility to the findings, future research could look to undertake interviews with participants to explore these C&Fs further. In addition, as we did not transcribe the audio-recordings it is possible that some information was lost between the workshop discussion and analysis. However, we believe that using our detailed notes, the post-it notes created during the workshop and listening to our audio recordings during coding enabled an authentic and robust analysis. Indeed, previous research recognises the limitations of relying solely on audio recordings transcribed verbatim and views the use of written field notes as robust [29]. Furthermore, content analysis was an appropriate analytical technique for our method as it is a technique often used for its wide applicability to the analysis of text from alternative sources as opposed to the more traditional use of interview and focus group transcriptions [23].

The participants were those with recent and intimate knowledge of oral health activity data from six European countries and were in a prime position to discuss and provide insight into the C&Fs of the use of such data for research. However, the generalisability of the C&Fs identified may be a limitation as the participants were discussing their experiences related to data acquisition specifically on the ADVOCATE project. Despite this, the factors identified are similar to those identified in related research and we believe they are likely to be experienced by others requesting or providing data. In addition, whilst we invited the key individuals in each country, there were others involved in the process who were not able to participate. As such, it is possible that vital insights were lost. Interestingly, given the cross-country scope of the ADVOCATE project, language was not seen as a barrier to data acquisition. We believe this is likely due to the fact that many requests were dealt with within each country and any outside-country communication usually involved those in the project who were confident and competent speaking in the English language.

This work is unique and timely as this study brought together private and national dental insurers with data requestors from each of the six countries who had accumulated a wealth of information and experience acquiring data for the ADVOCATE project. To our knowledge, this is the first time data ‘providers’ and ‘requestors’ have been brought together internationally to compare challenges to the secondary use of dental activity data. The variety of participants in the workshop proved valuable and resulted in a broad range of issues being discussed, ranging from individuals who saw the necessity for political and legislative changes to those who were more involved with the ‘nitty-gritty’ of data and its properties. Despite the limitations discussed, this research served to demonstrate the applicability of the approach, techniques, and tools employed in identifying and classifying challenges and facilitators to the acquisition and sharing of international health data, and particularly dental activity data.

5. Conclusion and Future directions

Through active exploration of facilitators and solutions to the challenges encountered, this work expands the previous knowledge in the area which focused on challenges alone. This is in keeping with the EU objectives of making data ‘discoverable, accessible, assessable, reusable and interoperable’ [8]. and may provide valuable guidelines to similar projects. Given the widespread international interest in exploiting the potential of big data, the findings of this study are important for future work involving the secondary use of routinely collected oral health systems data. Based on our findings we would recommend that stakeholders wishing to use data for secondary purposes continue to lobby for the mandatory collection and sharing of such data and that they simultaneously develop and nurture the relationships between the stakeholders. This will involve clear statements of goals and the creation of ‘win-win’ scenarios for all parties. The development of trust between the parties is imperative in order

to facilitate this. Although this project focused on oral healthcare activity data, the findings are equally applicable across the full spectrum of health data.

The COVID-19 pandemic has generated a strong impetus for facilitating the sharing of data on an international level and future work could also consider innovations as in the EU's EHDEN project [11] and the EVOTION project [30]. EVOTION [30] is seeking to use big-data to inform evidence based health policies within hearing research. Their strong focus on stakeholder engagement will hopefully tackle some of the social and motivational issues highlighted by our participants. EHDEN implements strategies to address technical, legal, and ethical challenges by creating a federated data network using a common data model. Social and motivational issues could be addressed through better communication between the stakeholders, dedicated roles and responsibilities, and the fostering of trust relationships. This could be aided by the formal documentation of organizational structures and face-to-face interaction between stakeholders.

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Ethical statement

Ethical approval was granted from the Dental Research Ethics Committee at the University of Leeds (Date: 5 April 2017; Number: 051115/HL/182).

Conflict of interest

The authors have no conflicts of interest.

Authors' Contributions:

H.L: Conceptulised and designed the research, undertook the research and analysis and drafted the manuscript. (100%)

F.F: Conceptulised and designed the research, undertook the research and analysis and drafted the manuscript. (100%)

K.V.C: Conceptulised and designed the research, undertook the research and contributed to drafts of the manuscript. (60%)

J.C: Conceptulised and designed the research, undertook the research and contributed to drafts of the manuscript. (60%)

E.Z: Undertook analysis and contributed to drafts of the manuscript. (40%)

H.W: Conceptulised and designed the research and contributed to drafts of the manuscript. (50%)

G.D: Conceptulised and designed the research and contributed to drafts of the manuscript. (50%)

All authors read and approved the final manuscript.

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Appendix 1. Example quotes for each theme.

Challenges	Quote
Legality, including privacy rules influencing data available (Political/legal)	We experienced limited data access due to data privacy rules P17 DR/DA As a research team we have no direct insight, which data institutions, companies or authorities are collecting, how they are storing them etc. This makes it difficult for us to communicate exactly what data we would like.P2 DR/DA

Variations in data standardisation and coding between countries (Technical)	Plethora of coding systems leads to mapping issues. P1 DR Lack of standardisation in terminology for key data P8 DP If the technical details of data supply/transfer are not clarified in advance, there might be problems with software (compatibility) or hardware (memory requirements). P5 DP Treatments are recorded differently by each country, which makes comparison difficult. P14 DR
Relationship and responsibilities between stakeholders (Social/motivational)	Being unable to discuss the data requirements in person, and instead via email makes it harder to discuss what data [*department name*] can provide and how best it can be used to meet your requirements. P6 DP Permissions and application is often time consuming and practically difficult to complete (not the content) and it may be difficult to get access to a person who can advise in case of questions P7 DR It is not always clear what they want. This makes it harder for us to provide it P16 DP
Data is made available for secondary use (Political)	Private insurance companies are not obliged to deliver data on health or health services P7 DR The Data Protection Commissioner prohibits the use of individual level data which has not been anonymised. Unfortunately the data owner does not have anonymised data so a third party, approved by the DPC, is required. This can lead to previously held assumptions being no longer valid and as a result unforeseen delays with data acquisition, including the need for Data Supply Agreements etc. P9 DR Lack of awareness of the importance of data-research (health service research, epidemiology etc.) P11 DR

Facilitators	**Quote**
Having clear detailed roles within the data collection process, rules and a framework in place (Technical /social/motivational)	At the time of writing the proposal there must be a confirmation to provide data. This confirmation must be as detailed as possible: -sample size, -provided variables, -time period, -aggregation level, -data protection regulations, -technical details P5 DR We developed a manual to guide the process P4 DR/DA Research all the legal and ethical issues carefully and summarise them for the compliance officer so that he

	/ she is able to answer questions for senior management or board of directors so that data can be released promptly P7 DP Utilise the existing Internationally recognised SNOMED CT which incorporates a dental sub set of coding. This would eliminate need for mapping and concentrate more on data sets. P1 DR
Having strong relationships between stakeholders (Social/motivational)	Researchers having expertise with secondary data. He knows possible data provider and their data (suitable for special research question) and is known by the providers. He knows about emerging problems with gathering/analysing claims data and can clear problems/ask crucial questions in advance. P5 DR Having face to face meeting with all involved. P4 DR/DA
Technical elements in place to support the process (Technical)	We have a standard process for giving approval for this type of data which balances the public benefit against privacy concerns. P6 DP When getting historical data from remote location make sure it is done correctly and accurately on one occasion, no double dipping- it significantly delays progress of study.P7 DP
Taking a pragmatic approach to the available data (Social/motivational)	We adopted a very flexible and pragmatic approach and just accepted whatever data the owners could share with us. P2 DR/DA Make it mandatory that all health service data can be obtainable (of course anonymously) P11 DR

Key:
Data provider = DP
Data requestor= DR
Data analyst =DA

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Research Article

IS THERE A RELATIONSHIP BETWEEN PAIN, LIMITS OF STABILITY AND SENSORY INTERACTION BALANCE IN PATIENTS WITH LUMBAR DISC HERNIATION? A CROSS-SECTIONAL STUDY

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Abstract: *Lumbar Disc Herniation (LDH) is a disorder causing pain and somatosensory loss. Although the association between pain and postural control in chronic low back pain is known, the relationship between pain and sensory problems with postural control is unknown in LDH, which is one of the most serious conditions among diseases. The purpose of the study was to determine the relationship between pain severity, limits of stability, and sensory interaction balance in patients with LDH. A total of 119 LDH patients, 64 of whom were women and 55 were men, were included in this cross-sectional study. Pain severity and postural control of the patients were measured by using the Visual Analog Scale and Biodex Balance Device, respectively. Limits of Stability and Clinical Test of Sensory Interaction Balance tests were used for postural control evaluation. The results of our study indicated that pain and disability were positively correlated with sensory interaction balance ($p<0.05$) while there was no statistically significant correlation between pain, disability, and limits of stability ($p>0.05$). In patients with LDH, the sensory interaction balance was negatively affected by the increased pain and disability level, while LOS was not. Therefore, in addition to reducing pain and disability, approaches to increase the sensory interaction balance should be adopted in physiotherapy programs for these patients.*

Keywords: *Lumbar disc herniation, Pain, Postural control, Stability limits, Sensory interaction balance*

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1. Introduction

Postural control is the ability to control the body in space to establish orientation and stability. Sensory information coming from proprioceptive, vestibular, and visual systems is used to ensure postural control [1]. In this context, postural control is affected negatively by aging and, neurological and musculoskeletal diseases [2,3]. Chronic low back pain, which is frequently encountered and affects daily living activities, is one of the main musculoskeletal disorders affecting postural control [4].

Lumbar Disc Herniation (LDH) causes chronic low back pain and sensory deficits. Sensory and motor losses that occur in lower extremities may affect postural control in patients with LDH and these impairments cause asymmetric loading to limbs [5]. Previous studies have reported that postural control was reduced in patients with low back pain when compared to healthy people. The decreased somatosensory input due to pain and nerve root compression has been stated as the possible reason for this change in postural control [6-8]. Although many mechanisms affecting postural control in LDH were mentioned; pain intensity, fear of movement due to pain, positive neurological findings, alternative

movement strategies, and reduced muscular condition have also been reported important factors in deteriorating postural control [9-12].

While many studies are reporting that postural control was decreased in patients with low back pain when compared to healthy individuals [13-15], studies that investigate postural control in patients with lumbar disc herniation are limited [16,17]. Although the postural control, which is required to ensure functional activities, was mentioned dynamically or statically in previous studies, postural control has not been studied in detail considering the limits of stability and sensory interaction balance parameters, which include the evaluation of proprioceptive and vestibular systems that are affected by the disease. There is no known study investigating the relationship between pain intensity, disability level, and postural control in patients with LDH. If the correlation between these parameters may be revealed, more necessary evaluation options should be determined and more efficacious treatment strategies may be developed. This study aimed to assist future research and clinicians to choose the most relevant variables that should be taken into account while evaluating and/or managing individuals with LDH.

The present study aimed to investigate the relationship between pain intensity, disability level, and postural control in patients with LDH. We hypothesized that pain and disability are negatively correlated with limits of stability, while positively correlated with sensory interaction balance.

2. Materials and Methods

2.1. Study design

The study was designed as a cross-sectional study and conducted between June 2017 and May 2018.

2.2. Participants

The study included 119 patients over the age of 18, who volunteered to participate in the study. Patients who were admitted to the Neurosurgery clinic with lumbar disc problems, whose disease stage were defined by magnetic resonance imaging, and who was diagnosed at least 6 months ago were included in study. Patients who have a neurological or musculoskeletal disease affecting the lower extremities, vestibular and vision problems likely to affect postural control, have an amputation or use assistive devices, are pregnant, have serious systemic disease in addition to disc problems (tumor, infection, osteoporosis, diabetes mellitus, rheumatological diseases such as Becterew), mental and cognitive disorders that prevent cooperation were excluded.

Ethical statements

Permission was obtained from Dokuz Eylül University Ethical Committee with 2017/15-20 decision number in 08.06.2017 for the study. A written informed consent form was signed by the participants based on the Declaration of Helsinki.

2.3. Procedure

The herniation level and stage of the disease were diagnosed by the neurosurgeon according to Magnetic Resonance Imaging results, and clinical examinations were performed. Patients who accepted to participate in the study and met the inclusion criteria were assessed by the physiotherapist regarding pain severity, disability levels, and postural control, and the data were recorded.

Visual Analog Scale was used to determine the pain severity [18]. The validated Turkish version of the Oswestry Disability Index was used to define the limitations of the patients [19]. This index measures functional insufficiency during daily living activities such as personal care, walking, lifting, standing, sleeping, sitting, sex life, social life, and travel. The level of disability is calculated a total of 100 points. As the score of patients increases, the disability level also increases [19].

Biodex Balance SD (12.1'Display 115 VAC) device, whose validity, and reliability study were conducted by Sherafat et al., was used to evaluate postural control of the patients [20]. Limits of stability

(LOS) and clinical test of sensory interaction and balance (CTSIB) were performed. In both tests, the age, foot positions, and platform adjustments of the patients were recorded. Throughout the tests, the patients were asked not to get support from their hands and not to change the foot position. Each test was replicated 3 times.

In the limits of the stability test, the patients were asked to reach 8 different points on the fixed firm surface without changing their foot positions on the balance platform and to return to the starting position each time. This test was performed to determine the patient's ability to stay within stability limits for optimal postural control. The higher index values and the shorter time to complete the test indicate better dynamic postural control.

In the CTSIB, the patients were asked to stay in balance, primarily on a firm surface with eyes open and then closed, and then on a foam surface with eyes open and closed, respectively. Patients were warned not to change the foot position during each test for 30 seconds. This test was performed to obtain information about the patient's vestibular functions together with the proprioceptive system. Higher index values indicate a worse sensory interaction balance.

2.4. Statistical Analysis

Statistical analyzes were performed using the "SPSS (Statistical Package for the Social Sciences) 25.0 for Windows" program. Descriptive statistics of dependent and independent variables were shown with frequency and means, minimum and maximum values were specified. The compatibility of the variables to normal distribution was analyzed using the Shapiro-Wilk test. Pearson's correlation analysis was performed to determine the correlation between pain severity, disability level, and postural control. The significance level was set as $p<0.05$.

Considering the effect sizes, a power analysis was calculated with Open Source Epidemiologic Statistics for Public Health (Open Epi Version 3.1) program using the primary criteria, which was firm surface eyes closed sensory interaction balance. The power of the study was found to be 84.8% at a 95% confidence interval [21].

3. Results

A total of 122 patients who met the inclusion criteria were evaluated. However, since the disc problem was in the sequestration stage and the evaluation of these patients posed a health risk, 3 patients were excluded from the study, therefore the study was completed with 119 patients. It was observed that the patients included in the study were between the ages of 20 and 65, and 64 of them were female (53.79%) and 55 were male (46.21%). The demographic and clinical characteristics of the patients are given in Table 1.

