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Research Article

# EVALUATION OF THE RELATIONSHIP BETWEEN VITAMIN D LEVELS IN COPD PATIENTS WITH ACUTE RESPIRATORY FAILURE

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**Abstract:** *Chronic obstructive pulmonary disease (COPD) can be prevented and treated condition that affects patients' quality of life, also one of the important diseases with increased mortality and morbidity due to smoking and increasing age. In our study, we aimed to evaluate the serum D vitamin level in COPD patients with acute respiratory failure and to investigate the effect of vitamin D in COPD stages. This study is a prospective cross-sectional study. The study was conducted with a total of 75 COPD patient groups and 65 control groups. Global Initiative for Chronic Obstructive Lung Disease (GOLD) score, COPD Evaluation Test (CAT) score, and Modified Medical Research Council Dyspnea Scale (mMRC) score were used in the study. All statistical data were analyzed by SPSS 20.0 for Windows. The results were evaluated in terms of p <0.05 significance level. According to the results of our study, vitamin D level in acute exacerbation was lower in patients with the acute obstructive pulmonary disease than in the control group. According to the results obtained in our study, when CAT scores, mMRC scores, vitamin D levels, and gold stages, which are the measured assessment for chronic obstructive pulmonary disease patients, are evaluated; with increasing vitamin D deficiency, patient clinics become more severe. We believe that patients diagnosed with COPD add vitamin D to their treatment protocols according to their vitamin D levels and their vital activities will increase while reducing the severity of COPD.*

**Keywords**: *COPD Patients; Vitamin D; GOLD staging; COPD assessment test; mMRC score*

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## 1. Introduction

According to the World Health Organization and TUIK (Turkish Statistical Institute) data, COPD ranks number three as the cause of death among chronic respiratory diseases [1,2]. Although Chronic Obstructive Pulmonary Disease (COPD) can be prevented and treated, it is a condition that affects an individual's quality of life and is one of the diseases with increased mortality and morbidity due to

smoking and increasing age [3-5]. Since COPD is not only fatal but also leads to disabilities, the number of people with disabilities is increasing day by day [2].

In exacerbation of COPD, unlike the stable COPD phenomenon, it is manifested by an increase in dyspnea, a decrease in daily activation, and a change in sputum amount and color. As COPD disease progresses, the number and severity of exacerbation increase [6]. Also, accompanying chronic health problems (comorbidities) affect the natural course of the disease [7]. Although it is a disease involving the lungs, it may also cause systemic effects [6].

With the development of inflammation in the alveoli as a result of exposure of harmful gases to the bronchi and bronchioles in the lungs, irreversible airflow restriction and respiratory symptoms occur [8,9]. As a result of changes in small airways that are chronically inflamed, restriction occurs during expiration. Although the severity and frequency vary clinically, patients progressively develop shortness of breath, cough, and mucus secretion [7]. Considering that smoking is an important factor in COPD, it has been stated in the literature that vitamin D may play an important role in the pathogenesis and progression of COPD [10]. As changes in the airways increase, the number and severity of COPD also increase [8].

According to GOLD criteria, COPD is diagnosed in the presence of appropriate symptoms and risk factors in case FEV1/FVC ratio is below % 70 after bronchodilator [11]. In addition to spirometric evaluation after 2011 according to the GOLD classification in COPD patients, it was suggested that patients should be evaluated together with the risk of exacerbation, mMRC scale, and COPD assessment questionnaire in the evaluation of current symptom status [11]. In cases where spirometry cannot be used continuously in patient follow-ups, it is important to use these scales in following the clinical course of the patient.

90-95% of vitamin D is a steroid-based vitamin produced in the skin and is also defined as a hormone because it acts in different regions outside of where it is produced [12]. There is a vitamin D receptor in target organs so that vitamin D can show its activity in the human body. 1.25 (OH)2D3 active metabolite shows its activity by binding to the vitamin D receptor (VDR) in target organs. The active metabolite of vitamin D hormone also regulates many genes related to cell differentiation and proliferation [13,14].

Vitamin D, the importance of which was not understood before, is thought to be a risk factor in chronic diseases through the vitamin D receptor (VDR) found in many places in the body. Today, it is known that vitamin D deficiency has effects primarily on bone, and it poses a risk for autoimmune diseases, cardiovascular system diseases, type 2 diabetes, some cancer diseases, and infectious diseases [15,16]. In the literature, vitamin D deficiency has been reported in approximately 40% of European countries [17].

Vitamin D is effective in cellular and humoral immunity [18]. Vitamin D plays an active role in mostly T cells in the immune system [19]. It activates anti-inflammatory mechanisms by activating the anti-inflammatory mechanism in Thelper 2 (Th2) cells and by inhibiting the release of IFN-γ, IL-2, IL-3, and TNF-α in T helper 1(Th1) cells and by inhibiting the activation of the proinflammatory mechanism. In vitamin D deficiency, proinflammatory mechanisms are activated from Th1 cells and they play a role in the etiopathogenesis of autoimmune chronic systemic diseases [20]. Active vitamin D also stimulates the synthesis of antimicrobial peptide-catelicide from 'natural killer' cells and epithelial cells of the respiratory tract [17, 20]. Besides, vitamin D receptors found in vitamin D monocyte and

macrophage epithelial cells also prevent infections from the respiratory tract [17]. In a study on lung diseases and vitamin D levels, it was reported that vitamin D levels had an inverse relationship with mortality [21].

In our study, it was aimed to evaluate serum D vitamin level in COPD patients with acute respiratory failure and to investigate the effect of vitamin D in COPD stages.

## 2. Methods

### 2.1. Study subjects

This study was conducted between 15.10.2019-15.12.2019 and is a prospective cross-sectional study. The study was planned in patients with acute exacerbation of COPD and volunteer healthy control group in the Training and Research Hospital Emergency Medicine Clinic, and the patients and the volunteer control group were informed about the procedures to be performed and an informed volunteer consent form was taken. Also, in the study with scoring systems, it was planned to evaluate the patients with COPD at the level of vitamin D according to their stages. The study was conducted with a total of 75 COPD patient groups and 65 control groups. Age, gender, spirometric staging, COPD evaluation questionnaire, mMRC scale, vitamin D levels, blood gas values of the patients included in the study were recorded. After explaining maneuvers on the first day of referral, the spirometric measurement was performed on the patient group. Patients who came for dyspnea not related to COPD disease, patients who did not agree to participate in the study, and those who used vitamin D preparate were not included in the study.

The patients were staged according to the GOLD guideline updated in 2021. The staging of the score is divided into 4 groups: A, B, C, D [22]. CAT scoring was done with the COPD assessment questionnaire. CAT scoring was divided into 4 groups as 1st group <10 points, 2nd group 11-21 points, 3rd group 21-30 points, 4th group 31-40 points. With the mMRC scale, 5 group staging of patients was made in terms of dyspnea. According to the clinical results of the patients, they were divided into 3 groups as discharge, hospitalization, and intensive care unit.

**Ethical statements:** Before the commencement of the study, the approval of the ethics committee was obtained from the Bozok University ethics committee. (Decision Date and number: 16/10/2019 and 2017-KAEK-189_201910-16_22). The study was conducted in line with the principles of the Helsinki Declaration.

### 2.2. Blood collection and measurement of plasma vitamin D3 level

For vitamin D measurement; Blood samples were collected in disposable, 10 ml, vacuum, anticoagulant, biochemical tubes, 5-7 ml for vitamin d measurement from patients and control groups, and centrifuged at 2500 rpm for 10 minutes, and serum was separated. Separated serums were stored at -80°C until examined. Each serum was only dissolved once on the day of the study. The measured form in the blood is 25 OH vitamin D levels. Under 20 ng/ml, 20-29 ng/ml, 30 ng/ml and higher and over 150 ng/ml were considered as deficiency, insufficiency, normal (normal value 40-60 ng/ml), and intoxication, respectively [23].

### 2.3. COPD clinical parameters

**GOLD staging:** Patients were staged as light (FEV1≥80%), moderate (50%≤ FEV1≤80%), advanced (30%≤FEV1≤50%), and very advanced (FEV1<30%) by performing spirometric staging.

**CAT:** The COPD assessment test was developed by Jones et al. to measure health status in COPD and to assess disease effect and severity [24].

In our country, the validity and reliability study was carried out by Yorgancıoglu et al. [25]. The test, which consists of eight questions, provides information on the rating of the disease, scoring of symptoms, and its effect on the patient's quality of life. It includes problems such as dyspnea, cough, expectoration, as well as symptoms such as fatigue and sleep problems. For each question, scoring is done between 1 and 5 (0: no symptoms, 5: serious symptoms). As a result of the scoring, it is determined that as the scores decrease, the severity of the disease decreases 26 and the health condition improves. According to the scoring, Excellent health: 0 points (minimum score), worst health: 40 points (maximum score) [24].

**mMRC score:** This scale was first used by Fletcher to evaluate lung diseases. The British Medical Research Council (MRC) started using this scale to monitor the natural course of COPD disease [26]. Modified Medical Research Council Dyspnea Scale (mMRC) is quantified disability attributable to breathlessness. It is a five-item scale based on a variety of physical activities that create the feeling of dyspnea. Here, patients are asked to mark the level of activity that causes dyspnea in themselves [27].

**Combined assessment COPD staging:** With the classification of patients as spirometric, it is recommended to determine the level of dyspnea with CAT score or Modified Medical Research Council Scale (mMRC) scores in the evaluation of symptoms [28]. The staging of the score is divided into 4 groups: A, B, C, D.

### 2.4. Statistical analysis

All statistical data were analyzed by SPSS 20.0 for Windows. Kolmogorov Smirnov test and skewness-kurtosis method were used to evaluate the normal distribution of all variables. In addition, the normal distribution of the data was evaluated by the histogram, one of the graphical methods. Descriptive statistics were used in the demographic examination of the patients. Within the scope of clinical research, Chi-Square ($\chi^2$) was used to evaluate independent, categorical variables. In the study data, numerical values are expressed as mean ± standard deviation. The data obtained by the study carried out within the scope of clinical research are statistically nonparametric. For this reason, Kruskal-Wallis H test and Mann-Whitney U tests were used in statistical evaluations according to the categorical (nominal or ordinal) status of the related variables and the numerical independent group. Spearman rank correlation method was used in nonparametric data for correlations between data. The results were evaluated for a significance level of $p < 0.05$.

## 3. Results

78 COPD acute exacerbation patients and 65 healthy control groups participated in the study. The mean age of the patients was 70.82±10.7 years, and the mean age of the healthy control group was 72.2±7.84 years. There was no statistically significant difference between the control and patient groups included in the study in terms of age ($\chi^2$=3.079; p=0.07). 66.7 % (n=52) of the patients in the study were male and 33.3 % (n=26) were female. 63.1% (n=41) of the control group in the study were male

and 36.9% (n=24) were female. There was no statistically significant difference in gender of the participant groups participating in the study ($\chi^2$=4.768; p=0.06). The mean vitamin D of the patient group was 11.3±6.49 ng/ml and the mean vitamin D of the control group was 17.7±8.83 ng/ml. D vitamin level difference between the groups was found statistically significant (Z=-5.303; p≤0.001). According to the clinical results, the mean vitamin D of the patients was 11.54±6.61 ng/ml for those discharged, 9.79±4.73 ng / ml for those hospitalized, 3±0.2 ng / ml for those in the intensive care unit. According to clinical results, this difference in vitamin D levels between the groups was found statistically significant ($\chi^2$=5.634, p<0.05) (Tab. 1).

**Table 1.** Demographic Characteristics Data of Participants

| Demographic Characteristics - Independent Variables (IVs) | Name of Characteristics | Number | Percent (%) | Mean±SD | p |
|---|---|---|---|---|---|
| **Patients Groups Gender** | Female | 26 | 33.3 | | |
| | Male | 52 | 66.7 | | |
| | ***Total*** | 78 | 100 | | |
| **Control Groups Gender** | Female | 24 | 36.9 | | |
| | Male | 41 | 63.1 | | |
| | ***Total*** | 65 | 100 | | |
| **Statistics Analysis** | | | | | 0.06 |
| **Patients Groups Age** | | | | 70.82±10.7 | |
| **Control Groups Age** | | | | 72.2±7.84 | |
| **Statistics Analysis** | | | | | 0.07 |
| **Vitamin D Level Average (ng/ml)** | ***Patients Groups*** | | | 11.3±6.49 | |
| | ***Control Groups*** | | | 17.7±8.83 | |
| **Statistics Analysis** | | | | | 0.001** |
| **Clinical results of patients** | Discharged With Health | 47 | 60.2 | | |
| | Hospitalized | 21 | 27 | | |
| | İntensive Care Unit | 10 | 12.8 | | |
| **Average vitamin D according to the clinical results of the patients(ng/ml)** | Discharged With Health | | | 11.54±6.61 | |
| | Hospitalized | | | 9.79±4.73 | |
| | İntensive Care Unit | | | *3±0.2* | |
| **Statistics Analysis** | | | | | 0.048* |

*$p$<0.01; ** p<0.05

**Table 2.** Statistical results of vitamin D levels of COPD patients according to GOLD classification

| GOLD classification | *Vitamin D Mean±SD(ng/ml)* | $\chi^2$ | *p* |
|---|---|---|---|
| **Group 1 (mild)** | 16.22±6.33 | | |
| **Group 2 (average)** | 8.7±4.05 | | |
| **Group 3 (advanced stage)** | 8.57±4.36 | | |
| **Group 4 (very advanced stage)** | 7.8±3.9 | | |
| **Kruskal Wallis H Statistics Analysis Result** | | 24.706 | 0.001* |

Global Initiative for Chronic Obstructive Lung Disease =GOLD * p<0.01

According to the GOLD classification, mean vitamin D values were Group 1 (mild) 16.22±6.33 ng/ml, Group 2 (average) 8.7±4.05 ng/ml, Group 3 (advanced stage) 8.57±4.36 ng/ml, Group 4 (very advanced stage) 7.8±3.9 ng/ml. A statistically significant difference was found between groups according to the GOLD classification of vitamin D level ($\chi^2$=24.706; p≤0.001) (Tab. 2). When the correlation between the GOLD staging of patients and vitamin D level was evaluated, a statistically negative weak correlation was found ($r_s$=-0.375, p≤0.001) (Tab. 6).

**Table 3.** Statistical results of vitamin D levels of COPD patients according to the COPD assessment test (CAT)

| **The COPD assessment test (CAT) Groups** | ***Vitamin D Mean±SD(ng/ml)*** | $\chi^2$ | ***p*** |
|---|---|---|---|
| **Group 1** | 9.7±9.2 | | |
| **Group 2** | 6.79± 6.14 | | |
| **Group 3** | 6.78±4.92 | | |
| **Group 4** | 6.68±5.42 | | |
| **Kruskal Wallis H Statistics Analysis Result** | | 19.954 | 0.001* |

* p<0.01

Average vitamin D values between CAT groups are shown in Tab. 3. This difference was found statistically significant in the vitamin D levels between CAT groups ($\chi^2$=19.954; p≤0.001) (Tab. 3). When the relationship between the patients' CAT scoring and vitamin D level was evaluated, a moderately negative correlation was found ($r_s$=--0.667, p=0.049) (Tab. 6).

**Table 4.** Statistical results of vitamin D levels of COPD patients according to mMRC staging

| **mMRC score Groups** | ***Vitamin D Mean±SD(ng/ml)*** | $\chi^2$ | ***p*** |
|---|---|---|---|
| **Stage 0** | 11.4±9.85 | | |
| **Stage 1** | 8.38±5.44 | | |
| **Stage 2** | 5.89±3.74 | | |
| **Stage 3** | 5.54±6.06 | | |
| **Stage 4** | 4.63±4.57 | | |
| **Kruskal Wallis H Statistics Analysis Result** | | 23.746 | 0.001* |

**mMRC=**Modified Medical Research Council Dyspnea Scale; *p<0.01

Table 4 shows the average vitamin D levels according to mMRC staging. This difference in vitamin D level in mMRC staging was statistically significant ($\chi^2$=23.746,p≤0.001) (Tab. 4). When the correlation between patients' mMRC staging and vitamin D levels was evaluated, a statistically moderate negative correlation was found ($r_s$=--0.574, p≤0.001) (Tab. 6).

**Table 5.** Statistical results of vitamin D levels of COPD patients according to Combined assessment COPD staging

| **Combined assessment COPD staging** | ***Vitamin D Mean±SD(ng/ml)*** | $\chi^2$ | ***p*** |
|---|---|---|---|
| **Stage A** | 9.43±9.06 | | |
| **Stage B** | 8.53±10.53 | | |
| **StageC** | 6.99±5.98 | | |
| **Stage D** | 6.34±4.85 | | |
| **Kruskal Wallis H Statistics Analysis Result** | | 23.571 | 0.001* |

*p<0.05

**Table 6.** Correlation of Vitamin D Levels of COPD Patients According to Scoring Systems

| **Scoring Systems** | $r_s$ | ***p*** |
|---|---|---|
| **GOLD staging** | -0.375 | 0.001* |
| **The COPD assessment test (CAT)** | -0.667 | 0.049* |
| **mMRC score** | -0.574 | 0.001* |
| **Combined assessment COPD staging** | -0.279 | 0.013* |

*p<0.05

According to the combined assessment of COPD staging, mean vitamin D values are shown in Tab. 5. This difference in the vitamin D level between the stages was found to be statistically significant ($\chi^2$=23.571, p≤0.001) (Tab. 5). When the correlation between the combined stating of the patients and vitamin D level was examined, a statistically negative and weak relationship was determined ($r_s$=-0.279, p<0.05) (Tab. 6).

## 4. Discussion

According to the results of our study, low vitamin D levels were found in healthy and patient individuals. Vitamin D levels found in our study were below the normal vitamin D limits determined by Pludowski in the literature (23). This situation shows us that Turkish society cannot benefit from sunlight sufficiently. In addition, according to the results of our study, vitamin D level was lower in patients with COPD acute exacerbation compared to the control group.

Apart from its effects on bone, the effects of vitamin D on other organs have been investigated recently. It has been reported that vitamin D is an active vitamin D synthesized from T cells and epithelial cells in the action mechanism of respiratory system diseases [29]. In a previous study, they reported that the relationship between COPD and vitamin D deficiency was due to an increase in inflammation, a decrease in pulmonary functions, and a decrease in immunity [30]. In another study, they reported that vitamin D levels were low in all stages of COPD disease compared to people without COPD [31]. In a study conducted in the literature, it was reported that vitamin D affects spirometric functions, but they could not find its relationship with COPD [32]. In our study, unlike that study, vitamin D was found to be higher in patients with mild stage than advanced COPD patients in staging according to GOLD classification. When evaluated in the symptomatic stages added after 2011 in the GOLD guideline, those with high CAT scores according to the COPD assessment test (CAT) also have low vitamin D levels, and as the CAT score increases, the severity and number of exacerbation of COPD increases. Low vitamin D suggests that it affects the severity of COPD disease and the number of exacerbations. In their studies, Erdinç et al. reported that CAT scoring correlated with GOLD spirometric scoring [33]. In our study, all scoring systems are similar to the literature and show correlation with each other. It is reported in the literature that there is a correlation between lung functions and vitamin D levels in the general population [34]. In a study conducted in Belgium, it was reported that vitamin D decreased COPD exacerbation [35]. The results in our study correlate with this study. While vitamin D itself is an antioxidant, it also increases antioxidant mechanisms [36]. Therefore, we think that vitamin D alleviates the course of the disease due to its antioxidant function in diseases that develop in the inflammatory process. Some of the studies with vitamin D supplements did not provide additional benefits to individuals with COPD, but in some studies, a reduction in exacerbation has been reported in patients with severe vitamin D deficiency [37, 38, 39]. In another study, they reported to COPD patients that their quality of life increased after vitamin D supplementation, but there was no mortality and hospitalization effect [40]. In our study, unlike this study, when the clinical results are evaluated, we see that the patients' clinical course and hospitalization rates increase as the vitamin D level decreases. Although COPD disease starts at around 30s, the severity of the disease increase with the advancement of age as with the decrease in the mobility of the patients. People feel the effects of vitamin D deficiency more due to the vitamin D receptors throughout the body, which affect the muscular system, cardiovascular system, and respiratory system. Based on the results of our study, when

CAT scoring, mMRC scoring, and vitamin D levels, besides the gold staging, which is the spirometric evaluation in COPD patients, are considered; the patients' clinics become more severe as the vitamin D deficiency increases.

## 5. Conclusion and Recommendations

It suggests that the clinical course of these patients has been affected by the increase in the level of vitamin D in COPD patients and the increase in the severity of the disease in all 3 scorings. We think that the patients who are diagnosed with COPD add vitamin D to their treatment protocols according to their vitamin D levels, and their vital activities will increase with decreasing the severity of COPD disease.

**Ethical statements:** Before the commencement of the study, the approval of the ethics committee was obtained from the Bozok University ethics committee. (Decision Date and number: 16/10/2019 and 2017-KAEK-189_201910-16_22). The study was conducted in line with the principles of the Helsinki Declaration.

**The compliance to Research and Publication Ethics**: This work was carried out by obeying research and ethics rules.

**Conflict of Interest Statement:** The authors reported that there was no conflict of interest.

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Research Article

# THE EFFECTS OF A STRUCTURED TRAINING PROGRAM ON THE IDENTIFICATION AND EVALUATION OF FORENSIC CASES BY NURSES

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**Abstract:** *This study was conducted to determine the effect of a structured education program on the ability of nurses to identify and evaluate forensic cases. The study is an intervention study with a pre-test, post-test, and follow-up test design. The population of the study is composed of 130 nurses working in a University Research and Application Hospital in Central Anatolia in Turkey. The sample size was not calculated as the aim was to reach the whole population. The study was completed with 42 nurses who agreed to participate in the study. The data of the study were collected by using the Nurse Information form and Forensic Cases Identification and Evaluation Knowledge form. The pre-test was done one week earlier than the training, the post-test was done just after the training, and follow-up was done one month later after the training. The average age of the nurses was found to be 30.11±4.87, 69% of the participants were married, and 59.5% hold a bachelor's degree. When nurses' Forensic Case Identification and Evaluation Information Form mean scores were compared, the mean score was 4.57±1.98 in the pre-test, 11.73±4.09 in post-test, and 9.88±3.40 in follow-up done one month later. It was determined that there was a significant increase in nurses' average of the post-test and follow-up scores according to pre-test ($p<0.05$). It was found that the number of the nurses' correct answers regarding the collection of evidence increased significantly after training and in the follow-up. It has been determined that education has a positive effect on the level of knowledge about the identification and assessment of forensic cases. It is recommended that nurses be given in-service training on the evaluation of forensic cases and evidence identification, collection, and recording. Also, forensic nursing certificate programs can be made more common.*

**Keywords**: *Nurse, Forensic case, Structured education*

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## 1. Introduction

All injuries which result from intentional, careless, and inattentive behavior of another, from incompetence in the profession, or from not complying with the instructions and orders and the injuries which cause suspicion of poisoning and whose purpose is suicide are defined as forensic cases. Also, all accidents involving trauma are considered possible forensic cases until the reason behind the accident is uncovered [1]. In case of a forensic case, nurses are one of the first group of healthcare personnel both the victim and the offender encounter. Thus, forensic nurses who have received specialized education or special training in forensic medicine have critical importance within the forensic team [2]. Forensic nurses have roles and responsibilities in criminal cases such as becoming aware of the incident, filing the story about the forensic case, physical evaluation, forensic examination, collecting and storing biological and physical evidence, protecting the safety chain, writing up the forensic report, and providing support to the victims and their relatives. However, the job definition of forensic nurses has not yet been made in our country. Thus, the roles and responsibilities of forensic nurses have to be fulfilled by clinic nurses [2,3].

Clinical nurses play an active role in forensic cases. It is not a new situation for nurses to encounter forensic cases; however, they cannot adopt the right approach in forensic cases as they do not have sufficient knowledge and experience about forensic medicine and forensic nursing [4]. It is possible that nurses without sufficient knowledge and experience do not realize the evidence and do not know the procedures and techniques of identifying, collecting, and storing evidence. As a result, evidence can be damaged, lost, or destroyed, which is an undesirable situation [5,6]. However, a mistake or an incomplete practice during the medical examination of a forensic case may affect the analysis of the case, and thus on the result.

Lack of knowledge and experience in forensic medicine not only affects the forensic review process but may also cause health care personnel to receive legal punishment. The purpose of the Penal Code is to protect individual's rights and freedoms, public order, and security, the rule of law, peace in the community, public health, and the environment and preventing crime [7]. As stated in Article 280 of the Turkish Penal Code, a health care Professional (physicians, dentists, pharmacists, midwives, nurses, etc.) who do not report a crime to the authorities or who has been delayed in reporting it despite having an indication on duty that a crime was committed, is sentenced to maximum one-year imprisonment. No law in Turkey clearly expresses the concept of forensic nursing, but as one of the most common health personnel with forensic incidents, nurses should be able to cope with this situation competently. Because the criminal law states that, all health personnel has criminal liability in case of negligence or postponement of duty. Also, a health care professional who does not have sufficient knowledge and skills in forensic medicine and evaluation may violate the law without knowing about the article in question. However, it should not be forgotten that as Article 4 of the Turkish Penal Code states, “Ignorance of the law does not excuse” [7].

Scientific research studies have revealed that the vast majority of nurses encounter forensic cases, that there are deficiencies in collecting and storing forensic evidence, delivering it to the relevant authorities, and evaluating forensic cases, and that education and approaches related to forensic cases are not adequate [8,9]. A study conducted with emergency nurses showed that 95 percent of the nurses have not received education about forensic nursing [10]. The importance of the correct nursing approach to forensic cases has recently been acknowledged, and forensic nursing courses have been included in

the undergraduate and graduate curricula of the nursing departments of many universities [11-13] as elective courses. This situation shows that attempts are made to increase the awareness of nurses in forensic cases.

Developments in forensic nursing in Turkey have begun to take place in recent years. The number of scientific meetings and certified courses related to forensic nursing has increased. Moreover, as mentioned earlier, forensic nursing has gained importance in nursing education. As a result, it is believed that nurses who have received special education in forensic medicine and forensic evaluation during their undergraduate education or after graduation through in-service training or certificate programs contribute greatly to the team making the forensic evaluation and to the solution of a forensic case [2]. Furthermore, nurses' ability to make forensic assessments and the theoretical knowledge they have on this issue will both accelerate the development of forensic nursing and affect the overall quality of forensic evaluations positively.

## 2. Material and Methods

### 2.1. Aim of the study

This study was conducted to determine the effect of a structured education program on the ability of nurses to identify and evaluate forensic cases.

### 2.2. Research Question

- Does a structured education program affect the ability of nurses to identify and evaluate forensic cases?

### 2.3. Setting and samples

The study is an intervention study with a pre-test, post-test, and follow-up test design. The population of the study is composed of 130 nurses working in a University Research and Application Hospital in Central Anatolia in Turkey. The sample size was not calculated as the aim was to reach the whole population. Nurses who agreed to participate in the study and whose working hours do not prevent them from attending the training were included in the study. Nurses who did not attend all of the training were excluded from the study.

The study was concluded with 42 nurses who gave their consent to participate in the study. At the end of the research, a power analysis was conducted with the data of the research itself. 95% confidence interval and $p = 0.05$ significance level were used for power analysis. As a result of the power analysis, the power of the study was found to be 0.87. The group was divided into two according to the worklist of the nurses. Because the nurses were divided into two groups to ensure education dynamics and to increase the effectiveness of education.

### 2.4. Ethical Considerations

To conduct the study, institutional permission was received from the University, Research and Application Hospital Dean's Office. Ethical approval was obtained from Bozok University, Research and Application Hospital Ethical Committee (Decision number: 2018-KAEK-189_2018.01.25_18; Date: 25.01.2018). Written and verbal consent was obtained from the nurses participating in the study.

### 2.5. Data Collection Tools

***Nurse Information Form:*** The form consists of six questions developed through literature review [14, 15]. The form includes questions about the participants' age, marital status, level of education, duration of work, and previous forensic evaluation training

***Forensic Cases Identification and Evaluation Knowledge form:*** The data were collected through a form that includes 32 questions developed by the researchers reviewing the literature [4, 14-17]. The form aimed at determining the knowledge levels of nurses regarding the identification of forensic cases, evidence protection chain, and collecting evidence. The form includes three sections.16 questions are about forensic case definition and types of forensic cases. 6 questions are about evidence protection chain (The package/ envelope containing the evidence should be sealed and sealed with tape. It is important to write on the envelope when the evidence is collected, whoever receives the evidence should write his name and position in the notebook, etc.). 10 questions are about collecting evidence such as hair, blood, urine, semen, saliva, gunpowder, etc., evaluating and photographing wounds, and removing clothes in the section on collecting evidence in forensic cases.

Expert opinion was obtained to evaluate the questionnaire. In the question form, each statement answered correctly was given 1 point, and each incorrect answer was given 0 points. The scores they got from the correct answers were collected and their level of knowledge was calculated.

### 2.6. Data Collection

To evaluate the clarity of the designed data collection tools, ease of answering the questions, and the response time, five nurses were applied the data collection forms two weeks before the education program. Following the pre-application, the questions forms were not changed.

***First Stage- Pre-test:*** The first stage was conducted about one week before the education. The researcher explained the aim of the study to the voluntary participants, and oral and written consent was obtained from them. The forms were filled in under the supervision of the researcher in about 20 minutes.

***Second Stage-Post test:*** The individuals who gave their consent to take part in the education group were given the structured education program. The education was given in two sessions by the same researcher. The education program was implemented once a week in a 40-minute session. In the first session, the types of forensic cases and approaches to forensic cases were discussed. In the second session, the collection of evidence, the roles, and responsibilities of the nurse were explained and participants were asked to evaluate the training program. The second stage of the research was performed immediately after training.

***Follow-up Stage:*** The third measurement was performed one month after training to measure the effect of time.

### 2.7. Data Analysis

The data were analyzed on the computer. While analyzing the data, descriptive statistical methods (Percentage calculations, Mean, Median, and Standard Deviation), Paired Sample T-Test, and Repeated Measures Anova were used. The results were found significant at a 95% confidence interval ($p<0.05$).

## 3. Results

The average age of the nurses was found to be 30.11±4.87; 69 percent of the participants were married, and 59.5% hold a bachelor's degree. Average years of work experience was found to be 7.54±4.36, and 40.5% of the participants have been working in the intensive care unit. 81% of the nurses stated that they have not received any education on forensic evaluation (Table 1).

**Table 1.** Distribution of Nurses based on their Descriptive Characteristics and Forensic Evaluation Education Status

| **Characteristic** | | |
|---|---|---|
| | $\bar{X}$ | **±SD** |
| **Age** | 30.11 | ±4.87 |
| **Nursing experience (year)** | 7.54 | ±4.36 |
| | **n** | **%** |
| **Marital status** | | |
| Married | 29 | 69.0 |
| Single | 13 | 31.0 |
| **Education level** | | |
| High school* | 11 | 26.2 |
| Associate degree | 6 | 14.3 |
| Bachelors | 25 | 59.5 |
| **Working services** | | |
| Internal medicine | 10 | 23.8 |
| Surgical services | 7 | 16.7 |
| Intensive care | 17 | 40.5 |
| Others | 8 | 19.0 |
| **Previous forensic evaluation training** | | |
| Yes | 8 | 19.0 |
| No | 34 | 81.0 |
| **Total** | 42 | 100.0 |

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The distribution of nurses' responses regarding the chain of evidence protection is included in Table 2. It was determined that 52.4.3% (Posttest: 64.3%, Follow-up:54.8%) of the nurses know that all the evidence should be placed in a single envelope before the training, and 33.3% (Posttest: 42.9%, Follow-up:42.9%) know that the identity information of the person collecting the evidence should remain open. In addition, it was found that 45.2.8% (Posttest: 69. %, Follow-up:59.5%) of the nurses know that they should write their name and position in the evidence notebook. It was determined that the correct answers given by the nurses to the questions about the chain of evidence protection before the training increased after the training. When the follow-up was examined, it was found that the number of correct answers in the last test remained the same or decreased.

**Table 2.** Distribution of Nurses' Responses Regarding the Chain of Evidence Protection (n:42)

| Questions on the chain of evidence protection | Pretest | | Posttest | | Follow-up | |
|---|---|---|---|---|---|---|
| | n | % | n | % | n | % |
| **All evidence should be placed in a single envelope.*** | | | | | | |
| True | 22 | 52.4 | 27 | 64.3 | 23 | 54.8 |
| False | 20 | 47.6 | 15 | 35.7 | 19 | 45.2 |
| **The package/envelope containing the evidence should be sealed and sealed with tape.** | | | | | | |
| True | 38 | 90.5 | 39 | 92.9 | 39 | 92.9 |
| False | 4 | 9.5 | 3 | 7.1 | 3 | 7.1 |
| **The package/envelope should include the name of the individual, the individual's protocol number, date of birth, what the sample is, where and when it was received.** | | | | | | |
| True | 35 | 83.3 | 41 | 97.6 | 39 | 92.9 |
| False | 7 | 16.7 | 1 | 2.4 | 3 | 7.1 |
| **The identity of the person collecting the evidence must remain confidential.*** | | | | | | |
| True | 14 | 33.3 | 18 | 42.9 | 18 | 42.9 |
| False | 28 | 66.7 | 24 | 57.1 | 24 | 57.1 |
| **It is important to write on the envelope when the evidence is collected.** | | | | | | |
| True | 36 | 85.7 | 41 | 97.6 | 40 | 95.2 |
| False | 6 | 14.3 | 1 | 2.4 | 2 | 4.8 |
| **Whoever receives the evidence should write his name and position in the notebook.** | | | | | | |
| True | 19 | 45.2 | 29 | 69.0 | 25 | 59.5 |
| False | 23 | 54.8 | 13 | 31.0 | 17 | 40.5 |

*****In these statements, the nurses were expected to answer"This statement is wrong".

The distribution of nurses' answers regarding the collecting of evidence is included in Table 3. It was determined that 16.7% of the nurses knew how the hair sample was collected before the training; this rate increased to 81% in the posttest and was 76.2% in the follow-up. It was determined that 7.12% of the nurses knew how the blood sample was collected before the training, this rate increased to 40.5% in the posttest and was 38.1% in the follow-up. It was found that the number of the nurses' correct answers regarding the collection of evidence increased significantly after training and in the follow-up.

When the averages of the scores nurses received from the judicial case identification and evaluation information form are compared, it was revealed that the pretest score average was 4.57±1.98, while the posttest score average was 11.73±4.09 and the follow-up test score averages obtained one month after education was 9.88±3.40. A statistically significant difference was observed between the iterative measurement values ($p$<0.001). Pretest score averages were found to be lower compared to posttest and follow-up score averages. It was further revealed that the posttest score average was higher than the scoring average of the follow-up test (Table 4).

**Table 3.** Distribution of Nurses' Answers Regarding the Collection of Evidence (n:42)

| Types of Evidence | Pretest | | Posttest | | Follow-up | |
|---|---|---|---|---|---|---|
| | n | % | n | % | n | % |
| **Hair** | | | | | | |
| True | 7 | 16.7 | 34 | 81.0 | 32 | 76.2 |
| False | 35 | 83.3 | 8 | 19.0 | 10 | 23.8 |
| **Blood** | | | | | | |
| True | 3 | 7.1 | 17 | 40.5 | 16 | 38.1 |
| False | 39 | 93.9 | 25 | 59.5 | 26 | 61.9 |
| **Urine** | | | | | | |
| True | 1 | 2.4 | 9 | 21.4 | 11 | 26.2 |
| False | 41 | 97.6 | 33 | 78.6 | 31 | 73.8 |
| **Semen and Saliva** | | | | | | |
| True | 2 | 4.8 | 18 | 42.9 | 14 | 33.3 |
| False | 40 | 95.2 | 24 | 57.1 | 28 | 66.7 |
| **Non-Genital Injuries** | | | | | | |
| True | 1 | 2.4 | 13 | 31.0 | 14 | 33.3 |
| False | 41 | 97.6 | 29 | 69.0 | 28 | 66.7 |
| **Genital Injuries** | | | | | | |
| True | 3 | 7.1 | 18 | 42.9 | 14 | 33.3 |
| False | 39 | 92.9 | 24 | 57.1 | 28 | 66.7 |
| **Emotional Status** | | | | | | |
| True | 2 | 4.8 | 12 | 28.6 | 9 | 21.4 |
| False | 40 | 95.2 | 30 | 71.4 | 33 | 78.6 |
| **Clothes** | | | | | | |
| True | 1 | 2.4 | 27 | 64.3 | 24 | 57.1 |
| False | 41 | 97.6 | 15 | 35.7 | 18 | 42.9 |
| **Nail Scrap** | | | | | | |
| True | 2 | 4.8 | 13 | 31.0 | 12 | 28.6 |
| False | 40 | 95.2 | 29 | 69.0 | 30 | 71.4 |
| **Gunpowder** | | | | | | |
| True | 0 | 0 | 23 | 54.8 | 24 | 57.1 |
| False | 42 | 100.0 | 19 | 45.2 | 18 | 42.9 |

**Table 4.** Distribution of the Forensic Cases Identification and Evaluation Information Form Scores of Nurses

| | Pretest X±SD | Posttest X±SD | Follow-up X±SD | Test* | Test** |
|---|---|---|---|---|---|
| **Forensic Cases Identification and Evaluation Knowledge Level** | 4.57±1.98[1] | 11.73±4.09[2] | 9.88±3.40[3] | p<0.001 | 1<2,3<br>2>3 |

*Repeated Measures Anova **Paired Sample T-Test

## 4. Discussion and Conclusions

In Turkey, there are no laws or regulations concerning forensic nursing [17], whereas the duties and responsibilities of nurses who may encounter forensic cases were determined by laws and regulations. Furthermore, in our country, the nursing undergraduate curriculum does not adequately address content such as approaches to forensic cases, types of cases, evidence collection, and the roles

and responsibilities of forensic nurses [18]. Consistent with the literature, this study also revealed that 81.0 percent of the nurses have not received an education on approaches to forensic cases. In their study conducted with the nurses working in emergency clinics, İlce et al. (2010) found that 65.9 percent of the participants have not participated in any conferences, seminars, or in-service training about forensic cases, and 52.3 percent of the nurses did not read publications on forensic issues [8]. Another study conducted by Gökdoğan and Erkol (2005) with nurses and nursing instructors revealed that 83.8 percent of the participants had no idea about forensic nursing and the duties of forensic nurses [9]. In a study, Topçu and Kazan (2018) have asked students about their opinions on forensic nursing, 94.7% of the students stated that there should be a field of forensic nursing in Turkey, and 42.1% of them stated that elective courses on forensic nursing should be offered in college [19]. The results of the study clearly show that nurses do not have sufficient knowledge about forensic nursing in our country.

In our study, it is seen that the level of knowledge of the nurses who were given education on types of cases, approaches to forensic cases, evidence collection, and storage increased. Moreover, it was observed through the follow-up test that the effectiveness of the education program continued even one month after the education. In a study conducted by Şentürk and Büyükaslan with students, 84% of the participants had no knowledge about forensic nursing, and 16% were partially informed; when those who were partially informed asked about where they got the information, they answered that they obtained the information from seminars, magazines, and the internet. Also, only 12% of the students in that study reported that they had encountered a forensic case [20]. Not knowing the type of evidence, and the ways of identifying, collecting, and storing evidence may lead to the loss of evidence during treatment and care and may make forensic evaluation even more difficult [21]. Our findings indicate that subjects of forensic nursing (collecting and storing the evidence, chain of evidence protection, etc.) should be included in the curriculum of all nursing education programs and graduate programs should impart the necessary knowledge and skills to the nurses [17]. In a study assessing the knowledge level of the healthcare personnel on forensic cases, Çalışkan and Özden reported that 73% of the health personnel did not receive training, and 17.5% of the trained ones did not find the training sufficient [22]. In the literature, we did not find any study examining the effect of a training program on forensic nursing. However, the findings of our study and other descriptive studies show that nurses have a serious need for training in forensic nursing and this need can be met with the training.

