Nursing Students' Applications, Knowledge Needs, Self-Efficacy During COVID-19: A Descriptive Study*

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Abstract

Aim: Nursing students are also a health educator. During the COVID-19 process, nursing students both provided health education to individuals in need in their environment and implemented protective measures themselves. The aim of this study was to determine nursing students' self-efficacy, basic knowledge, and protective measures they applied during the COVID-19 outbreak.

Method: This was a descriptive study. Ethics committee approval was obtained for the study. Data were collected interactively. The sample consisted of 672 voluntary nursing students 18 years of age from the universities in Turkey. Data were made using Statistical Package for Social Sciences (SPSS, v 21.0); Kruskal-Wallis and Mann Whitney-U tests, and Spearman's correlation were used. "STROBE" checklist has been followed.

Results: Gender had an effect on self-efficacy. Income level, place of residence, and self-efficacy had an effect on the number of in-house preventive measures. Regarding COVID-19 protection measures; girls, those living in rural areas and those with low income were found to be disadvantaged.

Conclusion: Nursing students may need to be supported to feel competent. It may be recommended to educate disadvantaged groups as a priority in preventing the spread of the epidemic. In addition, nursing students can take part in the health education of the community. The findings of this study emphasize the importance of improving nursing education. Nursing students can guide society in public education.

Keywords: COVID-19, nursing students, knowledge needs, self-efficacy, pandemics.

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ETHICAL STATEMENT: The study was approved by the Scientific Research Platform of the Turkish Ministry of Health (Rukiye Burucu-2020-05-06T15_58_21) and by the Non-Pharmaceutical and Medical Device Research Ethics Committee of Necmettin Erbakan Univercity (2020/2516).

Hemşirelik Öğrencilerinin COVID-19 Sırasında Uygulamaları, Bilgi İhtiyaçları, Öz Yeterlikleri: Tanımlayıcı Bir Çalışma

Öz

Amaç: Hemşirelik öğrencileri aynı zamanda bir sağlık eğitimcisidir. COVID-19 sürecinde hemşirelik öğrencileri hem çevrelerinde gereksinim duyan bireylere sağlık eğitimi vermiş hem de koruyucu önlemleri kendileri uygulamışlardır. Bu çalışmanın amacı hemşirelik öğrencilerinin COVID-19 salgını sırasında öz yeterliklerini, temel bilgilerini ve uyguladıkları koruyucu önlemleri belirlemektir.

Yöntem: Bu tanımlayıcı bir çalışmadır. Çalışma için etik kurul izni alınmıştır. Veriler interaktif olarak toplanmıştır. Örneklemi; Türkiye'deki üniversitelerde, 18 yaş üstü 672 gönüllü hemşirelik öğrencisi oluşturmuştur. Veriler Statistical Package for Social Sciences (SPSS, v 21.0) kullanılarak yapılmıştır; Kruskal-Wallis ve Mann Whitney-U testleri ve Spearman korelasyon analizi yapılmış, "STROBE" kontrol listesi takip edilmiştir.

Bulgular: Cinsiyetin öz-yeterlik üzerinde etkisi olduğunu göstermiştir. Kurum içi önleyici tedbirlerin uygulanmasında; gelir düzeyi, ikamet yeri ve öz yeterliliğin etkili olduğu saptanmıştır. COVID-19 koruma önlemleri ile ilgili olarak; kızlar, kırsal kesimde yaşayanlar ve gelir düzeyi düşük olanlar dezavantajlı bulunmuştur.

Sonuç: Hemşirelik öğrencilerinin kendilerini yeterli hissetmeleri için desteklenmesi gerekebilir. Salgının yayılmasını önlemede öncelikli olarak dezavantajlı grupların eğitilmesi önerilebilir. Ayrıca hemşirelik öğrencileri toplumun sağlık eğitiminde görev alabilirler. Bu çalışmanın bulguları hemşirelik eğitiminin geliştirilmesinin önemini vurgulamaktadır. Hemşirelik öğrencileri halk eğitimlerinde topluma rehberlik edilebilir.

Anahtar Kelimeler: COVID-19, hemşirelik öğrencisi, bilgi gereksinimi, öz yeterlilik, pandemi.

