

INFORMATION AND THOUGHTS OF NURSING STUDENTS ON THE USE OF PERSONAL PROTECTIVE EQUIPMENT

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Abstarct

The purpose of this study is to determine nursing students' knowledge and thoughts about the use of personal protective equipment (PPE). This descriptive study was conducted between February and April 2022. The population of the study consisted of students studying in the nursing department of a foundation university. The study reached 87.8% of the sample. The data was collected by the researchers through face-to-face interviews using a questionnaire based on the literature. The data obtained in the study was analysed using SPSS 25.0 programme. Descriptive statistics and chi-square test for comparison of categorical variables were used in the analysis of the data and the level of significance was taken as $p < 0.05$. It was found that students made errors in the order of putting on (51.2%) and removing (32.5%) the PPE. It was found that the knowledge level of students who had received training on occupational health and safety was higher than that of students who had not received training ($p < 0.05$). Although nursing students lacked basic understanding of PPE, they were found to have good attitudes towards its use. In addition, it was found that the OHS instruction provided to the students helped them to increase their knowledge about PPE.

Keywords: nursing, student, intern, personel protective equipment

HEMŞİRELİK ÖĞRENCİLERİNİN KİŞİSEL KORUYUCU EKİPMAN KULLANIMINA İLİŞKİN BİLGİ VE DÜŞÜNCELERİ

ÖZ

Hemşirelik öğrencilerinin kişisel koruyucu ekipman (KKE) kullanımına ilişkin bilgi ve düşüncelerinin belirlenmesi amaçlanmıştır. Tanımlayıcı olarak tasarlanan bu araştırma Şubat -Nisan 2022 tarihleri arasında gerçekleştirilmiştir. Araştırmanın popülasyonu bir vakıf üniversitesinin hemşirelik bölümünde okuyan öğrencilerden oluşmuştur. Araştırmada örneklemin %87,8'ine (123) ulaşılmıştır. Veriler araştırmacılar tarafından literatür temel alınarak oluşturulan anket formu kullanılarak yüz yüze görüşme yöntemi ile toplanmıştır. Araştırmada elde edilen veriler SPSS 25.0 programı kullanılarak analiz edilmiştir. Verilerin değerlendirmesinde tanımlayıcı istatistikler ve kategorik değişkenlerin karşılaştırılmasında ki-kare testi kullanılmış olup anlamlılık düzeyi $p < 0,05$ olarak kabul edilmiştir. Öğrencilerin KKE giyme (%51,2) ve çıkarma (%32,5) sıralamalarında hata yaptıkları saptanmıştır. Ayrıca iş sağlığı güvenliği (İSG) eğitimi alan öğrencilerin almayanlara oranla bilgi düzeylerinin daha yüksek olduğu saptanmıştır ($p < 0,05$). Hemşirelik öğrencilerinin KKE ile ilgili bilgi düzeyleri yetersiz olmakla birlikte KKE kullanımına ilişkin düşüncelerinin olumlu olduğu belirlenmiştir. Ayrıca öğrencilere verilen İSG eğitiminin KKE bilgi düzeyini arttırmada faydalı olduğu sonucuna ulaşılmıştır.

Anahtar Kelimeler: Hemşirelik, öğrenci, stajyer, kişisel koruyucu ekipman

1. INTRODUCTION

Personal Protective Equipment (PPE) is equipment used to minimise occupational accidents, the spread of infection and potential hazards in various occupations. Nurses, who face many risk factors in the hospital environment, can protect themselves, hospital patients and society from infections thanks to PPE (1). In addition, thanks to PPE, which is an important component in ensuring infection control, re-hospitalisation rates decrease, patient-centred care is provided, hospital costs decrease, and this increases the quality and standard of care (1,2). Especially in the period from COVID-19, the importance of PPE has increased for both society and health workers. This is because it is emphasised that the use of one or more personal protective equipment such as masks, gloves, visors, aprons and goggles by healthcare workers in the hospital, which is one of the most risky environments, reduces transmission (3). The World Health Organisation (2020) also emphasised the importance of using PPE in hospitals, stating that the spread of pathogens would decrease thanks to the rational, correct and consistent use of PPE (4). Studies also emphasise the importance of PPE use by medical staff to reduce the risk of infection in the clinic (5,6).