In the nursing profession, nurses may encounter forensic cases. As stated in Article 280 of the Turkish Penal Code, a health care professional, who does not report a crime to the authorities or who has been delayed in reporting it despite having an indication on duty that a crime was committed, is sentenced to a maximum of one-year imprisonment [7]. This law emphasizes the importance of nurses' approaches to forensic cases. It is believed that the education given in this study has contributed to the evaluation of forensic cases, for which nurses are responsible according to the law, and has improved the knowledge, understanding, and approaches of the nurses by drawing their attention to forensic cases **[**4]. The study revealed that the structured education program has had a positive effect on the knowledge levels of nurses regarding the identification and evaluation of forensic cases. As a result, it is an inevitable fact that nurses need training about the evaluation of forensic cases in our country and our study results also support that. In this respect, it is recommended to comprehensive training studies with different samples, enriched with interactive training techniques.

## 5. Recommendations

It is recommended that nurses be given in-service training on the evaluation of forensic cases and evidence identification, collection, storage, and recording and that forensic nursing certificate programs be made more common.

**Ethical Considerations:** To conduct the study, institutional permission was received from the University, Research and Application Hospital Dean's Office. Ethical approval was obtained from Bozok University, Research and Application Hospital Ethical Committee (Decision number: 2018-KAEK-189_2018.01.25_18; Date: 25.01.2018). Written and verbal consent was obtained from the nurses participating in the study.

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Research Article

# PEDIATRIC NURSES' ATTITUDES REGARDING MALPRACTICE TENDENCIES AND PATIENT SAFETY CULTURE: A CASE OF TURKEY

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**Abstract:** *Patient safety and medical errors are among the most discussed topics in recent years. Identifying and reporting medical errors is one of the most significant steps toward the adoption of measures to increase patient safety. Pediatric nurses provide care to children, which is why they play an essential role in preventing medical errors and ensuring patient safety. This cross-sectional and descriptive study was conducted to determine the relationship between pediatrics nurse's malpractice tendencies and patient safety culture in Turkey. The study was conducted in the pediatric clinics of a university hospital and a public hospital in a metropolis in the northern region of Turkey. The study population included 142 nurses. A 'Nurse Information Form', a 'Patient Safety Culture Scale (PSCS)', and a 'Malpractice Tendency Scale in Nursing (MTSN)' were used to collect information. Data were analyzed by using SPSS 16 program, descriptive statistics, Independent Two-Sample t-test, one-way analysis of variance (ANOVA), Tukey test, Tamhane test, Mann Whitney U, Kruskal Wallis test and Pearson correlation tests. Nurses who had a master's degree, made a medical error, and observed medical errors made by another colleague had a higher mean MTSN score ($p<0.05$). Nurses aged 46 and older, with a master's degree, that worked in the pediatric unit as a manager had a higher total mean PSCS score ($p<0.05$). A positive and significant relationship was found between total mean PSCS and MTSN scores. This study found that pediatric nurses' level of malpractice tended to be low and their level of patient safety culture perceptions high, which is significant in terms of quality of patient care.*

**Keywords:** *pediatrics, nursing, patient safety, medical error*

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## 1. Introduction

Medical errors are undesirable events that can happen to patients while in the care of health professionals during diagnosis, treatment, care, or aftercare, and can directly affect their life and medical condition [1]. While medical errors are significant for all health professionals, nurses are in direct charge

of patient care; therefore, there is a high possibility of putting patients' lives in danger with erroneous practices, thereby increasing the significance of medical errors for nurses [2]. Preventing medical errors and ensuring patient safety are considered fundamental practices in every stage of health care delivery [3].

Patient safety, a significant component of delivering quality care in health services, involves individual and organizational behaviors based on beliefs and targets with the aim of reducing medical errors to an acceptable level [4]. Effective communication, teamwork, motivative working conditions, and leadership in health care services support a culture of patient safety and contribute to the adoption of preventive measures, institutional learning, and the elimination of punishment as a means of error prevention [5]. Attention to patient safety by nurses within the health care team is a significant and necessary role in recovery and the development of a quality health care environment [6].

Hospitals are environments that can be dangerous for infants and children while outside of their usual environment [7]. Physiological and cognitive development is rapid during childhood, and children are dependent on adults for the fulfillment of their health care needs. These attributes may lead children to be exposed to medical errors more than adults [8]. Nurses and hospital administrators must be cognizant of events that may increase medical errors and take necessary measures to prevent children and families from damages. Pediatric nurses must also protect themselves from legal consequences as a result of medical errors resulting in patient damage, increasing the significance of patient safety practices in pediatrics clinics [9].

This study was conducted to determine the attitudes pediatric nurses' relationship between regarding malpractice tendencies and patient safety culture in Turkey.

## 2. Methods

### 2.1. Sample and Design of the Study

This was a cross-sectional and descriptive study and was conducted in the pediatric clinics of a university hospital and a public hospital in a metropolis in the northern region of Turkey between May 7, 2018, and May 28, 2018. The study population included 190 nurses the study in pediatrics clinics for at least one year. The study sample included 142 nurses who met the inclusion criteria and the participation rate was 75 %.

### 2.2. Research Instrument

Study data were collected using a Nurse Personal Information Form, Malpractice Tendency Scale in Nursing **(MTSN),** and Patient Safety Culture Scale **(PSCS)**.

**Nurse Personal Information Form:** This form included 15 questions examining sociodemographic characteristics and medical error experiences of the participant nurses.

**Malpractice Tendency Scale in Nursing (MTSN):** Altunkan (2009) developed this scale and tested its validity and reliability to measure the malpractice tendency levels of nurses directly in charge of patient care. The scale included 49 items and 5 subscales: medicine and transfusion practices (18 items), hospital infections (12 items), patient monitoring and equipment safety (9 items), falls (5 items), and communication (5 items). A higher total score indicated a lower level of malpractice tendency while a lower total score indicated a higher level of malpractice tendency. Altunkan found the scale's Cronbach's Alpha reliability coefficient to be 0.95 [10]. This study found the Cronbach's Alpha

reliability coefficient of the **MTSN** to be 0.82 and Cronbach's Alpha reliability coefficients of the subscales to be between 0.80 and 0.89.

**Patient Safety Culture Scale (PSCS):** Türkmen et al. (2011) developed this scale which included 51 items in five subscales as follows: management and leadership (17 items), employee behavior (14 items), unexpected event and error reporting (5 items), employee training (7 items), and care environment (8 items). In calculating the total scale score, the mean scores of the five subscales were added and the total was divided by five, which gave a scale score between one and four. A mean score close to four indicated a positive patient safety culture while a mean score close to one indicated a negative patient safety culture. Türkmen et al. (2011) found the Cronbach's Alpha reliability coefficient of the PSCS to be 0.97 and Cronbach's Alpha reliability coefficients of subscales between 0.83 and 0.92 [11]. This study found the Cronbach's Alpha reliability coefficient of the PSCS to be 0.89 and Cronbach's Alpha reliability coefficients of subscales to be between 0.79 and 0.92.

### 2.3. Data Collection

Data were collected on 7-28 May 2018. Firstly, the study's aim was expressed by the researcher to the nurses working in the hospitals where the studies were conducted. Nurses completed the questionnaires while on duty, in their room in services. Nurses completed the surveys within 15-20 minutes and all completed surveys were then placed in an envelope and returned to the researcher. No payment was made to the nurses for involvement in the survey.

### 2.4. Statistical Analysis

The data obtained from the study were evaluated using the SPSS 16.0 software program (SPSS Inc., Chicago II, USA). Parametric tests (the independent two-sample t-test, one-way analysis of variance (ANOVA), and Tukey's test) were used to analyze data with normal distribution and nonparametric tests (Mann-Whitney U and Kruskal-Wallis tests and Tamhane's T2) were used to analyze data without normal distribution. Pearson's correlation analysis was performed to investigate possible correlations between attitudes toward patient safety and tendencies towards medical errors. For all the analyses, $p<0.05$ was considered statistically significant.

### 2.5. Ethical Consideration

The study was conducted after formal permission for the study was obtained from the Directorates of the Hospitals and the Ethics Commission of the Ondokuz Mayıs University hospital (IRB file no: OMU-KAEK 2018-170, date: 30.04.2018). Before the launch of the research, nurses were informed about the subject and the objectives of the research. Personal information remained confidential and was only used for the research data. Verbal and written permission was obtained from the nurses who volunteered to participate in the research. All participants voluntarily agreed to participate in the study, which was carried out in accordance with the Helsinki Declaration Principles.

## 3. Results

Of the nurse participants, 51.4% were between the ages of 26 and 35, 96.5% were female, 73.9% were married, 61.3% had a bachelor's degree, and 52.1% had 1-10 years of professional experience. Nurses worked mostly in neonatal services (39.4%) and in pediatric services (23.2%). Of the nurses, 91.5% worked as clinic nurses, 79.6% worked 40 to 48 hours a week, 68.3% worked both night and day

shifts, and 66.2% cared for 1-10 patients a day. While 11.3% of the nurses admitted making a medical error during their professional life, 60.6% indicated observation of a medical error made by their colleagues (Table 1).

**Table 1.** Descriptive Characteristics of Pediatric Nurses (N: 142)

| | Sub-variables | Number (n) | Percentage (%) |
|---|---|---|---|
| **Age (years)** | 20-25 years | 12 | 8.5 |
| | 26-35 years | 73 | 51.4 |
| | 36-45 years | 50 | 35.2 |
| | 46 -54 years | 7 | 4.9 |
| **Gender** | Female | 137 | 96.5 |
| | Male | 5 | 3.5 |
| **Marital Status** | Married | 105 | 73.9 |
| | Single | 37 | 26.1 |
| **Educational Level** | High School | 11 | 7.7 |
| | Associate's Degree | 32 | 22.5 |
| | Bachelor's Degree | 87 | 61.3 |
| | Master's Degree | 12 | 8.5 |
| **Professional experience duration (years)** | 1-10 | 74 | 52.1 |
| | 11-20 | 45 | 31.7 |
| | 21-30 | 23 | 16.2 |
| **Unit worked in** | Neonatal intensive care | 56 | 39.4 |
| | Pediatric intensive care | 24 | 16.9 |
| | Pediatric service | 33 | 23.2 |
| | Pediatric emergency | 16 | 11.3 |
| | Pediatric surgery | 13 | 9.2 |
| **Task** | Nurse supervisor | 12 | 8.5 |
| | Clinic nurse | 130 | 91.5 |
| **Weekly working hours** | 40-48 hours | 113 | 79.6 |
| | 49-58 hours | 20 | 14.1 |
| | 59 -72 hours | 9 | 6.3 |
| **Shift type** | Day | 25 | 17.6 |
| | Night | 20 | 14.1 |
| | Day and night (mixed) | 97 | 68.3 |
| **The mean number of patients provided care daily** | 1-10 | 94 | 66.2 |
| | 11-30 | 27 | 19.0 |
| | 31-50 | 21 | 14.8 |
| **Made a medical error** | Yes | 16 | 11.3 |
| | No | 126 | 88.7 |
| **Observed a medical error made by other nurses** | Yes | 86 | 60.6 |
| | No | 56 | 39.4 |

The mean MTSN score was 236.76±10.57, with a median value of 241. The lowest score was 198 and the highest score was 245. The mean PSCS score was 166.84±27.59, with a median value of 155. The lowest score was 113 and the highest score was 204. The mean subscale scores of these two scales are presented in Table 2. Of the MTSN subscale mean scores, medicine, and transfusion practices was 88.23±3.17, falls was 23.97±1.77, hospital infections were 57.96±3.08, patient monitoring and equipment safety was 41.95±3.66, and communication was 24.27±1.43. Of the mean subscale scores of PSCS, management and leadership were 55.51±9.11, employee behavior was 45.07±7.56, unexpected event and error reporting was 16.03±3.19, employee training was 22.90±4.21, and care environment was 25.87±4.83 (Table 2).

**Table 2.** Descriptive Statistics of Pediatrics Nurses' Malpractice Tendency Scale in Nursing (MTSN) and Patient Safety Culture Scale (PSCS) and Subscales

| Scale and Subscales | Mean±SD | Min-Max | Median |
|---|---|---|---|
| Medicine and Transfusion Practices | 88.23±3.17 | 72-90 | 90 |
| Falls | 23.97±1.77 | 18-25 | 25 |
| Hospital Infections | 57.96±3.08 | 46-60 | 60 |
| Patient Monitoring and Equipment Safety | 41.95±3.66 | 29-45 | 43 |
| Communication | 24.27±1.43 | 20-25 | 25 |
| **Total MTSN Score** | **236.76±10.57** | 198-245 | 241 |
| Management and Leadership | 55.51±9.11 | 37-68 | 53 |
| Employee Behavior | 45.07±7.56 | 30-56 | 42 |
| Unexpected Event and Error Reporting | 16.03±3.19 | 11-29 | 15 |
| Employee Training | 22.90±4.21 | 9-28 | 21 |
| Care Environment | 25.87±4.83 | 15-32 | 24 |
| **Total PSCS Score** | **166.84±27.59** | 113-204 | 155 |

S.D.: Standard deviation, Min.: Minimum, Max.: Maximum

When the total scores of nurses from the Medical Malpractice Tendency Scale and their personal and professional features were compared, it was found that nurses with a postgraduate degree had higher scores than nurses with an associate degree ($p<0.01$), and nurses who experienced medical malpractice had higher scores than nurses who did not experience medical malpractice ($p<0.05$). When the total scores of nurses from the Patient Safety Culture Scale and their personal and professional features were compared, it was found that taken by nurses aged 46 and older when compared with other age groups ($p<0.05$), nurses with a postgraduate degree when compared with other education groups ($p<0.01$), nurses working in pediatric intensive care unit when compared with nurses working in neonatal and pediatric services ($p<0.01$), chief nurses when compared with service nurses ($p<0.05$) and nurses who experienced medical malpractice when compared with nurses who did not ($p<0.01$) (Table 3).

**Table 3.** Comparison of Nurses' Descriptive Characteristics with Malpractice Tendency Scale (MTSN) and Patient Safety Culture Scale (PSCS) Mean Scores

| Variables | MTSN | | PSCS | |
|---|---|---|---|---|
| | Mean±SD<br>Median (min-max) | Test<br>p | Mean±SD<br>Median (min-max) | Test<br>p |
| **Age (years)** | | | | |
| 20-25 [a] | 231.92±13.55<br>235 (207-245) | | 160.50±33.05<br>147 (129-204) | |
| 26-35 [b] | 235.89±11.20<br>240 (196-245) | F=1.555<br>0.203 | 162.45±25.42<br>152 (121-204) | KW=9.715<br>0.021*<br>a,b,c <d |
| 36-45 [c] | 237.12±9.88<br>240 (198-245) | | 163.52±27.41<br>153 (113-204) | |
| 46 -54 [d] | 242.43±4.42<br>245 (233-245) | | 198.43±13.87<br>204 (167-204) | |
| **Education level** | | | | |
| High school[s] | 239.82±8.48<br>243(216-245) | KW=11.590<br>0.009**<br>b<e | 174.91±28.73<br>167 (130-204) | F=5,945<br>0.001**<br>b,c<d |
| Associate's degree[b] | 233.38±11.97<br>236(196-245) | | 154.56±26.31<br>148 (113-204) | |
| Bachelor's degree[c] | 236.21±10.70<br>240(198-245) | | 163.28±25.39<br>153 (121-204) | |
| Master's degree[d] | 241.67±8.07<br>245(220-245) | | 189.58±26.80<br>204 (132-204) | |
| **The current unit worked in** | | | | |
| Neonatal intensive care [a] | 235.29±10.79<br>240 (198-245) | | 159.57±25.46<br>151 (121-204) | |
| Pediatric intensive care [b] | 239.00±10.97<br>245 (198-245) | F=0.691<br>0.600 | 183.04±28.63<br>204 (129-204) | F=3.920<br>0.005**<br>a,c<b |
| Pediatric service [c] | 237.18±11.22<br>242 (196-245) | | 158.67±26.73<br>151 (113-204) | |
| Pediatric emergency[d] | 234.25±10.53<br>237 (213-245) | | 163.75±23.21<br>154 (130-204) | |
| Pediatric surgeon service [e] | 236.08±10.50<br>241 (209-245) | | 166.54±27.16<br>153 (132-204) | |
| **Task** | | | | |
| Nurse supervisor | 239.36±9.67<br>244(213-245) | U=567.000<br>0.246 | 173.27±20.05<br>166(153-204) | U=459.500<br>0.047* |
| Clinic nurse | 235.98±10.91<br>240(196-245) | | 164.08±27.50<br>152(121-204) | |
| **Made a medical error** | | | | |
| Yes | 241.50±6.48<br>245(221-245) | U=639.000<br>0.015* | 189.75±26.46<br>204(132-204) | U=480.500<br>0.001** |
| No | 235.65±11.09<br>240(196-245) | | 161.22±25.77<br>152(113-204) | |

F: One-way analysis of variance and Tukey test, KW: Kruskal-Wallis and Tamhane's T2 tests, U: Mann Whitney U test

*:p<0.05; **p<0.01

A positive, and significant relationship was found between PSCS total score and all subscales and MTSN score and its medicine and transfusion practices, falls, patient monitoring, and equipment safety, and communication subscales (Table 4).

**Table 4.** Correlation between Malpractice Tendency Scale in Nursing (MTSN) and Patient Safety Culture Scale (PSCS) Total Score and Subscales (N=142)

| | **Total MTSN Score** | **Medicine and Transfusion Practices** | **Falls** | **Hospital Infections** | **Patient Monitoring and Equipment Safety** | **Communication** |
|---|---|---|---|---|---|---|
| **Total PSCS Score** | 0.26* | 0.21** | 0.26* | 0.08 | 0.20** | 0.19** |
| **Management and Leadership** | 0.27* | 0.24* | 0.23* | 0.12 | 0.19** | 0.25* |
| **Employee Behavior** | 0.16 | 0.13 | 0.21** | 0.01 | 0.10 | 0.14 |
| **Unexpected Event and Error Reporting** | 0.21** | 0.20** | 0.25* | 0.04 | 0.14 | 0.12 |
| **Employee Training** | 0.26* | 0.18** | 0.21** | 0.09 | 0.29* | 0.15 |
| **Care Environment** | 0.16 | 0.15 | 0.20** | 0.02 | 0.12 | 0.08 |

*p<0.01 **p<0.05

## 4. Discussion

In this study, the medical error rate among pediatric nurses was found to be low (11.3%) (Table 1). Two different studies conducted with pediatric nurses in Turkey found the rate of making medical errors to be high (43% and 61%) [3,8]. Studies conducted with nurses working in other fields also found a high rate of medical errors [12,13]. It can be said that the percentage of nurses who made medical mistakes is low due to the fact that the majority of the nurses participating in the study have a bachelor's degree, their professional knowledge is up-to-date and their awareness is high, and the nurses have received various training (orientation training, in-service training, etc.).

While this study found the rate of making a medical error to be low, it found the rate of observing a medical error to be high (60.6%) (Table 1). This situation indicates that nurses did not always report medical errors. Likewise, another study conducted with pediatric nurses found the rate of making medical errors to be high, although they did not record the medical errors [3]. Other studies conducted in Turkey found that health care teams did not report cases of medical errors [13,14]. Previous studies found higher rates of medical error reporting [15, 16]. These findings indicate that medical errors may not have been reported due to the lack of a culture of patient safety in Turkey.

This study found the nurses' malpractice tendencies to be low with the highest score from the medicine and transfusion practices subscale (Table 2). Some studies found the malpractice tendency score to be low [12, 13, 18] while other studies found malpractice tendencies to be high, which mostly resulted from drug and transfusion practices subscales [2, 19]. This study found the pediatric nurses' mean PSCS score to be high, which was similar to the findings of other studies [20, 21] (Table 2)**.** This situation may result from the in-service training provided to the nurses regarding patient safety.

This study indicated that nurses with master's degrees had a lower level of malpractice tendency and a higher level of patient safety culture (Table 3). While some studies have indicated that nurses' level of education did not affect their malpractice tendencies [2, 18, 19]. Külcü and Yiğit (2017) found that the level of education affected malpractice tendencies in a study conducted with pediatric nurses [8]. Education levels of more than half of the pediatric nurses in this study were graduate and

postgraduate, indicating a high level of vocational professionalism which might affect their perceptions regarding malpractice tendencies and patient safety culture.

Nurses who made or observed a medical error had a lower level of malpractice tendency and a higher level of patient safety culture (Table 3). Previous studies found that medical errors caused positive changes in the clinic when corrective preventive actions were performed to prevent the reoccurrence of these errors [8,15]. A study conducted in seven different hospitals found that the patient safety culture of the nurses who made a medical error increased and nurses needed a medical error reporting system that did not include any punishment [16]. Another study conducted regarding the patient safety culture in nine hospitals found that nurses refrained from reporting adverse events due to fear of being punished and hospital managers' attitudes affected whether or not medical errors were reported [22]. This situation may be due to the fact that nurses who made medical errors started to work more carefully and their awareness increased.

This study found that nurses' patient safety culture increased with increasing age. Previous studies indicated that nurses' patient safety culture increased with increasing age and clinical experience [17,23,24]. Thus, our study findings are in agreement with previous study results.

This study found the patient safety culture of the nurses working in the pediatric intensive care unit to be higher compared to nurses working in other pediatric units (Table 3). Previous studies also found the patient safety culture of the nurses working in the intensive care unit to be higher compared to other nurses [14,17]. Patient safety culture perspectives of nurses working in the intensive care unit were positively affected due to the following factors: (1) they provide care to patients who cannot express themselves, (2) they take precautions regarding patient safety with patient advocacy, (3) they recognize an obligation to apply quality standards in intensive care units, and (4) there is the inclusion of patient safety and subjects regarding medical errors during in-service training.

Other studies also found that nurse managers exhibited a more extensive patient safety culture compared to clinic nurses [1,23,24]. This may stem from the fact that nurse managers' duties, authority, and responsibilities include follow-up and control of patient safety, and nurse managers participate in quality studies more actively and lead their employees about constituting a patient safety culture in the institutions.

Nurses' patient safety culture perspectives increased as their malpractice tendencies decreased (Table 4). No relationship was found between patient safety culture and malpractice tendencies of nurses working in internal and surgical clinics [3, 8]. Previous studies found that a higher level of patient safety culture led to fewer medical error reports regarding patients and a lower level of malpractice tendency among the nurses [15, 17]. This study found a significant relationship between the total scores of both scales and subscales, which indicates that the concept of malpractice has a significant place within patient safety culture.

### 4.1. Study's limitations

There are two limitations to the current study. First, variables such as nurses' making medical errors or observing their colleagues make errors depended on their statements. Second, the study sample included only the Northern Anatolia region of Turkey; therefore, study findings can not be generalized in terms of pediatric nursing in other regions.

## 5. Conclusion

This study is the first study examining the relationship between pediatrics nurses' malpractice tendencies and patient safety culture. As such, it may lead to other studies being conducted regarding this subject. This study found that nurses had a lower level of making medical errors while they had a higher level of witnessing a medical error done by their colleagues. This study also found lower-level malpractice tendencies and higher-level patient safety culture perceptions among pediatrics nurses, which is significant in terms of quality of patient care.

**Ethical Consideration:** The study was conducted after formal permission for the study was obtained from the Directorates of the Hospitals and the Ethics Commission of the Ondokuz Mayıs University Hospital (IRB file no: OMU-KAEK 2018-170, date: 30.04.2018).

**Conflict of Interests:** The authors have no conflicts of interest to declare.

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Research Article

# DOES PROFESSIONAL VITALITY OF HEALTH CARE WORKERS CHANGE THEIR LEARNED HELPLESSNESS?

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**Abstract:** *This study was conducted to determine the effects of professional vitality levels on the learned helplessness of healthcare workers during the Covid-19 pandemic process. This descriptive and cross-sectional study was carried out with 200 healthcare workers using the Personal Information Form, Professional Vitality Scale, and Learned Helplessness Scale. SPSS 21 and AMOS 22 programs were used in the analysis of the data. In the evaluation of the data; percentage, average, Pearson correlation analysis, simple and multiple regression analysis methods were preferred. The significance level of the data was considered to be significant at the level of $p<0.05$. It was determined that the professional vitality levels of healthcare workers were at a high level (3.82±0.48) and that their learned helplessness levels were at a low level (2.19±0.47). It was found that the professional vitality levels of healthcare workers have a significant and negative effect on learned helplessness. Among the sub-dimensions of the Professional Vitality Scale, mastery and job satisfaction sub-dimensions affect learned helplessness significantly and negatively; passion and vigor subscales were found to have no significant effect on learned helplessness. In the process of the Covid-19 pandemic, professional vitality levels of healthcare workers have an impact on learned helplessness.*

**Keywords:** *Covid-19, Healthcare Workers, Professional Vitality, Learned Helplessness.*

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## 1. Introduction

Coronavirus (Covid-19) has caused an outbreak of acute and infectious pneumonia all over the world [1, 2] becoming a major worldwide public health concern [3]. In public health events, many causes like sudden developments, uncertainty, and damages caused by insecurity, emotional pressure, deterioration of the balance of life [4] have caused that the important life routines and life perspectives

of people changed, and everybody experienced intense stress. Healthcare workers are the professional group that was affected at the highest level by this process. Just like it is the case in all healthcare practices, healthcare workers have been at the forefront during this epidemic and faced intense obligations.

Healthcare workers experience physical and psychosocial problems specific to this field, different from public life during the Covid-19 pandemia process. Increasing workload [3], long working hours [5, 6, 7], uncertainties [4], inadequate resources [8], fear of infection, physical burnout, being infected and infecting others [9, 10], use of protective equipment that makes it difficult to meet event compulsory needs [11, 3], insomnia [12], rapidly changing recommendations and information [13], not being familiar with specific work environments and procedures, facing the pain and death of patients, long-term separation from family members [14], intense work stress [11], psychological helplessness, lack of knowledge [15], fear, anxiety [16], depression [17, 18, 19, 3, 16, 20], and unmet physical and emotional needs [12] are the main problems in this process. These problems are expected to have effects on the professional vitality of healthcare workers, and prepare the ground for learned helplessness in the long run.

Providing and maintaining the professional vitality of healthcare workers who play important roles in a pandemia is important in many respects. Professional vitality is an effective and pioneer variable of positive organizational output in works [21, 22]. The reason why professional vitality is one of the important study fields for researchers is that it is the energy source improving the performance in work, enabling employees to perform their tasks successfully [23]. The employee's success in their work depends on the sense of learning and vitality [24]. It is also a source for employee's practical self-demonstration, dealing with their roles, and direct their energy to physical, cognitive, and emotional efforts related to their work [25]. Employees who feel high vitality levels tend to see things positively and expect positive events to be repeated [23]. For this reason, it is associated with higher job performance [26], better mental health [27], and better stress coping [28]. It may be speculated that professional vitality is a very important element in organizational success outcomes like organizational commitment, performance, job satisfaction, burnout, security, vigor, and strength [23].

During the pandemia process, healthcare workers have experienced learned helplessness from time to time. The factors that affect this include the ever-changing and deepening knowledge burden or the uncertainty regarding the process, the rapidly increasing number of cases [3], workload, physical and mental burnout, fatigue, pessimism, fear of death and infection, concern for patients and family members [16]. Negative mental health outcomes like post-traumatic stress disorder, isolation, depression, anxiety, and loneliness [29] can also cause learned helplessness in healthcare workers infected with Covid-19 and quarantined. These long-term and intense difficulties can turn into learned helplessness, which is another organizational variable.

Learned helplessness is mental learned helplessness caused by repeated (and failed) attempts to escape from this damaging situation in the Covid-19 process [30]. In the literature, learned helplessness was first revealed by Seligman et al. as a result of animal experiments in the late 1960s. By the 1970s, experiments were done on humans. When creatures realized that their behaviors had no impact on an event and condition, they showed the learned helplessness reaction [31]. It is possible to argue that learned helplessness has negative consequences both in individual and organizational terms. It highly avoids organizational learning and changes in employees. In organizations where

organizational learning is at low levels, change, adaptation to the environment, innovation, productivity, and achieving missions become also difficult [32, 33], which causes depression and negative consequences in the work-life of the individual. This can lead to a decrease in the productivity of the institution and the employee, increase corporate expenses, and cause unnecessary reductions in domestic energy.

In this context, it is an already known fact that healthcare workers perform very important roles under very difficult working conditions in this pandemia process affecting the whole world. The present study is projected to shed light on the plans made to determine the level at which health workers can sustain their vitality during this critical period, to reveal their helplessness feelings, and to strengthen in this fight.

The hypotheses developed in line with the purpose of the study and the examinations performed are given below (Table 1).

**Table 1.** The hypotheses developed in the scope of the study

| | |
|---|---|
| $H_1$ | Professional vitality affects learned helplessness in a significant and negative way. |
| $H_{1a}$ | Professional vitality passion sub-dimension affects learned helplessness in a significant and negative way. |
| $H_{1b}$ | Professional vitality vigor sub-dimension affects learned helplessness in a significant and negative way. |
| $H_{1c}$ | Professional vitality mastery sub-dimension affects learned helplessness in a significant and negative way. |
| $H_{1d}$ | Professional vitality job satisfaction sub-dimension affects learned helplessness in a significant and negative way. |

## 2. Method

### 2.1. Purpose and Design of the Study

The purpose of the present study was to determine the changes in professional vitality levels of healthcare workers on learned helplessness. The study had a descriptive and sectional design.

### 2.2. The Place and Time of the Study

The study was conducted with two public and state health workers in Turkey between 01.04.2020 and 30.04.2020.

### 2.3. Universe and Sampling of the Study

The universe of the study was all the healthcare workers working in two public and state hospitals in Turkey, and the sampling consisted of 200 healthcare workers who agreed to participate in the study on the study date and were selected with the random sampling method.

### 2.4. Data Collection Tools

*Personal Information Form*. A Personal Information Form consisting of 8 questions to determine the socio-demographic characteristics of healthcare workers. It included statements regarding the gender, marital status, age, educational level, total professional year in the healthcare sector, total working year in the current institution, recommending their profession, choosing the profession, and determining the weekly working time.

*Professional Vitality Scale.* It was developed by Harvey [34]. The validity and reliability study of the scale was conducted by Uzunbacak and Akçakanat [35]. Cronbach Alpha was 0. 89. The scale consists of 18 items and 4 sub-dimensions. The dimensions that make up the scale are *passion*, *vigor*,

*mastery, and job satisfaction* subcomponents. Among these, passion and vigor dimensions have 4 items each, and mastery and job satisfaction have 5 items each. The scoring of the scale is rated in 5-Point Likert style (1= I Absolutely Disagree, 5= I Absolutely Agree). High scores received from the scale shows that professional vitality levels are increasing in terms of each dimension.

The 4-factor structure of the scale was tested with the Explanatory and Confirmatory Factor Analysis in the study. The "Kaiser-Meyer-Olkin Measure of Sampling Adequacy" was 0.82, and the "Bartlett's Test of Sphericity Sig." value was statistically significant. The explained variance was 67.29%. As a result of the Varimax Rotation Method used for the 4-factor structure of the scale, it was seen that the scale was collected in the 4-factor structure again. Items 4, 10. and 15 were eliminated from the scale because factor loads were below 0.40. It was determined in the new structure of the scale that the passion dimension consisted of 3 items, and the vigor, mastery, and job satisfaction subdimensions consisted of 4 items each. The structural validity of the scale was tested with the Confirmatory Factor Analysis. As a result of the CFA analysis, the goodness of fit index values of the scale was adequate (Table 2).

*Learned Helplessness Scale* This scale was developed by Quđnless and Nelson, and its validity and reliability study was conducted by Boysan [36, 37]. However, another validity and reliability study was conducted by Yavaş later[38]. Cronbach Alpha was respectively 0.63, 0.80. In this study, the Learned Helplessness Scale that consisted of 15 items and 2 subdimensions and whose reliability and validity study was conducted again were used [38]. It is in the form of 5-Point Likert. Scale items were scored as "Always = 5, Mostly = 4, Sometimes = 3, Very Rarely = 2, and Never = 1". Items 2, 3, 5, 7, 9, 11, 13, and 14 were reverse items. As the total score received from the scale increases, the level of learned helplessness also increases.

The Explanatory and Confirmatory Factor Analyses were made to test the new structure of the scale with 2 factors. The "Kaiser-Meyer-Olkin Measure of Sampling Adequacy" was 0.82, and the "Bartlett's Test of Sphericity Sig." value was statistically significant. The explained variance rate was 60.04%. As a result of the Varimax Rotation Method for the 2-factor structure of the scale, it was found that the scale items were collected under one factor. A total of 9 items were removed from the analyses because their factor loads were below 0.40. The structural validity of the single-factor scale was tested with Confirmatory Factor Analysis. The goodness of fit index values was found to be adequate (Table 2).

**Table 2.** Results of professional vitality and learned helplessness DFA analysis goodness of fit index values

| The goodness of Fit Indices | Good Fit | Acceptable Fit | Professional Vitality Scale | Learned Helplessness Scale |
|---|---|---|---|---|
| $\chi^2$/df | $0 \leq \chi^2/df \leq 2$ | $2<\chi^2/df \leq 5$ | 2.42 | 2.30 |
| RMSEA | $0 \leq$ RMSEA $\leq .05$ | $.05 <$ RMSEA $\leq .08$ | 0.08 | 0.08 |
| RMR | $0 \leq$ RMR $\leq .05$ | $.05 <$ RMR $\leq .08$ | 0.06 | 0.04 |
| IFI | $0.95 \leq$ IFI$< 1.00$ | $0.90 \leq$ IFI$<0.95$ | 0.92 | 0.94 |
| CFI | $0.95 \leq$CFI$<1.00$ | $0.90 \leq$CFI$<0.95$ | 0.90 | 0.94 |
| GFI | $0.95 \leq$GFI$<1.00$ | $0.80 \leq$GFI$<0.95$ | 0.94 | 0.97 |
| AGFI | $0.95 \leq$GFI$<1.00$ | $0.80 \leq$GFI$<0.95$ | 0.90 | 0.91 |
| NFI | $0.95 \leq$GFI$<1.00$ | $0.90 \leq$GFI$<0.95$ | 0.90 | 0.91 |

### 2.5. Data Collection

The data were collected with the own budget of the researchers. The survey forms were delivered face-to-face and with WhatsApp to the healthcare workers who volunteered to participate in the study. The surveys were described in the Google Drive online survey system.

### 2.6. The Analysis of the Data

The SPSS 21 and AMOS 22 Package Programs were used in analyzing the data. Normal distribution analysis of the data was made firstly in determining the analysis methods to be used (Table 3). Skewness and Kurtosis values of the data were examined. The normal distribution assumption was met as a result of the Skewness and Kurtosis values of the data were between -1 and +1 [39]. The Cronbach Alpha values of the scales showed that the scale variables were highly reliable. Percentages, mean values, Pearson Correlation Analysis, simple and multi-regression analysis methods were preferred in the evaluation of the data. The values were considered significant at $p<0.05$ level.

**Table 3.** Normal distribution and Cronbach Alpha values of the scales used in the study

| | Skewness | Kurtosis | Cronbach Alpha |
|---|---|---|---|
| Passion | -.453 | .516 | 0.78 |
| Vigor | -.083 | -.269 | 0.72 |
| Mastery | -.032 | -.085 | 0.75 |
| Job satisfaction | .077 | -.877 | 0.84 |
| Professional Vitality | .254 | -.557 | 0.87 |
| Learned helplessness | .429 | .127 | 0.79 |

**Ethical Permission:** Before the commencement of the study, the ethical board permission was obtained from the Scientific Research and Publishing Ethics Board of Osmaniye Korkut Ata University (dated 19.03.2020. and with the registry number E.1896). The participants took part in the study on a voluntary basis. Institutions were informed.

**The Limitations of the Study:** The study was limited to the healthcare workers, who were accessible and accepted voluntarily to participate to the study, and who were working at the hospital on the specified dates. The obstacles that emerged with pandemia were the most important limitations of the study. The small number of active workers limited the sampling. Also, the delivery of surveys to participants under prevention measures, the increased workload, and stress due to pandemia made it difficult for workers to fill out the surveys. The assumption that participants answered the surveys honestly and sincerely was another limitation of the study.

## 3. Findings

The socio-demographic characteristics of the healthcare workers are shown in Table 4. A total of 83% of the healthcare workers were female, and 17% were male. In terms of marital status, 49% were married, and 51% were single. In terms of educational status, 11% said that they were high-school graduates, 9.5% had an associate degree, 55.5% had an undergraduate degree, and 24% had post-graduate/doctoral degrees. A total of 6.5% were doctors, 60% were nurses, 12% were midwives, 8% were patient counselors, 8.5% were technicians, and 5% were healthcare managers.

**Table 4.** Socio-demographic characteristics of healthcare workers

| | | N | % |
|---|---|---|---|
| Gender | Female | 166 | 83 |
| | Male | 34 | 17 |
| Marital Status | Married | 98 | 49 |
| | Single | 102 | 51 |
| Educational Status | High-School | 22 | 11 |
| | Associate Degree | 19 | 9.5 |
| | Undergraduate Degree | 111 | 55.5 |
| | Post-Graduate/Doctorate | 48 | 24 |
| Working Status | Doctor | 13 | 6.5 |
| | Nurse | 120 | 60 |
| | Midwife | 24 | 12 |
| | Patient Consultant | 16 | 8 |
| | Technician | 17 | 8.5 |
| | Healthcare Administrator | 10 | 5 |
| Recommending the Profession | Yes | 85 | 42.5 |
| | No | 115 | 57.5 |
| Choosing the Profession | Willingly | 143 | 71.5 |
| | Unwillingly | 57 | 28.5 |
| Mean Age | 32.17±8.69 | Mean Total Professional Year | 10.56±9.56 |
| Mean Weekly Working Hours | 46.94±25.69 | Mean Total Professional Year at Current Workplace | 5.66±6.61 |

A total of 42.5% of the healthcare workers recommended their professions, and 57.5% did not recommend it. A total of 71.5% of the healthcare workers chose their profession willingly, and 28.5% were reluctant to choose their professions. The mean age of healthcare workers was 32.17±8.69. The mean weekly working hour was 46.94±25.69. The mean total professional year was 10.56±9.56, and the mean working duration in their institution was 5.66±6.61.

The mean score for determining professional vitality and learned helplessness levels of the healthcare workers are presented in Table 5. The mean professional vitality score was 3.82±0.48. In the sub-dimensions, the score in passion was 4.12±0.59; vigor 3.64±0.62; mastery 4.07±0.45, and job satisfaction 3.45±0.81.

**Table 5.** Mean scores of the scales used in the study

| | Min-Max | Mean | SD |
|---|---|---|---|
| Passion | 1-5 | 4.12 | .59 |
| Vigor | 1-5 | 3.64 | .62 |
| Mastery | 1-5 | 4.07 | .45 |
| Job satisfaction | 1-5 | 3.45 | .81 |
| Professional Vitality | 1-5 | 3.82 | .48 |
| Learned helplessness | 1-5 | 2.19 | .47 |

The mean Learned helplessness score was 2.19±0.47. The interpretation of the mean scale scores was made as "1.01<X< 1.80 very low, 1.81<X<2.60 low, 2.61<X<3.40 moderate, 3.41< X<4.20 high, 4.21<X<5.00 very high" [40].