Significance

Nursing is important for the protection and development of public health. Nursing students also receive training aimed at protecting and improving public health from the very beginning of their education. Health education of the society has an important place in these trainings. The society must have sufficient knowledge and awareness to be protected from infectious diseases. Nursing students are individuals who can transfer this information to the society and create awareness. They should also be able to implement protection measures themselves. The student's family and environment is a small example of society. For this reason, it is important that nursing students live with the family and individuals around them in the COVID-19 process. Therefore, the educational needs of the individuals around the students, the student's own knowledge needs and protection practices are important issues. If the student feels sufficient in

this regard, it will contribute to both protecting himself and educating the society. Therefore, with such a study:

● Information needs of students about COVID-19 protection measures

● Protection practices in the family

● Evaluation of the feeling of self-sufficient in this regard has been considered appropriate.

Introduction

The coronavirus disease 2019 (COVID-19) is a global health problem. At first, it was thought to be some sort of pneumonia, but later has been declared a pandemic[1]. The 2019 novel the coronavirus is transmitted from person to person (direct contact) through respiratory droplets, aerosols, and fomites. The coronavirus can live on surfaces even for a few days and spread by touching contaminated surfaces and then touching the mouth, nose or eyes[2]. It is highly infectious, and therefore, WHO recommends public health preventive measures for mitigating the risk and impact of the COVID-19 pandemic[3].

Preventing the spread of the coronavirus is a top priority for public health, and therefore, all necessary preventive measures should be taken to that end[4]. As of March 2020, Turkey took many precautions, one of which was to close down all schools until further notice and providing distance education since then[5]. Distance nursing education is not very ideal, but it is necessary to reduce the risk of the coronavirus spreading[6,7].

Raising public awareness is the key to preventing the spread of COVID-19, where nurses come into play as consultants and educators. Nurses as counselors have high autonomy and can fulfill that role more effectively by integrating it with the roles of a communicator and educator[8]. Nursing students can also take on the role of counselors and educators for people around them. To do that, they need self-efficacy, which comes with knowledge[9]. Self-efficacy is defined as one's belief in one's ability and capacity to meet one's goals[10]. Self-efficacy has a positive impact on motivation[11]. Therefore, nursing students should have adequate knowledge and high self-efficacy to be able to serve as consultants for people around them.

Research questions;

- What information did nursing students need about protection methods during the COVID process?
- What are the protection methods they apply?
- Did they feel sufficient during this period?

Material and Methods

Design and setting

This was a relational and descriptive study.

Sampling

The target group were nursing students in universities in Turkey (n: 672). Participation was on a voluntary basis. Inclusion criteria; He was a nursing student, 18 years old, and had internet access.

Measurement

The data were collected online and the participants' consent was obtained online. The data were collected using the "Data collection form" and the Generalized Perceived Self-Efficacy Scale (GPSES).

Data Collection Form

It includes students' socio-demographic data, the measures they have implemented for COVID, and the need for education. The form was prepared by the researchers based on the literature[1-7]. The prepared form was applied to 10 students before they were collected to test the understandability of the data. These students were not included in the study.

GPSES

Developed by GPSES, Schwarzer and others (1981)[12]. The validity and reliability of the Turkish version of the scale was established by Erci (2006). GPSES had an item-total score correlation between 0,64 and 0,78 and a Cronbach alpha value of 0,89. It consists of ten items scored on a four-point Likert-type scale. The total score ranges from 10 to 40. Higher scores indicate higher self-efficacy[13]. GPSES had a Cronbach alpha value of 0,88 (n:672) in this study.

Procedure

After data collection forms were created, arrangements were made to be used online; "Google Forms" database was used. Students were tried to be reached via social media or student associations. Forms were open online for a month. The data collected over a period of one month were evaluated. This research has been reported according to Observational Research Reporting Criteria (STROBE)[14,15]. The group was only asked to answer questions. Collecting data online negatively affects reliability. It was predicted that it could be able to be found and it was accepted as a limitation. In order to avoid bias risk, the data were collected and analyzed by a statistician via Google forms. This statistician was not included in the research.

