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## Research

## Postoperative Telenursing During the COVID-19 Pandemic: Improving Patient Outcomes



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## A B S T R A C T

## Keywords:

COVID-19  
telenursing home care  
anxiety  
comfort  
satisfaction  
postoperative

**Purpose:** This study was conducted to determine if postoperative nurse-driven telehealth visits for patients undergoing septorhinoplasty decreased patient anxiety while improving comfort and satisfaction levels.

**Design:** The present study was an intervention-control study completed with a total of 320 participants ( $n = 160$ , intervention group;  $n = 160$ , control group). The intervention postseptorhinoplasty training using the telenursing method was conducted at three time points in this study; preoperatively-postoperatively, on days 3, and 10.

**Methods:** Data were collected from a group of patients undergoing septorhinoplasty in the Ear, Nose, and Throat department of a University Hospital in Turkey between October 2021 and February 2022. The data collected in the study were evaluated with the SPSS 23.00 program and were analyzed with the independent sample  $t$  test for two independent groups and the  $F$  test (ANOVA) for more than two groups. Correlation analysis was performed to examine the relationship between scales, and  $P < .05$  was considered statistically significant.

**Findings:** In the postoperative period, the mean anxiety inventory score of the experimental group was found to be significantly lower than that of the control group ( $P < .01$ ). Telenursing increased the satisfaction and comfort of the patients and shortened the discharge time. There was a negative and statistically significant relationship between satisfaction and State Anxiety Inventory and Trait Anxiety Inventory ( $r = -0.715$ ,  $r = -0.739$ ,  $P < .01$ ).

**Conclusions:** This study confirms the importance of postoperative telenursing for septorhinoplasty patients in promoting continuity of care, reducing anxiety and discharge time, improving comfort and satisfaction levels during the Covid-19 pandemic. Remote care was well received during the study and should be used more frequently. There is a need for further research regarding telehealth; and the international incentives and regulations which will be needed to make telenursing a standard of care should be pursued.

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The COVID-19 pandemic posed global challenges to patients and health care workers.<sup>1</sup> COVID-19, which is transmitted through respiratory droplets and direct contact, has become increasingly contagious. The rapid spread of the virus caused morbidity and mortality among both health care professionals and patients.<sup>2</sup> Doctors, nurses and perianesthesia teams working with ear, nose, and throat (ENT) patients were at higher risk of contracting COVID due to the droplet spread of the virus and exposure to the secretions and mucous membranes of the upper respiratory tract.<sup>3</sup> For example, one study reported that during an endoscopic sinus surgery of a COVID-positive

patient, all staff present for the case contracted the virus.<sup>4</sup> Various measures were taken globally to protect both health care professionals and patients. In Turkish hospitals, the specific aim was to protect both patients and health care professionals involved in the perioperative process. The goal was achieved by adhering to strict measures such as keeping hospitalizations as short as possible and postponing elective surgeries. Once the viral transmission rate decreased, elective surgeries were permitted again.<sup>5</sup> As the volume of surgeries increased, the authors recognized the need for methods to reduce the spread of COVID-19 and allow noncontact follow-up after surgery. Although telehealth visits and nurse-driven telehealth or nursing visits are not new concepts, the pandemic created a need to use them more. Telehealth or telenursing provides both audio and visual access to nursing services with the help of technological tools such as computers and mobile phones.<sup>6</sup> Thus, telenursing services facilitate the contact-free monitoring of the medical conditions of patients and the

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provision of nursing counseling services.<sup>7</sup> During the pandemic, health care services provided by telenursing applications limited the transmission of infection, ensured continuity of care, and increased the participation of patients, saving both time and money for all involved.<sup>8,9</sup> In addition, it helped to identify and correct any knowledge gaps in patients after hospital discharge, and mitigate postoperative complications.<sup>10,11</sup> Despite all the challenges presented by the COVID-19 pandemic, it is thought to contribute to the development and spread of telenursing practices. Moreover, the COVID-19 pandemic may have increased nurses' familiarity with the concept of telenursing and accelerated their adaptation to it.

