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Nurses' Compliance with Isolation Precautions and Their Attitudes to Patient Safety

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ABSTRACT

Background/Purpose: Nurses' compliance with isolation measures is extremely important for patient safety. This research was conducted to examine nurses' compliance with isolation precautions and patient safety attitudes.

Methods: This is a cross-sectional and relational study. The data of the study were collected between January and March 2022 in a tertiary education and research hospital. A Nurse Descriptive Form, an Isolation Precautions Compliance Scale and a Patient Safety Attitude Scale were used to collect data.

Results: Three hundred and sixty-two nurses participated in the study. The total mean score of the nurses' Isolation Precautions Compliance Scale was 75.74±11.58, and the total mean score of the Patient Safety Attitude Questionnaire was 127.28±34.29. It was found that the mean patient safety attitude score of the nurses was significantly different according to age and whether they were caring for COVID-19 patients ($p<0.05$). It was also found that the level of compliance of the nurses with the isolation measures did not vary according to their socio-demographic and descriptive characteristics. There was a positive and very weak correlation between worker and patient safety and teamwork climate ($p=0.02$, $r=0.123$), safety climate ($p=0.04$, $r=0.105$), and hand hygiene and use of gloves and teamwork climate ($p=0.04$, $r=0.109$).

Conclusion: It was determined that the level of compliance of the nurses with the isolation measures was high and their attitudes toward patient safety were positive. It was determined that there was no significant relationship between the level of compliance of nurses with isolation precautions and their attitude toward patient safety.

Keywords: Health care-associated infection, patient safety, prevention and control, nurses

Hemşirelerin İzolasyon Önlemlerine Uyumu ve Hasta Güvenliği Tutumları

ÖZET

Amaç: Hemşirelerin izolasyon önlemlerine uyum sağlamaları hasta güvenliği açısından son derece önemlidir. Bu araştırma, hemşirelerin izolasyon önlemlerine uyumu ve hasta güvenliği tutumlarını incelemek amacıyla yapıldı.

Yöntemler: Araştırma tanımlayıcı ve kesitsel nitelikte tasarlandı. Araştırmanın verileri üçüncü basamak bir eğitim araştırma hastanesinde Ocak-Mart 2022 tarihleri arasında toplandı. Verilerin toplanmasında "Hemşire Tanıtıcı Formu", "İzolasyon Önlemlerine Uyum Ölçeği" ve "Hasta Güvenliği Tutum Ölçeği" kullanıldı.

Bulgular: Araştırmaya 362 hemşire katıldı. Hemşirelerin "İzolasyon Önlemlerine Uyum Ölçeği" toplam puan ortalaması 75.74±11.58 ve "Hasta Güvenliği Tutum Ölçeği" toplam puan ortalaması 127.28±34.29 olarak bulundu. Hemşirelerin hasta güvenliği tutum puan ortalamasının yaş ve COVID-19 hastasına bakma durumuna göre farklı olduğu belirlendi ($p<0.05$). Hemşirelerin izolasyon önlemlerine uyum düzeylerinin ise sosyo-demografik ve tanıtıcı özelliklerine göre değişmediği saptandı. Çalışan hasta güvenliği ile ekip çalışması iklimi ($p=0.02$, $r=0.123$) ve güvenlik iklimi ($p=0.04$, $r=0.105$) arasında, el yıkama-eldiven kullanımı ile ekip çalışması iklimi ($p=0.04$, $r=0.109$) arasındaki ilişki pozitif yönde, çok zayıf düzeydeydi.

Sonuç: Hemşirelerin izolasyon önlemlerine uyum düzeylerinin yüksek, hasta güvenliğine yönelik tutumlarının olumlu olduğu belirlendi. Hemşirelerin izolasyon önlemlerine uyum düzeyleri ile hasta güvenliği tutumu arasında anlamlı bir ilişki olmadığı saptandı.