Ethical Considerations

The study was approved by the Scientific Research Platform of the Turkish Ministry of Health (Rukiye Burucu-2020-05-06T15_58_21) and by the Non-Pharmaceutical and Medical Device Research Ethics Committee of Necmettin Erbakan Univercity (2020/2516). Online written consent was obtained from participants.

Data Analysis

Data were collected online and then analyzed using the Statistical Package for Social Sciences (SPSS, IBM, v. 21) at a significance level of 0,05. The Kolmogorov-Smirnov test was used for normality testing. Variance analysis and Levene's test were used for homogeneity and group variances. The data were not normally distributed, and therefore, the Mann-Whitney U test was used for pairwise comparison, while the Kruskal-Wallis test was used for comparison of more than two independent groups. Pearson's correlation was used to determine the relationship between variables.

Results

Of participants, 85,9% were female, 86,5% were first, second, and third graders, 57% had a family with a monthly income of TL 2000 to 5000, 52,2% lived in city or metropolitan centers, 44.3% were feeling neither good nor bad, 99,7% had no one around them who had COVID-19 and 26,3% lived in Central Anatolia and 17% in Eastern Anatolia (Table 1).

Table 1. Participants' sociodemographic characteristics (n: 672)

Characteristics		**n**	**%**
Gender	Woman	577	85,9
	Man	95	14,1
Grade Level	1	191	28,4
	2	200	29,8
	3	190	28,3
	4	91	13,5
Monthly Income	No fixed income	101	15,0
	< TL 2000	97	14,4
	TL 2000- 5000	383	57,0

	< TL 5000	91	13,5
Place of Residence	Village- town	106	15,8
	District	215	32,0
	City center	130	19,3
	Metropolis	221	32,9
Please indicate how you are feeling now.	Bad	72	10,7
	Good	262	39,0
	Neither good nor bad	298	44,3
	Quite good	40	6,0
Is there anyone you know who had COVID-19?	Yes	2	0,3
	No	670	99,7
Geographical Area of Residence	Marmara	85	12,6
	Aegean	61	9,1
	Mediterranean	83	12,4
	Central Anatolia	177	26,3
	Black sea	74	11,0
	Eastern Anatolia	114	17,0
	Southeastern Anatolia	78	11,6

Participants' responses were taken as number and percentage. The most common preventive measures were wearing a mask outside and staying indoors unless it is an emergency (92%), followed by washing hands frequently (89,1%), keeping visits to a minimum (88,8%), following the social distancing rules when outside (82%), opening the windows as often as possible to keep the air circulating (76,6%), not letting people in (73.5%), changing clothes when getting home (72,3%), disinfecting groceries before putting them away (51%), and paying more attention to diet than before (46,1%). Twenty-nine participants (4,3%) stated that they took no specific in-house preventive measures against the COVID-19 pandemic. The mean of all preventive measures for social distancing was 84,0% (Table 2).

Table 2. Participants' in-house preventive measures against COVID-19

In-house preventive measures	**n**	**%**
Wearing a mask outside	618	92,0
*Staying indoors unless it is an emergency	618	92,0
Washing hands often	599	89,1
*Keeping visits (home/neighbors/relatives) to a minimum	597	88,8
Preventive measures for social distance (mean)*	-----	84,0
*Following the social distancing rules when outside (market, bank, post office, cargo, etc.)	551	82,0
Opening the windows as often as possible to keep the air circulating	515	76,6
*Not letting people in	494	73,5
Changing clothes when getting home/having different clothes for indoors and outdoors	486	72,3
Disinfecting groceries before putting them away	383	57,0
Wearing gloves outside	347	51,6
Keeping groceries in the balcony for a few hours before putting them away	343	51,0
Paying more attention to diet than before	310	46,1
No specific preventive measures	29	4,3
Others	6	0,6

Note. Participants could choose more than one option.

*Averages are also presented as themes of social distancing.

Participants' responses were taken as number and percentage. Most participants stated that they were asked questions by others about how to prevent infection (56,8%), how to use protective equipment (mask and gloves) properly (40,6%), what proper protective equipment should be like (39%), and what social distancing was (32,9%), about which they therefore needed more information. One-hundred and sixty participants (23,8%) stated that they had no gaps in their knowledge of issues related to the COVID-19 pandemic (Table 3).