It has been reported that having student nurses out of practise for a period of time due to the COVID-19 pandemic causes them stress (7,8). Another study reported that the stress levels of student nurses who applied to clinics during the pandemic period increased because they were worried about the risk of infection to themselves and their families (5,9).

One of the most effective ways to reduce the infection-related stress levels of student nurses who will be a link in the health system chain is to use proper PPE. To increase the protection of PPE, it is very important to provide training on the order in which equipment is put on and taken off, where to throw used equipment in the trash, how often to change equipment and how to clean it. Health workers and student nurses have basic information on this topic (10).

For this reason, it is believed that the rational use of PPE and the level of knowledge of both nurses in direct contact with patients and student nurses undergoing clinical training in the hospital are important in terms of infection control. The aim of this study was to determine the knowledge and thoughts of student nurses attending the clinic on the use of PPE.

2. MATERIALS AND METHODS

Study design and population

This descriptive study was conducted between February 2022 and April 2022. The population of the study consisted of students studying in the nursing department of a foundation university. The research attempted to reach out to all students who were not selected as the sample. In the nursing department of the foundation university, which is the population of the study, there are a total of 140 students studying in the 1st, 2nd, 3rd and 4th year and going to the clinic. 123 of these students were reached and 17 students were unwilling to participate in the study. In our study, 87.8% of the sample was reached.

Data collection instruments

The research data were collected using the 'survey form' prepared by the researchers based on the relevant literature. The questionnaire consists of four parts: "Descriptive information", "Previous experience", "Information about PPE" and "Thoughts about using PPE" (9-12).

Section Introductory Information: The introductory information about the students asked for age, gender and grade level. Previous Experience Section: There are 6 questions about the students' previous experience of using PPE (whether they have received training on PPE and OSH (OHS), whether they have ever come into contact with blood or body fluids, whether or not they have been injured with a sharp object. as).

PPE information section: There are 7 questions to measure students' knowledge of PPE (the order of putting on and taking off PPE, which waste bin to use for used PPE). Section on thoughts about using PPE: It consists of 5 questions about students' thoughts about PPE (e.g. PPE prevents me from doing my job, PPE prevents infections, PPE reduces my work efficiency).

Implementation of the investigation

In order to evaluate the content validity of the form, the opinions of five faculty members who are experts in the field of nursing and two infection control nurses were sought. As a result of the analysis, the content validity index of the form was found to be above the minimum value set (confidence coefficient: $1 - \alpha = 1 - 0.05 = 0.95$). In the next phase, the pre-application of the questionnaire was conducted on 10 nursing students. Since no changes were made to the data collection instruments after the pre-application, the data were included in the research sample. The final form of the questionnaire was done through face-to-face interview. It took about 10-12 minutes to complete the questionnaire.

Statistical analysis

The data obtained from the research was analysed using SPSS 25.0 programme. Descriptive statistical methods (number, percentage) were used in the evaluation of the data. Chi-square test was used for comparison of categorical variables and significance level was accepted as $p < 0.05$.

Ethical approval

Approval was obtained from the ethics committee of a foundation university to conduct the study (decision dated 28/01/2022 numbered 18). Verbal and written informed consent was obtained from the participants of the study through a voluntary informed consent form. The study was conducted in accordance with the principles of the Declaration of Helsinki.

3. RESULTS

According to our research findings, it was determined that 74.8% of the nursing students were women, 35% were in 2nd grade, 58.5% had previously received training on PPE and 73.2% had received training on health and safety at work. It was also found that 21.1% of them had ever been in contact with blood or body fluids and 34.1% of them had already had stab wounds (Table I).