However, many countries did not have the infrastructure, patient, or staff familiarity with telehealth or nursing to properly use the required systems and technology. In this regard, nurses should be educated about telehealth practices and supported in selecting appropriate practices according to patient requirements.<sup>12</sup> Nurses' readiness and willingness to meet the technologies used in patient care are important in integrating and expanding the use of telehealth services into conventional care.<sup>13</sup>

Septorhinoplasty is defined as a surgical intervention applied to the nose to correct breathing problems and relieve aesthetic concerns. Septorhinoplasty, which is one of the most performed operations in ENT services, causes anxiety in individuals because it is related to the respiratory tract. In a critical process such as the COVID-19 pandemic, it is very important to reduce hospital admissions, ensure continuity of care, reduce anxiety, and increase care satisfaction and comfort.<sup>8,9</sup> However, there are very few studies in the literature that include telenursing practices related to the home care of surgical patients.<sup>14</sup> Thus, the studies carried out may be encouraging to transfer this to the field of practice. Therefore, in this study, as the COVID-19 pandemic shifted the global health care delivery system to embrace telehealth care, the nurses at a large tertiary hospital in Turkey sought to proactively create ways to improve the postoperative septorhinoplasty patient experience by embracing the telenursing model of care. The aim of this study was to determine if postoperative nurse-driven telehealth visits for patients undergoing septorhinoplasty decreased patient anxiety while improving comfort and satisfaction levels.

## Methods

### Study Design and Participants

The study had an experimental intervention-control design. The data were collected from patients who had undergone septorhinoplasty in the ENT department of a university hospital in a city located in Turkey between October 2021 and February 2022. The university hospital is a tertiary care center. No sample selection was performed in the present study. All patients who had septorhinoplasty surgery during this period were invited to participate in the study. A preliminary study was done and the required sample size was estimated using the G\*Power software. Given the study a power of 0.95, it was calculated that at least 73 participants were required in each of the two groups. Ten patients participating in the preliminary study were not included in the sample. The inclusion criteria were as follows: (1) Septorhinoplasty patients age 18 or older, (2) volunteered to participate in the study, (3) graduated from primary school, (4) had no visual or hearing impairments, (5) had no psychological or cognitive barriers which could impair communication, and (6) had access to smartphones or computers. The exclusion Criteria were as follows: (1) any patients with physical or cognitive barriers to communication, (2) any patients who did not have access to a smartphone or computer, (3) patients who did not voluntarily accept the study requirements. The participants were assigned randomly to either the intervention group or the control group. According to the order of

hospitalization, the first patient was enrolled in the intervention group and the second patient was enrolled in the control group. The patient assignment was made to the control and intervention groups by a staff member who was not part of the study team. The study was completed with a total of 320 participants, consisting of both control ( $n = 160$ ) and intervention ( $n = 160$ ) patients.

Study participants in the control group scheduled for septorhinoplasty had an average length of hospital stay of 2 to 3 days: 1 preoperative day and 1 to 2 postoperative days. The patients in the intervention group were hospitalized on the morning of surgery and discharged within 6 to 9 hours postoperatively barring any postoperative complications or pain management issues.

### Data Collection

#### Intervention Group

The intervention group was given online training via telenursing in addition to the routine care given to all septorhinoplasty patients. Online video training administered via smartphone or computer was completed in 20 to 30 minutes and was conducted at three time points: preoperatively, on postoperative day 3 and day 10 (POD 3 and 10). Subjects were given time to ask questions at the end of the training. The contact information of the researchers conducting the telenursing visits was given to the patients to have an ongoing exchange of information that would be used in the study results. Thus, it was ensured that the patients could easily communicate with the researchers about all their problems.

The anxiety scale was applied to the patients in the intervention group at the end of the third training (POD 10). Comfort and satisfaction levels with the scope of the telenursing training were measured using a Verbal Analog Scale (VAS). In addition, the ease of accessing nursing staff for telehealth services or whether the service facilitated access to health care during the pandemic, and the necessity of including telenursing in all health care services were measured using VAS.