The results of the Pearson Correlation Analysis between professional vitality and learned helplessness were presented in Table 6.

**Table 6.** Pearson correlation analysis between professional vitality and learned helplessness

| | Passion | Vigor | Mastery | Job satisfaction | Professional Vitality | Learned helplessness |
|---|---|---|---|---|---|---|
| **Passion** | 1 | .599** .000 | .326** .000 | .593** .000 | .818** .000 | -.379** .000 |
| **Vigor** | .599** .000 | 1 | .282** .000 | .617** .000 | .823** .000 | -.361** .000 |
| **Mastery** | .326** .000 | .282** .000 | 1 | .315** .000 | .553** .000 | -.478** .000 |
| **Job satisfaction** | .593** .000 | .617** .000 | .315** .000 | 1 | .867** .000 | -.490** .000 |
| **Professional vitality** | .818** .000 | .823** .000 | .553** .000 | .867** .000 | 1 | -.545** .000 |
| **Learned helplessness** | -.379** .000 | -.361** .000 | -.478** .000 | -.490** .000 | -.545** .000 | 1 |

**p<0.01

When Table 6 was examined, it was found that there was a significant and negative relation between professional vitality and learned helplessness (r:-.545; p<0.000). It was determined that there was a significant and negative relation between all professional vitality subcomponents (i.e. passion, vigor, mastery, and job satisfaction), and learned helplessness (p<0.001). In professional vitality subcomponents, job satisfaction and learned helplessness had the highest correlation coefficient (r:-.490; p<0.001); the vigor sub-dimension had the lowest correlation coefficient among learned helplessness.

Regression Analysis Methods were preferred to determine the effect of professional vitality on learned helplessness (Table 7). The Linear Regression Analysis Model was specified as Y=a+bX (41).

The regression analysis model established (F:83.832; p<0.001), and the test value (t:-9.156; p<0.001) were statistically significant. It was observed that there was a significant and negative relation between professional vitality and learned helplessness (R:-.545; p<0.001). The specificity coefficient value of the established model was $R^2$: .297. In this respect, it shows that the effect of professional vitality of healthcare workers accounted for 29.7% of the effect on learned helplessness perceptions. A one-unit increase in professional vitality reduced the learned helplessness levels of healthcare workers by -.530. When regression analysis coefficient values were examined in the relevant table, it was seen that professional vitality perceptions of healthcare workers had a significant and negative effect on learned helplessness levels; and $H_1$ Hypothesis was accepted. According to the regression analysis, if the estimated model is Y=a+bX [41], and if, a:4.218 and b:-0.530. Y=4.218-0.530X (X=Professional Vitality).

**Table 7.** Effect of professional vitality on learned helplessness

| Variable | Non-standardized coefficients | | Standardized coefficients | t | p | F | Model (p) |
|---|---|---|---|---|---|---|---|
| | B | Std. Error | **β** | | | | |
| Constant | 4.218 | .223 | | 18.908 | .000** | 83.832 | .000* |
| Professional Vitality | -.530 | .058 | -.545 | -9.156 | .000** | | |
| $R^2$:.297 R: -.545 *p<0.05 **p<0.01 Corrected $R^2$:.294 | | | | | | | |

Multiple Regression Analysis was made to determine the effect of the professional vitality (i.e. passion, vigor, mastery, and job satisfaction) sub-dimensions on learned helplessness (Table 8). Firstly, the Durbin-Watson Coefficient (i.e. the auto-correlation) value was examined among the analysis criteria. If this value is between 1.5 and 2.5, it shows that there is no problem in terms of autocorrelation in Multiple Linear Regression Analysis [41].

**Table 8.** Effect of professional vitality scale sub-dimensions on learned helplessness

| Variable | Non-standardized coefficients | | Standardized coefficients | t | p | VIF |
|---|---|---|---|---|---|---|
| | B | Standard Error | **β** | | | |
| Constant | 4.592 | .277 | | 16.554 | .000** | |
| Passion | -.042 | .062 | -.052 | -.674 | .501 | 1.824 |
| Vigor | -.019 | .060 | -.025 | -.316 | .753 | 1.873 |
| Mastery | -.365 | .064 | -.349 | -5.677 | .000** | 1.152 |
| Job satisfaction | -.195 | .046 | -.334 | -4.254 | .000** | 1.877 |
| F: 27.364 $R^2$:.360 R: .600 *p<0.05 ** p<0.01 Corrected $R^2$:.346 Durbin-Watson: 1.713 | | | | | | |

As the second criterion, it is expected that the Variance Inflation Factor-VIF coefficients are less than 10, which will show that there are no multiple correlation problems [41]. The Durbin-Watson coefficient was 1.713, and VIF ranged between 1.824 and 1.877. In this respect, it may be speculated that there are no autocorrelation and multiple connection problems in multiple linear regression analysis.

Multilinear Regression Analysis Model [41] is defined as ($Y=a+bX_1+cX_2+dX_3+\ldots$). The established model (F:27.364; p<0.01) was statistically significant. The ***t*** statistical values, which show the significance of regression coefficients, were insignificant for passion (-0.674; p>0.05) and vigor (t:-0.316; p>0.05) dimensions; however, they were highly significant for mastery (t:-5.677; p<0.01) and job satisfaction (t:-4.254; p<0.01). The specificity value of the established model was $R^2$: .346. In agreement with this outcome, the effect of mastery and job satisfaction subdimensions from professional vitality subdimensions was statistically significant and negative. According to the predicted regression analysis model, although other subscales were constant, a one-unit increase in mastery dimension decreased learned helplessness by -.365, and a one-unit increase in the job satisfaction sub-dimension caused a decrease by -.195 on helplessness. The effect of mastery and job satisfaction sub-dimension from scale sub-dimension was significant and negative. In line with these results, the $H_{1c}$ ve$H_{1d}$ hypotheses were accepted, and $H_{1a}$ and $H_{1b}$ were rejected (Table 9). According to the data given in Table 7, If the Multilinear Regression Analysis Model [41] is ($Y=a+bX_1+cX_2+dX_3+\ldots$), and if a=4.592; b=-.042; c=-.019 d=-.365 and e=-.195, $Y=4.592-0.042X_1$-

$0.019X_2$-$0.365X_3$-$0.195X_4$ ($X_1$=Passion; $X_2$=Vigor; $X_3$=Mastery; $X_4$=Job satisfaction). When Table 9 is examined, the developed hypotheses were mostly accepted.

**Table 9.** Acceptance or refusal status of the hypotheses developed in the scope of the study

| | | |
|---|---|---|
| **$H_1$** | Professional vitality affects learned helplessness at a significant and negative level. | ***ACCEPTED*** |
| **$H_{1a}$** | Professional vitality passion sub-dimension affects learned helplessness at a significant and negative level. | ***REJECTED*** |
| **$H_{1b}$** | Professional vitality vigor sub-dimension affects learned helplessness at a significant and negative level. | ***REJECTED*** |
| **$H_{1c}$** | Professional vitality mastery sub-dimension affects learned helplessness at a significant and negative level. | ***ACCEPTED*** |
| **$H_{1d}$** | Professional vitality job satisfaction sub-dimension affects learned helplessness at a significant and negative level. | ***ACCEPTED*** |

## 4. Discussion

In this study, the effects of the professional vitality of healthcare workers during the Covid-19 pandemia process on learned helplessness were evaluated. With this evaluation, the main purpose was to determine the evidence that would contribute to the strengthening of "the heroes of the pandemia: healthcare workers".

Professional vitality of the healthcare workers was at high levels and was compatible with the results of the studies done in the literature [21, 35]. The fact that the level was high despite the negativity of the pandemia is a pleasing result. No studies were detected on the pandemia period concerning the subject. For this reason, concepts that did not belong to the pandemia period but could be associated were included.

The relation between professional vitality and security, organizational commitment [42], work performance [26], innovation [43], creativity [44], burnout [45], and agility [46] was examined by previous researchers. When professional vitality perception increases in a positive way, this provides an increase in these important factors [42, 26, 44]. Employees also tend to work in a more secure way [42]. In their study, Brauch et al. reported that as professional vitality increased, the perception of life satisfaction would also increase in the same way [21]. Tummers et al. also found in their study that professional vitality increased work autonomy [47]. In Hennekam's study conducted with older employees, it was found that there were significant and positive relations between vitality and job performance [23]. In this context, it was reported that with increased vitality perception in employees, older employees who had higher vitality levels prevented early retirement, performed well, reached higher positions in their organizations as a result of high work performance, and received higher salaries than older employees [23]. The success of an employee at work, social interactions in the workplace, and a multicultural work environment may provide positive ideas about subjective goodness [48]. Previous studies also show that higher vitality increases the resilience of people to physical and viral stressors, and make them less vulnerable to diseases [49, 47].

Learned helplessness level is low in healthcare workers, which is in line with the literature [50. 51]. This result will improve the quality of the healthcare delivery and avoid that the vitality of the employees decreases during the pandemia. Despite all the negations, the low level of helplessness might be because Turkey has been one of the most reliable and successful countries during the

pandemia. The low number of mortality is the most concrete indication of this outcome. Many supportive factors like the high development level of second-line treatment institutions, the equipment of healthcare workers, early intervention, spiritual values, level of compliance with the rules of the people may also have increased the success rates and kept helplessness levels low. No data are available regarding learned helplessness in the pandemia process. However, it can be speculated that reducing the helplessness levels can be a motivator to overcome problems in the pandemia process and that they will have positive contributions in many ways like in increasing the performance and providing efficiency both in individual and institutional terms.

The relations between depression, self-confidence, scientific thinking skills [52], optimism, and pessimism were examined in previous studies [53]. In the study conducted by Yüksel and Özkiraz, helplessness was reported to be the most important problem in the public sector and the most important cause of the poor performance of employees [32]. In the study of Barutçu and Çöllü, it was reported that there was a significant and negative relation between learned helplessness and belief in overcoming difficulties and motivation [31]. In the study of Polatçı and Boyraz conducted with teachers, it was found that the role uncertainty was an important predictor for learned helplessness, and learned helplessness was an important predictor for job satisfaction [54]. Chen and Mykletun reported that organizational injustice caused learned helplessness, and learned helplessness caused anti-production behavior [55]. It is possible to speculate that similar results are true for the healthcare sector.

## 5. Result and Recommendations

It was determined in the present study that the professional vitality of healthcare workers had a negative impact on learned helplessness perceptions of the healthcare workers during the pandemia process.

The impacts on different sectors were examined in previous studies conducted on the subject. For this reason, it is recommended that more studies are conducted in the healthcare sector, which is very important for life. Studies must be conducted in different healthcare institutions, and the results must be compared.

It may also be recommended that open communication is established, shift hours are limited, resting areas are organized, basic and supportive training are provided regarding the patient management in Covid-19, and the use of preventive equipment to increase the vitality of healthcare workers and reduce their helplessness.

**Ethical Permission:** Before the commencement of the study, the ethical board permission was obtained from the Scientific Research and Publishing Ethics Board of Osmaniye Korkut Ata University (dated 19.03.2020. and with the registry number E.1896). The participants took part in the study on a voluntary basis. Institutions were informed.

**The compliance to the Research and Publication Ethics:** This study was carried out in accordance with the rules of research and publication ethics

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Research Article

# QUALITATIVE ANALYSIS OF THE INFORMATION OF HEALTHCARE PROFESSIONALS WORKING IN PEDIATRICS UNITS ON CHILDREN'S RIGHTS

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**Abstract:** *It is important for health professionals working with children to be aware of all aspects of children's rights. the study was conducted to determine the qualitative analysis of the knowledge of the healthcare professionals working in pediatrics units on children's rights. Twenty health workers in the pediatric units of an obstetric and children's hospital, nine physicians and eleven nurses, took part in the research. Data were collected with the semi-structured interview technique using an 'information form' and a 'structured interview form'. Data were then subjected to analysis. Two themes were determined as "the views of healthcare professionals on children's rights" and "what can be done to better implement children's rights". In line with these themes; it was determined that healthcare workers mostly focused on children's right to life and development, and other rights were not mentioned much. It was determined that healthcare professionals thought that training should be given to raise awareness of children's rights. It is recommended that in-service training be provided to increase the knowledge and awareness of children's rights among health workers in pediatric units.*

**Keywords:** *Child, Children's Rights, Nurse, Physician*

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## 1. Introduction

Right is the authority granted to individuals by legal rules and the legal order where laws are valid [1,2]. Human rights, on the other hand, are generally expressed as rights that people have simply because they are human. There is a basis of equality in human rights rules, it is universal. Therefore, it has high moral quality [3,4]. The purpose of human rights is to ensure the development of innate and only human qualities. It is within the scope of inalienable and non-assignable rights. Human rights are rights that require respect everywhere and in any situation [5]. Patient rights are the implementation of basic human rights in health services. Patient rights refer to the rights of individuals who need to benefit from health services, which are guaranteed by International Conventions, Constitution of Turkey, Law, and other legislation. The first official statement on patient rights is the Nuremberg Laws. The Nuremberg Laws impose the responsibility of informing the patient and obtaining his consent before the procedure is

performed. Many international declarations have been conducted on patient rights. "Declaration of Helsinki" published in 1963, "Declaration of Lisbon Patient Rights" published by the World Medical Association in 1981, "Declaration on the Improvement of Patient Rights in Europe" published in Amsterdam in 1994 and The "Bali Declaration" published by the World Medical Association in 1995 is among the most important studies in the field of patient rights [6,7]. Turkey also in the light of these developments, in 1998, prepared by the Ministry of Health, "Patient Rights Regulation" was published [5].

Patient rights are defined as a set of rules that all personnel in the health system should apply and pay attention. In order to implement the rules, to provide the best health service, and to prevent violations of rights; healthcare professionals should provide patients with a friendly, respectful, and reliable health service [8].

With the development of patient rights, children's rights are also an issue that has come to the fore again [9]. The United Nations Convention on the Rights of the Child, published in 1989, has special importance for children's rights. This Convention is the first tool developed to cover all international human rights that concern children only. This contract is part of almost all countries throughout the world, Turkey has started to implement it on September 14, 1995. The Convention has four guiding principles and these principles are essential requirements for the fulfillment of all children's rights. These principles are categorized under four main groups: non-discrimination, the best interests of the child, the right to life, survival, and development, and the right to respect the views of the child [10,11]. All rights specified in the United Nations Convention on the Rights of the Child, published in 1989, should also be implemented in health services [12]. Children have the right to be informed about the disease and treatment according to their age and developmental period. Children have the right to participate in any decision concerning their health condition. Every child has the right to be protected from unnecessary medical treatment and examinations. Children have the right to be in an environment suitable for their age and situation, with extensive opportunities for play, rest, and education. The environment should be arranged in a way that suits the needs of the children and should have appropriate personnel. Their education and empathy skills have the right to be cared for by health personnel who can respond to the physical, mental, and developmental needs of children and the needs of their families. Children should be approached with feelings and understanding, and they have the right to respect their privacy at all times. Every child has the right to be protected from unnecessary medical treatment and examinations [13].

Healthcare professionals have to take children's rights into consideration while protecting and improving the health and well-being of children. In this context, showing attitudes and behaviors in accordance with the Convention on the Rights of the Child, such as ensuring the participation of the child in the decision and treatment process and paying attention to the privacy of the child, increase compliance with treatment, while wrong behaviors against the rights of the child may negatively affect the physical and psychological health of the child. Knowing the extent to which the rights of hospitalized children are actually respected by healthcare professionals is essential for the implementation of children's rights and for planning measures to guarantee their psychological and physical health in the hospital. However, Bisogni et al. (2015) reported significant variations regarding the application of children’s rights among different regions of Italy, and even among children’s hospitals and general hospital pediatric units [14]. Kahriman et al. (2016) studied the thoughts of midwives and nurses who provide health services to the pediatric age group on the rights of children. In the study, it is seen that

midwives and nurses do not agree on the problems encountered in clinical practices regarding children's rights [9]. There are a limited number of studies in the literature that examine healthcare professionals' awareness of children's rights [14-19]. For this reason, discussing the thoughts and opinions of children's rights of healthcare personnel, especially on scientific platforms can provide significant contributions.

## 2. Materials and Methods

### 2.1. Research Aim and Type

The research was performed to determine healthcare professionals' perceptions concerning children's rights. A phenomenological approach, in a qualitative research design, was employed. The phenomenological approach examines subjects on which awareness is present, but not deep and detailed knowledge. At the same time, phenomenology focuses on revealing the individual's experiences and perceptions regarding a particular phenomenon or event [20,21].

### 2.2. Time and Place of the Research

The research was carried out in the pediatric clinics of an Obstetric and Children's Hospital in a province in Southeast Turkey between 1 July 2018, and 1 July 2019.

### 2.3. Research Population and Sample

The research was conducted with physicians and nurses working in an Obstetrics and Children's Hospital. Physicians and nurses providing health services for pediatric patients were included in the research. Detailed interviews are usually performed in phenomenological approaches, and small groups are generally reported to be sufficient [22]. At the same time, data obtained when the saturation point is reached are also reported to be sufficient [23,24]. Interviews were concluded when data began to be repeated. The research was conducted with 20 health workers (9 physicians and 11 nurses).

### 2.4. Data Collection Tools

Data were collected using an information form and structured interview form involving health workers' descriptive characteristics.

The information form contained five questions concerning health workers' socio-demographic characteristics, such as sex, occupation, marital status, whether they had children, and professional experience. In phenomenological approaches, data can be collected from individuals experiencing an event using several methods, including artistic products, keeping a diary, reflection reports, artistic content reflecting experience, and observation. The most commonly employed method is in-depth interviews or focuses group interviews [25].

A semi-structured interview form was used in this research to determine participants' perceptions regarding children's rights. The form was prepared by the authors based on the previous literature [26-28]. A preliminary application was performed with three health workers before the study began. The data obtained from these interviews were not included in the research. The questions on the structured interview form were as follows:

- What kind of rights do children have? To what extent do you think children are aware of their rights? What can be done to raise their awareness?

- Do you think there are any rights that children cannot benefit from? If you think there are rights that children cannot use, which are these, and why cannot they benefit from them?
- What responsibilities do you think health workers have in the implementation of children's rights?
- What do you think can be done in the hospital regarding the better implementation of children's rights?

### 2.5. Performance of the Research

The research data were collected using the in-depth interview method with healthcare professionals. The place and time of the meeting were determined by establishing communication with each participant before the interview. In the preliminary interview, participants were informed about the scope and objectives of the research. Face-to-face interviews were held whenever the participants were appropriate for the study. Participants were informed that they could leave whenever they wanted and were free to answer any questions they wanted. Interviews were held in a quiet room in the hospital, with the interviewer sitting opposite the healthcare professionals and at the same level. All face-to-face interviews were conducted by a researcher. Voice recordings were taken during the interviews, with prior permission. Interviews lasted approximately 20-30 min.

### 2.6. Statistical

The quantitative data were evaluated using the SPSS 21.0 package program. Descriptive statistical methods (percentage, arithmetic mean) were used in the study. The qualitative data obtained in the research were analyzed and interpreted using the 'content analysis' method. The content analysis aims to elicit relations and concepts capable of explaining data. Within that context, data were analyzed in four stages – data coding, themes, the arrangement of data by codes and themes, and definition [20,29].

In the first stage, the interviews that were recorded on audio were recorded on paper. In the next step, the raw data obtained was carefully read by each researcher, and in this way, the whole data was tried to be dominated. Then, using content analysis, the coding of the data was carried out by each author separately. After this process, the themes, categories, and codes produced by each author were brought together; As a result of the examination of similarities and differences, the final theme, category, and codes were created. The opinions of the participants were conveyed by coding on the basis of confidentiality, without giving their names. Accordingly, the participants were coded as "HP" to denote "health professionals" and each participant was given numbers such as HP1, HP2, HP3 ... in addition to their code. Two themes were thus established with the combined codes:

Theme 1. Health Workers' Opinions on the Subject of Children's Rights

Theme 2. What Can Be Done to Improve the Implementation of Children's Rights?

### Ethical Considerations

Ethical committee for the research was obtained before commencement from the Non-Interventional Clinical Research Ethical Committee of the Adıyaman University (date:26.06.2018/decision no. 2018/5-19). Verbal and written consent was also obtained from health workers agreeing to take part. The identities of the health workers were concealed during the reporting of the research, with numbers being used instead of names. The research was conducted in accordance with the Declaration of Helsinki.

## 3. Results

Nine physicians and 11 nurses took part in the study. The mean age of the health workers was 33.00±4.14 years.

Seventy percent were women, 65% were single, 70% had children, and 75% had professional experience greater than five years (Table 1).

**Table 1.** Health workers' sociodemographic characteristics

| **Sociodemographic characteristics** | **Mean±SD** | |
|---|---|---|
| **Age** | 33.00±4.14 | |
| | **n** | **%** |
| **Sex** | | |
| Female | 14 | 70 |
| Male | 6 | 30 |
| **Occupation** | | |
| Physician | 9 | 49 |
| Nurse | 11 | 51 |
| **Marital status** | | |
| Married | 7 | 35 |
| Single | 13 | 65 |
| **Children** | | |
| Yes | 14 | 70 |
| No | 6 | 30 |
| **Professional experience** | | |
| 0-5 years | 5 | 25 |
| More than 5 years | 15 | 75 |

Two themes were determined in the research – 'health workers' opinions on the subject of children's rights,' and 'what can be done to improve the implementation of children's rights?'

**Theme 1. Health Workers' Opinions on the Subject of Children's Rights**

This section consisted of two sub-themes, awareness of children's rights, and the situation concerning benefitting from children's rights.

This section consists of two sub-themes: statements of healthcare professionals about what children's rights are, children's awareness of children's rights, and the state of enjoying children's rights.

**Sub-theme 1: Statements and awareness of Children's Rights**

When healthcare professionals are asked what children's rights are; most of the participants stated that children have the right to education, health, and life. The great majority of health workers reported that children were unaware of their rights. They suggested such measures as provision of education, public service announcements, educating families, and allowing children to express themselves in order to increase awareness. Specimen comments are shown below:

*"HP 2: They have rights to education, health, and play. Due to a lack of paternal awareness in our society, with its inadequate education levels, children are unaware they have rights in the world into which they are born."*

*"HP 4: They have rights to life, health, and education. Children are not aware of their rights. A level of awareness, therefore, needs to be created. Lessons could be given in school.*

*"HP 6: Children need to be protected. Children have the right to care under suitable conditions, to play, and to education. Children are not at all aware of their rights. We must allow them the right to express themselves so they can acquire awareness."*

*"HP 10: Children have rights to education, teaching, shelter, protection, and health services. Children can be made aware of their rights through education, and the majority of children are not aware of all their rights."*

*"HP 13: They have the right to love and be loved, to be valued, to raise objections, and to complain of violence. Children's awareness of their rights varies depending on their age, place of residence, and the family's financial means. Families have to be educated first, then children can be shown educational material or visual aids explaining their rights, in kindergartens or schools, and if necessary in a health clinic in villages."*

*"HP 16: They have the right to shelter, life, food, and education. Children are not aware of their rights. In order for them to be aware of these rights, families have to be educated first, and families need to be informed, depending on their sociocultural levels."*

**Sub-theme 2: Children's Ability to Benefit from Children's Rights**

Health workers stated that children were unable to benefit from such rights as shelter, education, nourishment, and play for reasons including financial difficulties, parents being at work, prolonged duration of education, and children being unaware of their own rights. Some specimen comments are given below:

*"HP 2: They may be unable to enjoy their rights to education, health, and spending sufficient time with their families. They may be unable to benefit from their rights in Turkish society, with its low socioeconomic and education levels."*

*"HP 3: They may not enjoy their rights due to families having insufficient financial or psychological resources."*

*"HP 6: In my opinion, children are unable to benefit from their right to play, because educational activities are very lengthy and their families are always working."*

*"HP 9: They cannot benefit sufficiently from their rights to education, play and nutrition because of financial difficulties."*

*"HP 11: There are rights they cannot benefit from. Not everyone can study under equal conditions. The majority of children work out in the fields from early ages, or girls are married off early."*

*"HP 12: The right to education cannot be equally applied in all regions of Turkey. This derives from families' lack of awareness."*

*"HP 13: Yes, there are rights they cannot benefit from. A child does not know that he has the right to complain when violence is inflicted by his family, or else he cannot enforce that right, because older relatives think that will be disrespectful."*

**Theme 2. What Can Be Done to Improve the Implementation of Children's Rights?**

This theme was examined under two sub-themes, 'health workers' responsibilities toward children's rights,' and 'measures that can be taken concerning children's rights in hospital.'

**Sub-theme 1: Health Workers' Responsibilities toward Children's Rights**

Health workers made recommendations for the better implementation of children's rights, such as education, encouraging family planning, and raising parental and child awareness on the subject of children's rights. Some comments are given below:

*"HP 13: Healthcare professionals must observe every child they encounter and must teach as many parents and children as possible."*

*"HP 17: Responsibilities in the context of health must be explained, and families must be informed about children's rights. The relevant authorities must be informed if children's rights are suspected of being violated."*

*"HP 20: Mothers and fathers must be given education, and must be informed about children's rights before the child is born."*

**Sub-theme 2: Measures that can be Taken Concerning Children's Rights in Hospitals**

Healthcare professionals stated that in order for better use to be made of children's rights, training regarding those rights could be provided in the hospital, child play areas might be expanded, and environments might be established in which children could stay with their families in hospital:

*"HP 1: Education might be provided through awareness meetings, posters, presentations, and written material."*

*"HP 5: A large children's play area should be constructed. Wards should be sufficiently large and have sufficient capacity for children scheduled for admission."*

*"HP 6: Play areas for children could be created on the wards, and they must be able to stay with their families on the wards."*

*"HP 10: There should be an exchange of information at every meeting with children. The poster could be put up in hospitals for awareness purposes."*

*"HP 13: Posters could be put up in hospital entrances, cartoons explaining children's rights could be shown, and training could be provided for families.*

## 4. Discussion

In order to ensure that children benefit from children's rights, it is important that healthcare personnel are aware of children's rights and provide health services accordingly. It is known that being educated and informed about children's rights positively affects attitudes towards children's rights [15,30]. According to the results of this study, healthcare professionals did not fully express children's rights. In the study conducted by Öztürk et al. (2018) to determine the knowledge levels of health services vocational school students on patient and child rights, it was determined that students who have knowledge about child and patient rights are more sensitive to these issues [16]. In the study in which Küçük Alemdar and Yılmaz (2019) examined the attitudes of pediatric nurses towards children's rights, the nurses were asked whether they had information about children's rights. The majority of the nurses stated that they have information about children's rights. It has been reported that nurses who are knowledgeable about children's rights show a positive attitude towards children's rights [15]. In the study in which Ergin et al. (2020) examined the knowledge, attitudes, and behaviors of physicians on children's rights, it was determined that half of the physicians do not know the Convention on the Rights of the Child, and physicians who do not know the contract show negative attitudes and behaviors towards children's rights [17]. Similar to the literature, it was found in the study that healthcare professionals did not have sufficient information about children's rights. For this reason, it can be said that healthcare professionals are partially informed about children's rights.

In the United Nations Convention on the Rights of the Child, children's rights are included in four main principles as non-discrimination, the best interests of the child, the right to life, survival, and development, and the right to respect the views of the child [10,11]. The Convention on the Rights of the Child guarantees all developmental areas of the child. The Convention on the Rights of the Child

guarantees all developmental areas of the child. In this study, health professionals stated that children have the right to education, health, and life, but did not emphasize the right to respect the views of the child. The studies show that there are still deficiencies for children to fully benefit from their rights. Research conducted among European countries has shown that children's participation in decision-making is weak [31]. In the study conducted by Bisogni et al. (2015) on the implementation of sick child rights in pediatrics units in Italy, nurses reported that the most common right of children to be with their parents and to play is the right of the child to express himself or herself [14]. In this study, it was determined that healthcare professionals did not mention the right to respect the views of the child, such as expressing their own views and participating in decisions on matters that concern them. This situation may negatively affect the attitudes, behaviors, and healthcare practices of healthcare professionals towards children's rights. For this reason, if healthcare professionals learn about children's rights in all aspects, they can also protect children's rights in health services provision.

It is very important for children to be aware of their rights and to be able to internalize them. Knowing only some of their rights can cause children to violate one right while exercising another. For example, when children exercise their right to play and recreation, they themselves may violate the right to protection, the right to self-expression, or the right to education. Therefore, children also need to know all children's rights [26,32]. In the study conducted by Küçük Alemdar and Yılmaz (2019), nurses stated that children were not raised enough about children's rights [15]. Similar to the study of Küçük Alemdar and Yılmaz, the majority of the healthcare professionals stated that the children were not aware of their rights. There are studies in the literature that show that children do not have sufficient information about children's rights [26, 33,34]. The awareness of healthcare professionals about children's lack of knowledge on this subject can lead to their educational and advocacy roles for children.

The environment in which they socialize has an effect on the knowledge of children's rights. In this context, different economic, socio-cultural environments, the perspective of the child, and the implementation of children's rights affect the state of knowledge about children's rights. In different studies, it has been reported that factors such as the parents' age, education level, and economic status affect children's awareness of their rights [27,35,36]. In the study, healthcare professionals stated that socio-demographic characteristics such as age, place of residence, and economic situation affect children's awareness of their rights and that family and child education about children's rights is necessary. It can be thought that healthcare professionals are aware of this situation and will implement children's rights and provide consultancy by taking this situation into consideration in the provision of health services to children.

The World Health Organization (2017) states that every child in the hospital should have the right to respect the views in healthcare decisions that affect them and to receive information [37]. The child and parents should be informed according to their age and understanding [38]. Health professionals serving the pediatric age group have the responsibility of informing the child and family about children's rights and supporting the family, implementing children's rights within the health system, and defending children's rights [13]. In this study, health professionals mostly stated that children and families should be educated about children's rights and children should be protected in cases of abuse. In addition, they stated that in order to better implement children's rights, children and families can be informed about children's rights with posters and televisions in the hospital environment, children's playgrounds can be expanded, and environments, where children can stay with their families in the hospital, can be created. In line with these results, it can be said that healthcare professionals are aware of their responsibilities

in terms of children's rights. In their study, Fernandes Guerreiro (2014) found that attention has not cared to children's right to play and learning in the hospital [18]. In the study of Bisogni et al. (2015), it was reported that there are deficiencies in the implementation of the rights of hospitalized children in pediatric units according to the perception of pediatric nurses [14]. In the study of Schalkers et al. (2016), it was found that healthcare professionals thought that children were not active participants in health services [19].

## 5. Conclusion

This research, performed in order to determine healthcare professionals' perceptions regarding children's rights, revealed that although healthcare professionals had some knowledge of those rights, particularly the rights to life and development, they require greater awareness of how children's rights can be implemented within the hospital environment. In addition, the fact that healthcare professionals do not mention the right to respect the views of the child shows there is a serious need for education on that subject. In the light of our findings, we recommend that classes involving children's rights be included in the curricula of students in the field of medicine and health.

The awareness of children's rights among healthcare professionals serving the pediatric age group can also be raised through in-service seminars. Due to the lack of sufficient studies concerning children's rights in the literature, we recommend that particular priority be attached to these. Healthcare professionals' awareness of children's rights can thus be increased, and procedures during diagnosis, treatment, and care can thus be performed with a focus on the rights of the child.

**The Compliance to the Research and Publication Ethics:** This study was carried out in accordance with the rules of research and publication ethics.

**Ethics Committee Approval:** Ethical committee for the research was obtained before commencement from the Non-Interventional Clinical Research Ethical Committee of the Adiyaman University (date:26.06.2018/decision no. 2018/5-19).

**Informed Consent:** The health workers participating in the research informed about their consent were received in writing.

**Author Contributions:** Study design: T.KÖ, H.B, M.Y; Data collection: H.B; Data analysis: T.KÖ; Manuscript preparation: T.KÖ, H.B, H.A

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Research Article

# EXAMINATION OF NURSING STUDENTS' ACCEPTANCE LEVELS FOR AESTHETIC SURGERY AND AFFECTING FACTORS

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**Abstract:** *As a result of the rise of socioeconomic levels and globalization in the 21st century, aesthetic appearance has become more prominent, and the aesthetic/cosmetic sector has made great progress. Nursing education and practice are constantly evolving to meet the needs of the current community. The aim of this research is to examine the acceptance level of nursing students for aesthetic/cosmetic surgery and the affecting factors. This research is of descriptive type. It was conducted in the nursing department of a university in western Turkey (n:179). Permission was obtained from authors who made the adaptation of the scale used in this research, ethics board, institution, and students. The research data were collected using the introductory information form and Cosmetic Surgery Acceptance Scale (CSAS). Number, percentage, mean, standard deviation, Pearson correlation analysis, t-test, Mann Whitney u test, One-Way ANOVA, and Kruskal Wallis test were used to evaluate the data. 84.9% of nursing students were women, 58.1% had income equal to expenses, 23.5% had a father with an undergraduate or higher degree, and 49.2% lived in the city center before enrolling in university. 2.8% of students had previous experience of aesthetic surgery, 29.1% had a friend/family member undergoing aesthetic surgery earlier, 44.7% stated that those who underwent aesthetic surgery were stigmatized by the community, 48.6% stated that aesthetic surgery was not risky compared to other surgical procedures, 55.3% stated that they wanted awareness training about aesthetic surgery, and 47.5% stated that individuals underwent aesthetic surgery to become more beautiful. The mean CSAS score of nursing students was 56.11±21.80 (16.00-105.00). When looking at the characteristics that may affect acceptance levels of the students for aesthetic surgery, there was a statistically significant difference in terms of having a father with an undergraduate degree or higher education, living in the city center before enrollment at university, having a friend/family member with previous aesthetic surgery, not seeing aesthetic surgery procedures as more risky compared to surgical procedures and seeking awareness training related to aesthetic surgery. The aesthetic surgery acceptance level of nursing students was found to be moderate. The interaction of demographic and socio-cultural factors plays a role in accepting aesthetic surgery.*

**Keywords:** *Aesthetic surgery, Cosmetic surgery, Attitude, Nursing, Student.*

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## 1. Introduction

For humans, being physically healthy and beauty has always been important. People are looking for a solution in surgery for the body parts they do not like and obtain the health and beauty they want [1]. Aesthetic/cosmetic surgery is the process where tissues and organs with distorted shape and/or dimensions are changed in accordance with the patient's taste and ideal anatomical dimensions [2]. In some of the aesthetic surgical interventions, the purpose is treatment, it is beautification in others, and it is both treatment and beautification in some procedures [3]. Aesthetic surgery is part of plastic surgery [2]. Aesthetic surgery includes botox injections, facial rejuvenation surgery, endoscopic forehead surgery, skin regeneration (mechanical peeling, chemical peeling, laser surgery), filler applications (oil, silicone, teflon, fascia, etc.), eye surgery, nasal aesthetics, ear aesthetics, jaw aesthetics, breast aesthetics (breast augmentation (silicone), breast reduction or lifting, breast reconstruction, body shaping surgery and tummy tuck, aspiration of fatty tissues (liposuction, liposhaping), gynecomastia (large breast in men), genitals aesthetics and hair restoration [2-4].

As a result of the rise of socioeconomic level and globalization in the 21st century, aesthetic appearance has become more prominent, and the aesthetic/cosmetic sector has made great progress [5]. Television, the internet, and social media are full of messages to people about what constitutes beauty and how to reach ideal beauty [6-8]. Reduced costs with technological developments, shortened recovery period, safer and less invasive procedures increase the application of aesthetic surgery [9]. According to the global statistical data of the International Society of Aesthetic and Plastic Surgery (ISAPS), 15% of aesthetic surgeries performed in the world in 2019 were performed in the United States, 10.3% were performed in Brazil, 5.9% in Japan and the most common aesthetic operations performed were breast augmentation, liposuction, breast lifting, rhinoplasty, tummy tuck, and eyelid surgery, respectively [10]. Just like the world, aesthetic surgery has become widespread in Turkey in recent years and the number of surgical procedures has increased [4]. According to ISAPS 2019 data, Turkey ranks 7th among 95 countries in terms of aesthetic surgery applications. The most common procedures performed in Turkey are breast augmentation, liposuction, eyelid surgery, fat injection (face), and breast reduction [10].

The goals, reasons, and expectations of people seeking aesthetic surgery differ from each other [11]. According to Souiden and Diagne, the parameters affecting resorting to aesthetic surgery are collected under three headings: “personal variables”, “cultural beliefs”, and “marketing variables” [12]. The search for body satisfaction based on modern cultural norms increases the need for accurate knowledge and understanding from health workers. The rapid increase in this area of aesthetic surgery has left many nurses uninformed in terms of counseling and expertise in this field [6]. Patient care in aesthetic surgery practices includes perioperative care and psychosocial evaluation [11]. In the literature, it was stated that individuals experienced problems such as low self-esteem, negative self-perception, social isolation, fear of rejection in social relationships, disappointment, anxiety, depression, and sleep disturbance during the aesthetic surgery process. Achieving the goal and achieving healthy results in patients applying to aesthetic surgery applications requires a holistic approach in nursing care. Nurses should evaluate the individual's attitude, concerns and in which cases they need support, and should be supportive for patients with different personalities, abilities, interests, and expectations adapting to their new lives [13].

Nursing education and practice are constantly evolving to meet the needs of society. The

dynamic feature of nursing practice forces the profession to change and grow depending on the innovation in health care. The most important problem of patients undergoing aesthetic surgery is the absence of non-judgmental and informative health workers. Determination of attitudes related to aesthetic surgery is vital for proper nursing care. If acceptance of aesthetic surgery increases among patients without a similar increase among nurses and other healthcare workers, it can lead to severe patient care inequalities. In a study on nursing students, it was found that 50% of the students accepted patients undergoing aesthetic surgery. Most of the students stated that they would provide care for patients undergoing elective aesthetic surgery on an equal footing with other patients. Again, many students noted that they had difficulty empathizing with a patient undergoing elective aesthetic surgery with postoperative pain [6]. There is a limited number of studies related to aesthetic surgery in nursing students in the literature [6,14-15]. In this direction, the aim of this research is to examine the acceptance status of aesthetic surgery in nursing students and the affecting factors. In line with the findings obtained from the research, we think that important information can be obtained in terms of preparing students for the profession and educational processes.

## 2. Materials and Methods

### 2.1. Type of research

Descriptive research design was used in this study.

### 2.2. Place and Time of Research

The research was conducted between October-December 2020 at the Faculty of Health Sciences Nursing Department of a university in western Turkey.

### 2.3. Research Sample

The universe of the research consists of 890 students (First class: 187, second class: 193, third class: 189, fourth class: 321) who were studying at the nursing department at the time of the study. No sampling method was used to determine the research sample. The sample consists of 179 nursing students (First class: 79, second class: 33, third class: 31, fourth class: 36) who volunteered to participate in the research. The research sample consisted of 20.12% of the students studying in all classes.

### 2.4. Data Collection Tools

Research data were collected using the Introductory Information Form and Cosmetic Surgery Acceptance Scale.