Table 1. Demographic and clinical characteristics of patients

	X̄±SD	**Minimum-Maximum**
Age (years)	46.23 ± 14.83	20.0-65.0
BMI (kg/m^2)	28.08 ± 5.22	16.27-29.78
Disease duration (years)	6.02 ± 5.89	0.50 – 25.00
Pain (VAS)	6.31 ± 2.58	0.00 – 10.00
Oswestry Disability Index	31.79 ± 9.02	10.00 – 51.00
Limits of Stability (LOS) Indices		
Total LOS	45.86 ± 11.85	11.00 – 74.00
Forward	55.33 ± 17.58	9.00 – 93.00
Backward	55.11 ± 19.84	13.00 – 98.00
Left	56.10 ± 16.75	12.00 – 89.00
Right	54.82 ± 14.52	25.00 – 90.00
Forward-left	55.09 ± 15.48	17.00 – 86.00
Forward-right	58.38 ± 16.35	23.00 – 90.00
Backward-left	49.97 ± 16.30	5.00 – 86.00
Backward-right	46.69 ± 17.52	14.00 – 95.00
Clinical Test of Sensory Interaction and Balance (CTSIB) Indices		
EO-FiS	0.93 ± 0.58	0.15 – 2.70
EC-FiS	1.16 ± 0.64	0.31 – 3.47
EO-FoS	1.18 ± 0.78	0.34 – 4.46
EC-FoS	2.25 ± 0.95	0.94 – 6.35

BMI: Body Mass Index, LOS: Limits of Stability, CTSIB: Clinical Test of Sensory Interaction and Balance, EO: Eyes Open, FiS: Firm Surface, EC: Eyes Closed, FoS: Foam Surface

The relationship between pain severity, disability level, and postural control parameters was shown in Table 2. Sensory interaction balance was significantly correlated with pain and disability, and the relationship was weak and positive ($p < 0.05$). There was no significant correlation between LOS, pain, and disability ($p < 0.05$), (Table 2).

Table 2. Relationship between pain severity, disability score, and postural control parameters of patients

	Limits of Stability	**Clinical Test of Sensory Interaction and Balance**			
	Total value	EO-FiS	EC-FiS	EO-FoS	EC-FoS
Pain Severity (VAS)	r = -0.008 p = 0.945	r = 0.337** p = 0.002	r = 0.245* p = 0.023	r = 0.279* p = 0.009	r=0.286* p = 0.008
Oswestry Disability Index	r = -0.026 p = 0.809	r = 0.240* p = 0.026	r = 0.250* p = 0.026	r = 0.311* p = 0.004	r=0.350* p = 0.001

*****p<0.05, ******p<0.01 EO: Eyes Open, FiS: Firm Surface, EC: Eyes Closed, FoS: Foam Surface

4. Discussion

The findings of the study showed that, as pain and disability levels of patients increased, sensory interaction balance decreased in patients with LDH. It was also observed that the pain and disability level did not affect patients' limits of stability.

Pain is the most important symptom in lumbar disc herniation and is the primary reason for a consultation with a healthcare facility. There may be different reasons for the pain that occurs in lumbar disc problems. One and essential of these is nerve root compression [22]. Intervertebral disc problems cause unilateral lower extremity symptoms in most patients, and this causes asymmetric loading to

extremities and ground. Postural problems and muscle strength imbalance due to asymmetric loading are expressed as other causes of increasing widespread pain intensity [23].

It has been stated that postural control was negatively affected in patients with LDH when compared to the healthy group. The possible reasons for postural control impairment may be pain due to root compression, loss of strength, and decreased tendon reflexes [24]. In addition, balance and postural oscillation problems may occur due to pain severity in patients with low back pain [6,12]. Moseley et al. found that low back pain may increase postural oscillations [25], while Ruhe et al., showed a linear and positive relationship between pain intensity and postural oscillation [15]. Della Volpe et al., also showed that postural control can be impaired by chronic low back pain, and oscillations can be increased especially in dynamic conditions [26].

In our study, instead of examining the relationship with postural control by categorizing pain intensity as low or high pain, we questioned the instant pain when the patient came to the clinic. Unlike other studies, our results concluded that the pain was not related to the stability limits, but it negatively affected the sensory interaction balance. The reason why there was no correlation between pain and LOS may moderate pain levels of the patients, which did not cause a postural control problem in a way that would affect LOS. On the other hand, the reason why the pain was related to sensory interaction balance might be negatively affected vestibular inputs by pain together with proprioceptive impairment.

Brech et al. conducted a study with 10 patients with low back pain and examined if there was a relationship between pain intensity and sensory interaction balance. Their results showed there was no relationship between pain intensity and postural control [27]. Unlike this study, our results indicated that as the levels of disability increase, the sensory interaction balance decreases, but there was no relationship between disability level and LOS. We thought that body mass index may play a role in the emergence of this result. In other words, the decrease in sensory interaction balance of the patients due to disability whereas LOS might not have affected by it. This finding may indicate that increased body mass index can negatively affect some vestibular components more. So, these patients may have developed better adaptation to stability limits due to increased BMI.

In our study, the relationship between pain, disability, and postural control was examined in patients with LDH instead of those with chronic nonspecific or mechanical low back pain. In this context, the results of our study concluded that sensory interaction balance is negatively affected by pain in patients with LDH. In the light of these findings, approaches to increase postural control should not be ignored in evaluation and treatment approaches in patients with LDH.

The most important limitation of our study was the completion of the study with only patients whose herniation stages were bulging and protrusion, which are the initial levels of disease. Examining the relationship between pain, disability and postural control in patients who will be categorized according to different pain and disease stages might be guided in future studies. Since lower extremity muscle strength may affect postural control, evaluation of muscle strength in future studies may strengthen these studies in this respect.

The strengths of our study are 1) The multidimensional, dynamic, and objective evaluation of postural control with using LOS and sensory interaction balance parameters; 2) It is the first known study in the literature to investigate the relationship between pain, disability level, and postural control conducted with LDH patients.

5. Conclusion

Pain and disability can cause impairments in postural control in patients with LDH. Although there was no LOS influence in these patients, sensory interaction balance was negatively affected by an increased level of pain and disability. For this reason, approaches aiming to increase sensory interaction

balance as well as to reduce pain and disability should be adopted in assessment and treatment programs of patients with LDH.

Ethical Statement

Ethical approval for the research was obtained before commencement from the Non-Interventional Clinical Research Ethical Committee of the Dokuz Eylül University (date: 08.06.2017; decision number: 2017/15-20). A written informed consent form was signed by the participants based on the Declaration of Helsinki.

Conflict of Interest

All authors declare that they have no conflict of interest.

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Author Contributions

MST had a role in the conceptualization, data curation, formal analysis, methodology, project administration, supervision, validation, visualization, writing - original draft, writing - review & editing. ATY had a role in the conceptualization, data curation, formal analysis, methodology, visualization, writing - original draft, writing - review & editing. NG had a role in data curation; methodology, investigation, software, supervision, visualization, writing - original draft. OK had a role in methodology, administration, supervision, writing - review & editing. All authors read and approved the final manuscript.

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Research Article

DOES THE FREQUENCY OF ACUTE CHOLECYSTITIS DECREASE DURING THE RAMADAN MONTH?

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Abstract: *The pathophysiological mechanism of acute cholecystitis (AC), which is essentially the inflammation of the gallbladder, is blockage of the cystic duct, and its most common cause is gallstones. On the other hand, fasting held in Ramadan is worship practiced by Muslims within the period from dawn to sunset by avoiding any eating and drinking act. Within this framework, our study ultimately intends to reveal the variation of AC in two different time periods. We retrospectively compared the demographic characteristics, admittance times, biochemical parameters of the subjects diagnosed with AC and hospitalized in the general surgery between 2012 and 2018. We also evaluated diagnosis classification, length of hospitalization, presence of intensive care stay, presence of operation during hospitalization, and the underlying comorbid diseases of the subjects. 225 patients were hospitalized in the general surgery service after being diagnosed with AC in the ED over the course of six years, yet the total number of subjects recruited for the study is 46. Whereas 10 patients (21.7%) were admitted and hospitalized during the Ramadan month, 36 (78.3%) patients in the other group were hospitalized one month before and after Ramadan. 16 (34.8%) of the hospitalized patients underwent emergency surgery, while 30 (65.2%) patients were operated on electively. The comparison of the two cohorts in our study revealed no significant difference in relation to the demographic characteristics, laboratory findings, imaging methods, underlying comorbid diseases, and the length of hospital stay. Nevertheless, clinical investigations seem to have revealed a difference between groups.*

Keywords: *Acute cholecystitis, General surgery, Abdominal pain*

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1. Introduction

The pathophysiological mechanism of acute cholecystitis (AC), which is essentially the inflammation of the gallbladder, is the obstruction of the cystic duct, and its most common cause is gallstones. The diagnosis of this disease should be confirmed by radiological imaging methods in patients with clinically suspected AC. Besides, cholecystitis is a condition that is best treated with surgery but can also be treated conservatively, if necessary.

Under the Tokyo Guidelines 2018, the diagnostic criteria of AC are made up of three components (Table 1) (1) presence of local signs of inflammation (e.g. Murphy's sign or pain or tenderness in the right upper quadrant); (2) signs of systemic inflammation (e.g. fever, increased C-reactive protein [CRP], increased white blood cell [elevated WBC]), and (3) imaging findings [1]. The suspected diagnosis is made through the co-existence of one of local inflammation and systemic inflammation findings, while the definitive diagnosis is made with the presence of imaging findings.

Table 1 Tokyo Guidelines 2018, the diagnostic criteria of Acute Cholecystitis

TG18/TG13 Diagnostic Criteria For Acute Cholecystitis
A. Local signs of inflammation etc. (1) Murphy's sign, (2) RUQ mass/pain/tenderness
B. Systemic signs of inflammation etc. (1) Fever, (2) elevated CRP, (3) elevated WBC count
C. Imaging findings Imaging findings characteristic of acute cholecystitis Suspected diagnosis: one item in A + one item in B Definite diagnosis: one item in A + one item in B + C

RUQ: Right Upper Quadrant; CRP: C-Reactive Protein; WBC: White Blood Cell

The 8th, 9th, and 10th months are sequenced as Shaban, Ramadan, and Shawwal, respectively, according to the lunar calendar (Hijri), in which one month lasts 29-30 days and one year consists of 354 days. Therefore, the month of Ramadan falls 10-11 days earlier than the previous year, judging by the Gregorian calendar. Fasting held in Ramadan is worship practised by Muslims within the period from sunrise to sunset, which generally covers 11-19 hours, by avoiding any eating and drinking act. Smoking, taking oral intra-muscular or intravenous drugs, eating and drinking, and performing sexual acts are strictly prohibited during the worship of fasting [2]. Prior to the fasting period, some preparations are made through the consumption of food and water, and the fasting is ended on that day with the evening adhan (sunset) by eating dinner. Here, the purpose is to curb the cravings of the flesh. Under the teachings of Islam, anyone who reaches puberty, maintains their mental health, does not have an underlying chronic disease and does not travel long distances is supposed to fulfill their fasting ritual.

A review of the literature suggests that the amount of research into the association between the month of Ramadan and cholecystitis is rather limited indeed, and the existing studies on this phenomenon have observed only seasonal variations. With this in mind, the present study set out to unravel the association between acute cholecystitis and the month of Ramadan.

2. Materials and Methods

The approval for this study was granted from the non-interventional **ethics committee of Pamukkale University** with the decision number 60116787-020 / 34888 dated April 17, 2018, and numbered 2018/08. Following a retrospective review of the archive, this study eventually included over 18-year-old patients diagnosed with AC and hospitalized in the general surgery service between January 2012 and December 2018 in the Emergency Department (ED) of a hospital. This retrospective study intended to reveal the difference between the patients diagnosed with AC during the Ramadan and non-Ramadan period. Considering that there is no seasonal variation because the month of Ramadan is celebrated 10-11 days earlier than the previous year according to the Gregorian calendar [3], we compared the subjects in the month of Ramadan as one group with those in the month of Shaban (one month before Ramadan) and the month of Shawwal (one month after Ramadan) as the other group.

2.1. Data collection

The demographic characteristics, admission times, white blood count, alanine aminotransferase (ALT), aspartate aminotransferase (AST), C-Reactive Protein (CRP), direct bilirubin, indirect bilirubin, and cholesterol values of the subjects diagnosed with AC and hospitalized in the general surgery service in the ED of a hospital between 2012 and 2018 were retrospectively compared using the ICD (International Classification of Diseases) code. The diagnosis classification, the length of hospital stay, the status of hospitalization in the intensive care unit (ICU), the status of undergoing an operation during hospitalization, and the underlying comorbid diseases of the subjects were also investigated within the scope of the present study.

2.2. Statistical analysis

Performed by using IBM SPSS Statistics 22 documentation program, the statistical analyses are primarily based on descriptive statistics, such as mean scores, standard deviation, minimum, maximum, and percentage values. The patients were divided into two cohorts and compared as Group 1, consisting of the subjects admitted in the Ramadan month, and as Group 2, including the subjects admitted in the pre-Ramadan (Shaban) and post-Ramadan (Shawwal) months. Shapiro Wilk test were used for determination of normal distribution. For independent groups comparisons, we used Independent samples t test when parametric test assumptions were provided, Mann Whitney U test were used when parametric test assumptions were not provided. Difference between categorical variables were analyzed with Fisher Exact test. Statistical significance was determined as $p<0,05$.

3. Results

Although the number of patients diagnosed with AC in the ED and hospitalized in the general surgery service between 2012 and 2018 amounted to 225, the total number of patients included in the study was ultimately 46. The number of within-Ramadan (Group 1) and non-Ramadan (Group 2) subjects were 10 (21.7%) and 36 (78.3%) respectively.

18 of the subjects were male (39.1%), and 28 subjects were female (60.9%). Besides, the mean age of the subjects was 59.5 (± 16.45) (min. 24 and max. 88).

As far as the diagnosis classification is concerned, 7 subjects were hospitalized after being diagnosed with calculous cholecystitis and 3 subjects with acalculous cholecystitis in Group 1, while 24 subjects were diagnosed with calculus cholecystitis and 12 subjects with calculus cholecystitis were hospitalized in Group 2.

While 43 (93.5%) of the hospitalized patients were followed up in the general surgery service, 3 (6.5%) patients admitted during the non-Ramadan months were observed to require intensive care.

Whereas 16 (34.8%) of the hospitalized patients underwent an emergency operation, 30 (65.2%) patients were operated on electively. In addition, 1 patient subjected to emergency surgery was hospitalized during the Ramadan month, while the remaining 15 patients were hospitalized during the non-Ramadan months.

While diagnosing patients with AC, ultrasonography imaging was performed in the ED for 30 patients (65.2%) (7 in Group 1), abdominal tomography imaging for 22 (47.8%) patients (2 in Group 1), MRI for 14 (30.4%) patients (2 in Group 1) and other imaging for 8 (17.4%) patients (2 in Group 1).

Given the underlying comorbid diseases of the subjects, 11 (23.9%) of them were suffering from hypertension (2 in Group 1), 3 of them (6.5%) were afflicted with diabetes mellitus (no diagnosis of diabetes in Group 1), and 3 of them (6.5%) had COPD (no diagnosis of COPD in Group 1). In addition, ischemic heart disease was identified in 2 (4.3%) patients (no diagnosis of ischemic heart disease in Group 1), while 10 (21.7%) patients were afflicted with different chronic diseases (no diagnosis of different chronic diseases in Group 1).