*Training content.* The content of online training was created by the researchers. The content of the training material was arranged with the opinions of three professors, two of whom were ENT experts and one surgical nursing expert. In line with expert opinions, the content of the training was evaluated in terms of content validity, and then the comprehensibility of the expressions was evaluated with 10 patients in the preliminary study. All of the patients stated that the training was understandable. The training covered the applications to be made in the postoperative service and the home care process after the discharge and consisted of information on the expected situations. Topics related to the content of the training are included in [Figure 1](#).

#### Control Group

The control group was given standard postoperative teaching before hospital discharge and routine nursing care provided in the clinic. Standard discharge patients were expected to comply with follow-up postoperative care during which the anxiety scale was administered to the control group on the POD 10. After the postoperative data were collected, discharge training was done, and the control subjects were provided with printed training material.

### Instruments

*Study Questionnaire.* The researchers developed the study questionnaire after an extensive literature review.<sup>15,16</sup> The questionnaire consisted of eight questions that covered demographics, smoking and alcohol use status, and the main problem related to the nose.

Training topics including the applications to be made when coming to the post-operative service	
<ul style="list-style-type: none"> <li>• Postoperative discharge time,</li> <li>• Bed head level after surgery,</li> <li>• Nose tampons application,</li> <li>• How the ice application is made and its duration,</li> <li>• Bleeding and Pain control,</li> <li>• Drugs to be used</li> </ul>	<ul style="list-style-type: none"> <li>• Other applications to be made in the service (Blood pressure, heart rate monitoring, etc.),</li> <li>• Mobilization,</li> <li>• Time to start oral intake after surgery,</li> <li>• Method of moistening the mouth and lip as mouth breathing will be done,</li> </ul>
Training topics on what to do in the home care process after the patient is discharged from the hospital	
<ul style="list-style-type: none"> <li>• Post-operative position,</li> <li>• Ice application process,</li> <li>• Pain management,</li> <li>• Bleeding management,</li> <li>• Drugs to be used when discharged,</li> <li>• Tampons and plaster removal time,</li> <li>• How to take a bath,</li> <li>• Edema and bruise management,</li> </ul>	<ul style="list-style-type: none"> <li>• Exercise, activity,</li> <li>• Sun protection,</li> <li>• Use of glasses and masks,</li> <li>• Swimming,</li> <li>• Smoking and alcohol use,</li> <li>• Sexual activity,</li> <li>• Returning to work.</li> </ul>

Figure 1. Topics related to the content of the training. This figure is available in color online at www.jopan.org.

*State-Trait Anxiety Inventory (STAI).* The State-Trait Anxiety Inventory (STAI) that was developed by Spielberger et al<sup>17</sup> was used in this study. Turkish validity and reliability study was performed by Oner and Le Compte.<sup>18</sup> The STAI contains two different scales consisting of 40 items. The first 20 questions measure patients' State Anxiety Inventory levels (SAI), and the last 20 questions measure their Trait Anxiety Inventory levels (TAI). The scale includes direct expressions for negative emotions and inverted expressions for positive feelings. In direct statements, answers with a value of four indicate high anxiety, whereas, in reverse expressions, answers with a value of 1 indicate high anxiety. Inverted expressions are scored, while those with 1 weight value turn into 4, and those with 4 weight values turn into 1. The total score obtained from both scales varies between 20 and 80. A higher score indicates a high level of anxiety, and a small score indicates a low level of anxiety. Researchers stated that 39 to 40 points on this scale were the cut-off point for indicating the presence of clinical anxiety.<sup>19,20</sup> The Cronbach's  $\alpha$  value for state anxiety is between 0.94 and 0.96, and for trait anxiety, it is between 0.84 and 0.85.<sup>18</sup> In this study, the Cronbach's  $\alpha$  value as 0.958 for state anxiety was calculated, and as 0.963 for trait anxiety.