Table 3. Gaps in participants' knowledge of COVID-19

Gaps of Knowledge	**n**	**%**
Ways to prevent infection	382	56,8
Use of protective equipment (mask and gloves)	273	40,6
Features of ideal protective equipment (mask and gloves)	262	39,0
Social distancing and its features	221	32,9
No gaps in knowledge	160	23,8
Others	2	0,2

Note. Participants could choose more than one option.

Gender had a significant effect on participants' self-efficacy scores and the number of in-house preventive measures they took against the COVID-19 pandemic. Male participants had higher self-efficacy scores and took more preventive measures against the COVID-19 pandemic than females (p<0,05). Participants with a monthly income of TL 5.000 or more took the most preventive measures, while those with no fixed income took the fewest preventive measures against the COVID-19 pandemic. Participants with a monthly income of less than TL 2.000 and those with a monthly income of 2.000 to 5.000 took the same number of preventive measures (few) against the COVID-19 pandemic (p<0,05). Participants living in city and metropolitan centers took the most preventive measures, while those living in villages/towns took the fewest preventive measures against the COVID-19 pandemic. Participants living in districts took few preventive measures against the COVID-19 pandemic (p<0,05). The results also showed that the better the mood, the higher the self-efficacy total score (p<0,05) (Table 4).

Table 4. Factors affecting participants' knowledge needs, protective preventive measures, and self-efficacy scores

***Gender**		**n**	**Mean**	**SD**	**Median**	**Min**	**Max**	**Z**	**P**
**Preventive Measures	Woman	577	8,890	2,499	9	1	13	-3,221	**0,001[a]**
	Man	94	7,980	2,728	8	1	13		
Self-efficacy Total Score	Woman	577	26,849	5,200	27	13	40	-3,044	**0,002[a]**
	Man	95	28,557	4,920	29	16	39		
***Income**		**n**	**Mean**	**SD**	**Median**	**Min**	**Max**	**χ2**	**P**
	No	101	7,70	2,893	8	1	12	29,307	**0,000[a]**

**Preventive Measures	<TL 2000	96	8,39	2,735	8,5	1	13		
	TL2000-5000	383	8,92	2,431	9	1	12		
	>TL 5000	91	9,70	1,929	10	4	12		
***Place of Residence**		**n**	**Mean**	**SD**	**Median**	**Min**	**Max**	**χ2**	**P**
**Preventive Measures	Village Town	106	7,29	3,092	7,5	1	13	39,814	**0,000[b]**
	District	215	8,62	2,551	9	1	13		
	City center	129	9,32	2,222	10	1	12		
	Metropolis	221	9,29	2,125	10	1	12		
***Mood**		**n**	**Mean**	**SD**	**Median**	**Min**	**Max**	**χ2**	**P**
Self-efficacy Total score	Good	262	27,393	4,755	27,5	16	40	16,264	**0,001[b]**
	Neither good nor bad	298	26,597	5,218	26	13	40		
	Quite good	40	29,825	5,261	30	18	40		

Note. *Statistical significance

**The number of preventive measures evaluated

[a] Mann-Whitney U test score

[b] Kruskal-Wallis test score

Knowledge needs, preventive measures, and self-efficacy total score were not correlated with age (p>0,05). Knowledge needs were very weakly (10,7%) and positively correlated with preventive measures (10,7%) and self-efficacy total score (11,7%) (p<0,05) (Table 5).