As for the laboratory outcomes of the subjects, the mean score for white blood count was established to be 11669 (± 5452) (13295 [± 3435] in Group 1). On the other hand, the mean AST value was found as 108.91 (± 181.98) (93.8 [± 115.05] in Group 1), the mean ALT value as 106.34 (± 163.53) (124 [± 176.17] in Group 1), and the mean CRP value as 10.53 (± 11.55) (8.36 [± 10.95] in Group 1). Furthermore, the mean direct bilirubin level was calculated as 0.67 (± 16.85) (1.08 [± 1.43] in Group 1), while that of indirect bilirubin turned out to be 0.76 (± 1.04) (1.12 [± 1.77] in Group 1). Finally, the mean cholesterol level was identified as 141.14 mg/dl (± 31.33) (136 [± 8.84] in Group 1), yet it was realized that cholesterol levels were not measured in every subject included in the study.

The average length of hospital stay of the subjects was established as 8.11 days (± 5.14) (min. 2 days and max. 23 days) in Group 2, whereas this average was found as 5.6 days (± 1.84) (min. 3 days and max. 9 days) in Group 1.

Among the three subjects followed up in the intensive care unit were an 82-year-old male patient, an 83-year-old female patient, and a 78-year-old male patient. The length of hospital stay for these three subjects was 19, 10, and 15 days, respectively. All of them were admitted to the ED during the non-Ramadan months and underwent an emergency operation. While the first patient was diagnosed with calculous cholecystitis, the diagnosis of the other two patients was established as acalculous cholecystitis.

As the group comparisons reveal clearly, no significant difference was identified between the demographic features, laboratory findings, imaging methods, comorbid diseases, and the length of hospital stay in our study (Table 2).

Table 2. Demographic features, laboratory findings, imaging methods, comorbid diseases, and the length of hospital stay

	Ramadan		**Non-Ramadan**		
	X±SD	**Med (Min-Max)**	**X±SD**	**Med (Min - Max)**	**p (Test)**
Age	59.5 ± 16.45	53.5 (40 - 86)	59.47 ± 16.72	58 (24 - 88)	>0.05 (t=0.005)
Hospital stay/day	5.6 ± 1.84	5.5 (3 - 9)	8.11 ± 5.63	6 (2 - 23)	>0.05 (z=-1.092)
WBC	13295 ± 3435.67	12900 (8770 - 20220)	11217.66 ± 5849.39	10640 (6.87 - 27000)	>0.05 (t=1.068)
AST (aspartate aminotransferase)	93.8 ± 115.05	44.5 (16 - 359)	113.11 ± 197.72	41.5 (13 - 1078)	>0.05 (z=-0.04)
ALT (alanine aminotransferase)	124 ± 176.17	33 (8 - 544)	101.44 ± 162.14	25.5 (3 - 764)	>0.05 (z=-0.799)
Direct bilirubin	1.08 ± 1.43	0.35 (0.08 – 3.82)	0.55 ± 0.78	0,24 (0.05 – 3.92)	>0.05 (z=-1.066)
Indirect bilirubin	1.12 ± 1.77	0,35 (0.04 – 5.67)	0.66 ± 0.73	0.54 (0.01 – 4.36)	>0.05 (z=-0.386)
CRP	8.36 ± 10.95	4.43 (0.3 – 31.78)	11.03 ± 11.79	7.77 (0.08 – 39.14)	>0.05 (z=-0.499)

		Group		**Total**	
		Ramadan	**Non-Ramadan**		
Sex	Male	6 (60%)	12 (33.33%)	18 (39,13%)	>0.05 (δ =2.337)
	Female	4 (40%)	24 (66.67%)	28 (60,87%)	
Ultrasound	Yes	7 (70%)	23 (63.89%)	30 (65,22%)	>0.05(δ =0.129)
	No	3 (30%)	13 (36.11%)	16 (34,78%)	
Computerized tomography	Yes	2 (20%)	20 (55.56%)	22 (47,83%)	>0.05 (δ =3,965)
	No	8 (80%)	16 (44.44%)	24 (52,17%)	
Magnetic resonance	Yes	2 (20%)	12 (33.33%)	14 (30,43%)	>0.05 (δ =0.667)
	No	8 (80%)	24 (66.67%)	32 (69,57%)	
Other imaging	Yes	2 (20%)	6 (16.67%)	8 (17,39%)	>0.05 (δ =0.061)
	No	8 (80%)	30 (83.33%)	38 (82,61%)	
Operation	Emergency	1 (10%)	15 (41.67%)	16 (34,78%)	>0.05 (δ =3.460)
	Elective	9 (90%)	21 (58.33%)	30 (65,22%)	
Diagnosis	Calculosis	7 (70%)	24 (66.67%)	31 (67,39%)	>0.05 (δ =0.040)
	Acalculosis	3 (30%)	12 (33.33%)	15 (32,61%)	
Hypertension	Yes	2 (20%)	9 (25%)	11 (23,91%)	>0.05 (δ =0.106)
	No	8 (80%)	27 (75%)	35 (76,09%)	
Diabetes	Yes	0 (0%)	3 (8.33%)	3 (6,52%)	>0.05 (δ =0.891)
	No	10 (100%)	33 (91.67%)	43 (93,48%)	

Table 2. *Continued*

		Group		**Total**	

		Ramadan	Non-Ramadan		
Chronic obstructive pulmonary disease	Yes	0 (0%)	3 (8.33%)	3 (6.52%)	>0.05 (δ =0.891)
	No	10 (100)	33 (91.67%)	43 (93.48%)	
Other chronic disease	Yes	0 (0%)	10 (27.78%)	10 (21.74%)	>0.05(δ =3.549)
	No	10 (10%0)	26 (72.22%)	36 (78.26%)	
Coronary artery disease	Yes	0 (0%)	2 (5.56%)	2 (4.35%)	>0.05(δ =0.561)
	No	10 (100%)	34 (94.44%)	44 (95.65%)	
Intensive care unit	Yes	0 (0%)	3 (8.33%)	3 (6.52%)	>0.05(δ =0.891)
	No	10 (100%)	33 (91.67%)	43 (93.48%)	

WBC: White Blood Cell; CRP: C-Reactive Protein; t: Independent Samples t test; z: Mann Whitney U test; δ: Fisher Exact test

4. Discussion

In their study on the association of AC with Ramadan fasting and its seasonal variation, Hosseini et al. [3] reported that the frequency of AC remained higher during the summertime than other seasons, noting no significant difference in its frequency during Ramadan in comparison to Shaban and Shavval months.

In Valerie's systematic review, AC was detected in 20% of the cases admitted to the hospital due to biliary tract disease. AC was reported to be three times more common in female subjects than their male counterparts until the age of 50, yet this ratio was observed to decrease to one and a half times after the age of 50. As a side note, it was highlighted that approximately 95% of the subjects with AC also had gallstones [4]. In our study, the ratio of women to men afflicted with AC was identified as one and a half times, when the age of 50 was accepted as the cut-off age as in Valerie's review study. However, our proportion of acute calculous cholecystitis among our patients diagnosed with AC was found as 67.4%, which is lower than the proportion reported in Valerie's review. In this regard, the fact that fasting state and dehydration are cited as the primary triggers of acalculous cholecystitis [5] may account for the higher rate of this disease in Group 1.

Early cholecystectomy to be administered within seven days after the onset of symptoms is the ideal treatment for AC [4]. In a clinical review by Indar et al [6], 20% of the AC sufferers were reported to have required emergency surgery. According to the researchers, this situation might have resulted from the deterioration of the patient's condition, the presence of general signs of peritonitis, and gangrened or perforated gallbladder. When it comes to our study, emergency surgery was performed in 34.8% of the study population, which seems to be a higher rate in comparison to that reported by Indar et al.'s review. More specifically, 1 (10%) patient in Group 1 and 15 patients (41.67%) in Group 2 were subjected to emergency operation in our study ($p = 0.13$). Although the p-value for this finding is 0.13 and it is statistically non-significant, and although the smaller number of patients operated in Group 1 is not statistically significant, a clinical difference is nevertheless observable numerically. We tend to attribute the reason for the smaller number of emergency operations during Ramadan to postponing the surgery until the post-holiday period, devoting enough time to holiday preparations, and not staying in the hospital during the holiday. We also assume that the general surgeon following up with the patients might have preferred to postpone the surgery during Ramadan and that the patient may have also wanted to postpone it due to holiday preparations, to meet his relatives during the festive and not to stay at the hospital during the holiday.

In their study on the impact of seasons and fasting practiced during Ramadan upon the emergence of AC, Hosseini et al [3] hold that gallstone-induced AC might manifest different seasonal characteristics, but that this situation may also arise from other environmental factors. It is further suggested that abstaining from water and other liquid substances throughout Ramadan fasting may not trigger the onset of the disease. In the years included in this study, the month of Ramadan coincided with the summer period between May 15 and August 18, thus we compared the subjects admitted during the month of Ramadan as one group and the subjects admitted one month before and after the Ramadan

as the other group in order to eliminate the seasonal variation. Nevertheless, no significant difference was noted between the two groups ($p < 0.05$). Our subjects were evaluated based on a seven-year period, almost all of which coincided with the summer months. We are of the opinion that more extensive studies should be undertaken by making more detailed comparisons covering all months, rather than focusing on a specific period of time.

Ultrasound can be exploited to evaluate the presence of ductal dilatation or fluid collection [7]. In their meta-analysis, Abboud et al [8] report that abdominal ultrasound could reach 42% sensitivity and 96% specificity for enlarged bile duct while showing 38% sensitivity and 100% specificity for all bile duct stones. These results demonstrate that abdominal ultrasound tends to achieve high specificity but suffers insufficient sensitivity. On the other hand, 65.2% of the patients in our study who were assessed by abdominal ultrasound were also subjected to other imaging methods, and 52.2% of them were assessed and diagnosed only by abdominal USG.

In a study by Wertz et al [9] on 60 patients with AC, abdominal ultrasound scanning was performed on 56 patients, abdominal tomography to 48 patients, and both imaging methods on 42 patients. In addition, 60 patients with no cholecystitis were evaluated with tomography and ultrasound as the control group. They found the sensitivity of tomography (85%) superior to that of ultrasound (68%) and noted no significant difference in the negative predictive value of both imaging methods. While tomography turned out to be positive in 10 patients out of 42 patients exposed to both tomography and ultrasound, no significant imaging was found on ultrasound for AC. In general, abdominal tomography is recognized as a more useful method for diagnosing AC, but 65.2% of the patients diagnosed with cholecystitis in our study were scanned by ultrasound and 47.8% by abdominal tomography. Moreover, only 17.4% of the patients in our study were hospitalized after their abdominal tomography had been performed, while the patients assessed only by abdominal USG accounted for 52.2%. It is well-documented that tomography is easier to perform, that the sensitivity of tomography is higher, that there is no contrast allergy in patients with suspected cholecystitis, and that tomography should be the primary imaging method in the absence of renal failure. However, ultrasound as an imaging method tends to be more widely used in elderly patients to avoid renal failure and the side effects of intravenous contrast media.

Cao et al [10] analyzed the complications of the patients with gallstones, reporting that 39.1% of the patients had diabetes, while 35.2% had hypertension, and that their cholesterol average was 188.32 ± 38.66 mg/dl. As far as our study is concerned, the underlying comorbid diseases of the subjects were established as diabetes (23.9%) and hypertension (6.5%), and the mean blood cholesterol level was calculated as 141.14 mg/dl (± 31.33). In addition, while Goh et al [11] report that 12.2% of their patients diagnosed with AC were also afflicted with ischemic heart disease, this rate was found as 21.7% in our study. The presence of comorbid diseases reinforces the need for emergency surgery in patients admitted with abdominal pain complaints and diagnosed with cholecystitis, and a lower total cholesterol level may account for the low rate of acute calculous cholecystitis.

In our study, although the length of hospital stay did not differ significantly ($p = 0.286$) between the within-Ramadan group with 5.6 days (± 1.84) and the non-Ramadan group with 8.1 days (± 5.6) possibly due to the small number of subjects, a clinical difference was nevertheless observed. We tend to attribute this situation to the fact that the total number of patients hospitalized in Ramadan was 10.

In addition, the length of hospital stay for the patients in the intensive care unit amounted to 14.67 days (± 4.51), while that of inpatients not hospitalized in the intensive care was 7.07 days (± 4.84). The length of stay for three patients followed up in the intensive care unit was 19, 10, and 15 days, respectively. We assume that the lack of a significant difference between intensive care patients and in-patients was likely to result from the small number of patients in the intensive care unit and clinical-wise, the number of hospitalization days doubled. All three patients admitted within the Ramadan month

were subjected to emergency operation. We also hold that hospitalization in the intensive care and advanced age of the patients may have contributed to the increase in the length of hospital stay.

5. Limitations

Admittedly, the generalizability of these findings is subject to certain limitations. An issue remaining unaddressed in this study is that approximately 36 years of data should be taken into consideration since Ramadan is routinely celebrated 10 days before the previous year. Another important limitation lies in the fact that only a specific region in Turkey was considered within the scope of our work, and there might inevitably be differences between the ways the Ramadan month is celebrated at different times and circumstances in other regions. Therefore, further research involving different regions should be undertaken in the future.

6. Conclusions

As a result, no significant difference was identified in terms of the frequency of AC in the Ramadan month in comparison to the Shaban and Shawwal months. Even though there was no significant difference regarding emergency surgery, length of hospital stay, and intensive care hospitalization, a clinical difference was nevertheless observed. We are of the opinion that the results might turn out to be statistically significant provided that the study is performed with a larger number of subjects.

Conflicts of interest

The authors have no relevant financial or non-financial interests to disclose.

Ethics statement

The approval for this study was granted from the non-interventional ethics committee of Pamukkale University with dated April 17, 2018, and numbered 2018/08.

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Author Contributions

All of the authors declare that they all have participated in the design, execution, and analysis of the paper and approved the final version.

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Research Article

EFFECT OF COVID-19 ON EXERCISE HEALTH BELIEF, EMOTIONAL INTELLIGENCE AND STRESS LEVELS IN EMERGENCY UNIT NURSES

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Abstract: *This study was conducted to examine the effect of COVID-19 on exercise health belief, emotional intelligence, and stress levels in emergency unit nurses. The research was carried out on 1-30.01.2021 with 210 nurses who are working in emergency units located in five hospitals in the Eastern Anatolia region of Turkey. A significant relationship was found between the nurses' status of contracting COVID-19 and exercise belief, emotional intelligence, and perceived stress levels. While it was found that the exercise health belief and stress levels of nurses who had COVID-19 were higher than those who did not have COVID-19, it was found that the emotional intelligence levels of nurses who had COVID-19 were lower than those who did not.*

Keywords: *COVID-19, emotional intelligence, nurse, stress, health belief*

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1. Introduction

Coronavirus infection causes numerous health problems, from the common cold to fatal pneumonia. COVID-19 can be transmitted directly by close contact and respiration with infected people, or indirectly by touching surfaces or objects exposed to their droplets [1]. Nurses constitute the vital and largest workforce in combating this pandemic, as they take a role both in the care of the patient and they take on the main pioneering role in the community 24 hours a day, seven days a week. They are most in contact with suspected or confirmed COVID-19 patients during diagnosis, hospitalization, or follow-up after the patient is discharged [2]. The multidimensional roles and functions of nurses in combating this health crisis have vital importance in providing health services [2,3].