*Visual Analog Scale (VAS).* The VAS scale was used to measure patient satisfaction, comfort levels, ease of accessing nursing staff for telehealth services or whether the service facilitated access to health care during the pandemic and the necessity of including telenursing in all health care services. Patients were asked to rate these as 0 to 10. If the value given was close to zero, it was considered a "decrease," whereas if the subject rated a symptom and it approached 10, it was considered an "increase."

*Ethical Considerations*

Ethics Committee (Decision no: 2021-08/14) approval was obtained from both the University and the affiliated hospital where the research took place before the initiation of the study. Every stage of the research was conducted following ethical principles. Participants were free to withdraw from the study at any time during the study period. All study participants who were asked to participate in

the study were trained about the study details before obtaining their written consent. After the participants provided their informed consent, questions in the questionnaire were asked to the patients by the researchers. Only the first letters of the participants' names and surnames were used in the survey forms, and the full name was not written.

*Statistical Analysis*

The data obtained in the study were evaluated with the SPSS23 program. Descriptive statistical analyses (mean, standard deviation, frequency, and percentage) were used to evaluate the data. The normality of the data was evaluated with the Kolmogorov-Smirnov test, and the values of skewness and kurtosis were checked. Because the data met the parametric conditions, they were analyzed with the independent sample *t*-test for two independent groups and the F-test (ANOVA) for more than two groups. Correlation analysis was performed to examine the relationship between scales, and  $P < .05$  was considered statistically significant.

**Results**

The majority (61.9%) of the intervention group patients participating in the study were between the ages of 18 to 24, 55.6% were female, 53.1% were university graduates, 78.1% were single, 65% were unemployed, 58.8% were nonsmokers, 97.5% did not use alcohol, and 61.3% had the most important complaint as shortness of breath (Table 1). A total of 63.7% of the control group patients participating in the study were between the ages of 18 to 24, 53.8% were female, 55.5% were university graduates, 76.3% were single, 63.1% were unemployed, 63.1% were nonsmokers, 95.6% did not use alcohol, and 62.5% had the most important complaint as shortness of breath. There were no statistically significant differences between the groups in terms of sociodemographic features ( $P > .05$ )

The mean SAI total score of the intervention group was  $31.92 \pm 7.93$ , the mean total score of TAI was  $39.41 \pm 10.11$ , the mean SAI total score of the control group was  $45.18 \pm 5.25$ , and the mean TAI total score was  $53.40 \pm 9.17$  (Table 2). The postoperative hospital discharge time of the control group was significantly longer than the

**Table 1**  
Demographic Characteristics of the Intervention and Control Groups (N = 320)

Characteristics	Intervention Group (n = 160)		Control Group (n = 160)		$\chi^2$	P	
	Mean $\pm$ SD		Mean $\pm$ SD				
Mean age (y)	24.42 $\pm$ 6.11		24.36 $\pm$ 6.01				
		n	%	n	%		
Age (y)	18-24	99	61.9	102	63.7	0.120	.817
	25-50	61	38.1	58	36.3		
Sex	Female	89	55.6	86	53.8	0.113	.822
	Male	71	44.4	74	46.3		
Education status	Secondary school	4	2.5	2	1.3	0.208	.97
	High school	71	44.4	69	43.2		
	University	85	53.1	89	55.5		
Marital status	Married	35	21.9	38	23.8	0.160	.790
	Single	125	78.1	122	76.3		
Working status	Working	56	35.0	59	36.9	0.122	.816
	Unemployed	104	65.0	101	63.1		
Smoking at any period of life	Yes	66	41.3	59	36.9	0.643	.492
	No	94	58.8	101	63.1		
Alcohol use	Yes	4	2.5	7	4.4	0.847	.542
	No	156	97.5	153	95.6		
The most important problem with the nose	Shortness of breath	98	61.3	100	62.5	0.112	.408
	Deformity	62	38.8	60	37.5		