#### 2.4.1 Introductory Information Form

The form prepared by researchers in accordance with the literature consists of questions on “age, gender, marital status, perceived economic status, parental education status, residence before enrollment at university, grade, academic achievement grade average, state of wanting to be a nurse, previous aesthetic/cosmetic surgery history, aesthetic surgery history of friends/family members, the state of stigmatization by society to those who undergo aesthetic surgery, perceived risk of aesthetic surgery compared to other surgical procedures, source of information about aesthetic surgery, the duration of daily social media use, state of requesting training on aesthetic surgery, clinical practice in plastic surgery clinic, reasons for individuals to undergo aesthetic surgery” [15-17].

### 2.4.2 Cosmetic Surgery Acceptance Scale (CSAS)

The scale was developed by Henderson-King and Henderson-King (2005) to determine the attitudes of individuals towards aesthetic surgery, and Turkish validity and reliability study was made by Karaca et al. in 2017. The scale consists of three sub-dimensions and is a 7-point Likert type scale (1=Completely disagree, 7=Completely agree). The sub-dimensions of the scale consist of intrapersonal dimension (1, 2, 4, 5, and 14), social (9, 11, 12, 13 and 15), and consider dimension (3, 6, 7, 8, and 10). The score range of the scale is 15-105. Higher scores in the total scale and sub-dimensions indicate a more positive attitude towards aesthetic surgery. The internal consistency coefficient (Cronbach's alpha reliability coefficient) was 0.92 for the entire scale, 0.81 for Factor 1 (Intrapersonal), 0.86 for Factor 2 (Social), and 0.90 for Factor 3 (Consider). The scale can be evaluated based on subdimensions and the overall scale, and high scores indicate that the person has a more positive attitude towards aesthetic surgery [18-19]. The internal consistency cronbach's alpha reliability coefficient of the scale for this study was 0.93. For this study, the internal consistency Cronbach's alpha reliability coefficient of the sub-dimensions of the scale was .88 for the intrapersonal sub-dimension, .84 for the social sub-dimension, and .92 for the consider sub-dimension.

### 2.5. Data Collection

Before the research data was collected, online surveys were created for data collection tools due to the COVID-19 pandemic process. Class representatives were contacted for each class and online surveys were shared in class WhatsApp groups. Students were informed about the research (research purpose, volunteerism to take part in the study, and so on) using the informed consent form. Students who filled out the data collection tools after reading the informed consent form were considered to have given consent.

### 2.6. Evaluation of Data

Evaluation of research data was carried out using the SPSS 25 statistical software program. Number, percentage, mean and standard deviation from descriptive statistics were used for the introductory characteristics of nursing students. The mean scores of the students received from the cosmetic surgery acceptance scale were presented as mean, standard deviation, minimum and maximum. Pearson correlation analysis, Student t-test or Mann Whitney U test, and One Way ANOVA or Kruskal-Wallis tests were used for those with normal distribution and for those who did not show normal distribution. $p< 0.05$ was accepted as statistically significant in all analyses.

### 2.7. Ethical Considerations

Ethical board approval, authorization from authors who adapted the scales used in the study, and institutional permission were obtained to conduct the research (Süleyman Demirel University Medicine Faculty Clinical Research Ethics Committee’s Decision: Date: 18.9.2020; Number: 19/270). Online consent was obtained from nursing students. "Informed consent form" included information on the purpose of research, implementation, data collection, volunteerism, and the students were informed that they could leave the research at any time. Students who filled out the data collection tools after reading the informed consent form were considered to have given consent.

## 3. Results

The mean age of the students was 19.78 (±1.46), 84.9% were female, 100.0% were single, 58.1% had income equal to expenses, 48% of the students' mothers were literate, 23.5% of the students' fathers had university or above education, and 49.2% lived in the city center before enrolling in the university. 44.1% of the students were first, 69.3% had an academic achievement grade average between 80-100 points, and 64.8% stated that they wanted to be nurses. 2.8% of students had aesthetic surgery history, 29.1% had friends/family members with aesthetic surgery history, 44.7% stated that people who underwent aesthetic surgery were subjected to public stigma, and 48.6% did not consider aesthetic surgery more risky than other surgical procedures. 75.4% of students received information about aesthetic surgery online, 45.8% used social media for 2-4 hours a day, 55.3% wanted to receive awareness training about aesthetic surgery, 12.3% had clinical practice experience in a plastic surgery clinic, and 47.5% stated that individuals underwent aesthetic surgery to be more beautiful (Table 1). The introductory characteristics of nursing students are given in Table 1.

**Table 1.** Introductory characteristics of nursing students (n: 179)

| **Variables** | | **Mean ± SD** | **Min-Max** |
|---|---|---|---|
| Age | | 19.78±1.46 | 18.00-24.00 |
| | | **N** | **%** |
| Gender | | | |
| | Female | 152 | 84.9 |
| | Male | 27 | 15.1 |
| Marital status | | | |
| | Single | 179 | 100.0 |
| Perceived economic status | | | |
| | Income equal to the expense | 104 | 58.1 |
| | Income higher than the expense | 26 | 14.5 |
| | Income less than the expense | 49 | 27.4 |
| Mother education status | | | |
| | Literate | 86 | 48.0 |
| | Below undergraduate level | 83 | 46.4 |
| | Undergraduate level and above | 10 | 5.6 |
| Father education status | | | |
| | Literate | 59 | 33.0 |
| | Below undergraduate level | 78 | 43.5 |
| | Undergraduate level and above | 42 | 23.5 |
| Residence before enrollment at university | | | |
| | City center | 88 | 49.1 |
| | County | 59 | 33.0 |
| | Village/town | 32 | 17.9 |
| Class | | | |
| | First-class | 79 | 44.1 |
| | Second class | 33 | 18.4 |
| | Third class | 31 | 17.3 |
| | Fourth class | 36 | 20.2 |
| Academic achievement grade average | | | |
| | 80-100 | 124 | 69.3 |
| | 60-79 | 55 | 30.7 |
| State of wanting to be a nurse | | | |
| | I want | 116 | 64.8 |
| | I don't want | 12 | 6.7 |
| | Partly | 51 | 28.5 |
| Previous aesthetic surgery history | | | |
| | Yes* | 5 | 2.8 |
| | No_ | 176 | 97.2 |

***Table 1. continued***

| Variables | | N | % |
|---|---|---|---|
| Aesthetic surgery history of friends/family members | | | |
| | Yes | 52 | 29.1 |
| | No | 127 | 70.9 |
| The state of stigmatization by society to those who undergo aesthetic surgery | | | |
| | Yes | 80 | 44.7 |
| | No | 25 | 14.0 |
| | Partly | 74 | 41.3 |
| The risky situation of aesthetic surgery compared to other surgical procedures | | | |
| | Yes | 33 | 18.4 |
| | No | 87 | 48.6 |
| | I'm not sure | 59 | 33.0 |
| Source of information about aesthetic surgery | | | |
| | Internet | 75.4 | 75.4 |
| | Other** | 24.6 | 10.6 |
| The duration of daily social media use | | | |
| | 0-2 hour | 23 | 12.8 |
| | 2-4 hour | 82 | 45.8 |
| | 4-8 hour | 59 | 33.0 |
| | 8 hours and above | 11 | 6.1 |
| | Few times a week | 4 | 2.3 |
| State of requesting training on aesthetic surgery | | | |
| | Yes | 99 | 55.3 |
| | No | 35 | 19.6 |
| | I'm not sure | 45 | 25.1 |
| Clinical practice experience in a plastic surgery clinic | | | |
| | Yes | 22 | 12.3 |
| | No | 157 | 87.7 |
| Reasons for individuals to undergo aesthetic surgery | | | |
| | Be more beautiful | 85 | 47.5 |
| | Low self-confidence | 63 | 35.2 |
| | For therapeutic purposes | 16 | 8.9 |
| | Other *** | 15 | 8.4 |

Note: **Mole removal, rhinoplasty, nose, chin, suture correction. ** TV, family, friends, undergraduate education. ***Building better interpersonal relationships, actions/comments of those around them, social media impact, all*

The mean score of CSAS was 56.11±21.80 (16.00-105.00). Average intrapersonal sub-dimension score was 23.85±7.72 (5.00-35.00), average social sub-dimension score was 12.69±7.46 (5.00-35.00) and average consider sub-dimension score was 19.57±9.89 (5.00-35.00) (Table 2).

**Table 2.** Total and sub-dimension scores of nursing students' acceptance of cosmetic surgery (n: 179)

| Variables | | | |
|---|---|---|---|
| | | **Mean ± SD** | **Min-Max** |
| **Cosmetic surgery acceptance** | **Total score** | 56.11±21.80 | 16.00-105.00 |
| | **Subdimension scores** | | |
| | Intrapersonal | 23.85±7.72 | 5.00-35.00 |
| | Social | 12.69±7.46 | 5.00-35.00 |
| | Consider | 19.57±9.89 | 5.00-35.00 |

There was no statistically significant relationship between nursing students' acceptance level of cosmetic surgery and age ($p > 0.05$) (Table 3).

**Table 3.** Investigation of the relationship between age and acceptance level of cosmetic surgery (n: 179)

| **Variables** | **Age** | |
|---|---|---|
| | r* | p |
| The acceptance level of cosmetic surgery | .121 | .107 |

**Pearson test.*

When the introductory characteristics that may affect students' acceptance levels of cosmetic surgery were investigated, a statistically significant difference was found for the education status of the father (undergraduate level and higher education), living in the city center before enrolling in university, having friends/family with previous aesthetic surgery, not thinking that the risk of aesthetic surgical procedure is higher than other surgical procedures, and wanting to receive awareness training related to aesthetic surgery (Table 4). The investigation of mean CSAS scores of nursing students in terms of introductory characteristics is given in Table 4. As a result of advanced analysis, the cosmetic surgical acceptance levels were higher in the students whose father's educational background was undergraduate education and above than those who were literate and in students who had lived in a city center prior to enrolling in the university than those living in a county in a statistically significant level. Also, the cosmetic surgical acceptance levels were higher in the students who did not think that esthetic surgical procedures were riskier than other surgical procedures than the students who thought that the procedures were risky and those who said "I don't know" and in the students who demanded awareness training than those who did not, in a statistically significant level.

**Table 4.** Investigation of mean cosmetic surgery acceptance scores of nursing students in terms of introductory characteristics (n: 179)

| **Variables** | **Cosmetic Surgery Acceptance** | |
|---|---|---|
| | **Mean± Standard deviation/ Median/Min-Max** | **Tests** |
| Gender | | |
| Woman | 53.00/16.00-105.00 | U=1836.000 |
| Male | 50.00/21.00-96.00 | p=0.384 |
| Perceived economic status | | |
| Income equal to the expense | 53.00/20.00-105.00 | |
| Income higher than the expense | 71.00/19.00-105.00 | KW=5.260 |
| Income less than the expense | 50.00/16.00-96.00 | p=0.072 |
| Mother education status | | |
| Literate | 50.50/16.00-105.00 | |
| Below undergraduate level | 56.00/20.00-105.00 | KW=2.586 |
| Undergraduate level and above | 61.50/22.00-94.00 | p=0.274 |
| Father education status *** | | |
| Literate | **50.25±20.53** | |
| Below undergraduate level | 56.60±21.25 | F=4.685 |
| Undergraduate level and above | **63.40±22.70** | **p=0.010*** |
| Residence before enrollment at university *** | | |
| City center | **60.69±22.30** | |
| County | **50.37±19.31** | F=4.280 |
| Village/town | 54.06±22.56 | **p=0.015*** |
| Class | | |
| First-class | 53.30±21.63 | |
| Second class | 55.27±22.20 | |
| Third class | 63.97±22.79 | F=1.820 |
| Fourth class | 56.25±20.13 | p=0.145 |

***Table 4. continued***

| | | Mean± Standard deviation/ Median/Min-Max | Tests |
|---|---|---|---|
| Academic achievement grade average | | | |
| | 80-100 | 55.79±20.99 | t=-0.290 |
| | 60-79 | 56.82±23.72 | p=0.772 |
| State of wanting to be a nurse | | | |
| | I want | 53.00/16.00-105.00 | |
| | I don't want | 58.00/20.00-105.00 | KW=0.244 |
| | Partly | 52.00/24.00-103.00 | p=0.885 |
| Previous aesthetic surgery history | | | |
| | Yes* | 54.00/53.00-88.00 | U=258.500 |
| | No | 53.00/16.00-105.00 | p=0.122 |
| Aesthetic surgery history of friends/family members | | | |
| | Yes | | |
| | No | 63.00±23.43 | t=2.757 |
| | | 53.28±20.54 | **p=0.006*** |
| The state of stigmatization by society to those who undergo aesthetic surgery | | | |
| | Yes | 57.36±21.85 | |
| | No | 60.80±23.30 | F=1.393 |
| | Partly | 53.16±21.11 | p=0.251 |
| The risky situation of aesthetic surgery compared to other surgical procedures*** | | | |
| | Yes | 47.12±22.30 | |
| | No | **63.13±21.23** | F=9.990 |
| | I'm not sure | 50.78±19.17 | **p=0.000**** |
| Source of information about aesthetic surgery | | | |
| | Internet | 57.49±22.08 | t=1.491 |
| | Other* | 51.86±20.61 | p=0.138 |
| The duration of daily social media use | | | |
| | 0-2 hour | 49.00/20.00-94.00 | |
| | 2-4 hour | 49.00/20.00-94.00 | |
| | 4-8 hour | 60.00/19.00-105.00 | |
| | 8 hours and above | 68.00/16.00-105.00 | KW=6.734 |
| | Few times a week | 64.00/53.00-83.00 | p=0.151 |
| State of requesting training on aesthetic surgery*** | | | |
| | Yes | **60.20±23.18** | |
| | No | **50.11±19.71** | F=4.103 |
| | I'm not sure | 51.76±18.44 | **p=0.018*** |
| Clinical practice experience in a plastic surgery clinic | | | |
| | Yes | | |
| | No | 66.00/26.00-90.00 | U=1325.000 |
| | | 52.00/16.00-105.00 | p=0.077 |
| Reasons for individuals to undergo aesthetic surgery | | | |
| | Be more beautiful | | |
| | Low self-confidence | 53.00/16.00-105.00 | |
| | For therapeutic purposes | 49.00/20.00-96.00 | |
| | Other | 54.50/26.00-97.00 | KW=2.243 |
| | | 58.00/20.00-94.00 | p=0.524 |

**p <0.05, **p<0.01, ***Post-hoc analysis was performed to determine which group the difference originated from. Tukey HSD test was performed for "father education status, residence before enrollment at university, risky situation of aesthetic surgery compared to other surgical procedures" variables. Games-Howell test was performed for the "State of requesting training on aesthetic surgery" variable.*

## 4. Discussion

According to the findings of the research, it was found that the acceptance level of nursing students for aesthetic/cosmetic surgery was moderate. Again, according to the findings, it was seen that the intrapersonal subdimension scores were higher compared to consider, and especially the social

subdimension. In two studies conducted on medical faculty students, similar acceptance levels were obtained for aesthetic surgery [16,20]. Subdimension scores obtained in the present study show similarity with another study conducted with university students [21] When we look at the subdimensions of the scale: (a) The intrapersonal subdimension evaluates the expected personal benefits from aesthetic surgery (e.g. increasing satisfaction from personal appearance). (b) The social subdimension evaluates the social motivations underlying the decision of aesthetic surgery (e.g. to be more attractive to the partner). (c) Consider subdimension determines the possibility of undergoing aesthetic surgery by calculating factors that may affect the decision-making process (e.g. pain) [18-19]. In a study on university students, the main sources of motivation for aesthetic surgery were 'becoming more beautiful' and 'lack of self-confidence in terms of appearance', whereas undergoing aesthetic surgery to establish interpersonal relationships or looking good for others was among the lesser sources of motivation [17]. In a study conducted on patients undergoing aesthetic surgery, the main reasons for patients included 'becoming more beautiful', 'looking younger than spouse, friends, and relatives', whereas 'pleasing someone else' was specified as a reason at much lower frequency [22]. The explicit motivations of people who underwent aesthetic surgery in Turkey include 'looking more feminine and masculine', 'looking-slender', 'looking young', and 'desire for more self-complacency'. The implicit motivations include being appreciated by the close environment, believing that it will be effective in influencing the opposite gender/emotional relationships, and acceptance by social groups [23]. Another study on medical students in Kenya indicated that students' attitudes towards aesthetic surgery were poor. In the same study, 62% of the students did not want to undergo aesthetic surgery in the future and 77% stated that their friend/family would be ashamed if they knew [24]. A study found that health workers have a high awareness of plastic surgery, but their predisposition was low. In the same study, 19% would not undergo plastic surgery even if it was free, and only 34% stated that aesthetic surgery is socially acceptable [15]. A study on university students in Nigeria reported that the majority of students would undergo plastic surgery if necessary [25]. Culture, religious beliefs, and media are important factors reported in the literature [26]. In a study, it was reported that Islamic religion had an effect on the attitude towards aesthetic surgery [27]. The physical beauty of the individual is not emphasized in Islam and the aesthetic surgeries performed in order to become beautiful are evaluated as harm to the body and not approved [26]. In this regard, the findings of the present study are consistent with the findings in the literature and it can be assumed that the acceptance levels of students are moderate based on the factors mentioned above.

According to the findings of the research, students who have a father with undergraduate or higher education and lived in the city center before enrolling in the university have higher acceptance levels for aesthetic surgery. A study on students studying health-related fields found that aesthetic surgery attitudes were more positive in students who have a father with undergraduate or higher education [14]. In the literature, it is stated that education is a decisive motivation in terms of applying to aesthetic surgery [26] and people who decide to undergo aesthetic surgery are mostly university graduates [22, 28]. The educational level usually provides information about the cultural capital of people deciding to undergo aesthetic surgery. As the level of education increases, the improvement of socio-economic conditions of the individual makes aesthetic surgical interventions more attractive [23]. In this direction, having a father with undergraduate or higher education can be a facilitator for deciding to undergo aesthetic surgery due to a better socioeconomic level and positive attitude towards aesthetic surgery. In Turkey, 48% of all aesthetic surgeons are located in large cities and individuals who have undergone

aesthetic surgery are densely located in these cities. Furthermore, the non-traditional way of life in large cities provides more opportunities for individuals to modify their external appearance, and aesthetic surgeries are therefore concentrated in these regions [23]. Accordingly, the acceptance levels of students living in cities are higher, which suggests that seeing more people with aesthetic surgery normalizes the person's attitudes and also people living in cities can access aesthetic surgeons more easily.

According to the findings of the present study, students with friends/family who have previously undergone aesthetic surgery, who think that the risk of aesthetic surgery is not different from other surgical procedures, and students who want awareness training related to aesthetic surgery had higher acceptance levels for aesthetic surgery. In a previous study, it is stated that having friends/family who has had plastic surgery creates an indirect experience in the individuals, and the friends/family are perceived as different and more positive than the stereotypical aesthetic surgery patient [29]. In a study conducted on medical faculty students, a difference was found between students with family/friends who have had aesthetic surgery and students without [16]. Although it is associated with factors such as body perception, internalization, and social comparison processes, it is an unstable structure that is affected by images and messages in the media. However, it is noted in the literature that the comparisons made by people are usually made with friends, relatives, and other acquaintances rather than celebrities [30]. In a study on undergraduate students, family support was found to play an important role in the intention/attitude for aesthetic surgery [31]. In a study on undergraduate students, it was noted that previous aesthetic surgery experience was associated with aesthetic surgery acceptance [32]. In the literature, it is reported that despite the transformation in the general population, those who undergo aesthetic surgery are subject to stigma by individuals including health workers [6]. In the present study, 44.7% of the students stated that people who underwent aesthetic surgery were stigmatized by society. In line with these findings, having friends/family with aesthetic surgery familiarizes these patients, provides normalization and acceptability of surgery, and has a positive effect, as it breaks stereotypes. Again, students thinking the risk of aesthetic surgery was not different from other surgical procedures, and those who wanted awareness training had more positive attitudes, which suggests that normalizing thoughts about aesthetic surgery and being interested in aesthetic surgery influences attitudes.

## 5. Conclusion

It was found that nursing students' attitudes towards aesthetic surgery acceptance were moderate. Again, having a father with undergraduate and higher education level, living in the city center before enrollment at university, having friends/family with aesthetic surgery, thinking that the risk of aesthetic surgery is not different from other surgical procedures, and wanting awareness training about aesthetic surgery had a significant effect on aesthetic surgery acceptance. The number of studies on the acceptance of aesthetic surgery in nursing students is limited and further research is needed on different samples. Furthermore, studies related to the reflection of attitude related to aesthetic surgery on patient care should be conducted. The interaction of demographic and socio-cultural factors plays a role in applying for aesthetic surgical interventions. It is especially important to assess which factors play a motivating role in undergoing aesthetic surgery. Nursing education should address what should be the approach in terms of ethics, legal issues, and practice related to plastic surgery. Different perspectives of aesthetic surgery should be addressed in nursing education, appropriate beauty values should be created and training should be provided to ensure rational decisions about aesthetic surgery. In order for patients to

get the best treatment, it is important to raise the awareness of patients, nurses, and healthcare workers about aesthetic surgery and their role in the health care system.

**Ethical Considerations:** Ethical board approval and institutional permission were obtained to conduct the research. (Süleyman Demirel University Medicine Faculty Clinical Research Ethics Committee's Decision: Date: 18.9.2020; Number: 19/270).

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Research Article

# KOLORTA NURSING ATTITUDE SCALE VALIDITY AND RELIABILITY STUDY

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**Abstract*:*** *In this study, for the purpose of determining the attitudes of nurses and nursing undergraduate students towards the nursing profession, the validity and reliability study was tried to be performed for the "Kolorta Nursing Attitude Scale." In the study, the experiment form consisting of 45 expressions was applied to a sample of 1034 participants, of which 76.3% were female, 43.4% were nurses, and 56.6% were nursing students. The scale validity and reliability study consisted of the steps of examination of the theoretical structure, obtainment of the work permit, the stage of item writing, the language and psychometric controls, the pilot application for the item selection, obtainment of an expert opinion, creation of the experiment form and its application to the sample, validity, and reliability, and finalization of the scale. The validity of the scale was determined by examining the structural validity and internal validity of the scale. Factor analysis was used to determine the structural validity, and 27% subgroup and supergroup comparison were used to determine the internal validity. In order to test the reliability of the scale, the Cronbach's alpha reliability coefficient and test-retest consistency were calculated. The developed "Kolorta nursing attitude scale" consists of 3 sub-dimensions and 23 items, and it can explain 61.6 of the total variance for nursing attitudes. The total score of the scale ranges from 23 to 115, and the increase in score means a positive attitude towards nursing. The general Cronbach's alpha reliability coefficient of the scale was calculated as .90, which indicates high reliability. According to the results, it is observed that the "Kolorta nursing attitude scale," of which validity and reliability study was performed for the purpose of measuring attitudes towards nursing, can perform measurements in a valid and reliable way.*

***Keywords:*** *Nursing, attitudes, validity, reliability*

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## 1. Introduction

Nursing is a profession that succeeds in renewing itself with social-cultural and technological changes from past to present, which aims to provide care to patients and healthy individuals from every age group, families, and society, which have the ability to work with other members of the health care team, which is based on philosophy, theory, practice, and research [1], and which requires many qualities such as independent thinking, creativity, and competence [2].

Nurses, who constitute the largest group of health care workers, are the professional group that determines patient requirements, plans and applies care, and evaluates the efficacy of care, accompanies the patient for 24 hours without interruption, and at the same time ensures the coordination of health care team members [3]. Therefore, the importance of nurses in the health care team cannot be denied. However, the inadequacy of the number of nurses is a global problem, and this problem grows in parallel with the speed of nurses' leave from the profession [4-6]. Estimates suggest that this inadequacy will amount to 15 million in the 2030s [6]. Studies demonstrate that the negative attitudes of nurses towards the profession are an important factor in the inadequate number of nurses. This situation does not only affect the recruitment of new-qualified nurses, but it is also associated with the turnover of nurses and their leave from the profession [7]. Therefore, determining the attitudes of nurses and nurse candidates towards their profession becomes more important.

The attitude is a tendency to react positively or negatively to a particular object, situation, institution, concept, or other people. The attitude manifests itself with feelings, thoughts, and actions [8]. By measuring the attitudes of the health personnel, especially of nurses who spend the most time with the patient, towards their occupation, which factors influence them in their motivation for their occupation and what are their expectations from their occupation can be determined in advance [9]. Moreover, it is stated that positive attitudes towards the nursing profession have a positive effect on nurses' staying in the profession [10]. While nurses' perceptions of their profession affect how they see themselves within the community and their motivation, they can also be effective on their performance in the working life [11].

Investigation of the "attitude," which affects the motivation of nurses, their performance in the working life, as well as staying in the profession, becomes crucial. Although there are various measurement tools used in the field of nursing upon reviewing the literature, it is observed that some measurement tools were developed by ignoring the standards specified in the literature in terms of the variances and factor eigenvalues they explained. Furthermore, the high number of items of some measurement tools or quite long items constitute an essential problem for nurses who do not want to participate in scientific studies due to their intense work tempo and limited time and for researchers who conduct studies in this field. By using the nursing attitude scale developed in this study, it is aimed to meet this need and guide the related studies.

This study has a unique value in terms of developing a measurement tool, which is developed by considering the factor load and variance values proposed in the literature, which consists of a small number, short and comprehensible statements, which is practical but covers the concept fully and has a high capacity of accurate measuring.

## 2. Material and Methods

Study design should be implied as a methodological study. Developing the Kolorta nursing attitude scale consisted of the stages of examining the theoretical structure, ethics, permits, item writing, creating the draft form, pilot implementation, scope validity (expert opinion), creating the trial form, applying the trial form to the sample, obtaining the results (construct validity and reliability), and giving the final form to the scale.

### 2.1. Examination of the theoretical structure

At this stage, the literature on nursing and attitudes towards nursing was reviewed, and the conceptual framework of the subject was determined.

### 2.2. Ethics and permits

Ethics committee approval was obtained from the Scientific Research and Publication Ethics Board of Artvin Çoruh University (Dated 18.05.2017, session numbered 2017/3 and decision numbered 8), and institutional permission was obtained from the institutions where the data collection stage was carried out.

### 2.3. Creation of the question pool

This stage consisted of sub-stages such as literature review, composition writing, and focus group interview. At the stage of literature review, studies examining attitudes and opinions about the nursing profession in databases and printed sources were examined, and statements that could be an attitude were included in the question pool. At the stage of composition writing, six nurses and 45 nursing students were asked to write their feelings, thoughts, and behaviors about nursing and the nursing profession in the form of items, and statements including feelings, thoughts, and behaviors about nursing were transformed into attitude statements and added to the question pool. At the focus group interview stage, a student group consisting of 9 individuals was interviewed according to the literature recommendations [12]. After all these processes, a question pool consisting of a total of 57 statements was obtained.

### 2.4. Creation of the draft form

This study aimed to develop a 5-point Likert-type scale. Likert- type scales are the scales in which responses of various degrees may be given to statements according to the predetermined stimuli, criterion, or set of criteria, and which are commonly used in the tools which measure thoughts, beliefs, and attitudes by combining multiple questions of Likert type [13-15].

### 2.5. Pilot implementation

Prior to the studies being conducted especially with a large number of samples, being sure that the questions in the forms are understood correctly and completely by the sample is very crucial in terms of the reliability of both the data and the study. Therefore, the pilot implementation was performed in a group of 55 individuals carrying the characteristics of the sample in this study. This number is quite sufficient for pilot implementation because, in the literature, 30-50 people are stated to be sufficient for pilot implementation [16]. As a result of the implementation, it was determined that there were

statements that were not understood or were misunderstood by the sample, and by making the necessary corrections, a draft form consisting of 52 statements was obtained.

### 2.6. Content validity

Content validity is the deciding process about at what level the items constituting the test represent the universe of the measured behaviors; it is determined according to the expert opinion [17,18]. For assessing the content validity, the draft form, in which the necessary corrections were made after the pilot implementation, was sent to 10 experts consisting of academicians experienced in scale development, nursing, measurement and evaluation, and psychology (statistician, measurement and evaluation specialist, psychologist, nurse), and their opinions were requested. After the necessary corrections were made according to the expert suggestions, the draft form was reduced to 47 statements. Afterward, this draft form consisting of 47 statements was evaluated by experts in terms of Turkish language validity, and according to their opinions, the question form was corrected in terms of language and grammar. After the corrections, the draft form consisted of 45 statements in total.

### 2.7. Creation of the trial form

Statements in the draft form were arranged in the form of 1 = "I totally disagree", 2 = "I disagree", 3 = "I agree moderately", 4 = " I agree", 5 = "I agree completely", and the 45- statement trial form was obtained.

### 2.8. Application of the trial form to the sample

The obtained 45-statement trial form was applied to a sample of 1097 people of whom 76,3% were women, 43,4% were nurses, and 56,6% were nursing students. The sample of the study consisted of 1034 people because the participants, who filled out the trial form incompletely or who were considered to fill out the form randomly, were excluded from the study.

Two criteria were taken into consideration in determining the number of samples required for this study. One of them is the adequacy of the number of individuals to be included in the sample, and the other one is the Kaiser-Meyer-Olkin (KMO) test for determining the adequacy of the data obtained from the sample. Although there are various suggestions in the literature for the size of the sample to be taken in scale development studies [19,20], while Ho (2006) suggested that the number of samples should not fall below 100 to conduct factor analysis (p.207) [21], Comrey and Lee stated that 100 is weak, 200 is medium, 300 is good, 500 is very good, and 1000 is excellent [22]. In the evaluation of the KMO values, the KMO values close to 1 are evaluated as excellent, and the KMO values below 0.50 are evaluated as unacceptable. According to this evaluation, values around 0.50 are considered poor, 0.60 - 0.70 mediocre, 0.80 very good and 0.90 excellent [23]. In this study, the number of samples is over 1000, and the KMO value is 0.936, and these indicate that the number of samples is excellent and the data obtained from the sample are sufficient.

### 2.9. Validity and Reliability

Validity is the fact that the measurement tool used is appropriate to the feature desired to be measured, the data precisely reflect the quality of the feature desired to be measured, and at the same time, the data are useful for the purpose [20]. Reliability can be defined as the fact that test or scale results accurately reveal the phenomenon of conceptual structure, and that the measurement tool gives

similar results when applied in different places, at different times, and in different masses selected from the same mass [20].

In order to determine the construct validity of the scale developed to reveal attitudes towards nursing, "Principal Component Analysis," which is one of the "Exploratory Factor Analysis" techniques, was used. Exploratory factor analysis helps to collect the items in the measurement tool in certain sub-factors [24]. In factor analysis, when factors are obtained for the first time, they are not obvious, and therefore it is difficult to give meaning and interpret them since most of the variables are collected under the most significant factor with the highest load [25]. Therefore, the process of factor identifying, i.e. "rotation" is performed. At the end of the rotation, factors find items that are highly correlated with them, and as a result, the interpretation of factors becomes easier [25]. In the rotation process, "vertical rotation techniques" are used if there is no theoretical structure that requires factors to be related to each other, and "oblique rotation techniques" are used if there is a structure that requires factors to be related to each other [24,25].

In this study, since it was considered that there might be a relationship between the factors and it was desired to reveal a structure composed of theoretically interrelated factors, the "direct oblimin technique" among oblique rotation techniques was used as the factor rotation technique, and the maximum iterations for convergence were set at 15. For the internal validity of the scale, a lower-upper group comparison of 27% was made. For the reliability of the scale, Cronbach's α reliability coefficient (Cronbach's Alpha) and test-retest consistency were used.

## 3. Results

The results related to preliminary statistics and the validity and reliability of the scale were presented in this section.

### 3.1. Preliminary statistics

At this stage, firstly, the suitability of the data for factor analysis was investigated. In order to determine the suitability of the data for factor analysis, prior to factor analysis, it is recommended to check the normality assumption, to check the item reliability, to calculate the Kaiser-Meyer-Olkin (KMO) coefficient, and to perform Barlett's sphericity test [14,26].

Checking the normality assumption: In order to check the normality assumption, the data obtained from 1034 nurses and nursing students were examined, and the kurtosis and skewness values were controlled. The kurtosis and skewness values were determined to be within the acceptable limits (skewness<2, kurtosis<7) according to the literature [20].

Item reliability, i.e. the average of the item-total score correlation coefficients: It is calculating the correlation between the scores of each item and the total scores of a five- or seven-grade scale in attitude scales (indices) or of the scale/test which may be composed of double-digit values in knowledge and achievement tests [20]. If the item-total score correlation coefficient is below 0.30, it should be considered that there is a problem in the item [20], and the item should be either changed or excluded from the scale.

In the analysis, the correlation coefficient of 5 items ($M_2$, $M_{15}$, $M_{32}$, $M_{42}$, $M_{43}$, and $M_{44}$) was determined to be below 0.30, and therefore, they were excluded from the scale. The correlation coefficient of the remaining 40 items ranged from. 37 to. 75.

Kaiser-Meyer-Olkin (KMO) coefficient and Barlett's sphericity test: The KMO coefficient gives information about the suitability of the data matrix for factor analysis and the suitability of the data structure for factor extraction. The KMO is expected to be higher than. 60. The fact that the calculated chi-square statistics are significant is an indication that the data matrix is suitable. Barlett's sphericity test examines whether there is a correlation between the variables on the basis of partial correlations. The fact that the calculated chi-square statistics are significant can be regarded as proof of the normality of the scores [26]. For the 40 items evaluated, the KMO value was determined to be. 97, and Bartlett's test result was determined to be 24504.358 ($p<.0001$). These values demonstrate that the trial form is suitable for factor analysis.

**Table 1.** Item-Total Test Correlation Values

| Item No | Item Correlation | Item No | Item Correlation | Item No | Item Correlation | Item No | Item Correlation |
|---|---|---|---|---|---|---|---|
| **M1** | .368 | **M13** | .662 | **M25** | .437 | **M37** | .703 |
| ***M2** | .233 | **M14** | .608 | **M26** | .677 | **M38** | .521 |
| **M3** | .723 | ***M15** | .275 | **M27** | .747 | **M39** | .553 |
| **M4** | .671 | **M16** | .731 | **M28** | .598 | **M40** | .689 |
| **M5** | .710 | **M17** | .529 | **M29** | .649 | **M41** | .387 |
| **M6** | .587 | **M18** | .716 | **M30** | .616 | **M42** | .700 |
| **M7** | .622 | **M19** | .703 | **M31** | .697 | ***M43** | .225 |
| **M8** | .522 | **M20** | .494 | ***M32** | .009 | ***M44** | .220 |
| **M9** | .463 | **M21** | .607 | **M33** | .431 | **M45** | .716 |
| **M10** | .668 | **M22** | .552 | **M34** | .407 | | |
| **M11** | .603 | **M23** | .586 | **M35** | .705 | | |
| **M12** | .669 | **M24** | .521 | **M36** | .569 | | |

***Items of which the item-total correlation value was below 0.30 and which were excluded from the scale

### 3.2. Validity

The validity of the scale was tested by examining the scale's construct validity and internal validity. Factor analysis was performed to determine to construct validity, and a 27% lower-upper group comparison was made to determine internal validity.

**Construct Validity:** Exploratory factor analysis was performed to determine to construct validity. Exploratory factor analysis is a method that is useful in determining under how many headings the items (variables) will be gathered in a measurement tool prepared and implemented as a draft and that aims to find factors based on the relationship between the variables and that is commonly used to determine the construct validity of the scale [17.24.26]. While determining the number of factors to be included in a scale, in the factor analysis, the eigenvalue of each sub-dimension should be at least 1 and higher, and it should explain at least 5% of the variance. Furthermore, the opinion that the variance explained by the scale should be higher than the variance that cannot be explained is accepted as a fundamental principle [24]. In this study, these criteria were given importance at a maximum level. While determining the factors, attention was paid to the fact that the eigenvalue of each factor was greater than 1 and each factor could explain at least 5% of the variance, and the total variance was above 50%, and the selection of the items was made accordingly. Moreover, the line graph was observed to

lose its slope after the 3rd factor, and it was determined that the scale could consist of 3 factors, each of which could explain at least 5% of the variance and had an eigenvalue greater than 1.

After examination of the line graph, factor load values, and explained variances, item selection was made over the 3-factor structure of the scale through factor analysis. Factor analysis is a multivariate statistic aiming to find and explore a small number of new variables (factors, dimensions) that are unrelated and conceptually meaningful by bringing together the p number of variables related to each other [26]. Various criteria are suggested in the literature for item selection in factor analysis. The first one of these is related to the factor load value. Although the items' factor load value of 0.45 and above is a suitable criterion for selection, this value can decrease up to 0.30. In this study, item selection was performed more rigidly, and the items with a factor load value of 0.50 and higher were selected. The second criterion is that the items have a high load value in one factor and a low load value in other factors. It is recommended that the difference between the two high load values should be at least. 10 [24,26]. In this study, this criterion was taken into consideration, and the items, of which difference between two high load values was at least. 10, were considered as overlapping items and were not put into the process. As a result of the factor analysis, ten items with the factor load value below .50, and seven overlapping items were excluded from the study, and the study was continued with a 23-item trial form.

**Table 2.** Factor values and variance ratios of the Kolorta nursing attitude scale

| Factors | Eigenvalue | Variance Percentage (%) | Cumulative Variance Percentage (%) |
|---|---|---|---|
| **Factor 1** | 11.01 | 47.9 | 47.9 |
| **Factor 2** | 1.80 | 7.8 | 55.7 |
| **Factor 3** | 1.35 | 5.9 | 61.6 |

In the obtained 3-factor scale, the first factor explained 47,9% of the total variance, the second factor explained 7,8% of the total variance, and the third factor explained 5,9% of the total variance. It was determined that three factors together explained 61,6% of the total variance. These percentages indicate that the variance explained by the factors separately and together is sufficient.

As a result of the process of selecting items for the factors, a scale consisting of 3 dimensions and 23 items was obtained. The first factor consists of 12 items, and the factor load values of the items vary between. 507 and. 771. The second factor consists of 8 items, and the factor load values of the items vary between .564 and .763. The third factor consists of 3 items, and the factor load values of the items vary between .593 and .788. As a result of evaluations and expert opinions, it was found appropriate to name factor 1 as "professional preference" since it includes statements related to the preference of profession, the continuation of the profession, and personal adjustment. When factor 2 was examined, this factor was observed to be related to the adoption of the profession, and this dimension was named "professional adoption." When factor 3 was examined, this factor was observed to be related to the respectability of the profession and was named " professional respectability."

**Table 3.** Factor items and Item factor load values

| Item No | Factor 1 | Factor 2 | Factor 3 |
|---|---|---|---|
| **M30** | .771 | | |
| **M29** | .763 | | |
| **M25** | .750 | | |
| **M10** | .718 | | |
| **M26** | .712 | | |
| **M18** | .692 | | |
| **M27** | .644 | | |
| **M12** | .617 | | |
| **M42** | .607 | | |
| **M19** | .605 | | |
| **M6** | .539 | | |
| **M16** | .507 | | |
| **M31** | | .763 | |
| **M35** | | .761 | |
| **M45** | | .745 | |
| **M39** | | .717 | |
| **M5** | | .708 | |
| **M40** | | .686 | |
| **M3** | | .620 | |
| **M37** | | .564 | |
| **M22** | | | .788 |
| **M23** | | | .776 |
| **M24** | | | .593 |

*Factor 1: Professional preference, Factor 2: Professional adoption, Factor 3: Professional respectability*

**Internal validity:** Whether or not the items that were decided to be kept in the scale had internal validity was tested by the "t-test in independent groups." The test scores obtained from the scale were ranked from small to large, and 27% of the sample consisting of 1034 people was determined to be 279 people. Afterward, 279 people with the lowest score according to the scale score were re-coded as the lower group, and 279 people with the highest score were recoded as the upper group. The remaining people were not included in the process. After this process, whether the difference between the lower group and the upper group was significant was examined by the t-test in independent groups."