Health belief refers to people's thoughts and behaviours about their health or illness. As a result of the health beliefs of individuals, their health behaviours are reinforced, so whether the individual's health is affected positively or negatively depends on health beliefs [4]. Staying at home was prioritized as a security measure to prevent human-to-human transmission of the virus. This global health crisis has led to increased levels of inactivity, and studies have shown that physical inactivity negatively affects health [5-9]. There was no study investigating the effect of COVID-19 on exercise health belief status in nurses. In the study of Elgzar et al., (2020) on nursing students, there is a study showing that COVID-19 is effective on health belief status [10]. On the other hand, there are studies on the behavior patterns of health belief status in individuals against health. In the study conducted by Gözüm et al., it is stated that individuals' attitudes towards health and the importance given to health are affected by individuals' beliefs about illness and its consequences. In addition to this, it is stated that exercise should be done in order to protect from diseases and that the exercise behavior of individuals changes as well as the perception of the disease that occurs if exercise is not done [11]. Besides, it is necessary to exercise in

order to prevent diseases, and in the absence of exercise, the exercise behavior of individuals changes at the level at which the disease is perceived [12].

Emotional intelligence is defined as the ability to recognize and understand our own emotions and the emotions of others, to motivate ourselves, and to manage our emotions correctly in our own selves and relationships [13,14]. Nurses 'ability to manage their own emotions and interpret others' emotions helps them to cope with stress, which positively contributes to both their own health and the health of the patient [15]. In addition, it is emphasized that the quality of nursing care can be increased by using emotional intelligence skills such as positive coping methods during emotional crisis periods [16,17]. In the study conducted by Soto et al. on nurses during the COVID-19 pandemic, they stated that emotional intelligence had a protective effect against the negative effects of psychosocial risks [18].

Stress is defined as "an individual's indistinct reaction to various environmental stressors"[19]. While stress creates physiological and psychological destruction in occupational groups that work intensively, it negatively affects the health and organizational success of individuals [20,21]. The rapidly spreading COVID-19 pandemic has changed people's lifestyles; created a significant burden and stressful environment for all healthcare professionals, especially nurses, who provide health services inside and outside the hospital [3]. It has been shown that a large proportion of healthcare professionals are at greater risk of developing post-traumatic stress symptoms and stress disorder during the coronavirus process [22,23]. Nurses are exposed to psychosocial risks through the stress that can affect both psychological and physical health [18].

In the literature, there is no study examining the exercise health belief status, emotional intelligence, and stress of nurses who had Covid-19. Therefore, the purpose of this study is to investigate the exercise health belief status, emotional intelligence, and stress levels of nurses who contracted Covid-19 and to compare them with nurses who did not contract Covid-19.

2. Methods

2.1. Type of the Study

The research was conducted in a cross-sectional research design.

2.2. The Location and Date of the Study

The research was carried out on 1-30.01.2021 with nurses who are working in emergency units located in five hospitals in the Eastern Anatolia region of Turkey. The 3.1.9.4 version of the G*Power program (Heinrich-Heine-Universität Düsseldorf, Germany) was used to determine the sample size of the study. A total of 210 nurses were included in the study, with a power ratio of $\beta = 80\%$ and $\alpha=0.05$ of the sample calculated based on similar articles. [24].

2.3. Data Collection Tools

2.3.1 Personal Information Form

The personal information form prepared by the researcher consists of 6 questions (age, gender, duration of employment, marital status, education, and income status) in total.

2.3.2 Emotional Intelligence Scale (TEQue-SF)

The emotional Intelligence Scale (TEQue-SF) was developed by Petrides and Furnham (2001). The validity and reliability of the Turkish form were made by Deniz, Özer, and Işık (2013). The scale is a 7-point Likert-type scale with 20 items. This form, which aims to determine the perception level of individuals about their "emotional competence", can be applied individually or as a group. High scores obtained in the total of the scale; indicate that their emotional competence is perceived as high, and the low scores obtained; indicate that their emotional competence is perceived as low. The scale consists of a four-factor structure (well-being, self-discipline, emotionality, and sociability) including 20 items [25,26]. In the present study, the Cronbach's Alpha internal consistency coefficient of TEQue-SF was found to be 0.82.

2.3.3 Perceived Stress Scale (ASO)

Perceived Stress Scale (ASO) was developed by Cohen, Kamarck, and Mermelstein (1983) [27]. The validity and reliability of the Turkish form were made by Eskin et al., (2013). In the last month, the extent of a person's life cannot be predicted. The scale is in the 5-point Likert type (1 = never, 2 = almost never, 3 = sometimes, 4 = often 5 = very often), and its four items are reversed (4th, 5th, 7th, 8th items), six of its items are plainly worded (1., 2., 3., 6., 9., 10.). The evaluation of the scale is made on the total score. A total of 0-40 points are obtained from the scale. A higher score indicates a higher level of perceived stress [28]. In the present study, the Cronbach's Alpha internal consistency coefficient of ASO was found to be 0.84.

2.3.4 Exercise Health Belief Model Scale (EHBMS)

Exercise Health Belief Model Scale was developed by Esparza-Del Villar, O. A et al. (Esparza-Del Villar et al., 2017) [29]. The validity and reliability of the Turkish form were made by Çiftci and Kadıoğlu (2020). The scale is a 5-point Likert type consisting of 32 items. From the 1st to the 26th questions, they were scaled as None (1), A little (2), Neither a little nor more (3), Quite (4), A lot (5). From questions 27 to 32, they were scaled as I never think (1), I don't think (2), I think (3), I mostly think (4), I always think (5). The scale consists of 5 sub-dimensions (general health, seriousness perception, benefit perception, motivation, and sensitivity perception) and there is no reverse item. The maximum score that can be obtained from the scale is 160, and the minimum score is 32. The higher the score in the evaluation of the scale, the higher the exercise belief level is [30]. In the present study, the Cronbach's Alpha internal consistency coefficient of EHBMS was found to be 0.89.

2.3.5 Collection of Data

After the nurses were verbally informed about the study, the link address of the study was sent via e-mail to the individuals who accepted to participate. A survey was developed with google forms. The individuals who would participate in the research were informed about the purpose and method of the research, the time they would spare for the research, that participation in the research would not do any harm to them, and that it was completely voluntary and their verbal consents were obtained. "Questions on Socio-Demographic Characteristics of Nurses", "Exercise Health Belief Model Scale", "Emotional Intelligence Scale" and "Perceived Stress Scale" were used to collect data.

2.3.6 Evaluation of Data

Statistical analyses were performed using "IBM® SPSS © 24 software". The suitability of variables to normal distribution was examined using visual (histogram and probability graphs) and analytical methods (Kolmogorov-Smirnov). Descriptive statistics of numerical variables were expressed as mean and standard deviation. Descriptive statistics of categorical variables were given using numbers and percentage values. While the T-test is used in independent groups to compare two independent groups showing normal distribution; the Chi-square test was used to compare two categorically independent groups. Statistical significance level was taken as $p<0.05$.

2.3.7 Ethical Aspect of the Research

For the study, approval of Muş Alparslan University Scientific Research and Publication Ethics Committee was obtained (Number: E-10879717-050.01.04-15704).

2.3.8 Limitations of the research

The inability to reach nurses working in other hospitals in the Eastern Anatolia region is a limitation of the study.

3. Results

The characteristics of the descriptive data of the nurses who had Covid-19 and the control group included in the study are given in Table 1.

According to this table, when the descriptive characteristics of the nurses who had Covid-19 and the control group were compared, there was no statistically significant difference between the groups ($p > 0.05$). Thus, it is observed that the descriptive data of the Covid-19 group and the control group are similar (Table 1).

Table 1. Characteristics of the nurses who had and hadn't COVID-19

		Having COVID-19 Status			Test
		Yes (n=86) X̄±SD	No (n = 124) X̄±SD	Total (n = 210) X̄±SD	p
Age (year) [a]		27.70 ± 4.82	28.55 ± 6.05	28 ± 6	t=-1,086 p=0.279
Working year[a]		5.23 ± 5.38	5.76 ± 7.05	6-6.	t=-.583 p=0.560
		n (%)	n (%)	n (%)	Test p
Gender[b]	Male	36 (41.9)	59 (47.6)	95 (45.2)	χ^2 =0.671 p=0.413
	Female	50 (58.1)	65 (52.4)	115 (54.8)	
Marital status[b]	Married	35 (40.7)	55 (44.4)	90 (42.9)	χ^2 =0.277 p=0.598
	Single	51 (59.3)	69 (55.6)	120 (57.1)	
Educational status[b]	Associate Degree	13 (15.1)	23 (18.5)	36 (17.1)	χ^2 =0.509 p=0.775
	Bachelor's Degree	64 (74.4)	87 (70.2)	151 (71.9)	
	Master's Degree	9 (10.5)	14 (11.3)	23 (11)	
Level of income[b]	Income more than expenditures	(17.4)	17 (13.7%)	32 (15.2)	χ^2 =5.510, p=0.064
	Income equal to expenditures	27 (31.4)	59 (47.6)	86 (41)	
	Income less than expenditures	44 (51.2)	48 (38.7)	92 (43.8)	

[a] t test in Independent Groups, [b]Chi-square test,

When the exercise health belief status of nurses who had and had not COVID-19 was compared with the control group, there was a statistically significant difference in terms of "total", "benefit" and "motivation" levels in favour of nurses who had COVID-19 ($p = 0.009$, $p = 0.004$ and $p = 0.031$); there was no difference in other sub-parameters. It was observed that the exercise health belief levels of the nurses who had COVID-19 were higher than the control group (Table 2).

When the emotional intelligence of the nurses who had COVID-19 was compared with the control group, there was a statistically significant difference in terms of "total" and "well-being" levels in favour of the control group ($p = 0.038$ and $p = 0.014$); there was no difference in other sub-parameters. When the groups were compared in terms of emotional intelligence, it was determined that the control group had higher emotional intelligence levels than the nurses who had COVID-19 (Table 2).

When the stress levels of the nurses who had COVID-19 were compared with the control group, a statistically significant difference was found in favour of the control group ($p = 0.023$) (Table 2). It was observed that the control group had lower stress levels than the nurses who had COVID-19 (Table 2).

Table 2: Comparison of exercise health belief status, emotional intelligence, and stress levels of nurses who had and hadn't COVID-19

		Having COVID-19 Status		Test
		Yes (n=86) $\bar{X}\pm SD$	**No (n = 124)** $\bar{X}\pm SD$	**p**
Exercise health belief status	Total	126.07 ± 13.06	120.77 ± 15.09	t=2.645 p=**0.009****
	General Health	14.79 ± 3.13	14.10 ± 3.47	t=1.467 p=0.144
	Seriousness	26.51 ± 2.85	26.38 ± 3.35	t=.299 p=0.765
	Benefit	42.22 ± 6.02	39.51 ± 7.06	t=2.906 p=**0.004****
	Motivation	25.45 ± 3.72	24.28 ± 3.91	t=2.174 p=**0.031***
	Sensitivity	17.09 ± 4.73	16.49 ± 4.50	t=.932 p=0.352
Emotional intelligence	Total	66.37 ± 7.43	68.65 ± 7.99	t=-2.087 p=**0.038***
	Sociability	13.55 ± 2.70	13.71 ± 2.87	t=-.415 p=0.678
	Sensuality	12.03 ± 2.25	12.50 ± 3.02	t=-1.213 p=0.227
	Self-Control	13.30 ± 2.03	13.49 ± 2.77	t=-.542 p=0,588
	Well-being	13.93 ± 2.97	15.02 ± 3.28	t=-2.468 p=**0.014***
	Perceived Stress	20.84 ± 6.26	19.06 ± 4.93	**t=2.291 p=0.023***

T-Test in Independent Groups, *p <0.05, ** p<0.01

4. Discussion

In the study where we investigated the effect of COVID-19 on exercise health belief status, emotional intelligence, and stress in nurses, it was found that the exercise health belief status and stress scores of nurses who had COVID-19 were higher than the control group; it was observed that they obtained lower scores in terms of emotional intelligence than the control group.

Although the fact that there is no study investigating the effect of COVID-19 on exercise health belief status in nurses is the strength of our study, it is quite difficult to compare our study with the literature. However, there are studies on health belief status behaviours towards health in individuals. Regarding the subject, Gözüm et al. stated that individuals' attitudes towards health are influenced by the importance given to health, beliefs about the disease, and its consequences [11]. However it is also stated that it is necessary to exercise in order to prevent diseases, and if the exercise is not done, the exercise behaviour of the individuals changes as much as the disease is perceived. In other words, the person who faces the risk of illness and adopts that the positive aspects of his/her exercise behaviour are more than the negative aspects can become ready to experience protective health behaviour, that is, to exercise [12].

In the study conducted by Elgzar et al. among nursing students, it was reported that COVID-19 was effective on health belief status [10]. In our study, it was observed that COVID-19 affects the exercise health belief status of nurses working in the emergency units (in terms of total, benefit, and motivation sub-parameters). According to this result, the reason that nurses who had COVID-19 had higher exercise health belief status compared to the control group may be due to their belief in the clinical, psychological and social benefits of exercise as well as its effect on preventive health behaviour [31].

Emotional intelligence is an indispensable strategy in dealing with life difficulties by reducing stress factors and emotional regulation in individuals, maintaining mental health, increasing endurance, and dealing with chronic problems [32]. It is stated that a high emotional intelligence level is associated with well-being, stress management, improved clinical performance, advanced leadership in nurses, and more careful patient safety [33,34].

In studies conducted on healthcare professionals, works are showing that emotional intelligence levels are affected by factors such as gender, age, educational status, marital status, and ethnicity [34-36]. However, the level of emotional intelligence in nurses who had COVID-19 and its comparison with respect to the control group is not available in the literature. Our current study is different from other studies in terms of revealing this gap. In the study conducted by Sun et al. on 170 nurses, they found that the emotional intelligence of nurses was between medium and high [36]. Karacas et al. [37] Also found similar results in their study on 177 nurses. In our study, it was observed that the emotional intelligence levels of the nurses were between medium-high (68.65 ± 7.99) in the control group, similar to the studies of Sun and Karakas [37]. This result shows that in the COVID-19 process, nurses are skilled in avoiding negative emotions and successfully handling problems as well as controlling their emotions [36]. However, interestingly, it was determined that the emotional intelligence levels of nurses who had COVID-19 were lower than the control group.

COVID-19 affected the emotional intelligence of nurses. It has been previously reported that the COVID-19 pandemic can cause serious consequences such as mental diseases (such as schizophrenia, depression, panic, suicide) by increasing the negative emotions of healthcare professionals [35,38,39]. It is even reported that it may aggravate these results [35]. Accordingly, in our study, it was observed that nurses who contracted COVID-19 infection had a worse level of emotional intelligence compared to the control group. Therefore, COVID-19 has reduced the positive effects of emotional intelligence mentioned above.

Emerging infectious diseases like COVID-19 cause negative emotions such as stress, fear of illness, anxiety, depression, and anger in people [38,40]. In the studies conducted, the rate of these negative emotions is higher in healthcare professionals (especially nurses) who have closer contact with patients and are exposed to a high risk of infection compared to the normal population [41-43]. In addition, according to studies conducted in a past epidemic/pandemic diseases, it is stated that high stress continues for a long time in healthcare professionals [44].