**Table 2**  
Comparison of Scale Total Score Averages Between Groups (N = 320)

Scale	Group	Mean $\pm$ SD	t	P
SAI	Intervention	31.92 $\pm$ 7.93	17.619	.001**
	Control	45.18 $\pm$ 5.25		
TAI	Intervention	39.41 $\pm$ 10.11	13.228	.001**
	Control	53.40 $\pm$ 9.17		
Postoperative hospital discharge time (h)	Intervention	7.50 $\pm$ 1.13	7.222	.001**
	Control	14.60 $\pm$ 3.54		

SAI, state anxiety level; TAI, trait anxiety level. \*\* $P < .01$ .

intervention group ( $P < .01$ ). As none of the patients in the intervention group developed complications, no comparison was made with the control group.

The VAS score averages of the intervention group after the training applied with telenursing were as follows: Comfort  $8.68 \pm 1.08$ , Telenurse satisfaction  $8.53 \pm 1.19$ , Telenursing facilitates access to healthcare  $8.55 \pm 1.19$ , and Telenursing should be included in all healthcare services  $8.52 \pm 1.23$  (Table 3).

A statistically significant difference was determined between the patients' sex, age, primary surgery reason, alcohol, and cigarette use, and the VAS total score averages in terms of comfort, satisfaction, telenursing facilitates access to healthcare, and telenursing should be included in all healthcare services ( $P < .05$ ) (Table 4). The difference between alcohol use status and TAI total score, and the difference between sex of the patients, primary surgery cause, and SAI and TAI total score averages were found to be statistically significant ( $P < .01$ ).

A negative and statistically significant relationship between satisfaction and SAI and TAI ( $r = -0.715$ ,  $r = -0.739$ ,  $P < .001$ ) was determined. Also, there was a positive and statistically significant

relationship between training satisfaction and telenursing facilitates access to healthcare, telenursing should be included in all healthcare services, and the level of comfort ( $r = 0.958$ ,  $r = 0.958$ ,  $r = 0.937$ ,  $P < .001$ ) (Table 5).

## Discussion

Nurses are the first line of communication that many patients have with the health care delivery system. Through planning, coordination, provision, and evaluation of patient care,<sup>8</sup> nurses quickly recognized the importance of providing contactless care during the COVID-19 pandemic.<sup>3,4</sup> The primary goal of reducing the spread of COVID among health care workers and patients during the pandemic was a driving force in shaping the current health care delivery system. Due to recent technological advances in audio and visual communication, telenursing has proven to be a useful tool in coordinating patient care. The nurse scientists involved in this study quickly discovered that there was a gap in the literature on the use of telenursing for postoperative patients.

Patient needs after a surgery such as a septorhinoplasty are complicated and labor-intensive. Regular postoperative follow-ups of this cohort of patients are vital in the prevention of complications. To decrease postoperative morbidities during the pandemic, telenursing proved to be an important tool to improve patient outcomes while overcoming geographical barriers to quickly access home care services without viral exposure.<sup>9</sup> Video conferencing and any picture a patient can send via smartphone were an important part of early diagnosis of complications as effective interventions in reducing time and cost for patients and health care professionals.

**Table 3**  
VAS Total Score Averages for Intervention Group

Questions	n	Mean $\pm$ SD
Telenursing satisfaction	160	8.53 $\pm$ 1.19
Comfort	160	8.68 $\pm$ 1.08
Telenursing should be included in all health services	160	8.52 $\pm$ 1.23
Telenursing facilitated access to health care	160	8.55 $\pm$ 1.19