Table 5. Correlation between knowledge needs, preventive measures, and self-efficacy scores and age

		Preventive Measures	**Knowledge Needs**	**Self-efficacy Total Score**
Age	r	**0,029**	**-0,008**	**0,012**
	p value	0,450	0,844	0,757
*Preventive Measures	r		**0,179**	**0,107**
	p value		-	0,006
**Knowledge Needs	r			**0,117**
	p value			0,002

Note. *The number of preventive measures evaluated

**The number of areas which they think they lack knowledge

Discussion

Preventive measures play a key role in minimizing pandemics. The WHO recommends washing hands with soap and water or using alcohol-based hand sanitizers and wearing masks and abiding by social distancing protocols to prevent infection and the spread of the coronavirus[1]. Wearing masks and keeping hands clean are considered the most effective measures[4,16]. COVID-19 patients and carriers of the pathogen wearing masks prevent the virus from passing to anyone, while healthy individuals wearing masks protect themselves from the virus. Healthcare professionals caring for COVID-19 patients can protect themselves from the virus about 86 percent by wearing simple surgical masks[17]. Supplying high-protective masks to everyone is not economically possible. The COVID-19 pandemic has already caused unprecedented financial crises in many countries[18]. Should kept in mind that simple masks are effective in preventing infection and the spread of the coronavirus, and therefore, should continue to wear them and teach people how to wear them properly.

Hand hygiene is another important measure. It is recommended to wash hands with soap and water or use alcohol-based hand sanitizers in cases where there is no access to soap and water. The coronavirus is mainly transmitted by droplets but can live on surfaces for a few hours or even days, and therefore, is also spread by touching the mouth, nose or eyes[1,16]. The most

common preventive measures that our participants took against the COVID-19 pandemic were also wearing masks and washing hands with soap and water. Half of the participants (51%) also noted that they wore gloves when going into public, which is also an important result. However, wearing gloves can give people a false sense of security, causing an increase in the spread of the virus. The Centers for Disease Control and Prevention (CDC) does not recommend wearing gloves in public (shopping etc.) as a preventative measure. The CDC emphasizes that healthcare professionals should wear gloves while providing health[19]. It is, therefore, of paramount importance to inform both students and the public on preventive measures against the COVID-19 pandemic.

Another measure recommended against the COVID-19 pandemic is social distancing. Some of the measures our participants took were also related to social distancing, such as keeping social distance, staying indoors unless there is an emergency, and not visiting anyone or accepting any visitors. In order to maintain social distance, people should avoid spending time in crowds and keep a distance of up to 2 meters to others at all times when they have to be in crowds[1,19]. People spending time in crowds are more likely to be infected with the coronavirus because of respiratory droplets coming out of carriers or patients[1,4]. The environment should be ventilated at certain intervals to keep the number of pathogens as low as possible[1,20]. Therefore, students and the public should be informed about the importance of ventilation and social distancing.

Study participants stated that they disinfected groceries before putting them away and did laundry more often, indicating that they paid more attention to hygiene during the COVID-19 pandemic. Consumer behavior has also changed during this period, and there has been an increase in the consumption of cleaning products and foodstuffs[21]. It is emphasized that a balanced diet plays a key role in preventing infection and rapid recovery. Although there is no evidence of food being associated with transmission of COVID-19, washing fruits and vegetables with plenty of clean water before consumption is recommended. However, food packaging may also be a contaminant, and therefore, should be properly disinfected. Clothes do not have to be laundered in strong detergents and hot water, it is suggested that washing them only with water and detergent would suffice[1,5]. The recommendations of the WHO and the Turkish Ministry of Health (hand hygiene, protective masks and clothing, and food surface and food packaging disinfection) may have made the public more aware of the risks of the COVID-19 pandemic. The fact that the public takes heed of the recommendations of the WHO and the Ministry of Health is an important indicator of social awareness of the COVID-19 pandemic.

There are many asymptomatic carriers and patients. Therefore, healthcare professionals should abide by the preventive measures more firmly and inform the public about the health risks of COVID-19. Nursing students also serve as counselors and educators and inform the public about COVID-19. However, healthcare professionals are worried about not being able to answer

questions about the COVID-19 pandemic. The more the knowledge, the lower the perceived anxiety. In times of crisis, people increasingly turn to experts whom they deem have the information they need[22]. Nurses also serve as consultants in healthcare services. Nurses who can effectively serve as consultants and educators are, therefore, essential for the protection and promotion of public health[8]. Nurses and nursing students should have the right information to protect themselves and to inform the public about COVID-19. They already acquire that information during undergraduate years; however, it should be updated. Nurses and nursing students regard the WHO and the Ministry of Health as the right sources of information about the COVID-19 pandemic[23]. Our participants stated that they had gaps in knowledge about ways to prevent infection, correct choice and use of protective equipment, and social distancing. Therefore, nursing education and social awareness projects should also address these issues. The result also shows how important the works and projects of both the WHO and the Ministry of Health are.