In our study, it was observed that the nurses working in the emergency unit were exposed to stress in parallel with the literature, but the stress levels of the nurses who had COVID-19 were higher than the control group. This may be due to the fact that nurses who have contracted COVID-19 experience the symptoms of the disease as patients and fear experiencing this situation again. In a study conducted by Ahn et al. on 1783 healthcare workers, they compared the stress levels of doctors, nurses, administrators, and other healthcare personnel and observed that the stress levels of nurses were higher than other healthcare professionals [43]. Similarly, Lai et al. Also found that the highest stress among healthcare workers was in nurses [42]. In both studies, they attributed this to the fact that the most contacted people regarding diagnosis, treatment, and patient care were nurses. Therefore, being in contact with the disease or having the disease affects the stress levels of the nurses. In addition, our study provides superiority compared to other studies in terms of the stress levels of nurses who had COVID-19 and comparison with the control group.

5. Conclusion

In conclusion, while nurses who had COVID-19 had higher exercise health belief status and stress levels than nurses who did not have COVID-19, it was observed that they achieved lower scores in terms of emotional intelligence. Considering the negative relationship between emotional intelligence and

stress in nurses [35,36]. It is thought that nurses who had COVID-19 infection should be supported more in terms of programs that increase their emotional intelligence and reduce their stress. Thus, healthcare professionals who are exposed to multifactorial pressures during the pandemic process can use emotional intelligence as support against negative emotions such as stress [36]. In addition, nurses who do not have COVID-19 (control group) can be supported with training to exercise under the name of preventive health measures [10].

Acknowledgment

The authors are grateful to all the participants in the study.

Ethical Consideration

For the study, approval of Muş Alparslan University Scientific Research and Publication Ethics Committee was obtained (Number: E-10879717-050.01.04-15704). The individuals who would participate in the research were informed about the purpose and method of the research, the time they would spare for the research, that participation in the research would not do any harm to them, and that it was voluntary and their verbal consents were obtained.

Conflict of interest

The authors do not have any conflict of interest to disclose.

The compliance to Research and Publication Ethics

This work was carried out by obeying research and ethics rules.

Authors' Contributions

M. D: Conceptualization, Methodology, Formal analysis, Writing - Original draft preparation (% 40)
H. A: Conceptualization, Methodology, Resources, Investigation (% 30)
N.Ç: Conceptualization, Methodology, Resources, Investigation (% 30)
All authors read and approved the final manuscript.

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Research Article

MORAL AND SOCIAL SUPPORT STATUSES AND DEPRESSIVE SYMPTOMS OF PATIENTS AGED 65 AND OVER WHO HAVE CHRONIC OBSTRUCTIVE LUNG DISEASE

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Abstract: *The current study was undertaken to determine the status of morale, social support, and depressive symptoms among patients aged ≥ 65 years old with chronic obstructive pulmonary disease. This study was conducted in a descriptive and correlational design. The data were collected using patient descriptive forms developed by the researchers, a personal information form about the disease, Philadelphia Geriatric Center Morale Scale, the Multidimensional Scale of Perceived Social Support, and Geriatric Depression Scale through face-to-face interview method. For the analyses of the data; percentages, means, Mann Whitney U, Kruskall Wallis, and Correlation Analyses tests were employed. The rate of patients currently smoking was 6.2% whereas the rate of patients previously smoking was 60.6%. It was found that 50.9% of the elderly COPD patients had severe depression and their average depression score was 13.76±5.02, their average morale score was 5.78±2.11 and their average social support score was 54.71±16.80. It was found that there was a negative and significant correlation between morale and social support status of the elders whereas there was no correlation between morale and depression symptoms. It was identified that elderly COPD patients had lower morale status, moderate social support status, and more than half of them demonstrated depressive symptoms. While the morale levels of the patients decreased, their social support status increased. It is recommended that sufficient support systems should be provided to the elders to reduce their depression symptoms and to elevate their morale levels.*

Keywords: *Elderly, Morale, Social support, Depression, Nursing*

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1. Introduction

One of the most significant consequences of the scientific and technological developments of our time is the prolongation of human life [1]. Factors such as rising education and income levels, changing eating habits, and control of contagious diseases have led to an increase in life expectancy causing the older population to grow larger compared to the child population. This resulted in a shift in public health problems from childhood diseases to Non-Communicable Diseases (NCD) seen in the older population [2]. From these diseases, respiratory system diseases are among the most frequently seen diseases in the elderly. As one of the respiratory system diseases, Chronic Obstructive Pulmonary Disease (COPD) occurs more often either towards the end of middle age or in old age. The risk of COPD is reported to increase approximately twofold every decade after the age of 40 reaching its peak prevalence after the age of 70 [3]. The worldwide prevalence of COPD in the 20th Century is estimated to be between 4 and 20% [4].

Chronic diseases are on the rise in our country due to the aging population and changing lifestyles.2 A large majority of chronic respiratory system diseases (65%) comprises chronic airway diseases (asthma, COPD) [5]. According to the causes of death statistics of the Turkish Statistical

Institute (TSI) for 2014, from the first six diseases that cause death in Turkey, the respiratory system diseases come in third place with 10.7%2 and COPD was responsible for 61.5% of these deaths [6]. COPD is one of the most frequently seen diseases in older people [7].

Morale is an important concept that affects individuals' social support levels and depression. The Turkish Language Association defines morale as "a person's spiritual strength, spiritual strength, spirituality" [8]. The morale of the elderly is affected by many situations including diseases, depression, and social support. A low level of morale is an independent determinant of mortality in older people [9] and depression may lead to sadness and other emotional problems [10]. In a study made in Switzerland to investigate the factors affecting the morale of people aged over 85 years, absence of depression symptoms, living in an ordinary home rather than a nursing home, not feeling lonely, engaging in social activities, and perceiving their health as excellent were found to be the factors that keep their morale high [11]. Another study found that the presence of chronic disease, social support level, religious beliefs, and personal characteristics affected morale [12].

COPD is a physical disease with social consequences that necessitate the individual to make changes in their daily activities and lifestyle. COPD has significant adverse effects on the person's social interaction and social acceptance [13]. Morale cannot be sustained only with the feelings that arise in the patient but is largely affected by the social support to be received from his/her family and friends. In a study made with patients with COPD, the patients' perceived family support scores were found higher than their perceived friend support scores [14]. Another study found that patients experienced mostly depression symptoms, there was a negative correlation between depression and social support, and patients aged 65 and over had lower levels of social support [15]. Aslantaş et al. (2010) found in their study with inpatients that the perceived social support score decreased as the level of hopelessness went up in the patients. In their study also with inpatients, Sarı et al. (2011) found the perceived social support of the patients was a little above the moderate level [16,17].

COPD is a disease with systemic effects. One of the main comorbid conditions that become more apparent especially in the advanced stages of the disease is depression [2,5]. Comorbid diseases have negative impacts on the severity and prognosis of COPD particularly in older patients [2]. Biological, psychological, and social changes make older people frailer, and old age becomes a period when various problems and diseases occur more frequently. Encountered in all age groups, depression is a major psychiatric illness that leads to losses in the areas of health and works if not treated. The prevalence of major depression in the elderly is reported to be around 3%. However, it is also reported that the prevalence of subthreshold depression is 15% and the prevalence of depression symptoms is as high as 60% especially in nursing homes, hospitals, and other entities giving long-term care [18]. In a study made with subjects with COPD, Havlucu (2007) found that there were depression symptoms in 84.2% of the subjects [19].

In people aged 65 and over, the occurrence of problems related to the respiratory system is easy, but the care and treatment of them are difficult [20]. Patients whose hope and morale are high and social support is sufficient are predicted to adapt better to their diseases and have a better quality of life [21]. It is a major responsibility of nurses to provide moral and social support to patients with COPD. Nurses can keep the morale and social support levels of patients high and minimize their depression levels by recognizing their depression symptoms better. Considering the foregoing arguments, this study was conducted to reveal the moral and social support statuses and depression symptoms of people aged 65 and over who have Chronic Obstructive Pulmonary Disease.

2. Material and Methods

Conducted in a descriptive and correlational design, this study had a population consisting of old people aged 65 and over who had Chronic Obstructive Pulmonary Disease (COPD) and were being

treated as inpatients in two hospitals in Erzincan and Kırşehir between March and November 2016. Sample selection was not made for this study; 340 older patients who were open to communication, volunteered to take part in the study, and had no psychiatric problems were included. The data were collected by way of face-to-face interviews using a descriptive characteristics form prepared by the investigators, which included the descriptive characteristics of the patients and information on their disease, the Philadelphia Geriatric Center Morale Scale (PGCMS), the Multidimensional Scale of Perceived Social Support (MSPSS) and the Geriatric Depression Scale (GDS). Completion of the forms took approximately 25-30 minutes.

2.1. Data Collection Tools

Descriptive Characteristics Form: Consisted of a total of 13 questions about the socio-demographic and disease-related characteristics of the patients (age, gender, marital status, education, perceived income status, duration of disease, presence of any other diseases, perceived health, smoking, etc.).

Philadelphia Geriatric Center Morale Scale (PGCMS): The Philadelphia Geriatric Center Morale Scale (PGCMS) was developed in 1972 by Lawton to assess the morale of older individuals [22]. Pınar and Öz (2011) tested the scale for validity and reliability in our country [23]. The scale has 3 subscales; agitation, attitude toward own aging, and lonely dissatisfaction. Fifteen items in the scale involve yes/no options and one item in the attitude toward own aging section and another in the lonely dissatisfaction section involves a two-choice answer. The scale is scored by giving 1 point the 'no' answers and 0 points to the 'yes' answers to the 6 questions in the agitation section. The 'no' answers given to the first 3 questions in the attitude toward own aging section receive 1 point and 'yes' answers 0 points and the 'better' answer to the 4th question in this section receive 1 point and 'worse' answer 0 points, whereas the 5th and the last question in this section is scored 1 if the answer is 'yes' and 0 if it is 'no'. The 'not much' answer to the first question, the 'yes' answers to the 2nd and 5th questions, and the 'no' answers to the 3rd, 4th, and 6th questions are given 1 point in the lonely dissatisfaction section. The total morale score ranges between 0 and 15, with higher scores indicating better morale. The alpha value was found as 0.92 in the study of Pınar and Öz [23] and 0.87 in the present study.

Multidimensional Scale of Perceived Social Support: Developed by Zimet et al. (1988), the Multidimensional Scale of Perceived Social Support (MSPSS) assesses the level of social support perceived by individuals [24]. The 12-item scale subjectively evaluates the sufficiency of social support received from three different sources; family (items 3, 4, 8, and 11), friends (items 6, 7, 9, and 12), and significant other (items 1, 2, 5 and 10). The total score of the scale is found by adding up the subscale scores. Each item is rated using a 7-interval scale with Likert-type scoring. The subscale scores range between 4 and 28, and the total score of the scale is between 12 and 84. Higher scores obtained indicate a higher level of perceived social support. The scale was adapted to Turkish and tested for validity and reliability by Eker and Arkar (1995) on normal and ill groups. The reliability of the scale was assessed by way of Cronbach's alpha method using 5 groups; students presenting to the university health center, healthy university students, visitors coming to the hospital, and psychiatric and renal diseases patients. The Cronbach's alpha coefficients of the subscales were found to range between 0.77 and 0.92 [25]. The Cronbach's alpha coefficients turned out to be between 0.86 and 0.88 in the present study.

Geriatric Depression Scale (GDS): Developed by Yesavage and associates in 1983, this scale consists of 30 items prepared to determine depression in the elderly [26]. The GDS was designed as a screening test valid for older patients with easy administration and scoring. The scale was tested for validity and reliability in Turkish by Ertan and associates in 1997 in our country. The GDS consists of 30 items, each item being marked "Yes" or "No". Ten of these 30 items indicate depression if answered negatively and 20 if answered positively. The questions relate to the period "in the last week". The scores obtainable from the scale are between 0 and 30. The scores 0-10 mean "no depression", 11-13

"possible depression", 14 and above "definite depression". The alpha value was found as 0.92 in the study of Ertan and associates [27] and as 0.73 in the present study.

2.2. Data Analysis

The data obtained from the study were assessed electronically using the appropriate analyses in the SPSS (Statistical Package for Social Sciences) 13.0 package program. The descriptive statistics were given in numbers, percentages, and means. A Shapiro-Wilk analysis was run to see whether the data had a normal distribution and since the data were found to not have a normal distribution, it was decided to use nonparametric analyses, which were Mann Whitney U test, Kruskal Wallis, and Spearman Correlation Analysis tests. The significance level was set at $p<0.05$.

2.3. Ethical statements

After obtaining an ethics committee approval from the Ethics Committee of Erzincan University (9 December 2015, Protocol no. 12/01), official permissions were obtained from the institutions where the study was to be conducted. Verbal consents were obtained from the individuals who would participate in the study and those who volunteered were included in the study.

3. Results

The mean number of cigarettes smoked daily by current smokers was 18.66±18.17 and the mean number of cigarettes smoked daily by previous smokers was 32.15±21.53. The mean duration of smoking was 26.30±16.53 years in the elderly who smoked currently and 33.04±14.91 years in those who smoked previously (Table 1).

Table 1. Patient's socio-demographic and disease-related variables (n=340**)**

Variables		**n**	**%**
Age group	65-69	158	46.5
	70-74	86	25.3
	75-79	39	11.5
	80 and over	57	16.8
Gender	Female	136	40.0
	Male	204	60.0
Education status	Illiterate	113	33.2
	Literate/ Primary school	180	53.0
	Secondary School	32	9.4
	High School/ University	15	4.4
Marital status	Married	261	76.8
	Single/Widowed/divorced	79	23.2
Income status	Income is lower than expenditure	142	41.7
	Income is equal to expenditure	167	49.1
	Income is higher than expenditure	31	9.1
Social support status	Yes	195	57.4
	No	145	42.7
Perceived health status	Good	48	14.1
	Moderate	175	51.5
	Poor	117	34.4

Table 1. *Continued*

Variables		**n**	**%**
Status of having any disease other than COPD	Yes	230	67.6
	No	110	32.4
Duration of Disease	Less than 1 year	35	10.3
	1-5 years	121	35.6
	6-10 years	112	32.9
	More than 11 years	72	21.2
Currently smoking status	Continuous	21	6.2

	Sometimes	27	7.9
	Can not use	292	85.9
Previous smoking status	Yes	206	60.6
	Sometimes	11	3.2
	No	123	36.2
Smoking amount, grooves/day		18.66±18.17	
Duration of smoking, years		26.30±16.53	
If you have used cigarettes before, the number of cigarettes per day (grain)		32.15±21.53	
If you have used cigarettes before, the duration of use (years)		33.04±14.91	

Of the older patients with COPD, 50.9% were at a definite depression level with a mean depression rate of 13.76±5.02 (Table 2).

Table 2. Score distribution and depression status of elderly patients with COPD (n=340)

Depression Appearance Status	n	%	Mean±SD
No Depression	91	26.7	2.02±3.51
Possible Depression	76	22.4	2.69±5.03
Definite Depression	173	50.9	9.05±9.17
Total	340	100.0	**13.76±5.02**

The patients' mean morale scale score was 5.78±2.11. From the subscales of the social support scale, the mean family subscale score was 20.58±6.58, the mean friends' subscale score 14.63±7.40 and the mean significant other subscale scores 54.71±16.80, and their mean depression score was 13.76±5.02 (Table 3).