**Table 4**  
Comparison of the Demographic Data of the Patients in the Intervention Group with the Scale Averages (n = 160)

	n	SAI	TAI	Comfort	Telenursing facilitated access to health care	Telenursing should be included in all health services	Telenursing satisfaction
<b>Age</b>							
18-24	99	31.67 ± 7.86	38.82 ± 10.05	8.85 ± 1.05	8.72 ± 1.20	8.71 ± 1.23	8.71 ± 1.16
25-50	61	32.32 ± 8.10	40.37 ± 10.30	8.39 ± 1.08	8.27 ± 1.14	8.21 ± 1.18	8.24 ± 1.17
t/P		0.65/.619	1.54/.352	0.46/.009**	0.44/.019	0.50/.011	0.47/.015
<b>Sex</b>							
Female	89	34.76 ± 8.14	44.05 ± 9.47	8.10 ± 1.11	8.12 ± 1.10	8.05 ± 1.15	8.10 ± 1.11
Male	71	28.36 ± 6.05	33.60 ± 7.61	9.08 ± 1.05	9.09 ± 1.08	9.11 ± 1.08	9.08 ± 1.05
t/P		5.696/.001**	7.733/.001**	5.58/.001**	5.601/.001**	5.94/.001**	5.71/.001**
<b>Marital Status</b>							
Married	35	32.28 ± 8.46	40.11 ± 10.20	8.51 ± 1.21	8.48 ± 1.14	8.40 ± 1.16	8.40 ± 1.16
Single	125	31.82 ± 7.81	39.22 ± 10.12	8.72 ± 1.08	8.57 ± 1.21	8.56 ± 1.25	8.57 ± 1.19
t/P		0.303/.762	0.457/.650	0.845/.41	0.41/.686	0.70/.484	0.78/.437
<b>Education Status</b>							
Secondary school	4	30.25 ± 10.71	37.75 ± 13.57	8.5 ± 1.00	8.75 ± 1.25	8.75 ± 1.25	8.75 ± 1.25
High school	71	31.59 ± 7.53	39.52 ± 10.01	8.42 ± 1.11	8.53 ± 1.21	8.53 ± 1.21	8.53 ± 1.26
University	85	32.28 ± 7.93	39.41 ± 10.17	8.45 ± 1.10	8.56 ± 1.18	8.56 ± 1.18	8.55 ± 1.17
F/P		0.236/.790	0.06/.944	0.03/.91	0.065/.937	0.08/.925	0.09/.911
<b>Smoking at any period of life</b>							
Yes	66	32.54 ± 7.25	39.92 ± 10.01	8.46 ± 1.09	8.31 ± 1.21	8.27 ± 1.28	8.33 ± 1.20
No	94	31.48 ± 8.39	39.06 ± 10.22	8.82 ± 1.06	8.72 ± 1.15	8.70 ± 1.18	8.78 ± 1.16
t/P		0.828/.397	0.530/.597	1.928/.05	2.114/.036	2.153/.03	1.82/.04
<b>Alcohol use</b>							
Yes	4	35.50 ± 2.88	43.50 ± 1.73	7.50 ± 0.57	7.00 ± 0.00	7.00 ± 0.00	7.00 ± 0.00
No	156	31.83 ± 8.00	39.31 ± 10.22	8.71 ± 1.08	8.59 ± 1.18	8.56 ± 1.22	8.57 ± 1.18
t/P		2.32/.07	3.51/.005**	2.7/.008**	2.69/.008**	2.54/.012	2.66/.009**
<b>Working status</b>							
Working	56	32.82 ± 8.18	39.73 ± 9.54	8.50 ± 1.07	8.42 ± 1.10	8.39 ± 1.15	8.42 ± 1.12
Unemployed	104	31.44 ± 7.79	39.25 ± 10.45	8.77 ± 1.08	8.62 ± 1.24	8.59 ± 1.28	8.59 ± 1.22
t/P		1.034/.304	0.295/.769	1.08/.283	1.02/.308	1.02/.309	0.870/.386
<b>The most important problem with the nose</b>							
Shortness of breath	98	29.75 ± 6.32	36.70 ± 9.00	8.92 ± 1.03	8.80 ± 1.17	8.82 ± 1.18	8.80 ± 1.14
Deformity	62	35.35 ± 9.00	43.70 ± 10.36	8.29 ± 1.06	8.16 ± 1.13	8.04 ± 1.17	8.11 ± 1.14
Shortness/P		4.617/.001**	4.520/.001**	3.59/.001**	3.43/.001**	4.01/.001**	3.73/.001**

SAI, state anxiety level; TAI, trait anxiety level. \*P < .05, \*\*P < .01.