According to Cao et al., male college students without financial problems living in the countryside were less worried about the COVID-19 pandemic than females with financial problems living in the city[16]. Huang et al found that female nursing college students living in the countryside were more worried about the COVID-19 pandemic than males living in the countryside[24]. Our female participants were also more worried about the COVID-19 pandemic and took more preventive measures than males. However, unlike in other studies, our participants with high income living in city centers took more preventive measures than those with low income living in the countryside. These results show that female nursing students with high income living in city centers take more measures because they are more worried about the COVID-19 pandemic. Therefore, education on COVID-19 should focus more on male nursing students with low income living in the countryside.

Self-efficacy is another factor affecting anxiety. It is defined as a sense of competence and self-confidence that allows one to cope with unusual and stressful situations[25]. The more the knowledge, the higher the self-efficac[9]. Nursing students observing cases and engaging in clinical practice, in other words, gaining real clinical experience, are likely to acquire more knowledge and have higher self-efficacy, resulting in professional competence in the future[26,27]. The lower the stress and anxiety[28] and higher the awareness[29], the higher the self-efficacy. Taghriri, Brozjani, and Shiraly found that although Iranian medical school students were worried about being infected with COVID-19, they did not take enough preventive measures[30]. Everybody is actually concerned at varying levels degrees about the COVID-19 pandemic, however, nursing students are more concerned about themselves and their family members, and their education and profession life[31]. Therefore, state that male nursing students with higher self-efficacy feel more at ease and take fewer measures against the COVID-19 pandemic. This

suggests that training on the COVID-19 pandemic should focus more on male students to raise their awareness.

Study Limitations

The study had three limitations: (1) the data were collected online; (2) participants might have some unanswered questions; and (3) no sampling was performed. Since this study is not representative of the whole group, its results cannot be generalized.

Impact Statement

Preventive measures are very effective to prevent the spread of COVID-19 infection. Nurses are health professionals who both know and implement the measures and must inform the public. This task starts from studenthood. Students can also guide the community. However, students also need to know and apply the correct application. In addition, it is important that students feel competent in this regard. Female students living in rural areas feel more inadequate. All segments of the society have a duty to prevent the epidemic. Nursing students can take part in the education of the community. Female students should be confident in themselves, and rural residents should be supported to implement protection measures. These should be taken into account in the education of nursing students. It would be appropriate to give priority to the education of individuals living in rural areas.

Conclusion

Rural and low-income students take fewer measures against the COVID-19 pandemic. Nursing students need to learn more about ways to prevent infection, correct choice and use of protective equipment, and social distancing. Providing nursing students with information on COVID-19 is of paramount importance to help them develop self-efficacy. Female nursing students have lower self-efficacy and take more preventive measures against COVID-19 than males. More than half of nursing students wear gloves to protect themselves from COVID-19.

Implications for Nursing Practice

Nursing students should have enough information about preventive measures against the COVID-19 pandemic. Training on the COVID-19 pandemic should focus more on female students and those living in the countryside (receiving more feedback from them, etc.). Students and the public should be informed that wearing gloves might be further spreading the COVID-19. Future studies should address the effect of wearing gloves and masks in public. Projects should be developed to raise public awareness of the correct implementation of preventive measures against the COVID-19 pandemic.

Lessons for Practice

• Nurses have an important place in providing basic health education to the society. Nurses start this training when they are students

• Students must have sufficient knowledge to offer education. It is important that the student feels sufficient besides his / her knowledge.

• Nursing students are expected to both protect themselves and inform the individuals around them during the pandemic process. During this information of the students; It is important what they do, what they need, whether they feel competent and how they use protective measures. The adequacy of education programs in schools is important for students to feel competent in this regard. It would be appropriate to review the trainings accordingly.

Explanation

There is no conflict of interest between the authors. Informed consent form was signed by the participants.

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