Table 3. Score averages of moral, social support, and depression scales of elderly patients with COPD (n=340)

Scales		Mean	SD	Distribution Range
PGCMS		5.78	2.11	1-14
MSPSS	Family	20.58	6.58	4-28
	Friend	14.63	7.40	4-28
	Special people	19.50	7.18	4-28
	Total social support	54.71	16.80	12-84
Geriatric Depression Scale		13.76	5.02	3-26

No significant difference was found between the mean morale, social support, and depression scores of the older COPD patients with respect to their ages. The differences between the patients' total social support scores and the friends' subscale scores were significant with respect to gender, but the differences between their morale and depression scores were insignificant. While the education status of the patients did not affect their depression scores, it affected their mean morale and social support scores. The patients' marital status affected their social support and depression scores but did not affect their morale. Their income status affected social support but did not affect morale and depression (Table 4).

Table 4. The distribution of moral, social support, and depression scale scores according to introductory characteristics of elderly patients with COPD (n=340)

Introduction Features	PGCMS	MSPSS				Geriatric Depression Scale
		Family	Friend	Special People	Total social support	
Age group						
65-69	6.41±2.16	20.89±6.56	14.99±7.70	19.73±7.07	55.61±16.90	14.02±5.22
70-74	6.42±2.05	19.77±6.43	13.85±6.84	18.58±7.45	52.20±15.40	12.94±4.73
75 -79	6.44±1.93	22.18±6.48	14.67±8.88	21.13±7.40	57.97±18.95	12.77±4.70
80 and over	6.21±1.96	19.84±6.79	14.77±6.30	19.14±6.85	53.75±16.84	14.96±4.87
KW/p	.621/0.892	5.474/0.140	1.033/0.793	4.036/0.258	3.913/0.271	7.917/**0.048**
Gender						
Female	6.28±2.03	19.82±6.43	13.29±7.21	19.15±6.92	52.27±15.82	14.10±5.20
Male	6.45±2.09	21.08±6.64	15.51±7.42	19.74±7.36	56.33±17.26	13.54±4.90
MW-U/p	-.743/0.458	-1.862/0.063	-2.723/**0.006**	-.965/0.335	-2.481/**0.013**	-1.000/0.317
Education status						
Illiterate	6.07±1.89	17.93±6.79	13.40±6.95	17.46±6.99	48.79±16.77	14.03±5.48
Literate/ Pri. /Sec.S.	6.58±1.89	22.49±5.77	13.74±7.93	20.19±6.79	56.42±16.61	12.84±4.96
High School/	6.32±2.21	21.72±6.06	15.37±7.33	20.39±7.09	57.48±16.18	13.67±4.77
University	7.06±2.17	21.64±6.50	16.72±7.52	21.26±7.45	59.62±17.47	14.47±4.53
KW/p	10.124/**0.018**	26.454/**0.000**	9.159/**0.027**	15.623/**0.001**	23.760/**0.000**	2.278/0.517
Income status						
Income < expnd.	6.27±1.91	18.94±7.00	12.99±6.79	18.63±6.79	50.56±16.03	13.96±5.24
Income = expnd.	6.41±2.07	21.74±5.98	20.50±7.20	20.50±7.20	57.86±16.49	13.49±4.94
Income > expnd.	6.74±2.07	21.87±6.18	18.13±8.24	18.13±8.24	56.77±18.28	14.32±4.42
KW/p	.922/0.631	13.824/0.**001**	11.786/**0.003**	7.237/**0.027**	15.175/**0.001**	1.243/0.537
Marital status						
Married	6.47±2.10	21.38±5.99	14.99±7.44	20.49±6.86	56.87±15.99	14.01±4.81
Single/Wid./Div.	6.08±1.94	17.90±7.69	13.38±7.17	16.18±7.28	47.46±17.50	12.94±5.63
MW-U/p	-1.408/0.159	-3.625/**0.000**	-1.654/0.098	-4.525/**0.000**	-4.145/0 **.000**	-1.971/**0.049**

The patients' duration of disease did not affect their morale, social support, and depression scores. A significant correlation was found between the mean scores of perceived health and social support, but the correlation between the mean morale and depression scores was not significant. While the presence of another chronic disease except diabetes affected the morale score and the subdomain of the social support scale, it did not affect the other subscales of social support and depression. Receiving social support positively affected the significant other subscales of social support, but did not affect the morale, total social support, and depression scores (Table 5).

The correlation between previous smoking and the mean morale score was found significant, but there was no significant correlation between social support and depression. A significant correlation was found also between current smoking, income status, and social support, but there was no significant correlation between morale and depression. There was no significant correlation between the number of cigarettes smoked daily by the older COPD patients who were current smokers and their morale and depression levels and the family, significant other subscales of the social support scale, but there was a significant negative correlation between the total social support and friends' subscale. There was no significant correlation between the current smokers' duration of smoking and their morale and depression levels and the family, significant other subscales of the social support scale, but there was a significant negative correlation between the total social support and friends subscale. The number of cigarettes smoked daily by the older patients who smoked previously did not affect their morale and

depression levels, the total social support scale, and the family and significant other subscales, but affected the significant other subscales positively. There was no significant correlation between the duration of smoking in the older patients who smoked previously and their morale and depression levels, the total social support scale, and its subscales (Table 6).

Table 5. Distribution of moral, social support, and depression scale scores according to disease characteristics of elderly patients with COPD (n=340)

Disease Characteristics	**PGCMS**	**MSPSS**				**Geriatric Depression Scale**
		Family	**Friend**	**Special People**	**Total social support**	
Duration of Disease						
Less than 1 year	6.89±2.13	19.77±5.87	15.26±6.10	18.77±6.54	53.80±13.03	13.74±4.43
1-5years	6.40±2.01	21.58±6.21	15.07±7.24	20.27±7.05	56.93±10.00	13.91±5.29
6-10 years	6.22±1.83	20.01±6.63	13.99±7.59	19.03±7.45	53.03±17.90	14.01±4.75
More than 11 years	6.36±2.46	20.18±7.31	20.18±7.31	19.31±7.30	54.04±17.83	13.14±5.27
KW/p	2.699/0.440	4.333/0.228	2.027/0.567	2.840/0.417	3.592/0.309	1.186/0.756
Perceived health status						
Good	6.23±2.42	25.21±3.63	17.71±8.19	23.02±6.59	65.94±12.73	13.63±4.48
Moderate	6.53±2.18	20.41±5.98	14.59±7.05	19.59±6.70	54.59±15.59	13.83±4.98
Poor	6.22±1.72	18.94±7.46	13.42±7.29	17.92±7.63	50.28±17.95	13.72±5.32
KW/p	1.720/0.423	30.719/**0.000**	11.039/**0.004**	17.900/**0.000**	28.333/**0.000**	0.009/0.995
Status of having any disease other than COPD						
Yes	6.21±1.99	20.16±6.34	14.46±7.37	19.53±6.92	54.15±16.42	13.88±5.12
No	6.74±2.18	21.45±6.99	14.98±7.50	19.44±7.73	55.87±17.59	13.51±4.82
MW-U/p	-2.323/**0.020**	-2.111/**0.035**	-0.533/0.594	0.173/0.863	-0.867/0.864	-0.502/0.616
Social support status						
Yes	6.27±2.03	20.81±6.30	14.02±6.91	20.32±6.63	55.15±15.01	13.87±4.89
No	6.53±2.13	20.26±6.98	15.52±7.96	18.38±7.79	54.16±19.10	13.62±5.18
MW-U/p	-1.203/0.229	-0.370/0.711	-1.785/0.074	-2.199/**0.028**	-0.343/0.731	-0.515/0.607
Currently smoking status						
Continuous	5.43±1.96	19.19±8.82	16.14±8.28	18.14±7.98	53.48±22.37	13.81±6.15
Sometimes	6.63±2.50	23.96±5.60	19.48±8.19	22.59±7.27	66.04±17.91	13.96±0.54
Can not use	6.43±2.02	20.37±6.40	14.07±7.10	19.31±7.07	53.75±15.90	13.74±4.99
KW/p	4.783/0.092	8.399/**0.015**	12.687/**0.002**	7.562/**0.023**	14.204/**0.001**	0.020/0.990
Previous smoking status						
Yes	6.53±2.08	21.11±6.55	15.34±7.27	19.87±7.38	56.32±16.86	13.50±4.87
Sometimes	7.91±1.97	20.36±6.07	13.91±8.54	18.09±6.96	52.36±15.53	13.18±5.67
No	5.99±1.97	19.71±6.61	13.50±7.43	19.01±6.86	52.22±16.60	14.26±5.21
KW/p	12.215/**0.002**	3.618/0.164	4.835/0.089	2.431/0.297	5.436/0.066	1.647/0.439

Table 6. Correlation analysis of the smoking prevalence of the elderly and Morale, Social Support and Depression Scale (n=340)

		MSPSS			Geriatric
PGCMS	**Family**	**Friend**	**Special People**	**Total social support**	**Depression Scale**
Smoking amount, grooves/day					
r	-0.070	-0.142	-0.398	-0.135	-0.305	0.000
p	0.630	0.324	**0.004***	0.351	**0.032****	1.000
Duration of smoking, years[a]					
r	-0.098	-0.106	-0.335	-0.229	-0.299	0.190
p	0.500	0.464	**0.018****	0.110	**0.035****	0.186
If you have used cigarettes before, the number of cigarettes per day (grain)					
r	-0.113	0.080	0.003	.197	0.112	-0.015
p	0.096	0.235	0.970	**.003***	0.099	0.820
If you have used cigarettes before, the duration of use (years)[b]					
r	-0.044	0.009	-0.056	0.003	-0.023	0.000
p	0.515	0.896	0.409	0.963	0.737	0.999

*p<0.01 **p<0.05

[a] The current smoking period of smokers [b] Smoking history of previous smokers

While a significant negative correlation was found between the morale and social support statuses of the elderly, there was no correlation between their morale and depression symptoms (Table 7).

Table 7. Correlation analysis of Morale, Social Support and Depression Scale (n=340)

Scales		**PGCMS**	
		r	**p**
MSPSS	Family	-0.063	0.246
	Friend	-0.061	0.264
	Special People	-0.122	**0.025***
	Total Social Support	-0.113	**0.037***
Geriatric Depression Scale		-0.003	0.952

*p<0.05

4. Discussion

The social and economic burden caused by COPD leads to impaired morale, depression, and social support deficiency in patients.

The prevalence of depression is reported to be 10-45% in hospitalized patients. Old age can be considered as a "disability event" where morphological, physiological, and pathological changes progress negatively, various diseases combine, and physical and mental capabilities decline. The physical and psychosocial changes that occur during the aging process are important in that they pave the way for depression and affect the response to the treatment process [28]. Adaptation difficulties, anxiety disorders, panic disorder, and depression symptoms are seen in respiratory system diseases. The bronchodilators, sympathomimetics, and decongestants used in the treatment of respiratory system diseases also lead to anxiety, depression, and psychotic symptoms [29,30]. In the present study, 50.9% of the older patients with COPD were found to be at the definite depression level with a mean depression rate of 13.76±5.02. The mean morale scale score of the patients was 5.78±2.11 and their mean total social support score was 54.71±16.80. Similar to the results of this study, many other studies have also found that there are anxiety and depression symptoms in most COPD patients [15,31]. As relayed by Atasever and Erdinç (2003), 90% of the subjects with COPD had depression and anxiety in the study of Gore and associates [32,33]. In many studies made with hospitalized patients and patients with COPD, the mean social support scores were similar to the result of the present study [16,31]. In a study, the patients with essential tremors in a community were found to have lower morale compared to the control

group [34]. The morale level was found low and depression and social support levels high in that study. A high depression level leads to low morale.

The ages of the older patients with COPD who were included in the study affected their depression level but did not affect their morale and social support levels. In another study made with patients with COPD, a statistically significant correlation was found between age and perceived family and friend support, the perceived family and friend support turned out to be lower in patients aged 65 and over [14]. Another study found that the correlation between age and the mean depression score was insignificant, but there was a significant correlation between age and perceived social support score [15]. Rather than having a subjective relationship with age and health, morale may have an objective relationship with age and health [10]. When the patients were compared in the morale category (low, moderate, and high), a significant correlation was found between age and the morale score [9]. Another study found that there was a significant correlation between morale and advanced age [34]. The physical and psychosocial changes that occur during the aging process are important in that they pave the way for depression and affect the response to the treatment process [28]. Advancing age leads to low morale which in turn sets the depression stage.

Social support was found to correlate to gender but did not affect morale and depression in older patients with COPD. Unlike the result of this study, a study exploring social support in patients with COPD found that the family and friend support perceived by the patients did not have any statistically significant correlation with gender [14]. In another study, the correlation between gender and mean social support score was found insignificant [16]. Another study with older patients showed that there was a significant correlation between gender and morale scores [9]. Similar to the result of this study, another study made with patients with COPD found no significant correlation between gender and mean depression scores [15]. Depression is one of the major factors affecting morale negatively. As gender does not affect depression, it can be thought that it also does not affect morale.

A significant correlation was found between education statuses and morale, social support scores of the older patients with COPD, but no significant correlation with their mean depression score. Unlike the result of this study, two studies found no statistically significant correlation between patients' education status and perceived family support or social support [14,16]. One of the latest studies made in Europe reported that mortality from COPD was higher in men and women who had a lower education level [5]. The elderly with a high level of education usually have sufficient social support resulting in a better moral status. Since speedy information flow and change render the knowledge of older people obsolete, they can no longer serve as consultants for youngsters [28]. Depression then becomes inevitable.

There are difficulties in investigating the effect of socioeconomic status on the development of COPD because a low socioeconomic level is closely associated with other risk factors of COPD, particularly with smoking, nourishment, occupation, and air pollution indoors and outdoors. However, the studies exploring the impact of socioeconomic status adjusted for the other risk factors have reported that a low socioeconomic status, which is generally measured with total income, constitutes a risk factor independently for COPD, and lung functions tend to be poorer in groups with a low socioeconomic status [5]. We also found in the present study that the income statuses of older patients affected social support, but did not affect their morale and depression. In a study made with inpatients, the correlation between the economic statuses of patients and their social support was found significant [16]. Lack of trust in other people, fear of being exposed to violence and decreased financial support cause the elderly to be isolated from society, intensifying their loneliness and social alienation. Reduced financial facilities make them dependent on others [28]. Depression considerably increases healthcare costs in older people [10]. The average healthcare cost of COPD patients aged 65 and over, which includes hospitalization, outpatient services, and medications, was found twice as much as that of the control

group without COPD [3]. The fact that patients with a better income status have also better social support status does not necessarily affect their morale and depression.

The marital statuses of the patients were found to affect their social support and depression scores, but to not affect their morale scores. Two studies made with patients with COPD and hospitalized patients found that there was no statistically significant difference between perceived family, friend support, and social support with respect to marital status [14,16]. In another study, a significant difference was found between perceived social support scores with respect to patients' marital status. In a study made with COPD patients, a significant correlation was found between marital status and mean depression scores [15]. A study made with older people living in a nursing home and at home showed that the prevalence of depression was higher in those who were single or widowed than in the elderly living at home [35]. In the present study, single/widowed patients were found to have a lower level of social support. The fact that married elderly share their problems and support each other may have influenced this result.