For example, in the present study, the patients in the intervention group were discharged within 6 to 9 hours whereas patients in the control group were discharged after an average of 12 to 24 hours (Table 2). In addition, no complications developed in any of the intervention patients participating in this study and they required no postoperative rehospitalization whereas two patients in the control group had postoperative minor bleeding and nasal tip infections. The literature indicates that telehealth visits can promote the detection of postoperative complications.<sup>14,21</sup> Our study results align with the literature and advocate the use of telenursing for surgical patients. In

addition, the literature supports the importance of pictures and videos that are part of telehealth follow-ups that can be instrumental in the detection of postoperative complications.<sup>21</sup>

In studies conducted in Turkey before the COVID-19 pandemic, septorhinoplasty patient anxiety levels were above average (SAI; 38-41, TAI; 40-44).<sup>22-24</sup> COVID universally increases the level of anxiety in individuals 4 to 5 times.<sup>25,26</sup> Considering the anxiety caused by the COVID-19 pandemic process, in the study, the postoperative SAI and TAI scores of the experimental group were found to be significantly lower than the control group (Table 2).

**Table 5**  
Intervention Group Inter scale Correlation (N = 160)

		Telenursing satisfaction	Telenursing should be included in all health services	Telenursing facilitated access to health care	SAI	TAI	Comfort
Telenursing satisfaction	r	1	0.958	0.958	-0.715	-0.739	0.937
	p		.001**	.001**	.001**	.001**	.001**
Telenursing should be included in all health services	r	0.958	1	0.965	-0.741	-0.781	0.942
	p	.001**		.001**	.001**	.001**	.001**
Telenursing facilitated access to health care	r	0.958	0.965	1	-0.738	-0.751	0.960
	p	.001**	.001**		.001**	.001**	.001**
SAI	r	-0.715	-0.741	-0.738	1	0.901	-0.721
	p	.001**	.001**	.001**		.001**	.001**
TAI	r	-0.739	-0.781	-0.751	0.901	1	-0.723
	p	.001**	.001**	.001**	.001**		.001**
Comfort	r	0.937	0.942	0.960	-0.721	-0.723	1
	p	.001**	.001**	.001**	.001**	.001**	

r, Pearson correlation coefficient; SAI, state anxiety level; TAI, trait anxiety level. \*\*P < .01.



In this study, results indicate that telenursing increased comfort level and satisfaction. In fact, the patient cohort with access to tele-nursing indicated that they believed that it should become a standard part of the nurse-to-patient care model due to their positive experience with telenursing. It was hypothesized that, as a result of the correlation analysis, satisfaction with the training applied through telenursing reduces anxiety, increases comfort, facilitates health care, and since the patients are aware of these changes, they believe that telenursing should be included in all health care services (Table 5). Similarly, in a qualitative study, it was found that telenursing facilitates care during the COVID-19 process, increases communication and trust between patients and nurses, provides adequate training and counseling, adequate care and support to patients, and contributes to the improvement and development of health.<sup>27</sup> In another study, Hakim et al<sup>21</sup> found that telenursing services increased patient satisfaction during the COVID-19 pandemic. Early detection of problems hastens diagnosis and treatment of any postoperative complications and reduces anxiety levels by facilitating access to health services.