**Table 4.** Results related to the internal validity of the Kolorta nursing attitude scale

| Group | n | Average | Standard Error | t | p |
|---|---|---|---|---|---|
| **Lower Group** | 279 | 54.86 | .666 | 62.029 | .000 |
| **Upper Group** | 279 | 102.50 | .380 | | |

**p<0.001*

When the results related to the internal validity of the nursing attitude scale were examined, the difference between the scale's average scores of the lower group and the upper group was determined to be significant ($p<0.001$). According to this result, it can be said that the Kolorta nursing attitude scale

distinguishes individuals who have positive attitudes towards nursing from individuals who have negative attitudes, i.e. the scale has internal validity.

### 3.3. Reliability

In Likert-type scales, firstly, internal consistency should be checked. Internal consistency is related to the extent to which the items that make up the scale are compatible with each other. The most convenient way for this is to calculate Cronbach's α reliability coefficient. Besides, if necessary, reliability can be tested using the test-retest method [8,19]. In this study, Cronbach's α reliability coefficient and test-retest consistency were calculated in order to test the reliability of the scale.

**Cronbach's Alpha:** The reliability coefficients can be calculated with the help of different methods in the enhancement of measurement tools developed to measure cognitive and affective characteristics. One of these methods is Cronbach's Alpha (Cronbach's α) reliability. The coefficient of reliability that can be considered sufficient in a Likert-type scale should be above .70, but this value is desired to be as close to 1 as possible [8,13]. Cronbach's α value for research scales is recommended to be as follows: Unacceptable under .60, not desirable between .60 and .65, acceptable at a minimum level between .65 and .70, notable between .70 and .80, and very good between .80 and .90. When it is much higher than .90, the researcher is recommended to shorten the scale [13].

In this study, Cronbach's α value was calculated to be .90 for the overall scale. This value indicates that the reliability of the items in the scale is high and they aim to measure the same attitude. In other words, it can be said that this scale reliably distinguishes the attitudes of nurses and nursing students towards nursing.

**Table 5.** Results related to the reliability of the Kolorta nursing attitude scale

| Factor | Factor name | Number of items | Cronbach α value |
|---|---|---|---|
| Factor I | Professional preference | 12 | .92 |
| Factor II | Professional adoption | 8 | .91 |
| Factor III | Professional respectability | 3 | .79 |
| | **Total** | **23** | .90 |

**Test-Retest Consistency:** For the reliability of the scale, in addition to Cronbach's α reliability coefficient, the test-retest consistency of the scale was also calculated. This method was preferred since no significant change in the attitudes of the sample towards the nursing profession was expected. Test-retest reliability is a measure of the ability of a measurement tool to yield consistent results from implementation to implementation [8]. In this study, the validated 23-item form was implemented to 76 people from the study universe for test-retest reliability at a three-week interval. As a result of these implementations, no statistically significant difference was observed between the two measurements ($p>0.05$). According to this result, it was determined that the obtained scale is reliable and that it measures attitudes towards clinical practice reliably.

### 3.4. Scale instruction:

The "Kolorta nursing attitude scale" was developed in order to determine the attitudes of nurses and nursing students towards nursing. The obtained 23-item scale was renumbered from 1 to 23 from small to large, and the final shape was given to the form. The scale consists of 3 sub-dimensions and 23

items and can explain 61.6% of the total variance for nursing attitudes. The first factor consists of 12 items (Item 2, 3, 4, 7, 8, 10, 11, 14, 17, 18, 20, and 23) and its Cronbach's α reliability coefficient is .92. The second factor consists of 8 items (Item 1, 5, 6, 9, 12, 15, 19, and 22) and its Cronbach's α reliability coefficient is .91. The third factor consists of 3 items (Item 13, 16, and 21) and its Cronbach's α reliability coefficient was determined to be .79. The overall Cronbach's α reliability coefficient of the scale was calculated to be .90, and this value indicates high reliability. In the scoring of the scale, items 2, 3, 4, 7, 8, 10, 11, 14, 17, 18, 20, and 23 are scored inversely. The total score that can be taken from the overall scale varies between 23 and 115. The average response time to the form was determined to be 72 seconds.

## 4. Conclusion and Recommendations

As a result of this study, the validity and reliability of the Kolorta nursing attitude scale were tested to measure the attitudes of nurses and nursing students towards nursing. The developed attitude scale is a valid scale in terms of scope and content and has high reliability. Researchers conducting studies in the clinical field frequently experience failures in data collection processes due to the intensive work tempo of nurses and the length of questionnaires. Therefore, in this study, the number of questions was kept at a minimum level, and the statements were designed as short and clear as possible, in order for both the researchers to be able to use the form easily and nurses and nursing students to be able to answer the form in a practical way. Thus, it was attempted to provide saving from resources. With this developed scale, the professional attitudes of nurses and nursing students can be determined, and initiatives can be taken to improve these attitudes. Thus, it can be ensured that positive professional attitudes are reflected in the health care system in a positive way, by increasing professional quality and job satisfaction.

**Ethical Statement:** Ethics committee approval was obtained from the Scientific Research and Publication Ethics Board of Artvin Çoruh University (Dated 18.05.2017, numbered 2017/3).

**The compliance to Research and Publication Ethics**: This work was carried out by obeying research and ethics rules.

**Conflict of Interest**

No conflict of interest has been declared by the authors.

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Research Article

# PROSPECTIVE EVALUATION OF MEDIUM-TERM OUTCOMES OF PATIENTS UNDERGOING HYSTEROSCOPIC UTERINE SEPTUM RESECTION

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**Abstract:** *The study aimed to retrospectively and prospectively investigate the pregnancy outcomes after hysteroscopy (H/S) for septum resection in patients detected to have a uterine septum after presenting with a history of recurrent pregnancy loss (RPL), diagnosis of secondary infertility, or primary infertility. This study included 62 patients with infertility or a history of RPL who underwent hysteroscopic uterine septum resection. Patients who had uterine anomalies other than a uterine septum, such as submucous myoma, endometrial polyp were excluded. Those discharged home with a live infant after a uterine septum operation were compared based on certain variables, those who succeeded and those who failed were categorized into group 1 and group 2, respectively. The two groups were compared with regard to the total number of deliveries before and after the operation, the total number of abortions, preterm and term deliveries, delivery methods, control hysterosalpingographies (HSG), and whether they were reoperated. In our study, 25 (40%) patients were primary infertile, 37 (60%) had secondary infertility or a history of RPL. Hysteroscopic septum resection was performed under general anesthesia in 61 and spinal anesthesia in 1 of these patients. Of the patients who were postoperatively discharged home with a live infant, 8 (26.7%) were determined to be primarily infertile and 22 (73.3%) to have secondary infertility or a history of RPL. The rate of discharge with a live infant was determined as 76.9% among patients who conceived. The success rate of Group 1 patients, who were secondary infertile or had a history of RPL, was significantly higher compared to patients who were primary infertile. Hysteroscopic uterine septum resection is a method with an easy application and high effectiveness. The success of the operation is particularly higher in patients who have a history of RPL or are secondary infertile compared with patients who are primary infertile.*

**Keywords:** *Infertility, recurrent pregnancy loss, uterine septum, hysteroscopy*

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## 1. Introduction

Infertility is the inability to conceive despite no use of contraceptive methods at an appropriate frequency for one year or longer. Primary infertility is the absence of a history of pregnancy and secondary infertility is the absence of another pregnancy after having previously conceived by any method. The ability to conceive is defined as fecundability [1]. For a normal, young couple, the probability of conception is 25% at the end of one month and 85-90% at the end of one year. About 10-15% of couples in the reproductive period complain of the inability to conceive [2]. The primary causes of infertility are; ovulatory dysfunction (20-40%), tubal and peritoneal pathology (30-40%), male factor (30-40%), unexplained infertility (10%), and uterine pathologies (10-15%). Intrauterine pathologies can be surgically treated [3].

Recurrent pregnancy loss (RPL) is defined as two or more pregnancy losses. It affects less than 5% of couples. A significant portion is unexplained [4]. According to the Royal College of Obstetricians and Gynaecologists (RCOG) guidelines, the rate of Mullerian anomalies in individuals with RPL varies between 1.5% and 37% [5]. There is evidence suggesting that a uterine septum should be considered in RPL patients since uterine septa are associated with a higher number of pregnancy losses and uterine septum resection can decrease the rates of miscarriage [6].

Uterine septum is the most common congenital Mullerian anomaly [7]. It can contribute to the occurrence of unfavorable obstetric outcomes such as infertility, pregnancy loss and malpresentation, and preterm delivery. However, many women with uterine septa may not experience difficulty in reproduction [8]. There are a few minimally invasive surgical techniques used in uterine septum treatment. The primary therapeutic option for a uterine septum is septum resection with a resectoscope [9]. Septum resection was reported to be related to an improvement in the obstetric outcomes such as increasing the delivery rate, increasing the term delivery rate, and increasing the number of pregnancies in patients who were infertile prior to septum resection [10].

Our study aims to retrospectively evaluate the pregnancy outcomes after hysteroscopic septum resection in patients who presented to our clinic with a history of RPL, a diagnosis of secondary infertility or primary infertility, and were diagnosed with a uterine septum, and to contribute to the literature.

## 2. Materials and Methods

This study evaluated 62 patients who presented to the Gynecology and Obstetrics Clinic of Dicle University, Faculty of Medicine between January 2010-December 2018 with primary infertility, secondary infertility, or RPL, were diagnosed with septum based on hysterosalpingography (HSG) and ultrasonography (USG) and underwent hysteroscopic septum resection. Approval was obtained for this study from the local ethics committee of our University (Ethics committee Date:06.02.2020, No:103). Surgical consent forms included consent to the use of patients' information for the study.

All patients included in this study underwent HSG and USG. According to the examination results, patients with submucous myoma, endometrial polyp, and uterine anomalies other than a uterine septum (such as uterus didelphys**,** unicornuate uterus, bicornuate uterus) and patients diagnosed with infertility who had pathologies other than a uterine septum (such as an abnormal spermiogram, ovulatory dysfunction, tubal factor) were excluded from the study. Patients with complete or incomplete uterine septa were included in the study.

According to the information in the hospital records, HSG was performed by measuring patients' uterine cavity length and injecting 1 cc liquid contrast medium for each 1 cm of cavity length and each tube. USG was performed with a transabdominal and transvaginal approach. A 9-mm resectoscope with a 5-mm 30-degree optic and a bipolar or monopolar coagulation electrode was used. For diagnostic laparoscopy (L/S), 0-degree, two-dimensional L/S with white LED was used. All patients primarily underwent diagnostic L/S and H/S or only H/S. Patients who were found to have pathologies subsequently underwent operative H/S. During operative H/S, septum resection was performed on those with a septum. During the operation, resection of the septum was performed with scissors in 2 patients and using plasma kinetic energy with bipolar or monopolar coagulation electrodes with a resectoscope in 60 patients. The saline infusion was used as a distension medium. Patients were recommended to undergo a control HSG three months from the operation. Patients were postoperatively followed up for two years. Those who were discharged home with a live infant were compared based on certain variables, and those who succeeded and those who failed were categorized into group 1 and group 2, respectively. The two groups were compared with regard to demographic and clinical characteristics, type of infertility, and the presence of postoperative pregnancy.

Patients' phone numbers were obtained from the hospital information system. Patients were informed that the study did not involve any potentially harmful invasive interventions and that there would be no disclosure of information that could infringe on patient rights. The patients were asked questions regarding their age, gravidity, parity, abortion, number of living children, septum type, gestational week at delivery, history of surgery, method of delivery, and postoperative time to conception, and the responses were recorded.

The SPSS for Windows (version 16.0) program package was used for the statistical analyses. Data were tested for normal distribution using the Shapiro Wilk test. The Mann Whitney U test was used for the comparison of non-normally distributed variables in two independent groups. The chi-square test was used to investigate the relationships between categorical variables. Odds ratios and 95% confidence intervals were estimated. As descriptive statistics, quantitative variables were presented using mean±standard deviation, median (min-max) values, and the chi-square test was used for categorical variables. Statistically, $p<0.05$ was considered significant.

## 3. Results

We identified 98 patients who presented to the Infertility Polyclinic of the Gynecology and Obstetrics Clinic of Dicle University, Faculty of Medicine between January 2010-December 2018 for primary infertility, secondary infertility, or RPL, were diagnosed with a uterine septum by HSG and/or USG and were operated. Sixty-two patients could be reached from their existing phone numbers and were enrolled in the study. Thirty-six patients could not be reached. Of the patients, 25 (40%) were primary infertile and 37 (60%) had a history of RPL or were secondary infertile. General anesthesia was induced in 61 patients as they were to undergo simultaneous L/S. Since one patient had previously undergone L/S, only H/S was performed under spinal anesthesia. Patients' mean age was $28.32 \pm 6.86$. Mean gravidity was determined as $2.53 \pm 2.27$.

Postoperatively, 39 (62.9%) of the 62 patients conceived and 23 (37.1%) did not. Of the 39 conceptions, 6 (15.4%) were determined to result in spontaneous abortion, 6 (15.4%) in preterm delivery, and 27 (69.2%) in term delivery. All cases of abortion were observed to occur in the first

trimester. No fetal anomalies were detected in 36 (92.4%) of the achieved pregnancies, while anomalies were detected in 3 (7.6%). Of the infants with anomalies, 2 showed cardiac anomalies and 1 showed hypospadias. The mean age of the patients who delivered infants with anomalies was determined as 28.33. One patient was determined to be primary infertile and 2 to be secondary infertile (Table 1).

**Table 1.** Evaluation of patients' data in frequency and percentages

| | | n | Percentage % |
|---|---|---|---|
| Uterine septum | Complete septum | 6 | 9.6% |
| | Incomplete septum | 56 | 90.4% |
| Postoperative pregnancy | No | 23 | 37.1% |
| | Yes | 39 | 62.9% |
| Postoperative gestational week at birth | Term | 27 | 69.2% |
| | Preterm | 6 | 15.4% |
| | Abortion | 6 | 15.4% |
| History of complication during the operation | No | 60 | 96.8% |
| | Yes | 2 | 3.2% |
| The outcome of postoperative pregnancy | Abortion | 6 | 15.3% |
| | Vaginal birth | 10 | 25.8% |
| | Cesarean | 23 | 58.9% |
| Patients with fetal anomalies | No | 36 | 92.4% |
| | Yes | 3 | 7.6% |
| History of previous abdominal surgery | No | 45 | 72.6% |
| | Yes | 17 | 27.4% |

Data are presented as percent

Patients who were discharged home with a live infant were assigned to group 1 and those who were not were assigned to group 2. In group 1, gravidity, parity, the number of living children were significantly higher ($p<0.01$). The number of abortions, age, and duration of marriage did not influence the success of the operation and no significant differences were found ($p> 0.05$) (Table 2).

Of the patients who were discharged home with a live infant, 8 (26.7%) were determined to be primary infertile and 22 (73.3%) to have a history of RPL or to be secondary infertile. In secondary infertility/RPL patient group, the rate of discharge with a live infant was 3.12 higher compared to the primary infertility group, and this difference was significant (OR:3.12, 95% CI=1.07-9.05, $p<0.05$) (Table 3). In secondary infertility/RPL patients, the rate of pregnancies achieved in the postoperative period was 4.33 times higher compared with primary infertile patients, and this difference was significant ($p<0.01$). All patients whose pregnancies resulted in abortion were primary infertile. Compared with secondary infertile/RPL patients, the rate of abortion was significantly higher in primary infertile patients ($p<0.01$).

**Table 2.** Comparison of patients' demographic and clinical characteristics between Group 1 and Group 2

| Variables | Group 1 | | | Group 2 | | | |
|---|---|---|---|---|---|---|---|
| | n | Mean±SD | Median [min-max] | n | Mean±SD | Median [min-max] | p |
| Gravidity | 30 | 3.43 ± 2.16 | 3 [1 -9 ] | 32 | 1.69 ± 2.07 | 1 [0 -8 ] | 0.001** |
| Parity | 30 | 1.8 ± 1 | 2 [0 -4 ] | 32 | 0.38 ± 0.71 | 0 [0 -3 ] | 0.001** |
| Abortion | 30 | 1.6 ± 1.87 | 1 [0 -7 ] | 32 | 1.31 ± 1.64 | 1 [0 -6 ] | 0.622 |
| Number of living children | 30 | 1.73 ± 0.91 | 1.5 [1 -4 ] | 32 | 0.38 ± 0.71 | 0 [0 -3 ] | 0.001** |
| Age | 30 | 27.23 ± 6.8 | 28 [2 -42] | 32 | 29.34 ± 6.87 | 26.5 [21 -45 ] | 0.761 |
| Duration of marriage (years) | 30 | 8.5 ± 3.13 | 8 [3 -14 ] | 32 | 9.25 ± 6.08 | 8 [3 -30 ] | 0.610 |
| Number of postoperative pregnancies | 30 | 1.6 ± 0.89 | 1 [1 -4 ] | 32 | 0.41 ± 0.71 | 0 [0 -2 ] | 0.001** |
| Number of septum operations | 30 | 1.23 ± 0.77 | 1 [1 -5 ] | 32 | 1.19 ± 0.47 | 1 [1 -3 ] | 0.818 |
| Gestational week at birth | 30 | 37.47 ± 2.49 | 38 [28-41] | 9 | 18.44 ± 15.27 | 10 [5 -40 ] | 0.010** |
| Time to conception (months) | 30 | 10.7 ± 9.19 | 10 [1 -36] | 9 | 12.67 ± 15.01 | 6 [2 -48 ] | 0.852 |

* p<0.05; **p<0.01 statistically significant; Mann Whitney U test

Data are presented as mean ± SD

**Table 3.** Distribution of patients by type of infertility

| | | Septum resection | | | | | |
|---|---|---|---|---|---|---|---|
| | | Group 1 | | Group 2 | | | |
| | | n | % | n | % | OR[CI%] | p |
| Infertile/RPL | Primary | 8 | 26.7 | 17 | 53.1 | 1(reference) | |
| | Secondary or RPL | 22 | 73.3 | 15 | 46.9 | 3.12[1.07-9.05] | 0.037* |

* p<0.05 statistically significant; OR: Odds ratio, CI: Confidence interval RPL: recurrent pregnancy loss, Chi-square test

## 4. Discussion

We know that uterine septum is the most frequently encountered congenital Mullerian anomaly and that it can contribute to the occurrence of unfavorable obstetric outcomes such as infertility, pregnancy loss, and malpresentation, and preterm delivery [7,8]. In this study, we evaluated the rates of discharge with a live infant following hysteroscopic uterine septum resection in a patient group with infertility or RPL and determined that this operation is quite effective in the treatment.

Tonguc et al. reported in their study that all patients with a uterine septum who underwent hysteroscopic septum resection were operated on under general anesthesia and that all patients had undergone diagnostic L/S prior to H/S [7]. Paradisi et al. reported operating all patients under general anesthesia due to the concern that any one of the patients could require L/S [9]. In the present study, in

agreement with the literature, 61 of the patients underwent operative H/S with diagnostic L/S. One patient only underwent operative H/S. None of the patients underwent laparotomy.

To this date, many retrospective studies that evaluate pregnancy outcomes after hysteroscopic uterine septum resection have been published in the literature. The majority of these studies showed a postoperative improvement in pregnancy outcomes. Sendag et al. followed up patients with uterine septa who had a history of pregnancy for at least one year after hysteroscopic septum resection. They reported that, of the resulting pregnancies, 55% were term deliveries, 10% were preterm deliveries, and 35% were spontaneous abortions [11]. Another study followed up 72 primary infertile patients with uterine septa for one year after uterine septum resection. Authors reported that 33 patients conceived; only 12% of these resulted in spontaneous abortions and 15% resulted in preterm delivery [12]. Diverging from these two studies, our study included both primary infertile patients and patients with secondary infertility or RPL and conducted postoperative follow-up for two years. The results of our study are consistent with the literature; our live birth rate, which was 19.35% before the septum operation, increased from 0% to 26.7% in primary infertile patients, and from 29% to 73.3% in patients with secondary infertility or RPL. Since we determined that, 39 of the 62 patients in our study who conceived were able to conceive within an average period of 10 months, and that 30 of these (76%) conceived within the first year, we recommend allowing at least one year for pregnancy. In our patients who conceived, we determined the rate of term delivery as 69.2%, preterm delivery as 15.4%, and total live birth as 76.9%. The rate of abortion, which was 59.67% before the operation, decreased to 23.1% postoperatively. This situation in our study also clearly demonstrates that, in women with uterine septa and concomitant infertility or recurrent pregnancy loss, the most effective approach is hysteroscopic septum resection and that operation success is higher in patients with secondary infertility or RPL compared with primary infertile patients. This shows us that uterine septum causes pregnancies that result in abortion or preterm delivery rather than infertility.

Similar to our study, Gundabattula et al. evaluated primary and secondary infertile patients after uterine septum resection. They reported the rate of discharge with a live infant as 60% [13]. This study, the result of which is consistent with the rate we determined, differs from our study in that the number of patients with primary infertility is greater than that of patients with secondary infertility.

A study conducted by Yu et al. evaluated the occurrence of adhesion following septum resection. They categorized the patients into four groups as follows; postoperative estrogen therapy, intrauterine device use, intrauterine Foley use, and control. There was no significant difference between these four groups with regard to postoperative adhesion occurrence [14]. Upon review of the literature with regard to the occurrence of adhesion following uterine septum resection, there was no proven recommended treatment, and the hysteroscopic septum resection method was not recommended [15]. In our study, septum resection was performed on two patients using scissors, and on 60 patients using plasma kinetic energy with bipolar and monopolar coagulation electrodes with a resectoscope. Postoperatively, our patients were not given any treatment to prevent adhesion. Postoperative HSG was performed in 27 (43.5%) patients and adhesion was not encountered.

Of the patients in our study, 6 (9.6%) had a complete septum and 56 (90.4%) had an incomplete septum. According to the literature, the width and length of the uterine septum are not correlated with pregnancy outcomes. [15] We are not able to make such a comment due to the low number of patients with a complete septum in our study; however, we think that more studies are needed.

The limitations of our study are that not all of our patients underwent HSG in the postoperative period and that we were not able to reach all of the patients we had operated. The absence of data in the patient files regarding the size and width of the uterine septum constitutes another limitation of this study. On the other hand, the strength of our study is that all patients were operated at a tertiary hospital by doctors with at least 10 years of expertise.

## 5. Conclusion

Hysteroscopic uterine septum resection is an effective method with an easy application. Its success is particularly higher in patients with secondary infertility or a history of RPL compared to those with primary infertility. In this study, we determined a more significant improvement in the postoperative pregnancy outcomes of the group with secondary infertility or RPL. We recommend that primary infertile patients determined to have a uterine septum are operated but that other underlying causes are also investigated in patients who do not achieve pregnancy. A septum resection should be performed on patients with secondary infertility or a history of RPL and a period of at least one year should be allowed before the evaluation of treatment success.

**Ethical Statement**: An approval was obtained for this study from the local ethics committee of Dicle University Faculty of Medicine (Ethics committee's decision date and number: 06.02.2020; 103).

**The compliance to Research and Publication Ethics**: This work was carried out by obeying research and ethics rules.

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Research Article

# INVESTIGATION OF ATTITUDES AND BEHAVIORS OF NURSES TOWARDS CARING NURSE-PATIENT INTERACTION IN TURKEY

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**Abstract:** *Interaction with patients is very important in nursing. In Watson's theory of human care, a holistic approach and care-oriented interaction come to the fore. This study was implemented to examine nurses' attitudes and behaviors towards caring nurse-patient interaction. 183 out of 300 nurses working in inpatient units of a general hospital where the study was conducted participated in the study voluntarily. Data collection with the 12-question questionnaire and "Caring Nurse-Patient Interaction Scale"(CNPI-S) developed by Cossette et al. were used. As a result; most of the nurses are women, in the middle age group and 48.6% of them are educated at least at the undergraduate level. According to the CNPI-S total scores, the importance dimension is X=292.83±34.04, the efficiency dimension is X=282.93±51.19 and the practicality dimension is X=270.11±56.75 points. When the mean scores of the subscales were examined, it was found that the highest scores belong to the subscales of "necessities", "helping relationship" and "environment", and the lowest scores belong to the subscales of "teaching", "sensitivity" and "problem-solving". Significant differences were found in CNPI-S subscale scores regarding age, education level, and nurses' competence in communication (p<.05), and positive and significant relationships were found between CNPI-S subscale scores (p<.01). The tasking of nurses in care-oriented patient interaction is related to nurses' efficiencies and the increase in efficiency increases the practicality of care-oriented interaction. In this study, CNPI-S importance dimension scores of nurses working in public hospitals were similar to many studies, but practicality dimension scores and some subscale scores were found to be partially lower from many studies. For nurses working in a public hospital, skill training on care-oriented patient interaction and a holistic approach can be recommended.*

**Keywords**: *Nursing, Caring, Nurse-Patient Interaction, Watson's Human Care Model*

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## 1. Introduction

Today, in nursing care, humanistic and holistic approaches have started to gain importance rather than work-centered approaches and medical models. Conceptual and theoretical nursing models are used to develop knowledge in, guide nursing practice, and improving the quality of care [1-3]. The

communication and interaction between the nurse and the patient are important in terms of philosophical and relational dimensions of care in many nursing theories [4-6]. Although communication and interaction can be used interchangeably, interaction is explained as a subjective relationship experience, in which using communication as a tool. Nurse-patient interaction is the most important tool in realizing the nursing care role. [5, 7, 8]. Watson, who is one of the nursing theorists, emphasized care-focused nurse-patient interaction (CNPI) in his theory based on humanistic perspective and the integrity of mind, body, and soul [2, 3, 9]. In Watson's Human Care Model, the nursing process is defined as a "person-to-person care process" and initiatives are defined as a "healing process". In this model, the nurse and the individual influence and learn from each other through interpersonal relationships, and at the time of care, the nurse must be able to enter the existential domain of the individual by establishing a deep, humanistic approach in interpersonal relationships [10-12]. In nursing care's being effective; it is important that the essence of care is understood that the nurse is in care behaviours and that the patient perceives the care behaviours [3]. According to Watson, care behaviours are to make eye contact, to listen very carefully, to be honest, and sensitive, to touch, to be respectful, to call the patient with his/her name, to give information, to preserve hope, to consider the cultural differences of the patient, to relieve the patient and to take responsibility for him/her, to be individual-centered and emotionally understandable. Therefore, the care behaviours and the healing environment are mostly realized through the interaction of nurses and patients [1, 11, 13]. In addition, 10 carative factors have been defined in the human care model. These are; formulation of humanistic-altruistic value system; (2) instillation of faith–hope; (3) cultivation of sensitivity to oneself and others; (4) development of a helping trusting relationship; (5) promotion and acceptance of the expression of positive and negative feelings; (6) systematic use of the scientific problem-solving method of decision-making; (7) promotion of transpersonal teaching-learning; (8) provision for a supportive, protective, and/or corrective mental, physical, socio-cultural and spiritual environment; (9) assistance with the gratification of human needs and (10) allowance for existential, phenomenological and spiritual forces [1, 14, 15].

Nursing care given by the human care model approach increases empathy, care quality, patient satisfaction, and safety by ensuring that individuals are recovered holistically [7, 12, 16]. In addition, it is maintained that positive patient-nurse interaction increases adherence to the disease/ treatment, well-being, motivation and hope to recover, reduces stress and agitation [5, 17, 18]. The human care model was found to be effective in supporting the trust relationship between the patient and the nurse, the patient's self-expression and self-confidence, and in reducing the anxiety and hopelessness of the patient [13, 19]. Therefore, patient-nurse interaction is of great importance in the care process. However, it should be kept in mind that there are many factors affecting the nurse-patient interaction process, and communication errors or barriers may have negative effects on the interaction [5, 7, 20]. There are comments in the literature that nurses do not have enough awareness about the importance of communication, and that adequate and efficient patient interaction has not been provided because of problems such as insufficiency of personnel, workload, job burnout, and dissatisfaction [9, 12, 21]. Therefore, it needs to focus on solving existing problems related to care-oriented interaction and improving care behaviours.

In the nursing education process in Turkey, nursing models have started to be given more and more place and studies on the human care model were visible. However, the adequacy of these developments and the application status in nursing care are not known. There are a few studies conducted on nursing students and psychiatric hospital nurses in Turkey [8, 9, 19, 22, 23]. it is thought

that it is important to evaluate nurses working in a public hospital in terms of CNPI. Therefore, the aim of this study is to investigate the caring nurse patient interaction levels of nurses working at a public hospital. This study asked the following research questions: (a) What are the CNPI-S dimensions and subscale scores of the nurses in a public hospital? (b) Do nurses' characteristics such as age, education level, and communication skills affect the CNPI-S dimensions scores? (c) What are the relationships between CNPI-S dimensions scores?

## 2. Material and Methods

### 2.1. Study Design and Sample

This descriptive and cross-sectional study was conducted in a public hospital affiliated with medical faculty with the necessary institutional permissions and ethics committee approval from Mugla Sıtkı Kocman University (2015/42). Data collection was completed between 2016 and 2017 years 300 nurses working in patient care services of the public hospital constituted the target population. The sample selection method was not used in the research. The nurses are informed about the study and the data collection tools were distributed to all nurses; 183 nurses who accepted to participate in the study and filled the all data collection tools formed the sample. Because the scale used in the study took time to fill, a significant number of nurses refused to participate in the study and therefore the entire universe could not be reached. The rate of participation in the study was determined as 61%.

### 2.2. Measures

In the collection of the data, the information form prepared by the researcher and used to record socio-demographic and professional information and Caring Nurse-Patient Interaction long scale (CNPI-S) were used.

***Caring Nurse-Patient Interaction Long Scale*** **(CNPI-S):** The scale developed by Cossette et al. and the Turkish validity, authenticity of which is provided by Yalçın and Aştı (2012) is evaluated in 3 dimensions being "importance", "efficiency" and "practicality" and each dimension comprises 10 subscales and 70 items. Each question is scored between 1-5 and the subscale total scores of the scale without cut points are between 70-350. The subscales and the number of questions in the scale are Humanism (6), Hope (7), Sensitivity (6), Helping relationship (7), Expression of emotions (6), Problem-solving (6), Teaching (10), Environment (7), Necessities (10) and Spirituality (6). As the scores of the individuals on the scales increase, their attitudes and behaviours regarding care-focused nurse-patient interaction increase positively. In the study of Yalçın and Aştı (2012) the Cronbach α values of the scale for 3 dimensions were respectively determined as .99, .98 and .99. In this study; Cronbach α values for the 3 dimensions were found to be .97, .98, .99 respectively [6].

### 2.3. Data Analysis

Descriptive data were evaluated by number, percentage, and average calculations in the study. The data show the normal distribution and t-test was used in the analysis of binary variables, one-way variance analysis for multiple variables, and berferroni test for further analysis, and the results were evaluated at a .05 significance level. Pearson correlation test was used to analyze the relationships between CNPI-S dimensions.

## 3. Results

When the distribution of nurses was examined according to their socio-demographic characteristics, 91.8% were female and 46.4% to be over 40 years of age. It was also found that the education level of 48.6% of the participants was undergraduate/graduate, that 87.4% were married and 57.4% had two children. It was found that 24.6% of the nurses had been working for 16-20 years. We found among the nurses taking part in the study, 77.6% stated that their knowledge levels about communication were sufficient and 80.9% that their skill levels about communication with patients were sufficient. According to nurses, the most important problem affecting the interaction with the patient was not being able to allocate time due to the work burden (65%).

When the dimension mean scores of the nurses taking part in the study were calculated to CNPI-S, the importance dimension was found to be 292.83±34.04, the efficiency dimension 282.93±51.19, and the practicality dimension 270.11±56.75 points (Tab.1). The points that the nurses taking part in the study got from the CNPI-S subscales have seen in Table 1.

**Table 1.** Nurses' CNPI-S dimension and subscale scores (n= 183)

| CNPI-S Subscales | CNPI-S Dimensions | | | | | |
|---|---|---|---|---|---|---|
| | Importance | | Efficiency | | Practicality | |
| | X ± S.d | M | X ± S.d | M | X ± S.d | M |
| Humanism | 24.89±3.94 | 4.14 | 23.92±4.55 | 3.98 | 22.29±5.15 | 3.71 |
| Hope | 29.44±4.25 | 4.20 | 27.99±4.54 | 3.99 | 26.79±5.88 | 3.82 |
| Sensitivity | 24.38±4.02 | 4.06 | 23.17±5.08 | 3.86 | 21.94±5.89 | 3.65 |
| Helping relationship | 30.07±4.12 | 4.29 | 28.85±5.38 | 4.12 | 27.67±6.10 | 3.95 |
| Expression of emotions | 25.13±3.98 | 4.18 | 24.07±5.28 | 4.01 | 22.75±6.08 | 3.79 |
| Problem-solving | 24.74±4.08 | 4.12 | 23.16±5.63 | 3.86 | 22.00±6.36 | 3.66 |
| Teaching | 25.34±4.12 | 2.81 | 24.05±5.61 | 2.57 | 22.75±5.85 | 2.52 |
| Environment | 29.97±4.18 | 4.28 | 28.74±6.02 | 4.10 | 27.40±6.20 | 3.91 |
| Necessities | 44.91±5.36 | 4.49 | 42.66±8.77 | 4.26 | 41.60±9.17 | 4.16 |
| Spirituality | 25.34±4.12 | 4.22 | 24.05±5.61 | 4.00 | 22.75±5.85 | 3.79 |
| **Total scores** | 292.83±34.04 | 4.18 | 282.93±51.19 | 4.04 | 270.11±56.75 | 3.85 |

When the total mean scores of CNPI-S were compared according to the gender of the nurses, no statistically significant differences were found in the dimensions of significance, adequacy, and applicability ($p$> 0.05). When the CNPI-S mean scores of the nurses taking part in the study were compared considering their ages, according to the importance, efficiency, and practicality dimensions, statistically significant differences were found between the ages of the nurses and CNPI-S importance (F= 4.231; $p$<0.05), efficiency (F= 7.438; $p$<0.01) and practicality (F=7.478; $p$<0.01) dimensions. The mean scores of nurses over 40 years of age were found to be higher in all dimensions than in all other age groups (Tab.2). It was found that the differences generally stemmed from the difference in the

scores of nurses under 40 years of age and over ($p$<0.01). The mean scores of nurses over 40 years of age were found to be higher in all dimensions than in all other age groups.

**Table 2.** Comparison of CNPI-S dimension scores according to nurses' age (n= 183)

| Age | Total score X ± S.d | F | p |
|---|---|---|---|
| **CNPI-S Importance Dimension** | | | |
| Under 30 age | 276.14±35.38 | 4.231 | **.016*** |
| Between 30-40 age | 290.35±40.78 | | |
| Above 40 age | 296.50±31.88 | | |
| Total | 292.83±34.04 | | |
| **CNPI-S Efficiency Dimension** | | | |
| Under 30 age | 260.29±47.75 | | |
| Between 30-40 age | 257.20±70.73 | 7.438 | **.001**** |
| Above 40 age | 291.58±46.03 | | |
| Total | 282.93±51.19 | | |
| **CNPI-S Practicality Dimension** | | | |
| Under 30 age | 248.29±55.91 | | |
| Between 30-40 age | 237.80±75.53 | 7.478 | **.001**** |
| Above 40 age | 279.19±51.42 | | |
| Total | 270.10±56.75 | | |

*p<0.05; **p<0.01

When the CNPI-S scores of the nurses were compared according to their educational background, the nurses who had undergraduate and higher education had higher CNPI-S importance dimension scores and were found a statistically significant difference (t= -2.27; $p$<0 .05). Although there was no significant difference in other dimensions, higher educated nurses had lower CNPI-S efficiency and practicality dimension scores (Tab. 3)

When the CNPI-S scores of the nurses taking part in the study were examined according to their state of finding the general knowledge level sufficient about communication with patients, the importance ($\chi^2$= 8.720; $p$<0.05) and efficiency dimensions ($\chi^2$= 19.318; $p$<0.001) were found to show statistically significant differences. Besides, significant differences were found in the CNPI-S dimension of importance, in the sensitivity, emotion expression, problem-solving, necessities, and spirituality subscales, and in the practicality dimension in all the subscale scores ($p$<0.05). Those who found their knowledge level in communication to be quite sufficient were found to have higher CNPI-S scores and those who found it to be insufficient were found to have lower scores. In this study, when the CNPI-S scores were compared according to dimensions in terms of nurses' finding their skill of communication with the patients adequate, a statistically significant difference was found in the importance dimension ($\chi^2$= 6.727; $p$<0.05), and it was found that nurses who answered: "Yes, a lot" had higher scores ($\bar{x}$=294.61±36.25) while those who answered "no" had lower scores ($\bar{x}$=254.00±20.78). In addition,

statistically significant differences were found in sensitivity, emotion expression, necessities, and spirituality subscales in the CNPI-S importance dimension ($p$<0.05).

**Table 3.** Comparison of CNPI-S dimension scores according to nurses' education level (n=183)

| CNPI-S Dimensions | Education level | Total score X ± S.d | t | p |
|---|---|---|---|---|
| **Importance** | Undergraduate | 287.31±33.01 | -2.272 | **.024*** |
| | Bachelor/High Education | 298.64±34.32 | | |
| | Totaly | 292.83±34.04 | | |
| **Efficiency** | Undergraduate | 285.72±42.07 | 0.750 | .455 |
| | Bachelor/High Education | 279.99±59.42 | | |
| | Totaly | 282.93±51.19 | | |
| **Practicality** | Undergraduate | 273.06±48.18 | 0.716 | .475 |
| | Bachelor/High Education | 267.00±64.70 | | |
| | Totaly | 270.11±56.75 | | |

***p<0.05**

According to Pearson correlation analysis conducted to examine the relationship between the importance, efficiency, and practicality dimensions of the CNPI-S scores of nurses participating in the study, there is a positively oriented moderate relationship between the nurses' CNPI-S importance and efficiency dimension scores (r= 0.50; $p$<0.01), a positively oriented, moderate relationship between the importance and practicality score (r= 0.42; $p$<0.01) and a positively oriented strong relationship between efficiency and practicality dimension scores *(*r= 0.92; $p$<0.01) and all these relationships are statistically significant (Tab. 4). The relationship between CNPI-S dimensions is even stronger in nurses over 40 years of age with a bachelor's degree and a master's degree.