Table I. Introductory Characteristics and Past Experiences of Nursing Students (n= 123)

Introductory characteristics of nursing students		n	%
Gender	Female	92	74.8
	Male	31	25.2
Class of study	1st Class	27	22.0
	2nd Class	43	35.0
	3rd Class	20	16.3
	4th Class	33	26.8
Past experiences of nursing students			
Status of receiving PPE training	Yes	72	58.5
	No	48	41.5
PPE training institution	At school	29	23.6
	In hospital,	7	5.7
	Both school and hospital	36	29.3
OHS training status	Yes	90	73.2
	No	33	26.0
	At school	31	25.2
OHS training institution	In hospital,	24	19.5
	Both school and hospital	35	28.5
	Yes	26	21.1
OHS training institution	No	97	78.9
	Yes	42	34.1
	No	81	65.9

*PPE: Personal protective equipment, **OHS: Occupational health and safety

When the knowledge level of student nurses about PPE was examined, it was found that 1/5 (19.5%) did not know the visor, more than half (51.2%) misunderstood the order of wearing PPE and 32.5% of them misunderstood the order of taking it off. It was found that more than half of the participants (52%) answered incorrectly the question of which PPE should be discarded after leaving the patient's room (Table II).

Table II. Nursing Students' Knowledge of PPE (n= 123)

Information on PPE		n	%	
Recognising PPEs	Mask	Yes	121	98.4
		No	2	1.6
Glasses	Yes	108	87.8	
	No	15	12.2	
Visor	Yes	99	80.5	
	No	24	19.5	
Apron	Yes	109	88.6	
	No	14	11.4	
Glove	Yes	116	94.3	
	No	7	5.7	
The order of wearing PPE	Right answer	60	48.8	
	Wrong answer	63	51.2	
The order of removal of PPE	Right answer	83	67.5	
	Wrong answer	40	32.5	
PPE that should be discarded after leaving the patient's room	Right answer	59	48.0	
	Wrong answer	64	52.0	
Which waste bin should used PPE be disposed of in?	Right answer	109	88.6	
	Wrong answer	24	11.4	
Disposable PPE can be used more than once	Yes	5	4.1	
	No	118	95.9	

Hand hygiene is not required after removal of PPE	Yes	0	0.0
	No	123	100.0

*PPE: Personal protective equipment,

When the opinions of student nurses on the use of PPE were examined, it was found that the majority of them (78.9%) answered "I disagree" to the statements "PPE prevents me from doing my job" and "Working with PPE reduces my productivity". However, it was found that almost all of them answered "I agree" to the statements "PPE protects against infectious diseases (91.9%) and PPE gives safety (92.7%)". It was found that almost half of the participants (36.6%) answered "I am undecided" to the statement "The use of PSA is not practical" (Table III).

Table III. Student nurses' thoughts about the use of PPE (n= 123)

Thoughts about the use of PPE	I disagree		I undecided		I agree	
	n	%	n	%	n	%
PPE prevents me from doing my job	97	78.9	19	15.4	7	5.7
Working with PPE reduces my productivity	92	74.8	21	17.1	10	8.1
PPE protects against infectious diseases	7	0.8	3	7.3	113	91.9
PPE makes me feel safe	2	1.6	7	5.7	114	92.7
PPE is impractical to use	64	52.0	45	36.6	14	11.4

PPE: Personal protective equipment

According to the results, no statistically significant relationship was found between the gender of the nursing students and their knowledge about the use of PPE ($p > 0.05$). However, there was a significant difference in favour of male students between the gender of the students and their thoughts about the use of PPE ($p < 0.05$). It was found that 48.4% of the male students were undecided about the practical use of PPE and the difference with the female students was statistically significant (Table IV).