Anahtar kelimeler: Sağlık bakımı ile ilişkili enfeksiyon, hasta güvenliği, önleme ve kontrol, hemşire

Health service related infections, as well as increasing rates of morbidity and mortality, also cause an increase in the length of hospital stay and thus costs (1,2). For this reason, programs are implemented in health institutions to prevent infections (3). Infection control measures include both the standard measures of hand hygiene, the use of gloves and the application of aseptic techniques and advanced measures implemented to prevent infection from an infected or colonized patient, such as wearing a mask and apron, monitoring a patient in a negative pressure room, training health personnel and the implementation of isolation measures: contact, droplet or breathing isolation (4). One infection control measure is isolation (3), and the purpose of isolation is to prevent micro-organisms infecting the patient, the patient's relatives or health workers (4).

Health workers' attitudes and behaviors are a factor affecting the provision and maintenance of isolation (1). For this reason, it is important in order for the implementation of policies on patient safety that health professionals have a positive attitude to patient safety (5,6). Nurses are in the closest contact with patients, and play a key role in the implementation of infection control measures (7), and in providing and improving patient safety (8-10). Interventions to ensure patient safety include providing control of patients and their families in situations which might constitute a risk (11) and preventing unwanted results of interventions (12).

Not implementing isolation measures may give rise to unwanted events which may pose a risk to patient safety (13). Therefore, it is stated to be of the utmost importance that nurses should abide by isolation measures. Studies in the literature have shown that compliance with isolation measures may vary from country to country, and even between different hospitals and clinics in the same country (2,14,15), and in studies conducted in Turkey, it is seen that compliance with isolation measures is at a medium or good level (1,7,16). Most studies on patient safety have reported that nurses' attitudes to patient safety are positive (5,8,17-21). No study was found in the literature making a simultaneous examination of nurses' compliance with isolation measures and their attitudes to patient safety, and therefore, nurses' compliance with isolation measures and their attitudes to patient safety were examined in this study.

MATERIAL AND METHOD

Type of Study

The research had a cross-sectional and relational design.

The Population and Sample of the Research

The minimum sample size in the population was determined with power analysis using the G*Power v 3.1.9.7 program. In order to obtain a 0.05 significance level (α) and an 80% statistical test power (1-β), the effect size in the calculations was calculated as 0.30. Considering the standard deviation value, a minimum sample size of 82 was determined. As a result, 362 nurses who stated that they followed isolation procedures and who agreed to participate in the research were included in the study.

Data Collection and Tools

Data collection was conducted by face to face interview at a tertiary teaching and research hospital between January and March 2022. Each interview took approximately 15 minutes. Data collection instruments were as follows:

Nurse Descriptive Form: There were nine questions on this form, concerning the nurses' socio-demographic and other descriptive characteristics: gender, age, education, total professional experience, place of work (clinic), working status, whether caring for COVID-19 patients, and training on isolation and patient safety.

Isolation Precautions Compliance Scale: This scale was developed in 2011 by Tayran and Ulupınar. The scale has four sub-sections on way of contagion, worker-patient safety, environmental control, and hand hygiene and glove use. It consists of 14 positive items and four negative items (Nos. 5, 7, 12 and 17) showing compliance with isolation measures. The score obtainable on the scale varies from 18 to 90. A high score obtained on the scale indicates good compliance with isolation measures. The Cronbach Alpha value of the scale is 0.85, and that of its subsections between 0.52 and 0.80 (3). In the present study, the Cronbach Alpha value of the scale was 0.82, and the values of the sub-sections varied from 0.77 to 0.80.

Patient Safety Attitude Scale: This scale was developed by Sexon et al. (2006) (22), and its Turkish validity and reliability were tested by Baykal et al. (2010). The scale has six sub-sections, job satisfaction, teamwork climate, safety climate, perceptions of management, stress recognition and working conditions, and a total of 46 items. The score obtainable on the scale varies from 46 to 230. The ten items on the score containing negative statements are scored negatively. As the total score on the scale increases,

patient safety attitude increases, and as the total score decreases, patient safety attitude decreases. The Cronbach Alpha value of the scale is 0.96, and the Cronbach Alpha values of the sub-sections vary between 0.72 and 0.86 (23). In the present study, the Cronbach Alpha value was 0.79 and the values of the sub-scales varied from 0.71 to 0.91.