**Table 4.** The analysis to the relation between dimension scores of CNPI-S (n=183)

| CNPI-S Dimensions | Importance | | Efficiency | | Practicality | |
|---|---|---|---|---|---|---|
| | r | p | r | p | r | p |
| **Importance** | 1 | | .50 | **.000**** | .42 | **.000**** |
| **Efficiency** | .50 | **.000**** | 1 | | .92 | **.000**** |
| **Practicality** | .42 | **.000**** | .92 | **.000**** | 1 | |

**p<0.01

## 4. Discussion

Even though Watson's model of human care has come to the fore in recent years in nursing education in Turkey, there are not enough studies examining nurses' knowledge, attitudes, and behaviours regarding this model. In this study, which was planned from this point of view, CNPI-S dimension scores were found to be 292.83±34.04, 282.93±51.19, and 270.11±56.75 respectively for importance, efficiency, and practicality dimensions. In a similar study conducted in a university hospital, nurses' CNPI-S dimensions scores were found to be lower in efficiency (265.07±46.12) and practicality (241.39±48.95) scores than our study scores [9]. In a study with psychiatric nurses, these scores were found respectively 313.08±30.45, 283.79±37.43, and 268.01±47.65 [19]. Among the studies conducted in the literature with nursing students, CNPI-S dimension mean scores were higher in the importance dimension [6, 19, 22]. In our study, the CNPI-S importance dimension score of nurses was lower considering the literature and the other dimension scores were similar to the literature. In the studies of Yılmaz and Cınar [8], Kalender et al [24], and Cosetta et al. (2005) all dimension scores were found to be relatively higher [1]. Although the CNPI-S importance dimension score is high in most studies, the fact that the efficiency and practicality dimension scores are not equally high, this may have stemmed from professional and institutional problems. In the literature, it is mentioned that nurses experience problems such as lack of motivation, dissatisfaction, and burnout besides problems such as insufficiency of staff and workload and it is stated that all these may affect patient-nurse interaction and quality of care [9, 21, 25]. The nurses in the sample also stated that the most important problem preventing the interaction with the patient was the excess workload. That in the studies conducted especially with nursing studies in the literature the importance dimension score of the scale was found to be higher may be associated with holistic approach' being increasingly considered more important in today's nursing education [24]. However, training programs should be revised in order to turn knowledge into skills and increase practicality. It can be said that nurses' knowledge and skill deficiencies regarding patient and care-oriented interaction should be identified and improved, and regulations should be made regarding the working environment and conditions.

When the nurses' CNPI-S subscale mean scores were calculated according to the number of questions, it was found that the nurses got the highest scores in “necessities”, “helping relationship” and “environment” subscales and got the lowest scores in “teaching", "sensitivity" and "problem-solving" (Table 1). Felsmann et al. [13]. and Kaçmaz and Çam [19] also found in their studies that the same subscale scores were higher. In the study with psychiatric nurses, the "spirituality” and "expression of emotions" subscale scores were partially lower [19]. In the study conducted by Bayraktar and Eser with nurses, the highest mean scores of CNPI-S subscales are found "needs" and "help relations", the lowest mean scores are found "sensitivity" and "problem-solving" [9] and these results are similar to those of our study. The nurses in our sample attach importance to meeting the needs of the patient, which is the foundation of the profession, and to establish a helping relationship and regulate the environment for this purpose, and they consider themselves more competent and more practicable. Besides providing care for the needs of the individual, nurses need to be sensitive and adequate in problem-solving skills. However, the sensitivity and problem-solving subscale scores of the nurses are seen to be low in the sample and literature. This result may be a sign that nurses are more focused on physical care and that the concept of holistic care is not adequately reflected in nursing practice. Although there are studies aimed at improving the quality of care in Turkey, the work-centered approach continues to negatively

affect nursing care [19]. It is thought that sensitivity in patient interaction, problem-solving, and attitudes and behaviours towards patient education of nurses in the sample may be caused by lack of knowledge and skills and that the problems mentioned may also be effective and comprehensive research of the subject is needed.

In our study, it was observed that CNPI-S nurses aged 40 and over received high scores in all dimensions. This result can be interpreted as experienced nurses' giving more importance to care-oriented interaction and finding enough themselves more efficiency and practicality. Similarly, in the study of Bayraktar and Eşer [9], it was found that the CNPI-S importance and efficiency dimension scores increased in line with the age and professional experience of nurses. In addition, there are studies in the literature indicating that empathy and communication skills increase together with professional experience, it is maintained that with nurses, variables such as education and age affect communication skills [22, 27]. According to the results, it can be said that age and professional experience are important variables for care-oriented interaction. In the study conducted with psychiatric nurses, the professional experience was not found to be an important variable [19]. In the studies conducted on nursing students in the literature, that there were no significant differences between CNPI-S scores because the age groups were close to one another, was evaluated as an expected finding [6, 22, 24]. In our study, it was found that the CNPI-S importance dimension scores of the nurses with undergraduate and postgraduate degrees were significantly higher, but no significant difference was found in efficiency and practicality dimension scores (Tab. 3). This result shows that more educated nurses find the care-oriented patient-nurse interaction more important and suggests that there may be different variables affecting efficiency and practicality dimensions. It is stated in the literature that the general communication skills of nurses are related to education level [5, 26, 27]. In a study conducted by Bayraktar and Eşer in a university hospital, a significant difference was found between the education level of nurses and the practicality dimension of CNPI-S, and especially the scores of nurses with a graduate degree were found to be higher [9]. In Kaçmaz and Çam's study [19], there was a significant difference from all CNPI-S dimension scores according to the educational level of psychiatric nurses, and as the level of education increased, CNPI-S average scores of nurses also were increased. According to the results of the study, it was found that the sample and institutional differences might affect the results, and although most nurses considered themselves adequate about general patient communication and attached importance to care-oriented interaction, this situation was not reflected in the CNPI efficiency and practicality dimension scores. Although it is thought that excess workload may negatively affect the practicality of care-oriented patient interaction and the development of nursing efficiency, further study data are needed for the analysis of the subject.

In the analysis conducted to examine the relationship between the CNPI-S dimensions of the nurses taking part in the study, positively oriented and moderate relationships were found between the importance dimension and the other dimensions. Positively oriented and strong relationships were found between the efficiency and practicality dimensions (Table 4). Especially in those who find communication skills adequate and those over 40 years of age, this relationship was found stronger. In Kaçmaz and Çam's study [19], similar significant relations were found between importance and efficiency ($r$= 0.777, $p<0.01$), importance and practicality ($r$= 0.555, $p<0.01$) and efficiency and practicality dimension scores ($r$= 0.810, $p<0.01$) of nurses. Therefore, that the nurses care about CNPI increases their efficiency and the increase in the efficiency of nurses in care-oriented interaction also increases practicality. We think that nurses who care about care-oriented patient interaction may develop

their own communication skills while using communication skills can increase nurses' efficiency and practicability about CNPI.

Although the importance given to Watson's "human care theory" and nursing-patient interaction have been gradually increasing in nursing education and research, it can be said that its reflection on nursing care practices is not sufficient for our country. It is recommended to plan effective training for nurses about CNPI, to provide team and institutional cooperation, and to create a healing environment. The healing environment will also be supportive in the team members' being more sensitive to each other, in increasing the sense of well-being in the team, and in developing the corporate culture. Additionally, the use of the model is recommended for the prevention of lack of motivation, job dissatisfaction, and burnout and the reduction of medical and ethical violations [12]. Therefore, it is important that nurses question the concept of care and their capacity and performances [15]. When the nurses understand the essence of care and the importance of holistic care, patient-centered care and care-oriented interaction will increase in nursing practice. When the power of nursing care is perceived, more decisive steps can be taken for the solution of the professional problems affecting the care. However, as this process will take time, increasing the number of nurses in our country, the gradual transition from the work-centered system to the holistic and patient-centered caring system are the steps that can be taken to solve the problems.

## 5. Limitations

We thought participation of the nurses' was affected negatively because of CNPI-S (70 items) that used was very long and complex for nurses. Therefore, using the short form of the CNPI-S may be more advantageous in terms of the participation rate. Since there was no national study with nurses working in a state or public hospital, there were partial limitations with regard to the discussion in our study. Additionally, the fact that the study was performed in one public hospital can be considered as a limitation about generalizability. And, it may be useful to repeat the study in a multicenter and larger sample.

## 6. Conclusions

In this study, although the CNPI-S importance dimension scores of nurses working in general public hospitals were similar and higher than many studies, many scale scores were found to be partially lower than nursing students. The patient needs environment and helping relationship subscales scores were found to be higher and teaching, sensitivity, and problem-solving subscales scores were found to be low in the study. Excess workload and fewness of nurses number maybe see as the most important obstacle for interaction with the care-oriented patient. According to the results of the study, age/occupational experience is an important variable affecting CNPI-S scores, and education level has only made a difference in the importance dimension. In addition, according to the results of the study, the nurses' efficiency score increases as care-oriented patient interaction is emphasized, and the increase in efficiency increases practicality. An increase in the awareness and interaction skills of nurses will increase the applicability of care-oriented nurse-patient interaction.

Consequently, although the human care model and holistic approach are given more importance in vocational and post-graduate nursing education in recent years. It can be said that the knowledge and skills of the nurses working in the public hospital about the human care model are inadequate. Therefore,

it is necessary to increase the competence of nurses in the use of theories and models that will improve the quality of nursing care in the recovery process. Nurses with professional experience and high education can play a key role in the implementation of care-oriented nursing interaction. Other than this, comprehensive studies and projects should be planed for the analysis and solution of problems affecting nurse-patient interaction and nursing care in Turkey.

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Research Article

# CORRELATION OF GATA3, E-CADHERIN, P53, AND KI-67 EXPRESSION WITH HISTOLOGICAL TYPE/MOLECULAR SUBTYPE AND CLINICOPATHOLOGICAL PARAMETERS IN BREAST CANCER

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**Abstract:** *The purpose of our study is to examine immunohistochemically the correlation of GATA binding protein 3 (GATA3), E-cadherin, p53, and Ki-67 expression with histological type/molecular subtype and clinicopathological parameters in breast cancer. 120 patients diagnosed with breast cancer were retrospectively investigated between 2018 May and 2021 January. We used the GATA3, E-cadherin, P53, Ki67 antibodies by immunohistochemical analysis in breast tumors. GATA3 was positive in 100% (107/107) of the luminal A, luminal B, and HER2 overexpressing groups and 79.9% (10/13) of the triple-negative (TN) group. It is less common in the TN group (p <0.001). Ki67 of >20% was higher in human epidermal growth factor receptor 2 (HER2) overexpressing and TN groups compared to luminal A and luminal B subtypes (p <0.05). Estrogen receptor (ER) and progesterone receptor (PR) were more frequently observed in the group with Ki67≥20% than that with Ki67 <20% (71/120, 59.2%) (p <0.05).ER/PR hormone receptors were observed more in the p53-negative group than in the p53-positive group (66/117, 56.4%) (p <0.05). There is no significant difference between molecular subtypes in terms of the incidence of E-cadherin and p53 immunoexpressions (p> 0.05). Our study demonstrated that the presence of GATA3 was found to be associated with the ER/PR receptor and tumors associated with these receptors, lumen-type breast carcinomas. In addition to its proper use for diagnostic purposes in routine surgical pathology, GATA3 will have a developmental role in breast carcinomas and prognostic significance in different molecular subtypes of tumors at the same clinical stage. Ki67 is observed at a higher rate in high-grade tumors and has a prognostic significance. No significant correlation was reported between E-cadherin and p53 and prognostic factors.*

**Keywords***: breast cancer, molecular classification, GATA3, p53, Ki67, e-cadherin*

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## 1. Introduction

Breast cancer (BC) is the most common malignancy in women and is the leading cause of cancer-related mortality in women in developing countries [1]. In 2018, 2,088,849 (11.6%) new cases and

626,679 (6.6%) mortalities occurred because of BC around the world [2]. In Turkey, BC constitutes 22.4% of cancer cases in women with a new case number of 22,345 in 2018 and is by far the most common type of cancer. BC cases are estimated to reach 3.2 million annually by 2050 worldwide [3]. Although it is still a major cause of cancer, morbidity and mortality have largely decreased because of early detection and more effective treatments [4]. GATA3 is a transcription factor with two conserved Zinc finger DNA binding domains, encoding a protein member of the GATA family, involved in basic processes such as luminal cell differentiation, adhesion, and proliferation [5]. GATA3 has also been indicated to play a role in the development of breast, urothelial and salivary gland carcinomas [6,7][7].

E-cadherin is known as Cadherin 1 and is encoded by the CDH1 gene. Cadherin-1 is a classic member of the cadherin superfamily [8]. E-cadherin, a Ca2-dependent adhesion molecule, plays an important role in maintaining intercellular connections in normal epithelial cells in most organs [9]. In such tumors, cell separation is usually accomplished by expression or loss of E-cadherin function, which is an epithelial cell adhesion molecule [10]. Mutations in this gene are associated with gastric, breast, colorectal, thyroid, and ovarian cancers. The loss of function is considered to contribute to cancer progression by increasing proliferation, invasion, and/or metastasis [8].

P53 is a tumor suppressor gene. P53 functions to eliminate and inhibit proliferation, preventing abnormal cells, thus neoplastic development. P53 is the most common gene mutation in many cancers. P53 inactivation plays an important role in breast carcinogenesis [11]. Overall, 30%–35% of primary invasive BC are mutated. However, among BC, the prevalence of TP53 mutations depends on the molecular subtype of the disease. It is observed in ~80% of patients with the triple-negative (TN) subtype, 30% of those with Luminal A and Luminal B subtypes, and 70% of those with HER2 overexpressing types [12,13].

Ki-67, a marker of cell proliferation that is observed in all stages of the cell cycle except the G0 phase is a specific nuclear antigen. Ki67 expression is closely associated with tumor growth and prognosis. Some guidelines and international groups have concluded that the Ki-67 measurement may be important in both standard clinical practice and clinical trials [14].

The purpose of our study is to examine immunohistochemically the correlation of GATA-3, E-cadherin, p53, and Ki-67 expression with histological type/molecular subtype and clinicopathological parameters in BC. This will help predict the patient's prognosis and contribute to treatment management.

## 2. Materials and Methods

### 2.1. Cases

In this study, 120 patients diagnosed with BC at Pamukkale University Medical Faculty Pathology Department between 2018 May and 2021 January were retrospectively investigated. Demographics and other data such as age, gender, tumor diameter, and tumor localization were recorded using the descriptions in the pathology reports of the cases. Distant organ metastasis, clinical stage of the disease, family history, neoadjuvant chemotherapy status were obtained from the hospital automation system and patient follow-up files in General Surgery clinics. Information such as the clinical stage of the disease, family history, neoadjuvant chemotherapy status was obtained from the hospital automation system and General Surgery patient follow-up files.

**Ethical Statement:**This work was approved by Pamukkale University Ethics Committee of Non-Interventional Clinical Research. Approval number and date: 03; 02.02.2021.

### 2.2. Histopathological evaluation

Histopathological evaluations are based on the World Health Organization (WHO) histological classification of breast tumors [15] and Rosen's breast pathology [16]. Histological/nuclear grade and mitosis rate in all breast tumors were determined based on the modified Bloom–Richardson grading system. The histological grade was scored as follows: Score 1 (>75% the tumor area contains tubular or glandular structures), Score 2 (10% to 75% glandular/tubular structures), and Score 3 (<10% glandular/tubular structures). The nuclear atypia was scored between 1 and 3 (1 for low-grade atypia, 2 for moderate atypia, and 3 for high-grade atypia). The mitosis rate was scored based on mitotic figures per 10 high-magnification fields (40 objective lenses, Nikon Eclips E200 microscope) (1 for 0–7 mitosis, 2 for 7–14 mitosis, and 3 for>15 mitosis). The histological grade was scored as 1, 2, and 3, when the sum of scores for nuclear atypia and those for mitotic counts were 3-4-5, 6-7, and 8-9-10, respectively [15,16]

### 2.3. Classification of molecular subtypes

BC is a heterogeneous disease; therefore, molecular subtypes have been established based on genetic tests and/or immunohistochemical analyses. The molecular subtypes are based on the presence of ER/PR/HER-2 oncogene expression and the Ki-67 index [17]. Last updated in 2013 by the St. Gallen consensus, five subtypes have been determined:

- Luminal A (ER positive, PR>20%, HER2 negative, and Ki-67 index<20%),
- Luminal B/HER2 negative (ER positive, PR<20%, HER2 negative and Ki-67 index>20%),
- Luminal B/HER2 positive (ER positive, any PR, HER2 positive, and any Ki-67 index),
- HER2 positive (ER negative, PR negative, HER2 positive, and any Ki-67 index)
- TN (Basal-like) (ER negative, PR negative, HER2 negative, and any Ki-67 index) [18].

### 2.4. Immunohistochemistry (IHC):

A sample that best reflects the tumor tissue of the cases was determined. One 5-µm-sized section was taken from selected paraffin blocks to positively charged slides to study GATA3, E-cadherin, P53, and Ki67 antibodies for each case. Tissue samples taken were maintained in the incubator at 60°C for one night for deparaffinization and then stained automatically by VENTANA, Benchmark XT device using the routine procedure. The target proteins were made visible by applying GATA3 antibody (L50-823, Mouse monoclonal, Cell Marque, USA, prediluted), P53 antibody (DO-7, mouse monoclonal, Ventana, USA, prediluted) Ki67 antibody (30-9, rabbit monoclonal, Ventana, USA, prediluted), and E-cadherin antibody (36, mouse monoclonal, Ventana, USA, prediluted) on the stained sections.

Immunohistochemical expression of GATA3, E-cadherin, P53, Ki67 applied to the tumor-rich block of the cases was evaluated under optical microscopy. The nuclear expression of ≤5% of GATA3 was considered positive. The cut-off value for Ki67 was considered to be 20%. The higher value was considered positive [7]. Homogeneously stained cellular membrane positivity for e-cadherin was considered positive [19] and P53>10% nuclear staining was considered positive [20].

### 2.5. Statistical analysis

All analyses were conducted using the SPSS program (version 17.0, SPSS Inc., Chicago, IL, USA). Demographics and clinical data were determined and presented as a mean ± standard deviation

or frequency (percentage). The statistical significance level was set at 0.05. Mann–Whitney U test and Chi-square test were used for statistical analysis.

## 3. Results

### 3.1. Clinicopathological Findings

The study included 120 BC patients. Moreover, 117 (97.5%) were female and 3 (2.5%) were male. The age of the patients was between 31 and 92 years. The mean age was 55 ± 12.25 years. The tumor is 0.1–8 cm in diameter. Tumor diameter is 2.3 ± 1.56 cm on average. Furthermore, 64 (53.3%) were in the left breast, 53 (44.2%) in the right breast, and 3 (2.5%) in the bilateral breast. 88 (73.3%) of these patients were located in the upper outer quadrant, and 14 (11.7%) in the lower outer quadrant, 5 (4.2%) in the lower inner quadrant, and 1 (0.8%) in the retroareolar region. Note that 24 (20%) were multicentric, whereas 100 (83.3%) underwent mastectomy and 20 (16.7%) underwent breast-conserving surgery.

74 (61.7%) patients had ductal carcinoma in situ around the tumor. 48 (40%) had lymph node invasion. In fact, 22 (18.3%) were stage 1, 61 (50.8%) stage 2, 27 (22.5%) stage 3, and 8 (6.7%) stage 4. 83 (69.2%) were early stage (stage 1-2) and 35 (29.2%) were late stage (stage 3-4). Table 1 lists the distribution of the patients based on clinicopathological characteristics.

**Table 1.** Clinicopathological data of 120 breast carcinoma patients.

| **Clinicopathologic characteristics** | | **Total** |
|---|---|---|
| Age (X+sd) | 55 ± 12.25 | n=120 |
| | **N(%)** | |
| **Histologic type** | | n=120 |
| Microinvasive carcinoma | 1(%0.8) | |
| Invasive ductal carcinoma | 92(%76.7) | |
| Invasive lobular carcinoma | 7(%5.8) | |
| Tubular carcinoma | 1(%1.7) | |
| Nöroendokrin carcinom | 4(%3.3) | |
| Invasive micropapillary carcinoma | 4(%3.3) | |
| Metaplastic carcinoma | 1(%0.8) | |
| Mixed carcinoma | 9(%7.5) | |
| **Surgery type** | | n=120 |
| Modified radical mastectomy | 100(%83.3) | |
| Breast conserving surgery | 20(%16.7) | |
| **Tumour grade** | | n=120 |
| Grade 1 | 20(%16.7) | |
| Grade 2 | 61(%50.8) | |
| Grade 3 | 37(%30.8) | |
| **Tumour stages** | | n=118 |
| pT1 | 22(%18.3) | |
| pT2 | 61(%50.8) | |
| pT3 | 27(%22.5) | |
| pT4 | 8(%6.7) | |
| **Lymph node stages** | | n=120 |
| pN0 | 55(%45.8) | |
| pN1 | 41(%34.2) | |
| pN2 | 17(%14.2) | |
| pN3 | 7(%5.8) | |
| **Lymphovascular invasion** | | n=120 |
| Yes | 23(%19.2) | |
| No | 97(%80.8) | |
| **Neoadjuvant chemotherapy** | | n=119 |
| Yes | 42(%35) | |
| No | 77(%64.2) | |
| Recurrence | 3(%2.5) | |

### 3.2. Comparisons of the expressions of GATA3, E-cadherin, p53, and Ki67 among different histological types of breast cancer

GATA3 was reported to be positive in 117 (97.5%) patients. The immune expression has not been observed in three patients diagnosed only with invasive ductal carcinoma. E-cadherin was reported to be positive in 110 (%95.7) patients. Positivity was observed in all tumor types (100%). However, only 7 (77.8%) patients were positive for mixed carcinoma and 4 (57.1%) for lobular carcinoma ($p < 0.05$). P53 was positive in 43 (36.8%) patients. It was negative in microinvasive carcinoma, tubular carcinoma, and metaplastic carcinoma ($p > 0.05$). Ki67 was ≤20% in 90(75%) of patients. Ki67 was<20% in microinvasive carcinoma (1, 100%) and tubular carcinoma (2, 100%). Ki67 was also ≤20% in metaplastic carcinoma (1, 100%), mixed carcinoma (4, 4.44%), invasive micropapillary carcinoma (3,75%), invasive ductal carcinoma (74, 80.4%) and invasive lobular carcinoma (5, 71.4%) ($p<0.05$).

### 3.3. Classification of molecular subtypes in breast cancer patients

Among the 120 patients with BC, 77 patients had Luminal A subtype, accounting for 64,2% (77/120), 26 had Luminal B subtype, accounting for 21,7% (26/120), 4 had HER-2 overexpression subtype, accounting for 3,3% (4/120), and 13 had triple-negative subtype, accounting for 10,8% (13/120).

### 3.4. Comparisons of the expressions of GATA3, E-cadherin, p53, and Ki67 among different molecular subtypes of breast cancer

GATA3 was positive in 100% (107/107) of the luminal A, luminal B, and HER2 overexpressing groups and 79.9% (10/13) of the TN group. It is less common in the TN group ($p < 0.05$). Ki67 of >20% was higher in HER2 overexpressing and triple-negative groups compared to luminal A and luminal B subtypes ($p < 0.05$). There is no significant difference between molecular subtypes in terms of the incidence of E-cadherin and p53 immunoexpressions ($p > 0.05$) (Table 2).

**Table 2.** Comparisons of the expressions of GATA3, E-cadherin, p53 and Ki67 among different molecular subtypes of breast cancer

| Subtype | n | GATA3(n=120) | | E-cadherin(n=115) | | p53 (n=117) | | Ki67 | |
|---|---|---|---|---|---|---|---|---|---|
| | 120 | + | - | + | - | + | - | ≥%20 | <%20 |
| Luminal A | 77 | 77(%100) ** | 0(0) | 70(%9.6) | 4(%5.4) | 23(%30.3) | 53(%69.7) | 52(%67.5)* | 25(%32.5) |
| Luminal B | 26 | 26(%100) ** | 0(0) | 24(%96,0) | 1(%4.0) | 10(%40.0) | 15(%60.0) | 21(%80.8)* | 5(%19.2) |
| HER-2 overekspressing | 4 | 4(%100) ** | 0(0) | 3(%100) | 0(0) | 2(%50.0) | 2(%50.0) | 4(%100) * | 0(0) |
| Triple-negatif | 13 | 10(%79.9) ** | 3(%23.1) | 13(%100) | 0(0) | 8(%66.7) | 4(%33.3) | 13(%100) * | 0(0) |

*p<0.05 **p<0.01

### 3.5. Correlation between GATA3 expression and clinical pathology

GATA3 was applied to 120 patients, which was positive in 117 (97.5%). ER/PR hormone receptors were observed more in the GATA3 positive group than in the negative group (99/120, 82.5%). There was no significant correlation between GATA3 expression and age, grade, tumor size, lymph node invasion, stage, lymphovascular invasion, HER2 status, and neoadjuvant chemotherapy ($p > 0.05$) (Table 3).

### 3.6. Correlation between E-cadherin expression and clinical pathology

E-cadherin was applied to 115 patients. E-cadherin expression was observed in 110 (91.7%) patients. All patients with loss of E-cadherin expression were grade 2, which was not statistically significant (5/5, p>0.05). There was no significant correlation between E-cadherin and age, tumor size, ER / PR hormone receptors, lymph node invasion, stage, lymphovascular invasion, HER2 status, and neoadjuvant chemotherapy (p > 0.05) (Table 3).

**Table 3.** Relationship between the expression of GATA3 , E-cadherin and clinical pathology

| Clinicopathologic type | GATA3 expression | | | | E-cadherin expression | | | |
|---|---|---|---|---|---|---|---|---|
| | | positive | negative | | | positive | negative | |
| | n | n(%) | n(%) | p | n | n(%) | n(%) | p |
| **Age (years)** | 120 | | | 0.259 | 115 | | | 0.869 |
| <50 years | | 41(34.2) | 2(1.7) | | | 40(34.8) | 2(1.7) | |
| ≥50 years | | 76(63.3) | 1(0.8) | | | 70(60.9) | 3(2.6) | |
| **Tumour grade** | 118 | | | 0.719 | 114 | | | 0.087 |
| Grade 1 | | 20(16.9) | 0(0) | | | 20(17,5) | 0(0) | |
| Grade 2 | | 59(50.0) | 2(1.7) | | | 54(47.4) | 5(4.4) | |
| Grade 3 | | 36(30.5) | 1(0.8) | | | 35(30.7) | 0(0) | |
| **Tumor size, cm** | 116 | | | 0.834 | 113 | | | 0.703 |
| ≤2 | | 65(56.0) | 2(1.7) | | | 61(54.0) | 3(2.7) | |
| 2-5 | | 36(31.0) | 1(0.9) | | | 36(31.9) | 1(0.9) | |
| >5 | | 12(10.3) | 0(0) | | | 11(9.7) | 1(0.9) | |
| **Lymph node stages** | 120 | | | 0.304 | 115 | | | 0362 |
| pN0 | | 52(43.3) | 3(2.5) | | | 52(45.2) | 2(1.7) | |
| pN1 | | 41(34.2) | 0(0) | | | 37(32.2) | 1(0.9) | |
| pN2 | | 17(14.2) | 0(0) | | | 14(12.2) | 2(1.7) | |
| pN3 | | 7(5.8) | 0(0) | | | 7(6.1) | 0(0) | |
| **Stage** | 120 | | | 0.255 | 114 | | | 0.131 |
| I-II | | 80(67.8) | 3(2.5) | | | 78(68.4) | 2(1.8) | |
| III-IV | | 35(29.7) | 0(0) | | | 31(27.2) | 3(2.6) | |
| **Lymphovascular invasion** | 120 | | | 0.393 | 115 | | | 0.226 |
| Yes | | 23(19.2) | 0(0) | | | 22(19.1) | 0(0) | |
| No | | 94(78.3) | 3(2.5) | | | 88(76.5) | 5(4.3) | |
| **ER/PR Status** | 120 | | | **0.019*** | 115 | | | 0.309 |
| Positive | | 99(82.5) | 1(0.8) | | | 91(79.1) | 5(4.3) | |
| Negative | | 18(15.0) | 2(1.7) | | | 19(16.5) | 0(0) | |
| **HER-2 Status** | 120 | | | 0.322 | 115 | | | 0.817 |
| Positive | | 29(24.2) | 0(0) | | | 83(72.2) | 1(0.9) | |
| Negative | | 88(73.3) | 3(2.5) | | | 27(23.5) | 4(3.5) | |
| **Neoadjuvant chemotherapy** | 119 | | | 0.943 | 115 | | | 0.478 |
| Yes | | 41(34.5) | 1(0.8) | | | 39(33.9) | 1(0.9) | |
| No | | 75(63.0) | 2(1.7) | | | 71(61.7) | 4(3.5) | |

*p<0.05

### 3.7. Correlation between p53 expression and clinical pathology

P53 was applied to 117 patients, which was positive in 43 (%35.8). ER/PR hormone receptors were observed more in the p53-negative group than in the p53-positive group (66/117, 56.4%) ($p<0.05$). It was seen in 37.4% (34/91) of invasive ductal carcinoma, 42.9% (3/7) of invasive lobular carcinoma, and 31.6% (6/19) of others ($p=0.842$). There was no significant correlation between P53 expression and age, grade, tumor size, lymph node invasion, stage, lymphovascular invasion, HER2 status, and neoadjuvant chemotherapy ($p > 0.05$) (Table 4).

### 3.8. Relationship between the expression of Ki67 and clinical pathology

Ki67 was applied to 120 patients, which was more frequently observed in grade 2 and grade 3 tumors than grade 1 tumors (45/120, 38.1%; 34/120, 28.8%) ($p = 0.002$). ER/PR hormone receptors were more frequently observed in the group with Ki67≥20% than that with Ki67 <20% (71/120, 59.2%) ($p <0.05$). There was no significant correlation between Ki67 expression and age, tumor size, lymph node invasion, stage, lymphovascular invasion, HER2 status, and neoadjuvant chemotherapy ($p < 0.05$) (Table 4).

**Table 4.** Relationship between the expression of p53, Ki67 and clinical pathology

| Clinicopathologic type | p53 expression | | | | Ki67 expression | | | |
|---|---|---|---|---|---|---|---|---|
| | | positive | negative | | | positive | negative | |
| | n | n(%) | n(%) | p | n | n(%) | n(%) | p |
| **Age (years)** | 117 | | | 0.239 | 120 | | | 0.227 |
| <50 years | | 18(15.4) | 23(19.7) | | | 35(29.2) | 8(6.7) | |
| ≥50 years | | 25(21.4) | 51(43.6) | | | 55(45.8) | 22(18.3) | |
| **Tumour grade** | | | | | | | | |
| Grade 1 | | 5(4.3) | 15(13.0) | | | 10(8.5) | 10(8.5) | |
| Grade 2 | | 20(17.4) | 40(34.8) | | | 45(38.1) | 16(13.6) | |
| Grade 3 | | 18(15.7) | 17(14.8) | | | 34(28.8) | 3(2.5) | |
| **Tumor size, cm** | 113 | | | 0.664 | 116 | | | 0.143 |
| ≤2 | | 24(21.2) | 41(36.3) | | | 47(40.5) | 20(17.2) | |
| 2-5 | | 13(11.5) | 23(20.4) | | | 32(27.6) | 5(4.3) | |
| >5 | | 6(3.5) | 6(5.3) | | | 8(6.9) | 4(3.4) | |
| **Lymph node stages** | 117 | | | 0.191 | 120 | | | 0.631 |
| pN0 | | 16(13.7) | 37(31.6) | | | 45(35.8) | 12(10.0) | |
| pN1 | | 15(12.8) | 25(21.4) | | | 28(23.3) | 13(10.8) | |
| pN2 | | 7(6.0) | 10(8.5) | | | 13(10.8) | 4(3.3) | |
| pN3 | | 5(4.3) | 2(1.7) | | | 6(5.0) | 1(0.8) | |
| **Stage** | 115 | | | 0.222 | 118 | | | 0.453 |
| I-II | | 27(23.5) | 53(46.1) | | | 61(51.7) | 22(18.6) | |
| III-IV | | 16(13.9) | 19(16.5) | | | 28(23.7) | 7(5.9) | |
| **Lymphovascular invasion** | 117 | | | 0.087 | 120 | | | 0.141 |
| Yes | | 12(10.3) | 11(9.4) | | | 20(16.7) | 3(2.5) | |
| No | | 31(26.5) | 63(53.8) | | | 70(15.8) | 27(22.5) | |

***Table 4*** *continued.*

| Clinicopathologic type | p53 expression | | | | Ki67 expression | | | |
|---|---|---|---|---|---|---|---|---|
| | | positive | negative | | | positive | negative | |
| | n | n(%) | n(%) | p | n | n(%) | n(%) | p |
| **ER/PR Status** | 117 | | | **0.037*** | 120 | | | **0.024*** |
| Positive | | 32(27.4) | 66(56.4) | | | 71(59.2) | 29(20.0) | |
| Negative | | 11(9.4) | 8(6.8) | | | 19(15.8) | 1(0.8) | |
| **HER-2 Status** | 117 | | | 0.442 | 120 | | | 0.268 |
| Positive | | 12(10.3) | 16(13.7) | | | 24(20.0) | 5(4.2) | |
| Negative | | 31(26.5) | 58(49.6) | | | 66(55.0) | 25(20.8) | |
| **Neoadjuvant chemotherapy** | 116 | | | 0.053 | 119 | | | 0.058 |
| Yes | | 20(17.2) | 21(18.1) | | | 36(30.3) | 6(5.0) | |
| No | | 23(19.8) | 52(44.8) | | | 54(45.4) | 23(19.3) | |

*p<0.05

## 4. Discussion

In our study, the presence of GATA3 was found to be associated with the ER/PR receptor and tumors associated with these receptors. Unlike GATA3, ER/PR hormone receptors were more common in the p53-negative group than the p53-positive group. Moreover, Ki67 proliferation was observed in higher-grade tumors. High expression of GATA3 in primary invasive BC has been confirmed by the limited number of studies showing that it is associated with smaller tumor size and lower nuclear grade, ER/PR positive tumors. Consequently, the loss of GATA3 expression was reported to be associated with adverse prognostic outcomes [5].

GATA3 and ER are closely associated and have a positive correlation between GATA3 and ER expression in breast cancers. Although some studies have suggested a prognostic or predictive role for GATA3 expression, it can be considered as a marker to prove the breast origin of metastatic cancer. The frequency of GATA-3 expression ranges from 47% to 100% in all breast adenocarcinomas [21]. It was reported to be positive in 117/120 (97.5%) of our patients.

E-cadherin expression is mostly observed in epithelial cells [9]. At the end of the previous century, the essential role of E-cadherin during normal epithelial function as a tumor suppressor has been demonstrated. In the important studies of Birchmeier and Van Roy groups, it was shown that inhibition of E-cadherin induces dissociation and invasion of cancer cells [22]. Another study showed clinical relevance by demonstrating that the BC subtype called invasive lobular carcinoma is characterized by loss of expression of E-cadherin, whereas most other BC subtypes are expressed E-cadherin [23].

There is a limited number of data on differentiated E-cadherin status in BC subtypes in molecular systems. Most of the available studies are studies that refer to the classical histopathology of breast cancer, not molecular classification [8]. The study by Margan et al. [8] demonstrated that the loss of E-cadherin is associated with the grade of Luminal A-type tumors [8]. In our study, the loss of E-cadherin expression was observed in luminal A and luminal B types, and all of these cases were grade 2. E-cadherin, interfering with other metastasizing factors such as EGFR- or Akt/STAT-mediated pathway, has been reported as the main cause of induction of epithelial mesenchymal transmission in TN cancers and has been tested in vitro as a potential therapeutic target [12]. In our study, the loss of E-cadherin expression was not observed in TN tumors.

Abnormal p53 expression was detected in 29% (193/673) of tumors, respectively [25]. Overall, 30%–35% of primary invasive BC are mutated. However, among BC, the prevalence of TP53 mutations depends on the molecular subtype of the disease. It is observed in ~80% of patients with the TN subtype, 30% of those with luminal A and luminal B subtypes, and 70% of those with HER2 overexpressing types [12, 24]. In our study, although it was not statistically significant, p53 was more common in HER2 positive and TN groups than in luminal groups. Breast cancers with high p53 expression detected by IHC are characterized by a poor prognosis and a metastatic phenotype [12].

The absence of a targeted therapy combined with intrinsic aggressiveness means that patients with TNBC tend to have a poor outcome [25]. Another attractive feature of mutant p53 as a therapeutic target in breast cancer is that the gene is mutated in almost 90% of patients with BC metastases in the brain [26,27]. In our study, although it was not statistically significant, p53 was more common in HER2 positive and TN groups than in luminal groups.

In the literature review, the high index Ki67 is considered an unfavorable factor affecting tumor progression and is associated with a poorer prognosis [14, 28, 29]. The study by Li et al reported that higher expression of Ki67 was associated with a higher degree of malignancy, a faster growth rate of tumor cells, a higher degree of invasion and metastasis, and poorer clinical prognosis [30]. In our study, the higher expression of Ki67 was found to be associated with high-grade tumors.

Clinical studies confirmed that BC is characterized by high heterogeneity, and disease prognosis can significantly differ, even if the clinical stage and treatment method used for patients are the same. Therefore, it is particularly important to determine how to predict prognosis in patients during treatment [30]. Detection of GATA3, E-cadherin, p53, and Ki67 protein expressions in BC patients helps to evaluate the treatment effect and prognosis. Therefore, multiple biological markers detected through immunohistochemistry provide additional reference standards for the clinical treatment of patients with BC. Thus, it comprises a solid scientific basis for the correct estimation of its prognosis.

The limitation of our study is that it included the patients with breast carcinoma diagnosed in the last 2 years because GATA3 immunohistochemistry has been performed in our routine practice for the last two years. Therefore, the survival times of the patients could not have been examined. However, prognostic factors affecting survival time have been evaluated. These cases can be re-evaluated by considering their survival times with a higher number of cases in the future.

## 5. Conclusion

As a result, GATA3 is specifically expressed in lumen-type breast carcinomas. It can also be seen in TN and HER-2 positive breast carcinomas. In addition to its diagnostic use, GATA3 has a developmental role in breast carcinomas and prognostic importance in different molecular subtypes of tumors. Ki67 is seen at a higher rate in high-grade tumors and has prognostic significance. No significant relationship was reported between E-cadherin and p53 and prognostic factors.

**Conflict of interest:**The authors declare that they have no conflict of interest.

**Funding:** There is no funding for this study.

**Ethical Statement:** This work was approved by Pamukkale University Ethics Committee of Non-Interventional Clinical Research. Approval number and date: 03; 02.02.2021. The study protocol was conducted according to the Declaration of Helsinki.

**The compliance to the Research and Publication Ethics:** This study was carried out in accordance with the rules of research and publication ethics.

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Research Article

# DETERMINATION OF GENDER PERCEPTIONS OF NURSING AND MIDWIFERY STUDENTS

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**Abstract:** *The culture of the society in which the individual lives determines the characteristics revealing the expectations about how a woman or a man behave, think and act, that is, structuring woman and man socially. This study was carried out to determine gender perceptions of nursing and midwifery students. Descriptive design type was used in the study. The universe of the study consisted of 750 students studying in Nursing and Midwifery Departments in 2018-2019. The sample consisted of 471 students who were not willing to attend the study. The participation rate is 63%. "Sociodemographic Information Form" and "Perception of Gender Scale" were used to collect data. The ethics committee, institutional permission, and consent of the students were obtained for the study. In this study, percentage and frequency distributions of variables were examined. Comparisons between groups; Mann-Whitney U and Kruskal Wallis-H tests. The mean score of Gender Perception of the students was 108.18 ± 108.18 (min = 25 / max = 125). A significant relationship was found between the variables of gender, class, type of school, nationality, family styles, food preparation before the spouse of the woman, and marital status before starting work and earning money ($p < 0.05$). The gender scores of female students (109.68 ± 11.45) were higher than that of male students (93.38 ± 13.46) ($p<0.01$). In this study, the mean gender score of the students is good. Nurses and midwives, by raising the awareness of individuals through training programs on gender roles; develop an awareness of gender roles and gain egalitarian attitudes and perspectives.*

**Keywords:** *student, nursing, midwifery, gender perception*

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## 1. Introduction

The concept of "gender" expresses socially determined personal characteristics, roles, and responsibilities of women and men. The definition of this concept includes values expectations, judgments, and roles about how society sees and perceives us as a man and a woman, what they think about us and what they expect us to behave [1, 2].