Table IV. The relationship between the gender of nursing students and their thoughts on the use of PPE (n=123)

Thoughts on the use of PPE	Thoughts on the use of PPE	Female		Male		p
		n	%	n	%	
PPE prevents me from doing my job	I disagree	76	82.6	21	67.7	0.168
	I undecided	11	12.0	8	25.8	
	I agree	5	5.4	2	6.5	
Working with PPE reduces my productivity	I disagree	71	77.2	21	67.7	0.567
	I undecided	14	15.2	7	22.6	
	I agree	7	7.6	3	9.7	
PPE protects against infectious diseases	I disagree	4	0.0	3	9.7	0.221
	I undecided	3	7.6	0	0.0	
	I agree	85	92.4	28	90.3	
PPE makes me feel safe	I disagree	1	1.1	1	3.2	0.377
	I undecided	4	4.3	3	9.7	
	I agree	87	94.6	27	87.1	
PPE is impractical to use	I disagree	54	58.7	10	32.3	0.030*
	I undecided	30	32.6	15	48.4	
	I agree	8	8.7	6	19.4	

* $p < 0.05$ ** PPE: Personal protective equipment

No statistically significant relationship was found between nursing students' class and their knowledge of PPE use ($p > 0.05$). However, a statistically significant association was found between the classes of nursing students and their thoughts about the use of PPE ($p < 0.05$). 25.9% of first-year nursing students reported that PPEs did not protect against infectious diseases, and this was statistically significant compared to other classes (Table V).

Table V. The relationship between the class of nursing students and their thoughts on the use of PPE (n=123)

Thoughts on the use of PPE in the classroom		1st Class		2nd Class		3rd Class		4th Class		p
		n	%	n	%	n	%	n	%	
PPE prevents me from doing my job	I disagree	20	74.1	36	83.7	16	80.0	25	75.8	0.568
	I undecided	6	22.2	6	14.0	3	15.0	4	12.1	
	I agree	1	3.7	1	2.3	1	5.0	4	12.1	
Working with PPE reduces my productivity	I disagree	20	74.1	32	74.4	15	75.0	25	75.8	0.907
	I undecided	5	18.5	8	18.6	2	10.0	6	18.2	
	I agree	2	7.4	3	7.0	3	15.0	2	6.1	
PPE protects against infectious diseases	I disagree	7	25.9	0	0	0	0.0	0	0.0	0.003*
	I undecided	2	7.4	0	0	1	5.0	1	3.0	
	I agree	18	66.7	43	100	19	95.0	32	97.0	
PPE makes me feel safe	I disagree	0	0.0	2	4.7	0	0.0	0	0.0	0.417
	I undecided	3	11.1	1	2.3	1	5.0	2	6.1	
	I agree	24	88.9	40	93.0	19	95.0	31	93.9	
PPE is impractical to use	I disagree	13	48.1	24	55.8	9	45.0	18	54.5	0.979
	I undecided	11	40.7	15	34.9	8	40.0	11	33.3	
	I agree	3	11.1	4	9.3	3	15.0	4	12.1	

*p<0.05 *** PPE: Personal protective equipment

According to our findings, when comparing student nurses' previous experiences (receipt of PPE training, OHS, contamination with blood or body fluids, and sharps and needle stick injuries) with their knowledge of PPE use, it was found that there was only a statistically significant difference between the status of receiving OHS training ($p < 0.05$). It was found that 53.3% of those who had received OHS training knew the wearing order correctly, while more than half (65.6%) of those who had not received OHS training were wrong. When the PPE was analysed by subtraction order, it was found that 74.4% of those who had received OHS training knew the subtraction order correctly, while more than half (53.1%) of those who had not received training knew it incorrectly. This was statistically significant ($p < 0.05$) for nursing students who had received OHS training (table VI).