The patients' duration of disease did not affect their morale, social support, and depression statuses. Similar to the result of the present study, a study made with COPD patients found that duration of disease had no significant correlation with mean depression scores or perceived family and friend support [14,35]. The morale of patients is associated with their social support being high and depression levels low. Duration of disease not affecting social support and depression may suggest that it also does not affect morale.

Depression and restricted physical activities resulting from dyspnea in patients with COPD also impair their social well-being [32]. The patients' perceived health was found to be significantly correlated with their mean social support scores, but not with their mean morale and depression scores. In old age, not only the individual's loved ones but also their health abandons them. There is no sign of their former strength leaving them incapable of looking after themselves. Their ability to move has decreased; they have become a person "receiving help" not a person "helping others, capable and giving" [28]. This condition of the elderly increases their social support level but lowers their morale and depression levels.

While the presence of another chronic disease except COPD was found significantly correlated with the mean family subscale score of the moral and social support scale, it did not affect the mean total social support and depression scores. It was found in a study that the perceived social support scores were significantly correlated with COPD's impact on mental health and the presence of another physical disease [15]. Another study found that the presence of chronic disease in the elderly, social support levels, religious beliefs, and personal characteristics affected morale [12]. Chronic disease increases the risk of depression [36]. In the present study, more than half of the older patients had another chronic disease besides COPD.

Smoking is the most important environmental risk factor for developing COPD. In developed countries, smoking is responsible for the occurrence of COPD at a rate between 80 and 85% [5]. While current smoking was found to affect social support, it did not affect morale and depression. Previous smoking affected morale but did not affect social support and depression. A considerable portion of non-communicable diseases can be avoided using preventive measures for the four basic risk factors; smoking, inadequate physical activity, excessive alcohol consumption, and unhealthy eating [2]. While smoking is the most important risk factor for COPD, patients' exposure to shun and previous smoking moods may have an impact on this outcome. Previous smoking may be thought to have a psychologically relaxing effect which results in increased morale.

COPD is a physical disease with social consequences that necessitate the individual to make changes in their daily activities and lifestyle. COPD has significant adverse effects on the person's social interaction and social acceptance [13]. While a significant negative correlation was found between

morale and social support statuses of the elderly, there was no correlation between their morale and depression symptoms. Kara and Mirici (2004) found that family and friend support was low in COPD patients experiencing depression [37]. Another study found that there was a negative correlation between social support and depression; as the social support is given to patients decreased, their depression symptoms worsened [15]. A study found that individuals who joined support groups less frequently had a higher level of depression [38]. It was found that people with a good social support status had a lower level of depression.

5. Conclusion

It was found that 50.9% of the older patients with COPD were at a definite depression level and had high mean depression and social support scores. The mean morale scores of the elderly were found to be below. There was no significant difference between the mean moral, social support, and depression scores of the older COPD patients with respect to their age groups. The correlation between the patients' gender and their total social support scores was found to be significant, but the difference between their morale and depression scores was insignificant. While the education status of the elderly did not affect their depression scores, it affected their mean morale and social support scores. There was a significant negative correlation between the moral and social support statuses of the elderly, but no such correlation between their morale and depression symptoms.

In view of these results, nurses should be encouraged to utilize family and institutional social support systems when giving care to patients with COPD and to employ their communication skills to improve patients' morale while also taking into consideration their socio-demographic characteristics. They should also inform patients about their diseases regularly to lower their depression levels.

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Ethical Dimension of the Research

Ethics committee approval from the Erzincan University Ethics Committee (December 18, 2015, Protocol no. 12/01) and approvals from relevant institutions have been obtained for the research to be carried out. The research was carried out in accordance with the principles of the Helsinki Declaration.

Authors' Contributions

Study concept and design: RF, AÜ, PK;
Data collection and analysis: AÜ, PK, RF, XL;
Drafting and revision manuscript: AÜ, PK, RF;
All authors read and approved the final manuscript.

Conflict of interests:

The authors declare that they have no conflict of interests.

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Research Article

THE RELATIONSHIP BETWEEN HUMOR STYLE AND DEATH ANXIETY OF PALLIATIVE CARE PATIENTS

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Abstract: *This descriptive and relational study was conducted to examine the relationship between palliative care patients' humor styles and death anxiety. The study sample consisted of 282 palliative care patients treated in the palliative care clinics of a training and research hospital between January 2021 and August 2021. Personal Information Form, Humor Styles Questionnaire, Thorson-Powell Death Anxiety Scale, and Palliative Performance Scale were used as data collection instruments. Data analysis was performed using mean, standard deviation, and percentile, Kolmogorov-Smirnov Goodness-of-Fit Test, Significance test of the difference between two means, ANOVA, Post-hoc test, Pearson's Correlation test, and regression analysis. It was found that the mean age of the patients was 49.58±9.56 and 52.1% were hospitalized in the palliative care clinic for 5-10 days. It was determined that the most frequently used humor style by the patients was "Affiliative Humor" (31.7%), and the least used humor style was "Aggressive Humor" (19.5%). The Humor Styles Questionnaire subscale scores of the patients were determined as 31.05±7.11, self-enhancing humor 28.34 ± 6.94, aggressive humor 26.85±7.37, self-defeating humor 23.50± 6.21. The death anxiety scale mean scores of the patients were found to be 81.62±9.12. In addition, a low negative correlation was found between affiliative humor ($r=-0.298$; $p<0.05$) and self-enhancing humor ($r=-0.318$; $p<0.05$) and death anxiety. A moderate positive correlation was found between aggressive humor ($r=0.450$; $p<0.05$) and self-defeating humor ($r=0.427$; $p<0.05$) and death anxiety. The result of the study revealed that humor is an important variable associated with death anxiety and the way humor is used by patients differs in death anxiety.*

Keywords: *Palliative Care, Patient, Humor Style, Death Anxiety.*

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1. Introduction

Scientific and medical developments in recent years have made it possible to prevent or treat many diseases and have been effective in prolonging the human lifespan [1–3]. With the prolongation of human life, an increase has been observed in chronic diseases and diseases such as cancer, and this has revealed the concept of palliative care [2, 4]. In cases where medical treatment is not possible, ensuring the comfort of the patient and maintaining the quality of life constitute the main goal of palliative care [2, 4]. In this context, palliative care is specialized medical care for patients who have to live with a serious illness, with the aim of reducing symptoms, increasing the quality of life, and minimizing stress [2, 5].

In situations where life is under threat and diseases are severe, people often experience a life-related crisis [5, 6]. Being a palliative care patient, which is one of the situations that cause a life crisis, reminds the patient that the risk of death is higher [1, 2]. The end of life and the fact that one day you will leave everything you have causes anxiety. Death anxiety is an emotion experienced most of the time, and terminal illnesses may cause this anxiety to increase [4, 7]. Death anxiety is a feeling that

exists from birth, continues throughout life, lies at the root of all fears, develops after the awareness that people will no longer exist, that they can lose themselves and the world, and that they can become nothing [6, 7]. Due to human nature, it may be difficult to maintain the same mood all the time and to keep calm. This situation causes the person to experience anxiety and the person tends to some actions to get rid of this troublesome process. One of these actions is the use of humor [8, 9]. The Association for Applied and Therapeutic Humor (2004) defines humor as any attempt to promote health and well-being through playfully exploring, expressing, or affirming the strangeness or inappropriateness of life situations. At the same time, it is stated that humor can be used as a complementary treatment of diseases to provide physical, emotional, cognitive, social, or spiritual healing or coping [10, 11]. It is stated in the literature that humor is accepted by the health care team and has positive psychological and physiological results for patient care [8, 12, 13]. In addition, it is stated that humor in clinical settings is mostly patient-centered and occurs spontaneously [10, 12]. Studies have found that the use of humor in patient care facilitates coping with anxiety experienced during illness or hospitalization and creates a positive atmosphere between the patient and the caregiver [13, 14]. Humor reduces anxiety by replacing the stress situation with more positive emotions rather than a threat [11, 15].

There are four different styles of humor used in daily life, which are harmonious or incompatible and determined by the individual's in-person or interpersonal character. These styles also express the differences in the use of humor [8, 13]. Two of these humor styles are positive-healthy humor in terms of psychological well-being (self-enhancing, affiliative humor) and the other two are negative-unhealthy humor (aggressive humor and self-defeating humor) [15, 16]. Self-enhancing humor is the style in which people use humor in a tolerant and harmless way to contribute to themselves. Affiliative humor is the situation in which individuals can use humor in an accepting and tolerant manner in order to contribute to their relations with others and to improve their social relations [10, 16]. Aggressive humor is the situation in which individuals can use humor to contribute to themselves, to the detriment of others, and at the expense of their harm. Self-defeating humor, on the other hand, is the situation in which the individual uses humor to his detriment and harms himself in order to contribute to his relations with others and to improve his social relations [9, 15].

Humor has many physical, emotional, social, and cognitive benefits. Humor acts as a tool that reduces the emotional load in the environment in situations that cause anxiety such as death [10, 14]. Although it was stated in the literature review that patients' use of humor is a healthy method for coping with problems, it is noteworthy that there is not enough research examining the relationship with death anxiety [7, 17]. For this reason, the study was conducted to examine the relationship between palliative care patients' humor styles and death anxiety. The research questions are as below:

1. What is the humor style of palliative care patients?
2. What are the death anxiety levels of palliative care patients?
3. Is there a relationship between socio-demographic characteristics of palliative care patients, humor style, and death anxiety?
4. Is there a relationship between palliative care patients' humor styles and death anxiety?
5. Does humor affect death anxiety?

2. Materials and Methods

2.1. Objective and Type of the Study

This study was conducted in descriptive and relational type to examine the relationship between palliative care patients' humor styles and death anxiety.

2.2. Population and Sample of the Study

The research population consisted of palliative care patients treated in the palliative care clinics of a training and research hospital between January 2021 and August 2021. A total of 1170 patients were admitted to the hospital during the study period. The sample consisted of 282 patients who accepted to participate in the study and met the inclusion criteria. Power analysis was used to calculate the sample size. With the calculation made with G power software, the power of the research was 95%, the alpha value was 0.05, and the effect level was considered moderate.

2.3. Inclusion Criteria

All patients who were 18 years of age or older, conscious, had no mental illness, had a palliative performance score of 40% and above, and agreed to participate in the study were included. In determining the lower limit of the palliative performance score of the patients be included in the study, level of %40 which includes the criteria of being conscious and has normal or decreased nutrition, being able to perform self-care with a great deal of assistance, being "unable to perform most of the activities" and having "disseminated disease" in terms of activity and diagnosis, and being "usually in bed" in terms of mobility has been taken as the basis of the lower limit. Patients below this level were not included in the study because they could get very tired during the interview due to the inadequacy of their functional capacity, and healthy data might not be collected due to variable consciousness levels [3, 6]. The ambulation, activity performance, and conscious level of the patients were observed by the researcher while the level of self-care and oral intake asked the patients. To observe these characteristics of the patients, patients who are hospitalized in palliative care for more than 24 hours were included in the study.

2.4. Collection of the Data

The patients participating in the study were informed about the research and it was explained that the data would not be shared with third parties. The answers to the questionnaires were collected by face-to-face interview technique, following the mask, hygiene, and social distance rules. Before starting the questionnaire, the patients were informed about the purpose of the study and the questionnaire, and their verbal consent was obtained. The application of the data collection forms took approximately 10-15 minutes. Data were collected from the patients between 11:00-14:00 a.m. because there wasn't any specific treatment or any other intervention for the patients and they were able to answer the researcher's questions.

2.5. Data Collection Instruments

Personal Information Form, Humor Styles Questionnaire (HSQ), Thorson-Powell Death Anxiety Scale (TPDAS), and Palliative Performance Scale (PPS) were used as data collection instruments.

2.6. Personal Information Form

In the form created by the researchers by scanning the literature, there are a total of 8 questions consisting of the sociodemographic characteristics of the patient and information about the disease [1, 4, 7].

Humor Styles Questionnaire (HSQ)

HSQ is a self-assessment scale developed by Martin et al. (2003) to measure four different dimensions related to individual differences in daily use of humor and consists of 32 items. There are four subscales in the scale, two of which are compatible and two are incompatible, aiming to measure four different humor styles. These subscales were named Affiliative, Self-enhancing, Aggressive, and Self-defeating humor. Each of the subscales using a seven-point Likert-type rating ranging from "Totally Disagree" to "Totally Agree" consists of 8 items each and there are 11 items scored in the opposite direction. Thus, the lowest and highest scores that can be obtained from each subscale vary between 7 and 56. The high scores obtained from the subscales indicate the frequency of use of the relevant humor style. In the adaptation study of the scale into Turkish, the Cronbach alpha internal consistency

coefficients obtained for each subscale were calculated as Affiliative Humor 0.74, Self-enhancing Humor 0.78, Aggressive Humor 0.69, and Self-defeating Humor 0.67 [18, 19]. In this study, Cronbach's alpha was found to be Affiliative Humor 0.76, Self-enhancing Humor 0.80, Aggressive Humor 0.71, and Self-defeating Humor 0.70.

Thorson-Powell Death Anxiety Scale (TPDAS)

The Turkish validity and reliability study of the scale developed by Thorson and Powell (1992) was carried out by Karaca and Yıldız (2001), and the Cronbach Alpha coefficient was found to be 0.84. The scale, which consists of 25 items, is a five-point Likert type. While 17 items of the Death Anxiety Scale have a positive sentence structure (1, 2, 3, 5, 6, 7, 8, 9, 12, 14, 15, 16, 18, 19, 20, 22, 24th items) the other 8 items have a negative sentence structure (items 4, 10, 11, 13, 17, 21, 23, 25th items). For the scale to determine the death anxiety level, the lowest 0 and the highest 100 points can be obtained, and a high score indicates a high level of anxiety. However, death anxiety is not expected to be zero. On the contrary, very low death anxiety scores also indicate death anxiety [20, 21]. The Cronbach's alpha value determined for this study is 0.79.

Palliative Performance Scale

The Palliative Performance Scale (PPS), developed by Anderson et al. in 1996, enables the evaluation of the patient's mobility status, activity and disease signs, self-care, nutrition, and consciousness level. The rating level starts from 0% and reaches 100% in increments of 10%. After starting from the mobility status on the far left and finding the most appropriate percentile for the patient in the evaluation, the most appropriate percentile PPS score is assigned to the patient by evaluating the performance areas in the other columns [3, 6]. The lower limit of the PPS score of the patients to be included in our study was determined to be at least 40% so that individuals would not get tired during the interview and not be affected by their level of consciousness.

2.7. Analysis and Evaluation of the Data

Data analysis was performed using SPSS 25.0 software. Mean, standard deviation, and percentage were used to describe the socio-demographic characteristics of the participants. Kolmogorov-Smirnov Test was used for the normality analysis of the data. Significance tests of the difference between the two means, ANOVA, and Post-hoc Tukey's HSD analysis were used. In addition, Pearson's Correlation test and regression analysis were used to determine the relationship between the two scales.