What the culture expects from a man and a woman is similar to the observations related to the physical characteristics (Gender) of woman and man [3]. The culture of the society in which the

individual lives determines the characteristics revealing the expectations about how a woman or a man behave, think and act, that is, structuring woman and man socially. Children gain roles appropriate to their genders and acquire gender identity. While household chores and childcare stand out for women, the roles of working in a job become more important than family roles for men [4].

The components like the functions, responsibilities, and rights of woman and man in society and their positions in the production process are shaped based on gender. As a result, men are directed to the public area while women are directed to the private sector [5]. Thoughts like glorifying masculine gender and leaving female gender as a secondary position are seen to be the traces of the social lives in men [6]. Traditional perspectives on the gender roles of men negatively affect the status of women in society. It is therefore seen that today women do not reach the desired status in society and they fall behind men [7].

In patriarchal societies, it is not only difficult for women to make independent decisions, but also they are not even allowed to spend money without their husbands' consent. This negatively affects women's effective use of or access to social resources in the field of health protection and promotion. It can also make it difficult for women to access healthcare services even in an emergency situation [8]. To give an example, female circumcision, which is applied mostly in African countries and causes gynecological and obstetric problems, is a cultural practice and also may be made for the sexual satisfaction of men. This situation reflects the violence against women and also reveals the gender and sexuality perception of the woman through the eyes of some men [9].

In the literature, it is stated that parents who are role models for their children are effective in the development of gender roles and children prepare their own roles by internalizing what they see from their parents. Therefore, it is very important to raise awareness of the parents about gender perception. The most basic individual of the family which is the main component of society is a woman. Midwife and nurse frequently interact with women and family because of their profession and gender [7]. For example, encouraging and supporting the father to continue kangaroo care of the infant with joint responsibility of the mother and father by midwife and nurse would definitely contribute to the development of positive attitudes in the society toward gender roles.

Firstly, developing an egalitarian attitude by midwives and nurses for themselves will provide a significant contribution to both the enhancement of health care quality and further development of professional identity. With this study, it will be possible to determine the differences between the gender perceptions of midwifery and nursing students, to shape programs and training intended for increasing awareness about this subject and motivating individuals about behavioral changes and to reach a wider audience.

This study was conducted to determine the gender perception of midwifery and nursing students.

## 2. Materials and Methods

### 2.1. Type of the Study

This research is a descriptive type study.

### 2.2. Population and Sample of the Study

The population of the study was composed of 750 students studying in the Midwifery and Nursing Departments of a University in the 2018-2019 Academic Year. Without sample selection from the

population, the study was completed with 471 students who voluntarily participated in the study and from school. The participation rate for the study was determined as 63%.

### 2.3. Data Collection Tools

The data of the study were collected with "Sociodemographic Information Form", prepared upon the literature review, and "Perception of Gender Scale".

***Sociodemographic Information Form:*** The form prepared by the researchers includes questions about the students' age, gender, year, cause of choosing the major, family types and cultural situations, and roles of women and men about gender roles.

***Perception of Gender Scale:*** The scale was developed by Altınova and Duyan (2013) and its validity and reliability studies were conducted [10]. It is a scale developed to be applied particularly to adults. It has the capability of measuring individuals' attitudes about how they perceive gender roles in different fields. The scale is composed of a total of 25 items. For each item, one of the options "I strongly agree", "I agree", "undecided", "I disagree", "I strongly disagree" is selected and scored between 1 and 5. Some items are reversely scored while calculating the total scale score (the items 2, 4, 6, 9, 10, 12, 15, 16, 17, 18, 19, 20, 21, 24, and 25 were reversely scored). While the lowest score on the scale is 25, its highest score is 125. A high score indicates high gender perception while a low score refers to low gender perception. The analyses about the internal consistency of the scale were calculated over a total of 443 people and the Cronbach's Alpha internal consistency coefficient is 0.872. In this study, the Cronbach's Alpha internal consistency coefficient of the scale was found as 0.899.

### 2.4. Application of the Study

The data collection tools were applied to the students, who were included in the study, through a face-to-face interview method for 20-25 minutes.

### 2.5. The Inclusion Criteria of the Study

- Studying in Nursing Department of Canakkale Onsekiz Mart University Faculty of Health Sciences
- Studying in Midwifery Department of Canakkale Onsekiz Mart University Faculty of Health Sciences
- Volunteering to participate in the study

### 2.6. The Exclusion Criteria of the Study

- Declining to participate in the study.

### 2.7. Data Assessment

The data obtained from the study were evaluated in Statistical Package for Social Sciences for Windows (SPSS 25.0) statistical package program. In the study, percentage and frequency distributions of the variables were examined. Comparisons between the groups were conducted with Mann-Whitney U and Kruskal Wallis-H tests in non-parametric variables. In case of significant differences in the Kruskal Wallis-H Test, the groups having differences were determined with post hoc Tukey B test. The value of 0.05 was used as the significance level while interpreting the results.

## 3. Results

It was determined that the mean age of the participants was 20.92±1.75 and the majority of them were female (88.7%) and studying in the 3rd and 4th years (29.3% and 27.2%). The participants were mostly (94.5%) Turkish citizens. The majority had nuclear family type (84.3%), their family income level was middle (74.1%) and their family type was democratic family (64.8%).

It was found that male child was not wanted more than the female child in 90.7% of the participants and women's clothes have not interfered in 67.3% of the participants. Of the participants, 81.3% expected men in the family to help household chores, 71.5% believed that women should not come home earlier than men and prepare the meals, 97.7% had the idea that giving birth to a boy would not increase the woman's value, and 90% did not think about getting married before starting to work and earn money (Table 1).

In the study, it was found that the gender showed a significant difference in terms of gender perception ($p<0.05$) and women's gender perception scores (109.68±11.45) were higher than the scores of male participants (93.38±13.46).

It was determined that the gender perception scores of the participants showed a significant difference in terms of class type ($p=0.009$), gender perception scores of the 2nd-year students (109.15±12.33) were higher than those of the 1st -year students

(104.37±14.04), gender perception scores of the 3rd -year students (108.11±12.21) were higher than those of the 1st-year students (104.37±14.04) and the scores of the 4th -year students (110.40±10.69) were higher than those of the 1st -year students (104.37±14.04).

When the students' gender perception was examined in terms of school type, it was determined that the gender perception scores of the students who graduated from Anatolian High School (109.59±11.66) were higher than the students who graduated from Regular High Schools (108.11±12.21) and the students who graduated from Health Vocational High school (108.40±10.91) were more positive compared to the students who graduated from Regular High Schools (101.77±15.78) ($p=0.006$). Besides, the perception scores of the students whose nationality is the Republic of Turkey (109.11±11.65) were seen to be higher than the foreign students (92.19±14.28) ($p=0.000$).

When the gender perception of the participants was examined in terms of family type, it was determined that the gender perception of those who had nuclear families (108.86±11.75) was more positive than those with extended families (102.57±15.26) ($p=0.002$)

A significant correlation was found between those who believed that woman should come home earlier than her husband and prepare the meals and those who did not ($p<0.01$). Those who did not think that the woman should come home earlier than her husband and prepare the meals (111.15±10.42) were more positive than those who did (95.82±14.93).

**Table 1.** Sociodemographic, Familial, and Social Characteristics of the Participants

| **Characteristics** | **Mean+SD** | **Min-Max** |
|---|---|---|
| **Age** | 20.92±1.75 | 18-37 |
| | **N** | **%** |
| **Gender** | | |
| Female | 418 | 88.7 |
| Male | 53 | 11.3 |
| **Year** | | |
| 1st Year | 99 | 21 |
| 2nd Year | 106 | 22.5 |
| 3rd Year | 138 | 29.3 |
| 4th Year | 128 | 27.2 |
| **Nationality** | | |
| Republic of Turkey | 445 | 94.5 |
| Others | 26 | 5.5 |
| **Income level of the Family** | | |
| Income less than expenses | 83 | 17.6 |
| Income equal to expenses | 349 | 74.1 |
| Income more than expenses | 39 | 8.3 |
| **Family type** | | |
| Nuclear family | 397 | 84.2 |
| Extended family | 61 | 13.0 |
| Others | 13 | 2.8 |
| **Family style** | | |
| Oppressive | 38 | 8.1 |
| Democratic | 305 | 64.7 |
| Free | 128 | 27.2 |
| **Do you think a baby boy is wanted/expected more than a baby girl?** | | |
| Yes | 44 | 9.3 |
| No | 427 | 90.7 |
| **Is there anyone interfering with the clothes of female members of the family?** | | |
| Yes, My father | 103 | 21.6 |
| Yes, Brother | 27 | 5.6 |
| Yes, Me | 12 | 2.7 |
| Yes, Others | 12 | 2.5 |
| No | 317 | 67.6 |
| **Are the male members of your family expected to do and help with household chores (cooking, cleaning, tidying the house, etc.)?** | | |
| Yes | 383 | 81.3 |
| No | 88 | 18.7 |
| **Should a woman be at home before her husband and prepare the meal?** | | |
| Yes | 50 | 10.6 |
| No | 337 | 71.6 |
| Undecided | 84 | 17.8 |
| **Does giving birth to a boy increase the value of a woman?** | | |
| Yes | 11 | 2.3 |
| No | 460 | 97.7 |
| **Do you consider getting married before starting to work?** | | |
| Yes | 47 | 10.0 |
| No | 424 | 90.0 |

It was observed that there was a statistically significant difference between the gender perception scores of those who did not consider getting married before starting work and earning money (108.64±12.03) and the gender perception scores of those who considered getting married before starting work and earning money (104.06±14.91) (p=0.044, Table 2).

**Table 2.** Comparison of Gender perception with Some Variables

| Characteristics | n | Mean±SD | Mean rank. | Test and p-value |
|---|---|---|---|---|
| **Gender** | | | | |
| Female | 418 | 109.68±11.45 | | U=4834.00 |
| Male | 53 | 93.38±13.46 | | p<0.05* |
| **Year** | | | | |
| 1st Year [1] | 99 | 104.37±14.04 | 197.78 | H=11.651 |
| 2nd Year [2] | 106 | 109.15±12.33 | 247.18 | p=0.009** |
| 3rd Year [3] | 138 | 108.11±12.21 | 235.14 | 1-2 1-3 1-4 |
| 4th Year [4] | 128 | 110.40±10.69 | 257.22 | |
| **Graduated High School** | | | | |
| Anatolian High School | 270 | 109.59±11.66 | 251.12 | H=12.476 |
| Health Vocational High School | 112 | 108.40±10.91 | 230.29 | p=0.006** |
| Regular High School | 47 | 101.77±15.78 | 179.28 | 1-3 2-3 |
| Other | 42 | 105.71±14.35 | 217.52 | |
| **Nationality** | | | | |
| Republic of Turkey | 445 | 109.11±11.65 | | U=1998.00 |
| Others | 26 | 92.19±14.28 | | p=0.000** |
| **Income level of Your Family** | | | | |
| Income less than Expenses | 83 | 106.77±11.57 | 212.95 | H=3.428 |
| Income equal to Expenses | 349 | 108.69±12.32 | 242.62 | p=0.180 |
| Income higher than Expenses | 39 | 106.62±14.72 | 225.81 | |
| **Family Types** | | | | |
| Nuclear Family | 397 | 108.86±11.75 | 241.63 | H=12.413 |
| Extended Family | 61 | 102.57±15.26 | 185.03 | p=0.002** |
| **Family Styles** | | | | |
| Oppressive | 38 | 109.00±11.93 | 245.87 | H=0.484 |
| Democratic | 305 | 107.96±12.33 | 232.95 | p=0.785 |
| Free | 128 | 108.47±12.80 | 240.34 | |
| **Do you think a baby boy is more wanted than a baby girl in your family?** | | | | |
| Yes | 44 | 108.23±12.88 | | U=9366.00 |
| No | 427 | 108.18±12.38 | | p=0.974 |
| **Is there anyone who interferes with the clothes of female members in your house?** | | | | |
| Yes. My Father | 103 | 108.39±11.64 | 234.60 | H=0.484 |
| Yes. Brother | 27 | 106.19±9.94 | 194.65 | p=0.785 |
| Yes. Me | 12 | 101.92±12.62 | 161.00 | |
| Yes. Others | 12 | 107.75±16.29 | 250.58 | |
| No | 317 | 108.54±12.67 | 242.26 | |
| **Would you expect the male individuals in the family to do household chores ?** | | | | |
| Yes | 383 | 108.43±12.64 | | U=15149.50 |
| No | 88 | 107.10±11.37 | | p=0.139 |
| **Do you think a woman should be at home early and prepare the meals before her husband?** | | | | |
| Yes [1] | 50 | 95.82±14.93 | 122.21 | H=67.326 |
| No [2] | 337 | 111.15±10.42 | 267.09 | P=0.010* |
| Undecided [3] | 84 | 103.62±12.32 | 179.00 | 1-2 1-3 2-3 |
| **Do you think giving birth to a baby boy will increase a woman's value?** | | | | |
| Yes | 11 | 89.27±16.09 | | U=15149.50 |
| No | 460 | 108.63±11.97 | | p=0.139 |
| **Do you consider getting married before starting to work and earning money?** | | | | |
| Yes | 47 | 104.06±14.91 | | U=8179.00 |
| No | 424 | 108.64±12.03 | | p=0.044* |
| **Gender perception Score** | | | | |
| Mean score | 471 | 108.18±12.40 (min :68-max:125) | | |

* p<0.05 ; **p<0.01

## 4. Discussion

Inequality based on gender roles determines the relationship between the man and woman in all segments of the society based on gender roles as well as their gender roles [7]. The reflections of gender roles on social life shape the lives of men and women as traditional and egalitarian roles in different directions [2].

When equality in gender is mentioned, it refers to an individual not facing any discrimination due to his/her gender in using opportunities, allocating and using resources, and receiving services [11]. As it is understood, there is an attitude difference towards gender roles among male and female students. Nurses and midwives have professions with important responsibilities in their society for shaping attitudes toward gender roles in an egalitarian manner and adopting them to the society which they serve for.

In the 2018 Global Gender Gap Report published by the World Economic Forum, Turkey is stated to be ranked as 130 out of 149 countries in gender equality order [12]. This result is quite remarkable for Turkey.

In the study, the gender perception mean scores of the participants were at a good level. The gender perception mean scores of the female students participating in the study were found to be higher than male students ($p<0.05$). In the literature, when the students' perceptions towards gender roles according to gender type were examined, it was stated that the female students' thoughts on egalitarian gender were highly positive [6, 7, 13-21]. Unlike the results of this study, in a study conducted by Balcı Akpınar et al., (2019) with university students (n=2356), a significant difference was found between the gender perception mean score and gender [22]. It was stated that the gender perception score was lower in female students than in male students. In this context, it was believed that there was a more positive gender perception in women.

In terms of gender perceptions of the participants according to their class type, gender perceptions of the 4$^{th}$-year students were higher than the 1$^{st}$ -year students ($p<0.05$). The results of the study are in line with the results in the literature [15, 23, 24]. In contrast to the results of this study, it was expressed in the study of Özpulat and Özvarış (2019) conducted with the students (n=360) from the Department of Nursing and Department of Nutrition and Dietetics that there was no statistically significant difference between the class variable and gender perception score [16]. It was emphasized that the "Instructional Training for Gender Equality and Fighting with Violence Against Women" given (n=28) in the study with pretest and posttest design conducted by Uzun et al. (2017) positively affected the participants' gender perceptions and attitudes towards gender roles [25]. It was determined that those who had gender courses in their curricula had higher gender perceptions than those who did not [6]. This result may be related to the fact that 4$^{th}$ -year students took gender courses and increased their awareness of this subject further.

Concerning the participants' opinions about the type of high school they graduate from it was found that the gender perception scores of the students who graduated from Anatolian High School were more positive than the students who graduated from Regular High School and those of the students who graduated from Health Vocational High School were more positive than the students who graduated from Regular High School ($p<0.05$). It was determined in the study by Çelik et al. (2013) that equality gender attitudes of those who graduated from Anatolian High Schools were higher than those who graduated from other high school types and those of the students studying in Health Sciences were

higher than the students studying in the other fields [26]. The study results are similar to the results of the present study. It may be due to the fact that the parents of the students studying in Anatolian High Schools have higher education levels and have egalitarian attitudes towards gender equality. In similar studies by Kavuran (2011) and Atış (2010), it was determined that the students studying in the health department had a more egalitarian attitude towards gender roles [27, 28]. This striking result will give priority to women's health care needs with a positive discrimination perspective in the field of reproductive health where gender discrimination is quite a lot in women.

It was determined that the perception scores of the Turkish students were higher than the foreign students (92.19±14.28) ($p<0.05$). No relevant data have been found in the literature. The culture in which the individual lives determines the characteristics expected from the woman and man. This important result is thought to be caused by the that the culture of this country does not coincide with the culture of foreign students.

When the gender perception mean scores of the participants were evaluated by family styles, the nuclear family had a higher score than the extended family. When the literature was examined, it is consistent with the study results [15, 29, 30]. Unlike the results of this study, it was observed in the studies of Balcı Akpınar et al. (2019), Köken Durgun and Cambaz Ulaş (2019) and Uçtu and Karahan (2016) that the variable of the extended family increased the gender perception score [19, 22, 23]. It was believed to be caused by that the students have grown up with their parents. In addition, this result may be caused by the fact that the parents have egalitarian attitudes towards gender roles.

As a result of rapid social changes, the traditional family structure has tried to renew itself in terms of changing gender roles. In the study, a significant correlation was found between those who thought that woman should come home earlier than her husband and prepare the meals and those who did not ($p<0.05$). Those who did not believe that woman should come home earlier than her husband and prepare the meal had more positive gender perception scores than those who did. In the study conducted by Kahraman et al., (2014) with the teaching staff (n=209) working in Nevşehir Hacı Bektaş Veli University, 20.6% of the participants agreed that woman must prepare the meal after coming home before her husband following the work while 77.5% did not agree [31]. It is seen that gender roles are accepted in line with the culture of society.

The gender perception scores of those who did not consider getting married before starting to work and earn money were higher than those who considered getting married before starting to work and earning money. When the literature was examined, no study was found giving similar results. As stated by Kodan (2013), this may be explained by the openness of an individual to new ideas and not remaining under the influence of culture-society [32].

## 5. Conclusion

It is important to determine first the attitudes of university students towards gender roles in order to ensure them acquiring an egalitarian perspective by changing their traditional perspectives on gender roles. In the study, the gender means a score of the students was at a good level. It was determined to be negatively affected by variables such as gender, class, school type, nationality, family styles, woman's status of coming home before her husband and preparing the meal, and the status of getting married before starting to work and earn money.

As a result of the study, it was determined that the mean scores of the perception of gender scale were higher in the students who took gender courses than those who did not. Therefore, it can be recommended to add gender and related concepts into the curricula of midwifery and nursing departments and organize in-service training programs on gender roles. Since men have a more traditionalist attitude, the participation of men should be ensured as much as possible in the training programs to be carried out in this process. More comprehensive studies should be planned to determine students' gender perspectives and find out regional differences.

**Limitations of the Study:** The limitations of the study are the inability to reach all the students in the study, incomplete filling of the data collection forms, and those who were not willing to participate in the study. The results of the study can be generalized to the population where the study was carried out.

**Conflict of interest:** The authors declare that they have no conflict of interest.

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**Ethical Approval:** The institutional permission from the school administration and the ethics committee approval from the Clinical Trials Ethics Committee of the University (04.01.2019 / No:18920478-050.01.04-E.1900001718) were obtained. Before starting the data collection process in the study, the students were informed about the purpose and scope of the study and then their verbal and written consents on agreeing to participate in the study were obtained.

**The compliance to the Research and Publication Ethics:** This study was carried out in accordance with the rules of research and publication ethics.

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Review

# NURSING INTERVENTIONS IN MANAGEMENT OF COVID-19-RELATED DELIRIUM IN INTENSIVE CARE UNITS: LITERATURE REVIEW

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**Abstract*:*** *The development of delirium is highly probable in COVID-19 patients, and its management is much more difficult than other diseases. Nurses have important roles in the management of delirium that may develop in COVID-19 patients. The aim of this paper was to review the literature regarding non-pharmacological interventions in intensive care units (ICUs) to prevent delirium in COVID-19 patients. The terms used in the literature search were 'intensive care' or 'critical care' including their abbreviations, as well as 'delirium,' 'intervention,' 'approach,' 'nursing' or 'non-pharmacologic' or 'treat' or 'management' or 'prevention' and 'COVID-19' with Turkish and English words. The literature was scanned using the keywords based on the Medical Subject Headings (MeSH) and Embase Tree (EMTREE) from the databases of Cochrane, CINAHL, PsyInfo PubMed, and EMBASE. A total of 63 studies were included in the review. In this paper, it was found that non-pharmacological interventions had an important place in delirium management; however, the transmission way of COVID-19 via droplets prevents many non-pharmacological attempts. First and foremost, among these interventions is the termination of the sedating drug, preventing isolation, ensuring that the patient spends time with visitors, and weaning from mechanical ventilation. In COVID-19 patients, the latest technology may be used to help prevent social isolation. Based on the findings of this literature review, we recommend a patient-centered approach in the management of delirium in COVID-19 patients and a revision of current strategies in accordance with the profiles of the patient and the disease. It is recommended to raise awareness on interventions for delirium syndrome that may cause problems for nurses regarding COVID-19.*

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**Keywords***: COVID-19, Delirium, Intensive Care Unit*

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## 1. Introduction

The COVID-19 pandemic is an extremely dangerous threat for the world population, affecting all countries and requiring considerable financial and human resources [1]. The current literature highlights that it is dangerous especially for the elderly and individuals with chronic diseases [2]. It should not be ignored that many doctors, nurses and children and young people die due to the COVID-19 pandemic.

The death toll of COVID-19 is expected to cause important problems for all sectors in the future. "Skilled labor", already scarce in an increasingly crowded world, may be safely predicted to be more expensive in the near future as a repercussion of the COVID-19 pandemic. Currently, the work of physicians and nurses is the first thing that comes to mind while speaking of skilled labor [3]. Delirium diagnosis, treatment, and care interventions require a multidisciplinary approach. Delirium diagnostic difficulties concern nurses as well as physicians. The lack of knowledge of physicians and nurse clinicians working in the ICU, lack of training on the topic, workload, and systemic problems may be listed in failure to diagnose delirium. This is because, when routine screening for delirium is not performed within the working system of the ICU, the patient is generally not evaluated in this respect [4]. The literature is constantly updated with the latest information on the negative effects of COVID-19 in the hospitalization process [2, 5, 6].

Moreover, there are yet unknown but suspected secondary conditions of COVID-19, among which delirium is one of the most important ones [1].

Delirium is a transient neurocognitive syndrome associated with impaired cognitive functions, clouding of consciousness, inability to maintain attention, and unstable psychomotor activity [7, 8]. Delirium often develops rapidly in a few days, worsens the clinical prognosis, and affects health status both in the short-term and long-term [8]. Before COVID-19, the mean incidence of delirium was 20-30% in clinics and 25-87% in Intensive Care Units (ICUs) [9].

Prior to COVID-19, it was reported that only 54% of health professionals involved in cases of delirium were using the correct terminology [10], and awareness of delirium and the capability to diagnose it were not adequate in many ICUs [11]. However, the development of delirium is related positively to morbidity, need for intensive care, length of time of mechanical ventilation and length of hospitalization, nosocomial infections, and mortality [7, 8, 12, 13]. Moreover, patients who experience delirium in the ICU are reported to continue having problems after their discharge and suffer functional deficiencies [12]. This underscores the potential long-term consequences of delirium after discharge caused by COVID-19. Delirium is quite common in the Intensive Care Units, and studies report that it is seen at rates varying between 25% and 87% [14-17]. In this context, it was noted that the rate of delirium in COVID-19 patients was 23% [18]. Indeed, COVID-19 patients are directly at risk of delirium. In this context, the development of delirium is highly probable in COVID-19 patients, even inevitable, and its management is much more difficult than other diseases [1]. Therefore, it is very important that healthcare professionals acquire the awareness of delirium and the ability to detect sudden metabolic or physiological changes caused by COVID-19, as well as its diagnosis and treatment [7, 8, 19]. The aim of this paper was to present a literature review regarding nonpharmacological strategies used in delirium management in patients treated for COVID-19 in the ICU.

## 2. Material and Method

The aim was to review the literature on non-pharmacological strategies used in the management of delirium in patients hospitalized for COVID-19 treatment in the ICU. The terms used in the literature search were 'intensive care' or 'critical care' including their abbreviations, as well as 'delirium,' 'intervention,' 'approach,' 'nursing' or 'non-pharmacologic' or 'treat' or 'management' or 'prevention' and 'COVID-19' with Turkish and English words. These keywords were determined based on the Medical Subject Headings (MeSH) and Embase Tree (EMTREE). Research articles published on the topic were

found by scanning the databases of Cochrane, Cumulative Index to Nursing & Allied Health Literature (CINAHL), PsycINFO, PubMed, and EMBASE between March and May 2020.

The inclusion criteria were publications in a refereed journal between 2000 and 2020, with an experimental or quasi-experimental design, full-text availability online, and being original and of quantitative nature. Figure 1 provides a summary of the search strategy results with a Flowchart of the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) [20]. The screening returned a total of 136 studies. These were first examined by their titles, and 63 were excluded as they were not related to the scope of our study. Consequently, a total of 73 studies were included in the review.

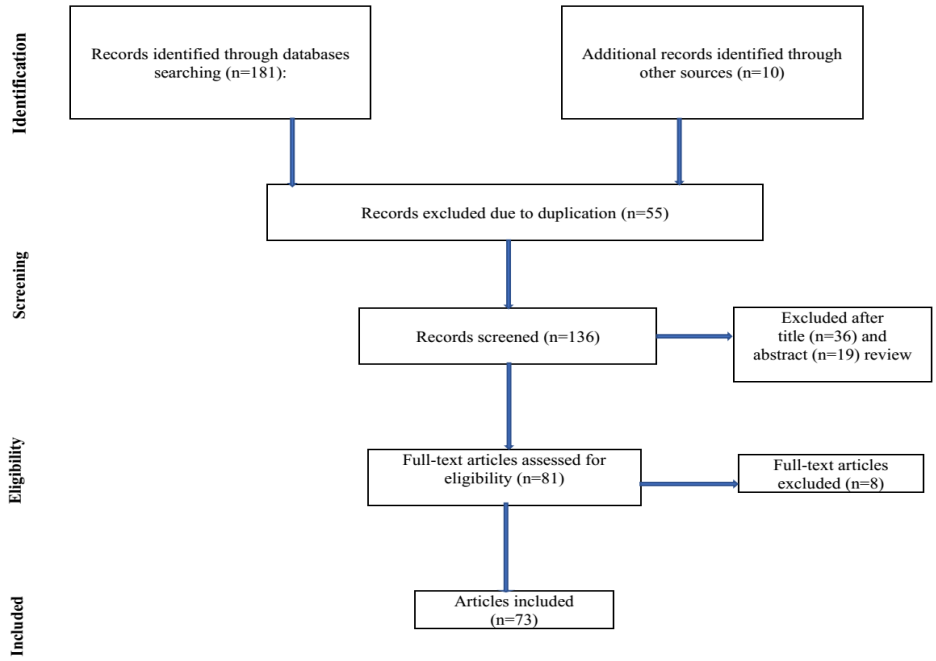


**Figure 1**. Flow diagram of study selection

## 3. Results

Delirium is assessed according to the Diagnostic and Statistical Manual of Mental Disorders (DSM-V) diagnostic criteria and delirium scales (Table 1). For a diagnosis of delirium, there should be 1) changes in consciousness and accompanying problems with concentration and attention, 2) disruptions in perception or cognitive functioning not related to dementia, 3) brief fluctuations during the day, 4) anamnesis, assumptions on a cause for dementia as a result of tests and examinations, and 5) exposure to toxicity should be determined [21]. More than one of these criteria are evaluated in the diagnosis of delirium.

**Table 1.** DSM-V Diagnostic Criteria

| |
|---|
| A. Disruptions in attention: decreased ability to direct attention, focus, maintain and re-orient; decreased awareness. |
| B. Acute development: it usually develops within hours to several days, with a remarkable decrease in the initial level of attention and awareness. |
| C. Cognitive impairment: unresponsiveness to stimuli, weakened reflexes, memory problems, disorientation, impairment of language and eyesight, and compromised perception. |
| D. A neurocognitive disorder that develops as an extension of (A) and (C). A comatose condition and total unresponsiveness to stimuli may be observed. |
| E. Deterioration of the previous findings of physical examination or laboratory tests, such as a cognitive impairment which is a direct result of intoxication accompanied by another clinical diagnosis or exposure to a toxic agent, or which develops from multiple etiologies. |

Pharmacological and non-pharmacological methods are used in delirium management. The side effects of medication used in the treatment of delirium include impaired heart rhythm, stroke in patients of dementia, restlessness, agitation, or sleepiness, and these medications may not always be useful in preventing delirium.

The United Kingdom National Institute for Health and Care Excellence (NICE) recommends short-term (maximum of one week) use of sedatives in agitated patients who are not communicative and show a risk to harm themselves or others [8,19]. Clinical practice guidelines also do not advise any pharmacological interventions in ICUs in the prevention and treatment of delirium [13]. Even though ICU delirium is considered to be a serious problem, the use of medication remains limited in clinical practice [9]. In consideration of these potential side effects, however, nonpharmacological interventions are needed in the prevention and treatment of delirium [8]. In a meta-analysis reviewing 14 studies, it was reported that non-pharmacological interventions reduced the frequency of delirium by 53% in patients hospitalized outside of ICUs and aged 65 and above [22].

### 3.1. Non-Pharmacological Strategies in Delirium Management

Multi-component interventions of care are needed in the diagnosis and management of delirium [8]. The diagnosis of delirium primarily includes identification and elimination of possible underlying problems, then the treatment, and prevention, and management of complications [8, 19]. Care approaches include cognitive, physical, psychological, and environmental interventions in accordance with clinical guidelines [8].

There is no specific treatment for delirium, but it is managed through multi-component non-pharmacological interventions that include effective communication, re-orientation, reducing environmental stimuli, cerebral hemodynamic recovery, cutting down daily sedation, early and frequent mobilization, exercise, hydration and sleep hygiene, family involvement, patient education and a holistic approach [7-9, 19, 23-25].

The most common practice is the ABCDE Bundle which involves Awakening and Breathing Coordination, Delirium prevention and management and Early physical mobility [5, 9, 12]. The multi-component ABCDE Bundle reduces the incidence of delirium, as well as the length of ICU stay, dependency on mechanical ventilation and hospitalization and increases survival rates [12]. Bounds et

al. (2016) reported the effects of ABCDE bundle application on delirium prevalence in intensive care patients in their study. In the study, after implementation of the ABCDE bundle, the prevalence of delirium decreased significantly (from 38% to 23%, P = .01), and the mean number of days of delirium were reduced significantly (from 3.8 to 1.72 days, P < .001) [12]. The use of delirium prevention bundles is reported to reduce the frequency and length of delirium. These bundles consist of oxygen therapy, fluid-electrolyte balance, preventing dehydration, controlling pain and agitation, avoiding polypharmacy, regulating bladder and intestinal functions, adequate nutrition, regulating the environment and treating cognitive impairment, as well as problems with mobility, eyesight, and hearing [7, 9, 13, 25-27].

### 3.2. Regulating the Environment:

Environmental factors that trigger delirium include noise, constant light, odors, interventional or non-interventional procedures, sensory overload, insufficient cognitive and verbal stimuli, social isolation, inactivity, sleep disturbances, lack of humidity, heat, and windowless interiors [13]. Iatrogenic factors include the application of chest, nasogastric or endotracheal tubes, bladder catheterization, mechanical ventilation, invasive monitoring, and untreated urinary and stool retention [13]. Noise heightens adrenal and cardiovascular stimulation and suppresses the immune system [13].

Regulations of the environment should therefore involve lighting and noise management, keeping a calendar and clock, explaining the equipment required in the environment to the patient, controlling confusing or overwhelming stimuli, effective communication with the patient, daily re-orientation to persons, space and time, and providing a good environment for sleep to maintain the circadian rhythm [8, 13]. Adding a radio or television, or hanging pictures of relatives near the bed in the unit may help maintain the patient's orientation [7].

Moreover, it is recommended to minimize physical restraints and noise, prevent malnutrition, conceal tubes and catheters that are used, ensure adequate lighting and minimize noise, control pain and monitor the medications administered for risk of triggering delirium [8, 13]. The side rails of the bed should be raised for patient safety [8]. The patient in delirium should be closely monitored, using alarm, sound, and video camera equipment where necessary [13].

The recommended room temperature is between 21.1 and 23.8 °C, and the noise level should not be above 40 decibels in the daytime and 35 decibels at night [7, 13]. These interventions to enhance patient comfort and relaxation are both low-risk and inexpensive [26].

### 3.3. Additional Points of Patient Care

Healthcare professionals should avoid procedures that are not essential or that only disrupt the patient especially in hours of sleep. In fact, they should minimize all care interventions, keep only a few lights on at night, and take noise-reducing measures, such as giving the patient washable earplugs or turning off device alarms, where possible [7,12,26]. Day and night may be explained from an appropriate distance showing the patient a window looking outside [13]. Where patients have impaired hearing or eyesight, these problems should be addressed in order to avoid the worsening of delirium and keep it under control [12]. Ensuring sleep hygiene and day and night cycles, use of night lamps, providing the patient with appropriate hearing aid or eyeglasses are other recommendations [8, 9, 25].

It should be remembered that lack of stimuli is likely to increase hallucinations in the patient.[7] Interventions that improve the state of consciousness should not be forgotten, including providing the

patient with suitable cognitive and therapeutic stimuli [12]. However, the stimuli should not be often or too many and confusing. Patients who develop delirium may be frightened and defensive. When they cannot express their feelings and thoughts verbally, they may seem anxious, restless, or stressed. Therefore, it is imperative that healthcare professionals need to gain the trust of the patient. Talking to the patient and discussing daily events and news with them are helpful in preventing delirium through re-orientation of the patient [8]. Moreover, visiting relatives in the ICU should be warned that the patient might be in delirium and the reasons [12] should be explained, whereas visitation times should also be extended [7, 9, 25, 27]. The religious (religious wellbeing) dimension in spiritual wellbeing may be interpreted as having a spiritual connection with God or a higher power [28]. The existential dimension is a mental and social element and shows who it is, what it does why, where it belongs [28]. The religious dimension leads us to God, and the existential dimension directs us to the environment and other people beyond ourselves. It is very important that intensive care nurses provide spiritual care. In situations where there are an impasse and conflict in spiritual wellbeing, the person may experience painful feelings such as loneliness, depression, and loss, and they may question the meaning of life [30, 31]. This situation requires spiritual care, social and psychological support [28, 29]. Spiritual wellbeing and care initiatives increase life expectancy, energy, and motivation [30]. They provide people with hope and thus strengthen their adaptation to disease conditions [32].

It is important to wake up patients once a day or at certain intervals during the day and conduct spontaneous breathing trials [12], test the level of neurological functions, and orient the patient. Having two patients with delirium share the same room should be avoided [13]. It is also needed to ensure the safety of the patient and inform the family members about all procedures [13].

The patient's personality, coping strategies, existing psychological problems, and levels of fear, panic, and anxiety are among the emotional factors that may lay the ground for delirium [13]. Repetition of a certain thought in delirium may aggravate the situation causing agitation; therefore, distracting the attention is recommended. The attention span of patients in delirium is short, and drawing attention with varying stimulation (like music or visuals) may help detach them from thoughts that cause agitation [13]. Moreover, dexmedetomidine derivatives should be preferred over derivatives of benzodiazepine in agitated patients [12]. It should be remembered that restraining always increases agitation [13]. If the patient has substance abuse problems, specific psychological support should be provided [13].

In their study, Simon et al. suggested using a combination of several measures that may be less effective or not be effective alone but decrease delirium incidence in ICU patients when used in a multi-component format, such as light therapy and regulating the circadian rhythm [33].

Furthermore, Chevillon et al. reported that individual preoperative training of increasing the patient’s knowledge before pulmonary thrombo-endarterectomy helped decrease the time the patient had to be kept on mechanical ventilation by increasing their knowledge [34, 35].

### 3.4. Mobilization Exercises

In the literature, there are different results regarding early and frequent mobilization exercises and the mechanism by which they work [8, 26]. However, the combined use of non-pharmacological interventions is supported.[7] Mobilization of patients by way of bed exercises[24] within the first 48 hours after admission to the ICU is recommended to prevent delirium [8, 12, 19].

Mobilization requires teamwork, and patient fitness needs to be assessed before getting started with exercises. In cases where exercise may have side effects, such as deep vein thrombosis,

hematochezia, or severe cardiac ischemia, the healthcare team should consider if indicated and decide on the amount and kind of mobilization. Mobilization must be immediately terminated in case of disruption in the patient's breathing pattern or hemodynamic imbalance. Exercise is recommended for at least 20 minutes a day [8]. Exercise also reduces the risk of falling [12].

In their study to identify the effects of exercise in preventing delirium and shortening its duration in elderly ICU patients, Karadaş and Özdemir (2016) found no significant relationship even though the incidence and duration of delirium decreased 2.5 times compared to the control group [36]. Functional and cognitive impairments are adverse situations that require rehabilitation. With early physical and cognitive rehabilitation, the duration of delirium is shortened, and the underlying problems must be corrected simultaneously. In the long term, the effects of early physical and cognitive therapy should be evaluated [8, 9, 22, 25]. The few studies available have indicated that rehabilitation of cognitive impairment is possible, but new studies are needed to determine its effectiveness. However, rehabilitation of functional disability and correction of cognitive impairment are important in reducing delirium and associated morbidity.

### 3.5. Relationship of COVID-19 to Delirium

#### 3.5.1 Delirium in COVID-19 Patients

Studies show that 40-80% of patients hospitalized in the ICU experience delirium [4, 9, 37-45]. It is recorded that delirium develops in 60-80% of patients connected to mechanical ventilation and 40-60% in those not connected, in 14-47% of elderly patients, in 30% of patients after intraabdominal surgery, in 30-67% of patients after heart surgery, in 40-50% of patients after orthopedic surgery, and in 26-44% of end-stage cancer patients in hospital [1, 4, 25, 42-47].

Investigation of the reasons why COVID-19 increases the incidence of delirium in the ICU points at risk factors such as the increased use of sedating medication together with mechanical ventilation, hallucinations caused by hydroxychloroquine, vasopressor shock, and use of mechanical ventilation by intubation [1,25,46]. High doses of sedatives in intubation and reintubation to prevent cough which increases the risk of spreading the virus through droplets to the healthcare team are other conditions that increase ICU delirium [1].

It is thought that there is a direct relationship between cytokine levels and delirium. The serum levels of interleukin (IL)-6 and IL-8, which are pro-inflammatory cytokines, have been shown to increase the incidence of delirium in elderly patients with hip fracture [47, 48].

Lower levels of the insulin-like growth factor (Insulin-like Growth Factor, IGF)-1 and lower levels of circulating IL-1RA are associated with delirium [49]. In addition to these, decreased serum Interferon Gamma (IFN-γ) is detected in elderly medical patients with delirium [50].