Statistical Analysis

The program IBM SPSS Statistics 20.00 was used in the statistical analysis of the research data. Normality was tested with the Kolmogorov Smirnov normality test. Mean ± SD values were given for continuous variables, and percentage values for categorical variables. The Student t test and one-way variance (ANOVA) analysis were used in the analysis of data. The correlation between the nurses' levels of compliance with isolation measures and their attitudes to patient safety was determined with Pearson correlation analysis. In interpreting the results, $p<.05$ was taken as significant.

Ethical Considerations

This research was conducted in accordance with ethical principles and the Declaration of Helsinki. Institutional permission was obtained from the institution where the research was performed, and permission was obtained from Başakşehir Çam and Sakura City Hospital Clinical Research Ethics Committee, dated 5 January 2022, approval No. 2021.06.204. Informed written approval was obtained from the participants concerning their willing and voluntary participation.

RESULTS

The mean age of the nurses participating in the study was 25.54±1.44 (min.22-max.33) years, and their total professional experience was 24.25±11.03 (min.3-max.120) months. A majority of the nurses were between 21 and 25 years of age (62.7%), female (62.7%), university graduates (97.2%), clinical nurses (98.6%), and working in the emergency service (50%). A majority also had cared for COVID-19 patients (93.6%), had not had training in the past year on isolation measures (74%), but had had training on patient safety (52.5%). The nurses' mean score on level of compliance with isolation measures was 75.74±11.58, and their mean score on attitude to patient safety was 127.28±34.29 (Table 1).

Nurses between the ages of 21 and 25 years had higher mean scores than those aged ≥ 26 years on safety climate (p=.02), perceptions of management (p=.01), stress recognition (p=.02) and total patient safety attitude (p=.03). In those who stated that they had cared for COVID-19 patients, mean scores on total attitude to patient safety were high (p=.02) (Table 2).

Very weak positive correlations were found between the nurses' scores on teamwork climate and worker and patient safety (p=.02, r= 0.123), teamwork climate and hand hygiene and glove use (p=.04, r= 0.109), and safety climate and worker and patient safety (p=.04, r= 0.105) (Table 3).

Table 1. Nurses' Sociodemographic and Descriptive Characteristics

		n	%
Age	21-25 years	227	62.7
	≥ 26 years	135	37.3
Gender	Female	227	62.7
	Male	135	37.3
Education	Bachelors	352	97.2
	Postgraduate (Masters/ Doctorate)	10	2.8
Total professional experience	3-24 months	331	91.4
	≥ 25 months	31	8.6
Place of work (unit)	Internal medicine	38	10.5
	Surgery	30	8.2
	Emergency	181	50.0
	Intensive care	48	13.3
	Other	65	18
Working status	Clinical nurse	357	98.6
	Head nurse/ Nurse manager	5	1.4
Isolation measures training in the past year	Yes	94	26.0
	No	268	74.0
Patient safety training in the past year	Yes	190	52.5
	No	172	47.5
Caring for COVID-19 patients	Yes	339	93.6
	No	23	6.4
Monitoring patients in isolation in the past year	Yes	362	100.0
Isolation Precautions Compliance Scale Score (18-90 points)		75.74±11.58 (min.30-max.90)	
Way of Contagion (5-25 points)		21.44±3.08 (min.11-max.25)	
Worker & Patient Safety (6-30 points)		25.50±4.04 (min.3-max.30)	
Environmental Infection Control (4-20 points)		16.21±2.91 (min.4-max.20)	
Hand hygiene & Glove Use (3-15 points)		12.73±2.18 (min.6-max.15)	
Patient Safety Attitude Total Score (46-230 points)		127.28±34.29 (min.46-max.25)	
Work Satisfaction (11-55 points)		24.79±9.86 (min.11-max.55)	
Teamwork Climate (12-60 points)		35.29±11.42 (min.12-max.60)	
Safety Climate (5-25 points)		16.04±5.08 (min.5 -max.25)	
Perceptions of Management (7-35 points)		20.97±6.05 (min.7-max.35)	
Stress Recognition (5-25 points)		13.69±4.28 (min.5-max.25)	
Working Conditions (6-30 points)		16.76±4.83 (min.6-max.30)	