Table VI. Comparison of nursing students' education OHS and their knowledge about PPE (n= 90)

Comparison of OHS training and knowledge about PPE		Occupational health and safety training status				p
		Yes		No		
		n	%	n	%	
The order of wearing PPE	Right answer	49	53.3	11	34.4	0.005*
	Wrong answer	41	46.7	22	65.6	
The order of removal of PPE	Right answer	67	74.4	16	46.9	0.014*
	Wrong answer	23	25.6	17	53.1	
PPE that should be discarded after leaving the patient's room	Right answer	50	55.6	9	27.3	0.003*
	Wrong answer	40	44.4	24	72.7	
Which waste bin should used PPE be disposed of in?	Right answer	83	92.2	25	78.1	0.104
	Wrong answer	7	7.8	8	12.9	
Disposable PPE can be used more than once	Yes	3	3.3	3	6.3	0.475
	No	87	96.7	30	93.8	
Hand hygiene is not required after removal of PPE	Yes	0	0.0	0	0	-
	No	90	100.0	33	100.0	

*p<0.05 ** PPE: Personal protective equipment, *** OHS: Occupational health and Safety

4. DISCUSSION

Our research findings have shown that nursing students' knowledge of PPE is inadequate. They were found to make errors especially in the order of application (51.2%) and removal (32.5%) of PPEs. Similar to our study, Baran (2020) in his study to determine the status and approach of doctors in the use of PPEs (13) found that there are deficits in the level of knowledge on the use of PPEs. In a study conducted with faculty members and dental students, it was found that participants gave incorrect answers in the order of PPE (72.6%) and subtraction (60.3%) (14). In another study conducted with health professionals, a checklist for donning and doffing PPE was prepared for the participants and their practises were tracked accordingly. It was found that 50% of the participants made at least one mistake when donning and 100% when doffing (15). In a study conducted by Yuksel (2020) with paramedic students, it was found that one in two students misunderstood the order of donning PPE (16). In light of our research findings, it is believed that there is a need to improve the level of knowledge through the development of various techniques and to strengthen the education of nursing students at university and hospital, where application precedes clinical practise, regarding PPE.

In our study, it was found that student nurses' opinions on the use of PPE were predominantly positive. Similar to our research findings, Kucuk (2021) found in his study of 112 paramedics that 69.3% of the participants believed that PPE would protect them from accidents (17). The fact that students' opinions on the use of PPE are predominantly positive can be interpreted to mean that they are educated in the field of health and the importance of using PPE is frequently highlighted in social media due to COVID -19.

In our study, significant differences were found between the gender of nursing students and their thoughts about using PPE. This difference was shown to be caused by male indecision about the appropriateness of using PPE. The results of our study support the literature (11,18). It is suggested that the fact that the male students who participated in our study did not have indecisive (48.4%) and negative (19.4%) attitudes towards the practicality of PPE use was due to gender roles. In particular, the majority of women living in our country are encouraged to dress indoors from an early age (19). However, this is not the case for men. For this reason, men may not have a positive attitude towards the practical use of PPE because they are not familiar with it.

According to our research, it was found that 25.9% of first-year nursing students reported that PPE does not protect against infectious diseases, which is statistically significant compared to other classes. In a study examining student nurses' attitudes towards the use of gloves, it was found that first-year students considered it less necessary than those taught in other classes (20). Similar results were obtained in our study. This situation can be interpreted as the students have just started their nursing education, are at the beginning of clinical training and there is no course on infectious diseases in the first year. Their thoughts about PPE are based on the traditional thoughts they acquired before their studies.

Our results show that there is a statistically significant relationship between the previous experiences of the student nurses participating in the study (participation in PPE training, OHS, contamination with blood or body fluids, and sharps and needle stick injuries) and their knowledge of PPE use. Similar to our findings, the study conducted by Madziatera et al. (2020) found that those who had received training on PPE were more likely to use PPE than those who had not (6). According to our research findings, the reason why those who have received OHS training are more knowledgeable about PPE than those who have not may be because the OHS training teaches the importance of using PPE, how to use it, and the significance of the accidents that can occur if it is not used.

5. CONCLUSION

It was found that the level of knowledge of nursing students about PPE was inadequate but their thoughts about its use were positive. It was found that the training OHS helps to improve knowledge about PPE. It is recommended that PPE training for student nurses be intensified both in school and in hospital and that the effectiveness of the training be evaluated.

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