2.8. Ethical Aspect of the Study

Ethics committee approval (İnönü University Ethical Committee, date: 03.11.2020; number: 2020-35/3) and institutional permission from the relevant hospital (13.11.2020/20-352) were obtained in order to conduct the research. After the patients participating in the study were informed about the study, their verbal consent was obtained, and the study was conducted in accordance with the Declaration of Helsinki.

2.9. Limitations of the Study

The results of this study are valid only for the patients participating in the study and cannot be generalized to all palliative care patients.

3. Results

The mean age of the patients was 49.58±9.56, 41.9% were in the 48-52 age group, 53.2% were female, 56.7% had a moderate economic status, 55.7% were married, 48.2% were secondary school graduates, 35.5% were cancer, 62.4% had a disease duration of 5-9 years and 52.1% were hospitalized in the palliative care clinic for 5-10 days (Table 1). No statistically significant difference was found between the HSQ Affiliative and Self-enhancing sub-dimensions and the variables. A statistically significant difference was found between the HSQ Self-defeating sub-dimension and gender and disease diagnosis. It was determined that there was a statistically significant difference between the HSQ

Aggressive sub-dimension and gender, disease diagnosis, and disease duration. A statistically significant difference was found between the death anxiety scale mean score and age group, gender, marital status, and disease diagnosis.

Table 1. Comparison of the participants' Death Anxiety, Humor Styles sub-dimension, and total scores according to the information about sociodemographics

Variables	n	%	Affiliative	Self-Enhancing	Self-Defeating	Aggressive	Death Anxiety
Age Group							
38-42	68	24.1	31.51±2.37	27.30±3.42	20.02±2.90	26.78±2.88	76.22±1.03[d]
43-47	96	34.0	30.70±2.25	28.19±3.60	24.26±1.11	25.05±2.71	80.59±1.46[d]
48-52	118	41.9	31.95±2.04	28.61±3.00	23.40±1.54	26.24±2.35	84.30±1.75[c]
p[a]			0.072	0.128	0.705	0.931	0.023
Gender							
Female	132	46.8	30.10±3.00	27.20±2.77	26.29±1.88	29.52±2.46	83.05±1.92
Male	150	53.2	31.99±2.16	29.63±2.35	20.15±1.63	24.43±2.90	77.60±1.17
p[b]			0.364	0.056	0.030	0.040	0.034
Economic Level							
Poor	63	22.3	29.36±3.19	28.15±2.10	22.00±1.08	26.31±1.55	80.00±2.11
Middle	160	56.7	30.17±2.00	27.08±3.91	23.94±1.35	26.06±1.36	80.15±1.00
Good	59	30.0	32.50±2.36	27.31±3.35	23.18±1.11	26.52±1.09	80.30±1.38
p[a]			0.623	0.980	0.071	0.199	0.080
Marital status							
Single	157	55.7	32.14±3.16	29.52±2.43	23.28±1.03	27.14±1.73	84.33±1.25
Married	125	44.3	30.23±2.60	27.36±2.04	23.96±1.65	25.38±1.05	76.90±1.42
p[b]			0.122	0.500	0.062	0.545	0.032
Education Level							
Primary	68	24.1	30.18±3.80	28.10±1.12	24.17±1.00	27.06±1.70	79.90±1.00
Secondary	136	48.2	31.07±2.32	28.91±1.34	22.35±1.28	24.14±2.10	80.05±1.36
University	78	27.7	32.90±2.16	28.00±2.39	21.61±1.42	25.02±2.33	80.12±1.24
p[a]			0.130	0.106	0.167	0.081	0.144
Diagnosis							
Cancer	100	35.5	29.16±2.10	27.62±2.08	29.44±1.53[c]	30.30±2.14[c]	85.19±1.70[c]
CKD	70	24.8	30.35±2.17	28.19±3.15	23.50±1.61[d]	22.15±2.09[d]	82.21±1.16[d]
CHF	52	18.4	28.60±2.33	28.05±2.66	19.31±1.74[d]	26.40±2.15[d]	78.05±2.20[d]
Stroke	60	21.3	31.47±2.46	29.94±2.13	23.12±1.32[d]	26.55±1.00[d]	78.38±1.42[d]
p[a]			0.187	0.235	0.023	0.030	0.015
Disease Duration							
1-4 years	106	37.6	29.33±2.10	26.62±2.02	23.00±1.25	22.09±2.34	79.14±2.49
5-9 years	176	62.4	32.06±2.13	29.60±2.73	23.15±1.19	30.10±2.50	80.70±1.84
p[b]			0.408	0.711	0.070	0.013	0.058
Hospitalization duration in the palliative care clinic							
1-5 days	135	47.9	30.56±5.47	28.06±5.22	24.50±1.69	26.50±2.55	80.06±2.14
5-10 days	147	52.1	32.66±4.96	27.94±4.85	22.36±1.56	27.79±2.06	80.78±1.90
p[b]			-0.890	0.140	0.004	0.802	0.350

[a] Variance analysis (ANOVA), [b] Independent samples t-test, $p<0.05$, [c] Group with the difference in Post-hoc Tukey's HSD test, [d] Group with no difference in Post-hoc Tukey's HSD test CKD: Chronic Kidney Disease, CHF: Chronic Heart Failure

It was determined that the most frequently used humor style of the patients was "Affiliative Humor" (31.7%), and the least used humor style was "Aggressive Humor" (19.5%). The patients' Humor Styles Scale mean scores were affiliative humor 31.05±7.11, self-enhancing humor 28.34±6.94, aggressive humor 26.85±7.37, self-defeating humor 23.50± 6.21. The death anxiety scale mean scores of the patients were found to be 81.62±9.12 (Table 2).

Table 2. The patients' Humor Styles' sub-dimensions and their mean scores from the death anxiety scale

Scales	n	%	X̄±SD	Min-Max
Humor Styles Questionnaire (HSQ)				
Affiliative humor sub-dimension	89	31.7	31.05±7.11	9-54
Self-enhancing humor sub-dimension	77	27.3	28.34±6.94	8-48
Aggressive humor sub-dimension	61	21.6	26.85±7.37	7-46
Self-defeating humor sub-dimension	55	19.5	23.50±6.21	7-40
Scales	**X̄±SD**		**Min-Max**	
Death Anxiety Scale Total	81.62±9.12		65-95	

The relationship between affiliative humor style and self-enhancing humor style was moderate, positive, and statistically significant (r=0.487; p<0.05). The relationship between affiliative humor style and aggressive humor style was negative, but no significant relationship was found (r=-0.019; (p<0.05). The relationship between affiliative humor style and self-defeating humor style was low, positive, and statistically significant (r=0.155; p<0.05). The relationship between self-enhancing humor style and aggressive humor style was negative, low and no statistically significant relationship was found (r=-0.025; p<0.05). The relationship between self-enhancing humor style and self-defeating humor style was positive, moderate, and statistically significant (r=0.490; p<0.05). The relationship between aggressive humor style and self-defeating humor is positive, low, and statistically significant (r=0.241; p<0.05). In addition, a low negative correlation was found between affiliative humor (r=-0.298; p<0.05) and self-enhancing humor (r=-0.318; p<0.05) and death anxiety. A moderate positive correlation was found between aggressive humor (r=0.450; p<0.05) and self-defeating humor (r=0.427; p<0.05) and death anxiety (Table 3).

Table 3. Correlation Analysis Results of Humor Style Questionnaire (HSQ) sub-dimensions and Death Anxiety Scale

Variables		1	2	3	4	5
1. Affiliative Humor	r	1				
	p					
2. Self-enhancing Humor	r	0.487	1			
	p	0.021*	-			
3. Aggressive Humor	r	-0.019	-0.025	1		
	p	0.105	0.318	-		
4. Self-defeating Humor	r	0.155	0.490	0.241	1	
	p	0.029*	0.031*	0.013*		
5. Death Anxiety	r	-0.298	-0.318	0.450	0.427	1
	p	0.040*	0.016*	0.025*	0.019*	

r: Pearson correlation; *p<0.05

According to Table 4, self-enhancing, affiliative, aggressive and self-defeating humor styles have a significant relationship with death anxiety (R = 0.47). These variables explain 22% of the variance in death anxiety. According to the results of the regression analysis, all the variables of self-enhancing humor (β = 0.16), affiliative humor (β = 0.33), aggressive humor (β = -0.17), and self-defeating humor (β = -0.16) are significant predictors of death anxiety (Table 4).

Table 4. Multiple Linear Regression Analysis Results for the Prediction of Death Anxiety

Variable	B	Sh	β	t	*p*
Constant	78.26	0.21		5.96	p<0.001
Self-enhancing humor	0.09	0.04	0.16	2.31	0.025
Affiliative humor	0.17	0.03	0.33	4.79	p<0.001
Aggressive humor	-0.08	0.03	-0.17	-2.37	0.021
Self-defeating humor	-0.07	0.03	0.16	2.03	0.046

$F = 15.39$, $p < 0.05$; $R = 0.47$, $R^2 = 0.22$

4. Discussion

It is known that humor is the ability to see the positive side of events and situations instead of being serious all the time, and it is one of the effective and healthy methods that provide a different perspective in coping with the difficult experiences of life. In this study, it was seen that the most used humor style by the patients was the affiliative humor style, and the patients used compatible-positive (affiliative and self-enhancing) humor styles more than incompatible-negative (aggressive and self-defeating) humor styles. Studies have shown that patients use affiliative humor more [8, 22]. It is stated that individuals who have compatible-positive humor styles, which include affiliative humor and self-enhancing humor styles, use humor in an accepting way to contribute to themselves and others in order to contribute to their relations with others and improve their social relations in a tolerant and harmless way [9, 12]. Kuiper (2020) stated that affiliative humor, which is one of the compatible - positive humor styles, has a negative relationship with self-actualization and stress [18]. They state that humor positively affects physical health, creates a positive mood in individuals, contributes significantly to mental health, and is an effective method for coping with the negative effects of anxiety [12, 23].

In this study, it was found that there was a significant difference between gender and disease diagnosis, HSQ self-defeating sub-dimension, and aggressive sub-dimension, and death anxiety ($p<0.05$). Women's death anxiety was high, men's self-defeating and aggressive sub-dimension mean scores were high. In some studies, it is stated that men have more aggressive humor, but there is no difference between affiliative and self-enhancing humor, which has positive humor features [10, 24]. However, on the contrary, there are studies stating that men have a more affiliative humor style [11, 25]. According to these results, it can be stated that there is no difference in the use of humor by both genders in terms of using affiliative humor and self-enhancing humor, which are more supportable and acceptable with the influence of social life and culture. The reason why especially male students have an aggressive humor style may be due to the way men are brought up in our society and their aggressive behavior being accepted as normal. In addition, the emergence of different results can be explained by the opinions that the sense of humor differs from society to society and that it arises from difficulties in measuring humor [14, 18]. It was determined that there was a statistically significant difference between the HSQ aggressive sub-dimension and gender, disease diagnosis, and disease duration. A statistically significant difference was found between the death anxiety scale mean score and age group, gender, marital status, and disease diagnosis ($p>0.05$). In the literature, it is stated that women, married, diagnosed with cancer, and elderly individuals have high death anxiety [3, 6]. It is known that cancer is a difficult disease that affects the patient both physically and emotionally. Despite important biomedical advances, cancer is still synonymous with death, pain, and suffering [2, 5]. It is thought that the lack of cancer treatment and the troublesome chemotherapy process increase death anxiety and cause an aggressive humor style. It suggests that the reason for the high death anxiety of women and married people may be related to their greater family and home-related responsibilities. As age increases, people think that they are closer to the end of life and believe that they have more things to do [2, 17].

As a result of the analyzes made to understand the relationship between humor styles, the relationship between affiliative humor and self-enhancing humor was found to be positive and statistically significant (r=0.424, p<.01). Affiliative humor, which is one of the compatible humor styles, includes joking and having fun without harming oneself and others, and a humorous point of view and having fun is the basis of self-enhancing humor [20, 26]. Therefore, a significant relationship was found between the two. Although the relationship between affiliative humor and aggressive humor is not statistically significant, it is negative (r=-0.052; p>.01). The relationship between affiliative humor and self-defeating humor was positive and statistically significant (r=0.21; p<.01). Self-defeating humor, which involves entertaining others by sacrificing oneself, was found to have a significant relationship since it aims to make others laugh even if it is mocking oneself [16, 19]. A negative correlation was found between self-enhancing humor style and aggressive humor style, although it was not statistically significant (r=-0.049; p>.01). The relationship between self-enhancing humor and self-defeating humor is positive and statistically significant (r=0.305; p<.01). Self-defeating humor style was found to be related to self-enhancing humor style because it is a humor style that makes self-sacrifice to make others laugh. Finally, the relationship between aggressive and self-defeating humor is positive and statistically significant (r=0.235; p<.01). A significant relationship was found between aggressive humor and self-defeating humor styles because they are unhealthy and contain ridicule and humiliation [23, 25]. These results support the hypothesis that compatible humor styles may be related within themselves, and incompatible humor styles may be related within themselves [9, 14, 18]. In addition, the same results added to the literature that self-defeating humor style is seen together with compatible humor styles (self-enhancing humor and affiliative humor).

In this study, it was determined that affiliative and self-enhancing humor style decreased death anxiety, while self-defeating and aggressive humor style increased death anxiety. Studies have examined the relationship between humor styles and anxiety, and it has been reported that there are negative relationships between compatible humor styles and anxiety [7, 15]. As a matter of fact, the results of the regression analysis also confirm this finding. Regression analysis results showed that all humor styles were significant predictors of death anxiety. While self-enhancing and affiliative humor styles were found as positive predictors of death anxiety, aggressive and self-defeating humor styles were found as negative predictors. The findings of this study are also in line with the findings of studies stating that individuals who have a high level of humor and use humor constructively have lower levels of anxiety [23, 26, 27]. The findings show that patients with healthy and compatible humor styles, affiliative humor, and self-enhancing humor styles, also have less death anxiety, as well as tend to incompatible humor styles less. The fact that people who use humor in a non-aggressive and tolerant way to facilitate interpersonal relations and reduce tensions, and who enjoy laughing with others and making them laugh, have less anxiety in the face of death anxiety also meets the theoretical expectations [26, 27].

5. Conclusion and Recommendations

As a result, the significant relationships between humor styles and death anxiety revealed that humor is an important variable associated with death anxiety and that humor differs in death anxiety according to whether the patient's use of humor is positive or negative. In addition, it was determined that patients with more aggressive and self-defeating humor styles, which are incompatible and unhealthy humor styles, had more death anxiety. Patients' awareness of this issue can be increased and their ability to use humor as a coping strategy against death anxiety can be improved. Considering that there is a negative relationship between aggressive humor style and affiliative humor, the use of aggressive humor at excessive levels should be avoided. We recommend health professionals consider the patients' humor styles while they plan interventions to decrease the level of death anxiety. We also recommend adding humor styles and death anxiety to the nursing curricula and in-clinic educations. We

recommend further studies to isolate the effect of humor styles on death anxiety in larger populations and various cultural groups.

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We thank the patients for their collaboration.

Ethical Statement

This study was approved by the Non-invasive Ethical Committee of İnönü University (Date: 03.11.2020, Number: 2020-35/3).

Conflict of Interest

The authors declare that they have no conflict of interest.

Authors' Contributions

The authors declare that their contribution to the work is equal.

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