In our study, the training provided through telenursing significantly decreased the SAI and TAI scores in male patients compared to female patients. Likewise, the TAI score of those who used alcohol in the intervention group was significantly higher than those who did not drink alcohol. In addition, VAS score averages were statistically significantly higher in satisfaction, comfort, facilitation of health care services, and the inclusion of telenursing practice in all health care services in nonsmokers and nonalcoholic, male patients, younger than 24 years of age in the intervention group (Table 4). SAI indicates the fear that an individual feels due to the stressful situations in which they are and is an indicator of an individual's feelings of tension and restlessness.<sup>28</sup> TAI deals with the person's previous experiences as a reaction to a subjective situation of unknown cause or to situations in which there are uncertainties. If the factors that cause SAI exceed a certain intensity, the fears that the person has experienced since childhood can increase the reaction to TAI.<sup>29</sup> A study that evaluated the anxiety level of ENT surgical patients justified that anxiety was significantly higher in both females and individuals who were 30 years and younger.<sup>21</sup> The other studies that evaluated septorhinoplasty patients indicated that women's anxiety levels were higher than those of men.<sup>23,30</sup> This finding may be due to an increased vulnerability of women and young people to anxiety in general, or to the anxiety which may have been caused by the uncertainty surrounding the pandemic and the additional mitigation safety strategies put in place for public health safety. In addition, this may be because patients with alcohol dependence failed to manage stress in their previous experiences and rely on this substance as a negative coping method to reduce their anxiety.<sup>31</sup>

SAI and TAI scores of those who had dyspnea in the intervention group were significantly lower than those who had undergone septorhinoplasty due to aesthetic anxiety. In addition, those with shortness of breath had significantly higher VAS scores for the questions on satisfaction, comfort level, facilitating health care and telenursing should be applied in all health care services. Finding a surgical solution to improve respiratory status for the cohort of patients with impaired breathing may have reduced their anxiety levels independent of the telenursing provided. It is emphasized in the literature that rhinoplasty was among the most frequently performed aesthetic surgeries, and patients who underwent rhinoplasty had more psychological disorders than in other plastic surgeries.<sup>32</sup> Therefore, individuals with anxiety related to aesthetics and who underwent septorhinoplasty may have psychological issues, which make them experience anxiety more profoundly.

## Limitations

This study had several limitations which included but were not limited to the following. All participants were fully fluent in the use of smartphones, tablets, and the technology needed to conduct a telehealth visit. In addition, all participants had access to the internet. The results of a study using a group of participants who did not know about the technology needed for a telehealth visit, or did not have internet access would likely have been different than those which were presented in this paper.

## Implications for Practice

The COVID-19 pandemic has already plunged the entire world into a technological world it may not have been ready for and we must adapt quickly. While the initial implementation of telenursing practices was unexpected and rocky, this pandemic could evolve tele-nursing into a mainstay of many fields of medicine, in particular surgical postoperative care. In the present study, researchers faced certain challenges because some patients had limited access to the internet and limited availability to devices such as smartphones, tablets, or computers. Health policies should be developed to integrate telenursing and telehealth services into the health system. In addition, there is a need to educate nurses about telenursing and to improve the existing technology and infrastructure needed to successfully deliver telehealth services. In this sense, the sharing of worldwide websites and the use of satellite technologies can facilitate individuals' contactless and rapid access to telenursing services. Hospitals need to do infrastructure work in this regard. In addition, training should be provided to increase the knowledge and skills of nurses to understand and apply telenursing correctly. There is a need for studies to be conducted on international incentives and regulations that will integrate telenursing into health care services.

## Conclusion

Infectious diseases such as COVID-19 that emerged in recent years have led the global health care community to seek practices that facilitate the reduction of the number of health care providers and patients during a time of the heightened spread of disease. The importance of reduced contact during postoperative patient follow-up became evident especially after the number of surgical procedures increased after the initial phase of the pandemic.<sup>33</sup> Although tele-nursing was not a new practice, it became an increasingly desirable alternative to in-person pre- and postoperative follow-up care necessitated by the need to stop the spread of COVID-19. The data presented in this study illustrate the effectiveness of providing telenursing for septorhinoplasty patients by reducing anxiety levels, facilitating home care, preventing postsurgical complications, and increasing patient satisfaction and comfort levels. The devastating effects of COVID-19 created the need for the development of remote delivery of health care services and especially for the need to increase usage of the practice of telenursing.

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