COVID-19 patients are thought to experience a significant increase in the level of virus-induced cytokines [51]. Reducing and treating hyper-inflammation is an important requirement with the use of validated treatments to reduce high mortality levels [51-54]. There is important evidence linking high IL-6 and IL-8 levels to delirium. A study with elderly patients hospitalized in acute conditions and who developed delirium found significantly high levels of IL-6 and IL-8 [47, 48]. A cytokine is a type of glycoprotein (which contains oligosaccharide chains-glycans covalently attached to amino acid sidechains) essentially synthesized by monocytes and macrophages, and in certain conditions, T-lymphocytes, neutrophils, mast cells, fibroblasts, and endothelial cells also contribute to its production.

Cytokine is the first component that can be detected in the blood following tissue damage or physical stress, and it has important effects in the onset and continuation of inflammation in many autoimmune diseases [55].

The Tumor Necrosis Factor (TNF)-α is one of the pro-inflammatory cytokines responsible for inflammation, immunity, and cellular homeostasis. TNF-α plays a critical role also in tumor proliferation, migration, invasion, and angiogenesis. These cytokines may also be associated with the pathophysiology of delirium [56, 57]. Additionally, TNF-α may also mediate neurodegeneration by inhibiting the activity of IGF-1, a neuroprotective peptide. Peripheral TNF-α, induced by any systemic inflammatory process, plays an important role in microglial activation and the release of more cytokines that have a detrimental effect on neuronal functions in brain tissue [56].

### 3.5.2 Treatment of COVID-19

The current treatment of COVID-19 is supportive therapy. Acute respiratory distress syndrome (ARDS) and respiratory failure are the leading causes of mortality. More than 70% of patients who die have been found to have ARDS [3,4]. In addition to respiratory system problems, multiorgan failure and sepsis are responsible for 60% of the mortalities [58]. The frequency of hemophagocytic lymphohistiocytosis is relatively high in adults, and it is common in 50% of viral infections that cannot be cured [58]. HLH is an important disease in which the immune system is overstimulated and causes multiorgan failure at advanced stages. Consequently, HLH is found in 3.7 to 4.3% of the cases of sepsis-induced by COVID-19 [59]. Its symptoms include fever, cytopenia, and hyperferritinemia [51].

Approximately 50% of patients with pulmonary involvement experience HLH [60]. In severe cases of COVID-19, the gravity of the illness is characterized by an increase in the levels of cytokines, IL-2, IL-7, granulocytic colony-stimulating factor, interferon-γ inducing protein 10, monocyte chemoattractant protein[1], macrophage inflammatory protein 1-α and TNF-α [61]. A recent retrospective multi-center study found a correlation between lethal prognosis and hyper-inflammation. In a retrospective study, it was found that patients who died eventually had higher ferritin and IL-6 levels than those who survived [53].

As with previous pandemics, corticosteroids are not routinely recommended and are supposed to exacerbate pulmonary damage associated with COVID-19 [62]. Notwithstanding, randomized controlled studies on patients with sepsis hyper inflammation showed that IL-1 blockade (anakinra) was beneficial and did not increase adverse events [63]. Consequently, therapeutic options advised for COVID-19 include steroids, intravenous immunoglobulin, selective cytokine blockade (e.g., anakinra or tocilizumab), and Janus kinase inhibitors [51,63].

SARS-CoV-2 affects the central nervous system through peripheral nerves. It is thought to affect respiration and sense of smell through its action on the hypothalamus and brainstem through the nose. SARS-CoVs enter human host cells via the cellular receptor of the angiotensin-converting enzyme (ACE2). The possible brain entry paths of SARS-CoV-2 also include direct intranasal access through olfactory nerves (with anosmia as an early symptom) or indirect access through hematogenous or lymphatic spread passing the blood-brain barrier. Coronavirus causes brain damage, disrupting the renin-angiotensin system. ACE is the main component of the renin-angiotensin system and is localized in the endothelium of the cerebral vasculature. The use of ACE inhibitors to prevent hypertension reduces cognitive dysfunction. The inflammatory response of the central nervous system to viral infection may cause a poor neurological outcome and delirium. Neutrophils and monocytes penetrate

into the central nervous system in the case of infection. Immune cells infiltrate the brain, and macrophages and microglia play a role in the destruction of myelin. As a result, neurological disorders may lead to delirium [64].

### 3.5.3 Delirium Care in COVID-19

It has been determined that the rate of delirium in patients connected to a mechanical ventilator is 70-75% [64]. A longer stay on a mechanical ventilator increases the risk of delirium, increases the length of hospital stay, and increases the cost. In the future, patients are more likely to suffer from dementia [65,66]. The risk of delirium may be prevented by 50% with less sedation, earlier mobilization, and early extubation (weaning) [64].

The use of the ABCDEF care package may have significant benefits [67]. This is because it includes attempts to reduce the sadness, isolation, fear, and helplessness caused by staying in intensive care, and it creates awareness on life. It is an accurate and necessary practice for clinicians regarding the ABCDEF care bundle to use reminders.

Routine ICU care is already performed in patients with COVID-19. It is worrying that a reliable measurement instrument is not routinely used to diagnose delirium. Therefore, awareness of the ICU team members on delirium detection and management should be developed in both physicians and nurses, and their delirium diagnosis should be checked [68].

The largest obstacle in detecting delirium in the ICU is the use of sedation. Sedation is inevitable in hyperactive delirium. This makes it difficult to provide space-time orientation in patients or may trigger delirium. For this reason, sedation and termination of the mechanical ventilator are very important. However, effective pain management should be done first. This is because severe pain not only triggers delirium and but also requires high doses of sedation. The high dose and long-term use of sedation cause the patient to be immobile unnecessarily and prevents mobilization.

It has been determined that delirium seen in COVID-19 patients increases cost, mortality, and morbidity. To put it more clearly, delirium directly affects survival in COVID-19 patients [64]. In literature reviews, ineffective and insufficient pain management, gastrointestinal problems, urinary retention, nosocomial sepsis, and insufficient oxygenation has been identified as delirium triggers in COVID-19 patients [64,69]. Delirium risks should be minimized in the ICU.

The preferred prone position in COVID-19 patients requires more sedation [70]. This may increase the delirium in delirium patients. Additionally, it is ideal to choose drugs that have low toxicity and will not cause neurotoxicity in COVID-19 drug administration, because neurotoxicity will increase the risk of delirium.

## 4. Discussion

COVID-19 claimed tens of thousands of lives worldwide. As of yet, it is not possible to predict any future health problems that might befall the survivors. The disruptions COVID-19 causes in the blood-brain barrier and cerebral circulation, physiological changes due to hyperinflammation, and environmental stressors in ICUs lay the groundwork for delirium as a secondary condition. However, before the onset of the COVID-19 outbreak, delirium management in ICUs was far from being optimal due to insufficient financial and human resources [5, 9, 12]. Today, COVID-19 further increases the workload of healthcare professionals. As a result, there is a real need for new financial and human resources for the management of delirium caused by COVID-19 and other problems in ICUs [64].

Some non-pharmacological methods in delirium management may not be effective or feasible in COVID-19 patients due to the disease-specific difficulties of the condition. The physical distance between patients is of crucial importance as the primary transmission path of COVID-19 is the respiratory tract. Special clothing of healthcare professionals may make it difficult for the patient to recognize them. This, in turn, may cause patients to experience more anxiety and isolation.

Furthermore, deep sedation of COVID-19 patients to inhibit the cough reflex [1] may cause delirium [25]. In COVID-19 patients, prevention of transmission through droplets is vitally important and can only be achieved through deep sedation. Patients surviving COVID-19 may experience withdrawal signs related to the sedation drugs used including those used for delirium. Another risk factor in addition to deep sedation is long-term mechanical ventilation in ICU stays [1, 25, 46].

Apart from the problems caused by the drugs used in the treatment of COVID-19, the virus itself is thought to cause pulmonary, renal, hepatic, psychiatric, neurological, and cardiovascular problems [71]. Psychiatric and neurological problems including headache, unconsciousness, muscular coordination disorder, acute cerebrovascular disease, confusion, and convulsive seizures are likely to be seen within 2-3 weeks after catching the novel coronavirus [71, 72].

Mobilization of patients receiving deep sedation and mechanical ventilation is an important challenge. It certainly does not allow active participation in bed exercises and physiotherapy interventions. Communication with patients, conversations, and close contact with family and friends is an effective intervention in the prevention of delirium in the ICU. However, the visitation restrictions inevitably imposed on COVID-19 patients because of the dangers of close physical contact render this strategy impossible to implement. For the same reason, healthcare professionals cannot spend much time with the patient or make lengthy observations.

In literature reviews, it has been reported that after the acute phase of COVID-19, viruses remain in the central nervous system (CNS) and subsequently lead to post-infectious neurological complications [73]. The degree and severity of the COVID-19 disease process are significantly associated with the development of psychiatric and neurological problems. Severe systemic inflammatory responses are likely to induce these problems. The psycho-neurological vulnerability of individuals with advanced age, weak immune system, comorbidity, or chronic disease increases [44]. Even if this group of patients survives COVID-19, even minor injuries such as urinary tract infection or pneumonia may trigger an acute confusion state, delirium, and encephalopathy, as there will now be a predisposition [44]. In the literature, the D-dimer level in the blood of patients with at least one neurological symptom was found to be significantly higher ($p < 0.05$) than patients without neurological symptoms. IL-6 levels were found to be significantly higher in patients with a headache than those without ($p < 0.05$). The creatine kinase (CK) level was found to be significantly higher in patients with muscle pain in comparison to those without muscle pain ($p < 0.05$). Increasing awareness of neurological and psychiatric problems caused by COVID-19 is of great importance for the management, prevention, and treatment of these problems.

Delirium is a potential problem that COVID-19 patients may experience during COVID-19 treatments, and its management is crucially important. To this end, the latest technology may be used. Video conversations using smartphones or teleconferences with headsets to support and enhance patient's interaction with family and friends help prevent social isolation [64].

## 5. Conclusion

Delirium is a significant mental condition that may be frequently observed in COVID-19 and other ICU patients which increases the rates of morbidity and mortality. Delirium might and is likely to continue after discharge from the hospital. The risk, management, and treatment of delirium are all multifactorial. Effective methods for prevention and treatment include respiratory coordination, early discontinuation of sedative medication or continuation with low dosages, monitoring and management, exercise, and early mobilization.

Non-pharmacological interventions may be performed with a trained interdisciplinary team to keep agitation, pain, and delirium under control in ICUs, through fluid and nutrition support, re-orientation, appropriate lighting, noise prevention, mobilization, reduction of evening stimuli, regulating the environment, and regulating the circadian rhythm with sleep protocols. However, management of delirium by healthcare professionals requires arrangements where non-pharmacological methods may be used in COVID-19 patients.

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Case report

# LARYNGEAL TUBERCULOSIS – A NEGLECTED DISEASE THAT CAN MIMIC LARYNGEAL CARCINOMA

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**Abstract:** *Laryngeal tuberculosis is a form of extra-pulmonary tuberculosis that occurs in only 1% of all tuberculosis cases, with a mortality rate of less than 2%. It can be a complication of pulmonary or some other form of extra-pulmonary tuberculosis (via bronchogenic, haematogenic, or lymphagenic spread of bacilli), or the larynx can be the only organ affected after the direct invasion of Mycobacterium tuberculosis. Clinical, laryngoscopic, and radiological findings of laryngeal tuberculosis tend to mimic laryngeal cancer, delaying the appropriate treatment. In this paper, we present a case of laryngeal and pulmonary tuberculosis, which was primarily diagnosed and almost treated as laryngeal carcinoma. An 84 years old Caucasian male presented with a 3-months history of hoarseness, odynophagia, dysphagia, cough with expectoration, and weight loss. After the laryngoscopy and biopsy of the laryngeal ulceration, a squamous cell carcinoma was suspected. However, chest X-ray and CT scan detected pulmonary infiltrates, while the positive sputum smear for acid-fast bacilli was obtained and the sputum cultures grew Mycobacterium tuberculosis. Detailed histopathological analysis of the biopsies was in accordance with tuberculosis, and no signs of timorous tissue were found. After the end of the proposed antituberculous treatment, the patient reported no symptoms of the diseases, laryngoscopic findings showed no signs of neoplastic tissue, and CT findings showed partial radiological regression. Distinguishing laryngeal carcinoma and tuberculosis can be very challenging, even after obtaining histopathological material. Nevertheless, biopsies should be taken from all suspicious lesions and at multiple sites, while Ziehl-Neelson staining of sputum and bioptic tissue is necessary. Otorhinolaryngologists should always consider tuberculosis in the differential diagnosis of laryngeal lesions, especially nowadays when the incidence of laryngeal tuberculosis is increasing in developing countries.*

**Keywords**: *tuberculosis, larynx, lung, carcinoma, misdiagnose.*

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## 1. Introduction

Laryngeal tuberculosis is a form of extra-pulmonary tuberculosis that occurs in only 1% of all tuberculosis cases nowadays [1], with a mortality rate of less than 2% [2]. However, in the first half of the 20th century, it was one of the most prominent forms of tuberculosis, affecting 35 – 83% of patients [3]. Due to the development of effective antituberculous drugs, improvement in living standards, and different public health interventions, the incidence of tuberculosis decreased significantly in the second part of the 20th century. Nowadays, due to the increasing prevalence of drug resistance, immunosuppressive conditions, poor living standards in some parts of the world, traveling to developing countries, and the spread of HIV infection, the incidence of tuberculosis, in general, is increasing [4]; therefore, it can be expected that the incidence of laryngeal tuberculosis could also rise in the upcoming years.

Laryngeal tuberculosis can be a complication of pulmonary tuberculosis when Mycobacterium tuberculosis has a bronchogenic spread from the lungs. Haematogenic or lymphogenic spread of bacilli from other, extra-pulmonary, organs are also possible. Solitary laryngeal involvement, when the larynx is affected via direct invasion of bacilli, is becoming more common nowadays [5]. Some studies suggest that laryngeal tuberculosis is found in around 40% of patients with no pulmonary manifestations [6].

Clinical, laryngoscopical, and radiological findings of laryngeal tuberculosis tend to mimic laryngeal carcinoma, delaying the appropriate treatment [7]. In this paper, we present a case of laryngeal and pulmonary tuberculosis which was primarily diagnosed and almost treated as laryngeal carcinoma.

## 2. Materials and Methods

### 2.1. Case Description

An 84 years old Caucasian male presented with a 3-months history of hoarseness, odynophagia, dysphagia, cough with expectoration, and loss of 10 kilograms of weight. He denied fever, chills, night sweats, or haemoptysis. The patient reported a history of previously treated pulmonary tuberculosis at the age of 18. He was a former tobacco consumer, did not use alcoholic beverages. After the completed fiberoptic laryngoscopy, an ulcerative lesion that almost completely destructed the region of the epiglottis was described. Biopsy of the epiglottis was performed two times in two different medical centers and the histopathological findings were suspected of squamous cell carcinoma of the mucosa in both of the cases. To investigate the dissemination of the disease, a chest X-ray (Fig. 1) and shortly after CT scans (Fig. 2A) were taken, with the radiological findings consistent to diffuse irregular lesions in the lung parenchyma, possibly as a part of pulmonary tuberculosis. The positive sputum smear for acid-fast bacilli was obtained, while the sputum cultures, later on, grew Mycobacterium tuberculosis. Due to the possibility of coexistence of tuberculosis and cancer of the larynx, a more detailed analysis of paraffin moulds obtained from the biopsies was made; the histopathological features were consistent with tuberculosis, acid-fast bacilli were found, there was no neoplastic tissue in the examined material (Figure 3a and 3b).

**Figure 1.** Initial chest X-ray

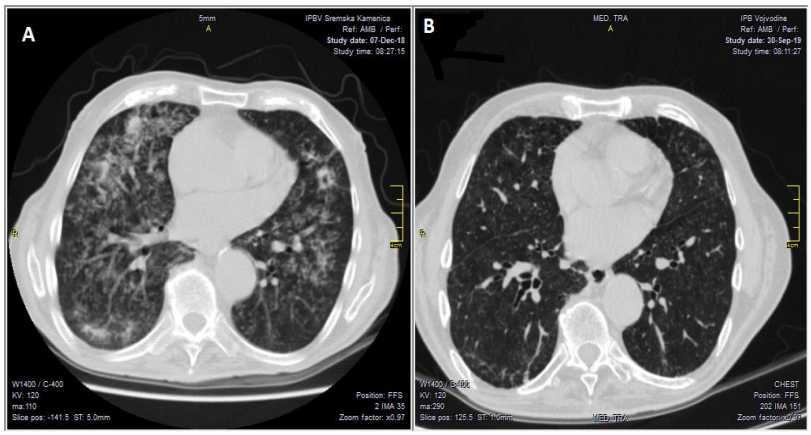


**Figure 2.** CT scans before (A) and after treatment (B)

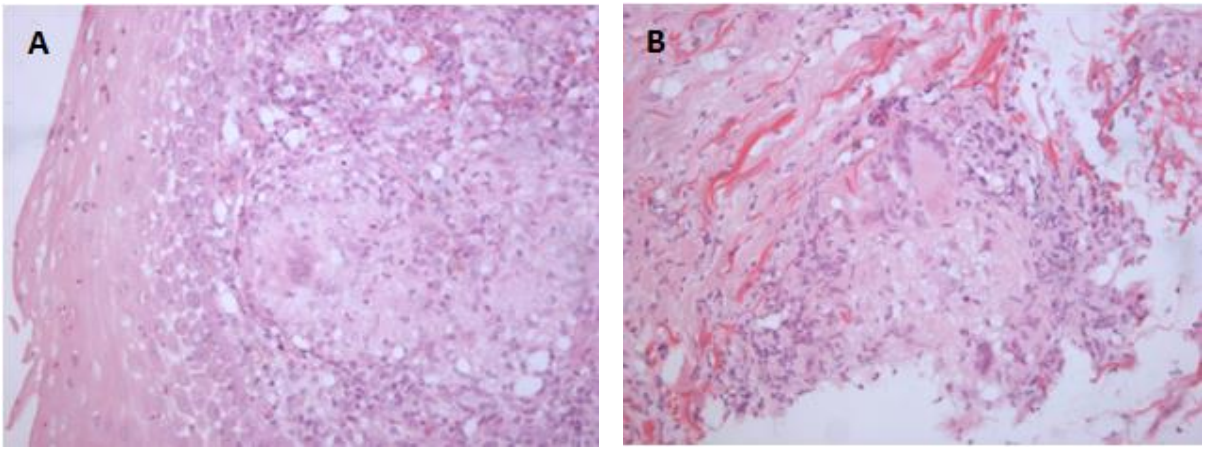


**Figure 3**. A squamous laryngeal epithelium on the surface, granulomas composed of epithelioid cells, lymphocytes, and giant Langhans cells are present in the mucosa, H&E x 200 (A); a granuloma in the deeper layers of the wall made up of epithelioid cells, lymphocytes, and giant Langhans cells; an incipient necrosis is seen in the central part of the granuloma, H&E x 200 (B).

Antituberculous therapy was administered (isoniazid 250 mg, rifampicin 450 mg, pyrazinamide 1200 mg, ethambutol 800 mg). Even though the patient was previously treated for tuberculosis, streptomycin was not introduced into therapy due to the patient's hearing loss, but an eight-month treatment regimen was implemented. During the course of treatment, he was regularly monitored by the pulmonologist. After 8 months of therapy, the patient was feeling completely healthy, reporting no symptoms of the disease. Laryngoscopally, no visible tumorous changes were detected, some parts of the epiglottis were missing though. CT scans of the chest (Fig. 2B) showed partial radiological regression of the previously described lung parenchyma alterations.

This study was approved by the Professional Board and the Ethics Committee of the Institute for Pulmonary Diseases of Vojvodina. Approval number and date: 112-I/3, 20.01.2021.

## 3. Discussion

Even though tuberculosis is still the most common granulomatous disease of the larynx [1], clinicians usually do not consider it in the differential diagnosis when a lesion of the larynx is detected [8]. Initial diagnosis of laryngeal carcinoma is usually made in such cases because laryngeal tuberculosis and carcinoma share some important demographic, clinical, laryngoscopical, and radiological features. Laryngeal carcinoma occurs 40 times more often than tuberculosis, as well [9].

Laryngeal tuberculosis nowadays usually affects those between 40 and 60 years, which is different from the past, when those between 20 and 39 were usually affected. Also, it is notable that males are at a greater risk of infection, while in the past no gender predominance was present [5,10,11]. Similar demographic characteristics can be found in patients with laryngeal carcinoma. Risk factors, such as cigarette smoking, alcohol abuse, poor nutrition, workplace exposures, can be mutual as well, all leading to diagnostic difficulties [7]. Underlying conditions, such as HIV infection or diabetes, should always be considered. In some studies, it was estimated that HIV infection was present in 48% of patients with head and neck tuberculosis, and 25% of patients with laryngeal tuberculosis [9].

Laryngeal tuberculosis and carcinoma can have similar clinical features, such as hoarseness, odynophagia, dysphagia, cough, stridor, hemoptysis, and cervical lymphadenopathy [12]. Constitutional symptoms, such as loss of weight, fever, malaise, night sweats, can be also presented in both cases. The main complaint of patients with laryngeal tuberculosis is hoarseness (70-97% of cases), followed by odynophagia in around 40% of cases [5,11], unlike in the past, when patients usually had dyspnea or pulmonary and other constitutional symptoms. Odynophagia is not common in laryngeal carcinoma, and this could be an important clue for distinguishing two similar diseases [13].

Laryngoscopic findings of tuberculosis may be divided into four different types: granulomatous, ulcerative, polypoid, and nonspecific lesions (such as diffuse oedema and inflammation) [4,5]. All of these forms can be seen in laryngeal carcinoma, especially hypertrophic, exophytic and polypoid lesions, aggravating the distinction between two laryngeal diseases. When considering the localization of the lesions, posterior parts of the larynx were the most common site of infection in the past (when the lung involvement and bronchogenic spread of bacilli were often), but nowadays, the anterior part of the larynx is more affected [14], with vocal cords being affected predominantly [3].

In the initially suspected diagnosis of carcinoma, laryngeal tuberculosis is generally not considered until the chest X-ray or CT scan is done. In patients with tuberculosis, the chest x-ray is usually abnormal and often appears with cavitations at the apical parts of the lung together with bilateral nodular infiltrates [15]. In a systematic review from 2014, lung involvement on chest X-ray was found in 86% of confirmed cases of laryngeal tuberculosis [1]. In a study of 60 cases of laryngeal TB, only 20% had normal chest radiographs [4]. All of this suggests that chest radiography should be an inevitable diagnostic procedure when examining laryngeal lesions. Radiological imaging in solitary laryngeal tuberculosis is non-specific. CT scan and MR imaging of the neck usually show diffuse bilateral thickening or a mass in the vocal cords, epiglottis, or paralaryngeal tissue in the acute phase [16]. The typical finding in the chronic phase is a localized lesion mimicking a mass [17].

Even though the finding of acid-fast bacilli in sputum smear is suggestive of tuberculosis, the positive rate of sputum smear was only around 43% in a study by Wang et al [9]. In other studies, the positive rate of sputum culture was higher (around 85%), but it takes several weeks to obtain the result [18].

The final diagnostic tool to distinguish carcinoma and tuberculosis of larynx should be the histopathological analysis of the material obtained after the biopsy of the laryngeal lesion. The findings of granulomatous inflammation, caseating granuloma, or acid-fast bacilli confirm the diagnosis of tuberculosis [10]. However, the presence of pseudoepitheliomatous hyperplasia that mimics squamous cell carcinoma can make the diagnosis difficult [2,19]. The physician must be aware that tuberculosis and carcinoma of the larynx can co-exist, even though that happens seldom. A patient with carcinoma may have deficient cellular immunity, leading to the development of tuberculosis [11].

Once the diagnosis of laryngeal tuberculosis is confirmed, immediate treatment should be implemented, using antituberculous drugs, administered for a minimum of six months [20], even though some researchers suggest that the treatment should be extended to one year [21]. During the course of treatment, it is important to obtain the sensitivity results and correct the therapy if necessary. Most lesions resolve over two months, while the patient is considered to be cured after the end of the implemented treatment protocol and after the confirmation of inactive disease through sputum microbiological controls, chest X-ray, and laryngoscopy [22]. Even though the treatment is usually effective, untreated or incorrectly treated laryngeal tuberculosis can lead to laryngeal stenosis and/or cricoarytenoid fixation [23], requiring surgical interventions.

The typical situation of misdiagnosis was described in this case report. Because of the clinical symptoms, age of the patient, history of previously cigarette smoking, and finding of ulceration of epiglottis spreading into the surrounding areas during fiberoptic laryngoscopy, the preliminary diagnosis was carcinoma. However, the most intriguing fact was that two biopsies were performed and both indicated squamous cell carcinoma, but no Ziehl-Neelson staining of biopsies or sputum was performed. Only after applying this method, usage of imaging methods, and detailed examination of biopsied tissue, the diagnosis of tuberculosis was confirmed. Thus, it is not surprising that some authors suggest that in an endemic area for tuberculosis, samples of laryngeal lesions should be reviewed by two pathologists [10]. The diagnosis of carcinoma was excluded for certain after the 8 months of therapy for tuberculosis when the patient had no clinical, laryngoscopical, or radiological signs of carcinoma.

## 4. Conclusions

Distinguishing laryngeal carcinoma and tuberculosis can be very challenging. The diagnostic algorithm should start with thorough history taking, to identify signs and symptoms of the disease, risk factors, and eventual contact with a person who had similar complaints. The diagnostic approach should also include chest radiographs and examination of sputum for acid-fast bacilli (smears and cultures) to exclude or confirm concomitant pulmonary tuberculosis. If those additional exams are not indicating pulmonary tuberculosis, laryngoscopy should be performed and biopsies of the laryngeal lesions should be taken from all suspicious lesions and at multiple sites with Ziehl-Neelson staining of the obtained material.

Otorhinolaryngologist should always consider tuberculosis when evaluating laryngeal lesions, especially nowadays when the incidence of laryngeal tuberculosis is increasing in developing countries. The early distinction of these two diseases does not only affect the treatment but is also essential in disease transmission control and decreasing the risk of sequelae.

**Ethical considerations:** This study was approved by the Professional Board and the Ethics Committee of the Institute for Pulmonary Diseases of Vojvodina. Approval number and date: 112-I/3, 20.01.2021. Informed consent has been obtained from the patient whose case was described in this study.

**Conflict of interest:** The authors declare that they have no conflict of interest nor any financial support in the preparation of this study.

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Case Report

# PLANNING NURSING CARE OF AN INDIVIDUAL DIAGNOSED WITH COVID-19 ACCORDING TO WATSON'S THEORY OF HUMAN CARING: A CASE REPORT

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**Abstract:** *COVID-19 pandemic is a global health crisis defining our age. As a result of the uncontrollable stress in individuals diagnosed with COVID-19, individuals show avoidance behaviours and as a result, the patient restricts their behaviours to a great extent. Intense anxiety worry and uncertainty individuals experience cause them to give different reactions and lead to deterioration in their quality of life. It is essential for nurses working in this challenging process to provide remedial care to individuals by supporting faith, trust, and hope. In this case report, nursing care was planned and applied to a 55-year-old COVID-19 diagnosed female patient who was married with three children according to Watson's Theory of Human Caring. While providing care to the patient, the concepts of faith, hope, and trust were supported by taking into consideration the emotional, spiritual, and physical needs of the patient. The patient was encouraged to express her negative and positive feelings for the disease and her fears and worries were reduced. It was found that nursing care interventions created with Watson's Theory of Human Caring reduced the patient's fears, made communication stronger, and supported faith and hope.*

**Keywords:** *COVID-19, SARS-CoV-2, Theory of Human Caring, Nursing, Nursing Care*.

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## 1. Introduction

Coronavirus disease 2019 (COVID-19) pandemic, caused by the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) virus which appeared in the province of Wuhan, the Hubei state of China on December 31, 2019, spread quickly to 6 continents and hundreds of countries and passed into history as the first pandemic caused by coronavirus [1-2]. COVID-19 is mainly transmitted by droplets and by the contact of the disease agent to the mucous membrane after contact with the droplets on surfaces as a result of coughing or sneezing. While the disease is mostly transmitted through sick people, asymptomatic cases also play a critical role in the spread of the disease [3]. The epidemic process, which started in Turkey on March 10, 2020, with the identification of the first positive case, is continuing to increase its impact. As of April 14, 2020, the number of SARS-CoV-2 positive cases is 64.111 and the number of deaths due to disease is 1.403 [3]. Considering the fact that Covid-19 has a

high power to spread and poses a life threat, this situation may cause fear and high anxiety in individuals [6-9]. The reason why people worry and panic is that they are exposed to an epidemic or the fact that their possibility of getting infected with the virus creates a big threat to them [3]. During the pandemic period, the emergence of situations such as disruption of routine life, sudden change of people's regular, loss of expectations and goals, and disruption or delay of plans cause a traumatic perception on patients [3]. Intense anxiety worry and uncertainty individuals experience cause them to give different reactions and lead to deterioration in their quality of life [6-9].

While developing the Theory of Human Caring, Jean Watson grounded her theory on care and she aimed to find out the contributions of nurses to individuals and society since nursing is a profession that provides care, it is effective in the fields of education and practice and it has high humanistic and moral sensitivity [10]. Model of Human Caring (MHC) focuses on spiritual care which consists of science and art and the essence of nursing is care. During the process of interpersonal care, nurses use healing processes and provide care.

Nurses focus on cognitive, intuitive, and sensory aspects of individuals during care and show that care does not consist only of invasive procedures but also aims to know the individual spiritually and to perceive the individual correctly [10]. Nurses' helpful, supportive, caring, sincere, honest, understanding, and sensitive care behaviours form the basis of the MHC consists of three basic concepts as interpersonal care relationship, the status of care, and the process of treatment [11-12].

This study includes planning, implementation, and evaluation of nursing care according to the patient who was receiving treatment for COVID-19. Watson's MHC supports individualized and holistic care by providing care to the patient in theoretical, philosophical, and ethical fields. MHC is new hope for nurses in the field of care and supports holistic care. Table 1 shows the curative processes of Watson's MHC [13].

**Table 1.** Watson's Caritas Process [13]

| **Carative factors** | **Caritas processes** |
|---|---|
| 1. Humanistic-altruistic system of values. Practicing loving-kindness/compassion and equanimity for self/other. | Practicing loving-kindness/compassion and equanimity for self/other. |
| 2. Enabling faith-hope | Being authentically present; enabling belief system and subjective world of self/other |
| 3. Cultivation of sensitivity to self and others | Cultivating own spiritual practices; beyond ego-self to the authentic transpersonal presence |
| 4. Helping-trusting, human care relationship Sustaining a loving, trusting, and caring relationship. | Sustaining a loving, trusting, and caring relationship. |
| 5. Expression of positive and negative feelings | Allowing for expression of feelings; authentically listening and "holding another person's story for them'' |
| 6. The creative problem-solving caring process | Creatively solution-seeking through the caring process, full use of self; all ways of knowing/doing/being; engage in the artistry of human caring healing practices and modalities |
| 7. Transpersonal teaching-learning. | Authentic teaching-learning within the context of a caring relationship; stay within other's frame of reference, shift toward a health-healing wellness coaching model |

***Table 1. Continued***

| Carative factors | Caritas processes |
|---|---|
| 8. Supportive, protective, and/or corrective mental, social, spiritual environment. | Creating a healing environment at all levels; physical, nonphysical, subtle environment of energy and consciousness, wholeness, beauty, dignity, and peace are potentiated. |
| 9. Human needs assistance | Reverentially and respectfully assisting with basic needs, holding an intentional, caring consciousness of touching the embodied spirit of another as a sacred practice, working with life force/life energy/life mystery of another. |
| 10 Existential-phenomenological Spiritual forces | Opening and attending to spiritual, mysterious, unknown, and existential dimensions of all the vicissitudes of life change; "allowing for a miracle." All of this is presupposed by a knowledge base and clinical competence. |

## 2. Case Report

The female patient MA is 55 years old, married, and three children. MA applied to a university hospital with complaints of chills, shivering, and 38.8 °C fever on 14.04.2020. As a result of the anamnesis it was found that she did not have a sore throat, runny nose, or diarrhea, she had not traveled abroad, she had not contacted any SARS-CoV-2 positive patients, she had not gone to Umrah, she was not smoking, she had muscle and joint pain, she was a hypertension patient, and she had undergone appendectomy and cesarean surgery.

As a result of the computed tomography, a frosted glass image was observed on the peripheral regions of both lungs. The findings were found to be significant in terms of COVID 19 pneumonia. As a result of these findings, the patient was hospitalized in the Covid-19-bed service. Physical examination showed findings of a rally in the lung and the oropharynx was found to have a natural appearance. Blood examination results of the patient were: CRP=82, Sedimentation=62, and the patient was ordered azithromycin flk (1×500 mg) and Plaquenil tb (1×250 mg) as treatment. The patient's antibiotic therapy was continued for 5 days and during this period, it was found that the patient's general condition was good, she had complaints of weakness and headache but no fever. The patient's SARS-CoV-2 test was found to be positive. As a result of the blood gas taken, it was found that pO2= 34.1mmHg; HCO3= 26.5mEq/L; oxyhemoglobin = 57.7gm/dL; tHb= 9.1; CRP= 70.9 mg/L; Sedimentation= 79mm/time. 5-day-long antibiotic treatment of the patient, whose general condition was good and who did not have a fever, was discontinued. The patient participating in the study were informed about the research and their verbal and written consent was obtained for participation. The patient who agreed to participate in the study were told that the personal information they provided in accordance with the principle of confidentiality would not be disclosed to anyone by the researcher and this information would not be disclosed to third parties.

### 2.1. Evaluation of the Case According to Model of Human Caring Establishing Interpersonal Care Relationship and Starting the Moment of Care

MA was approached in a warm, sincere, assuring, and the sensitive way during this difficult period she experienced, she was told that we were there for her and as a result, the patient revealed her feelings such as anxiety, fear of death, hopelessness, sadness, and stress. Nursing interventions were planned, and her care was supported accordingly due to the loneliness, desperation, and fear of death the patient experienced during the process of quarantine as a result of the disease.

### 2.2. Nursing Interventions Practiced on the Patient According to the Stages of the Model

#### 2.2.1 Using the Healing Processes

**Healing Process-1. Humanistic –altruistic system of values.**

The humanistic system of values is based on adopting values such as humanity and devotion and approaching the individual and self with love and affection [13]. It is based on the experiences of the individual including mutual communication and interaction. The patient was called by her name, she was told that we were there for her and an environment full of trust was created. She was approached with sincerity, patience, kindness, understanding, and love while her anamnesis was taken. The patient stated that the approach with love and compassion motivated her [13].

**Healing Process -2. Enabling faith-hope**

This process includes instilling faith and hope in the individual. It aims to understand the individual spiritually and to integrate the concepts of faith and hope with mind-body-spirit [13]. Eye connection was established during communication with the patient, effective communication was established, and the patient was encouraged to express her anxiety, fear, sadness, feelings, and thoughts. The patient stated that she would be more positive about the thoughts that had a negative influence on her, she would believe in herself, and that she wanted to recover.

**Healing Process -3. Cultivation of sensitivity to self and others**

This process aims to be sensitive to self and others by developing individual beliefs and practices [13]. Understanding and helping the individual can be shown as an example of behaviours showing sensitivity. Nurses should try to understand patients' feelings and thoughts by connecting with their emotional world. The patient was approached without prejudices and her feelings and thoughts about her disease were learned and her incorrect information, attitudes, and beliefs were eliminated. She was informed about the issues she wanted to learn about her disease.

**Healing Process - 4. Helping-trusting, human care relationship**

It is a process that aims to develop the relationship between supporting and reassuring care, which forms the basis of quality care, enables explaining positive and negative feelings, and expresses the subjective transition of two people [13]. It includes concepts such as effective communication, empathy, harmony, and sincerity [11-14-15]. the patient was allowed to express herself; she was informed about her disease and her worries and fears were eliminated. MA, who had difficulties in carrying out her daily activities due to her weakness, muscle, and joint pain, was supported on these. The patient stated that she felt better thanks to interventions and that she would contribute more to care.

**Healing Process - 5. Expression of positive and negative feelings**

It is the healing process that includes encouraging the individual to express fears and feelings by listening sincerely. Listening to patients and sharing their feelings has a great significance in the process

of healing for nurses [13]. MA was encouraged to express her fears, worries, and sadness. It was found that in time the patient was able to share her positive and negative feelings more comfortably as a result of the reassuring environment.

**Healing Process - 6. The creative problem-solving caring process**

It includes using creative, scientific problem-solving methods to decide on the care and scientific problem-solving ways based on science and practice [13]. The patients' nursing interventions were planned and practiced according to the patient's disease symptoms. Measures were taken for the risk of falling during the quarantine. The patient was made to rest for her pain and weakness. It was found that the patient felt better after the interventions.

**Healing Process - 7. Transpersonal teaching-learning.**

This process is based on providing learning and teaching suitable for individual needs and comprehension styles, enabling the individual to take part in self-care and also individualized care [13]. The patient was informed about important hygiene applications and observed. In order to strengthen the immune system, a balanced and healthy diet was provided and a diet program suitable for the patient was provided. In this period, an increase was seen in the patient's trust in the nurse.

**Healing Process -8. Supportive, protective, and/or corrective mental, social, spiritual environment**

It is a process that aims to create a physically, emotionally, and spiritually comfortable, nice, peaceful environment, to provide quality care and healing, to improve health, and to prevent diseases [13]. A physically and mentally healthy environment in which the patient could feel comfortable under the quarantine was created. The nurse tried to remove the prejudices of the patient who did not like the hospital environment. During joint pain, the non-pharmacological method was applied by drawing the patient's attention in another direction. After the patient was discharged, she was supported by being informed about home care.

**Healing Process -9. Human needs assistance**

It is a process that helps the physical, emotional, and mental needs of the patient and a process in which all needs are important and correlated with each other at the moment of care [13]. The issues the individual needed help with during this process were determined and the patient was helped to participate in self-care. Care was taken for the patient to have an adequate and balanced diet, to pay attention to oral care after meals, and to pay attention to hand hygiene and general hygienic rules. The patient was given psychological support and thus enabled her to share her feelings and thoughts. The patient stated that she wanted to participate more in care and that she would be more effective in dealing with the disease.

**Healing Process -10. Existential-phenomenological-Spiritual forces**

It is a process that reveals the real meaning of life (dream, intuition, legend), enables the individual to understand self and others, and gives a mysterious and philosophical perspective to human experiences. The nurse tries to make the patient understand life/disease and death [13]. Effective communication was built with the patient and the patient was encouraged to express herself about the difficulty of the situation she was in. In this process, the goals of care are spiritual support, gaining self-confidence, and reassurance [11-14-15]. When all the healing processes were applied, it was found that the patient felt better and her fears and worries decreased.

## 3. Conclusion

Watson's Theory of Human Caring is a model that includes a great number of concepts (such as compassion, love, trust, respect, human) and which has been used in the care of chronic diseases for many years. The model constitutes the core of nursing in reducing the negative feelings caused by the disease symptoms, in the process of coping with the disease and adapting to the disease. The healing processes used in the model give a new perspective to the methods and practices in nursing in increasing patient satisfaction, giving spiritual and holistic care. In this case study, positive changes were observed in the patient, and coping and adopting the process was supported based on the model of human caring and healing processes.

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**Ethics Statement**: The study was carried out in line with the principles of the Helsinki Declaration. Approval was received for this study from the patient.

**Ethics Committee's Name, approval number, and date**: Erzincan Binali Yıldırım University / Human Research Ethics Committee Decision. (Date: 30/06/2020, Number: 06/19).

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