Table 2. Factors Affecting Nurses' Attitudes to Patient Safety

	Patient Safety Attitude Scale													
	Work Satisfaction		Teamwork Climate		Safety Climate		Perception of Management		Stress Recognition		Working Conditions		Total	
	Mean±SD	p	Mean±SD	p	Mean±SD	p	Mean±SD	p	Mean±SD	p	Mean±SD	p	Mean±SD	p
Age														
21-25 years	25.18±9.73	0.33	36.13±10.99	0.07	16.51±4.88	**.02***	21.60±5.89	**0.01***	14.07±4.22	**.02***	17.13±4.67	0.06	130.17±32.80	**.03***
≥ 26 years	24.14±10.09		33.89±12.02		15.27±5.34		19.92±6.19		13.04±4.31		16.15±5.06		122.41±36.27	
Caring for COVID-19 patients														
Yes	24.90±9.84	0.44	35.59±11.25	0.06	16.14±5.05	.16	21.12±5.98	0.07	13.78±4.27	.12	16.87±4.82	0.09	128.31±33.65	.02*
No	23.26±10.37		30.87±13.21		14.61±5.42		18.83±6.76		12.35±4.35		15.13±4.79		112.09±40.51	

**p<.05, ANOVA, Student's t test*

Table 3. Correlation between Nurses' Patient Safety Attitudes and Isolation Measures Compliance Levels

			Isolation Precautions Compliance Scale				
			Way of Contagion	Worker & Patient Safety	Environmental Infection Control	Hand Hygiene & Glove Use	Total
Patient Safety Attitude Questionnaire	**Work Satisfaction**	**r**	-0.002	0.028	0.031	0.022	0.001
		p	.97	.59	.55	.68	.98
	Teamwork Climate	**r**	0.098	0.123	0.097	0.109	0.097
		p	.06	**.02***	.06	**.04**	.06
	Safety Climate	**r**	0.087	0.105	0.103	0.092	0.064
		p	.09	**.04***	.51	.08	.11
	Perceptions of Management	**r**	0.083	0.091	0.081	0.086	0.084
		p	.11	.08	.12	.10	.11
	Stress Recognition	**r**	-0.022	0.009	0.028	0.006	0.002
		p	.67	.86	.59	.91	.97
	Working Conditions	**r**	-0.018	-0.012	0.018	-0.017	-0.017
		p	.73	.82	.73	.74	.57
	Total	**r**	0.064	0.084	0.087	0.071	0.063
		p	.22	.11	.09	.17	.22

*r: Pearson correlation analysis, *p<.05*

DISCUSSION

Hospital infection rates are one of the quality indicators of health institutions. Non-compliance of health workers with infection control measures has a negative effect on the quality of patient care and patient safety, causing an increase in morbidity and mortality. In this study, an evaluation was made of nurses' compliance with isolation measures and their attitudes to patient safety.

In a study by Arli and Bakan (2017), it was determined that nurses' compliance with isolation measures was good, and that the nurses' age, education level and length of work experience affected their compliance with isolation (1). It was found in a study by Özden and Özveren (2016) that nurses' compliance with isolation measures was at a medium level (24). As in other studies in the literature (2,7,16), the compliance of the nurses in the present study with isolation measures was high. Also, in the present study as in similar studies in the literature, the lowest

score was on the scale's sub-section of hand hygiene and the use of gloves. In Turkey, there is no standard practice on the quality and effectiveness of training given on isolation measures, but annual compulsory training is planned for health workers. In this regard, it is thought that the training given to nurses has affected their isolation compliance. However, the fact that 74% of the nurses stated that they had not had training and that the lowest score was on one of the standard measures, the sub-section of hand hygiene and glove wearing, suggests that the effectiveness of this training needs to be reviewed. Also, there is a need for interventions to increase awareness of the training which they receive.

It is shown in the literature that the most positive attitude concerning patient safety is to teamwork climate, and the most negative attitude is to stress recognition (20,21,25). Teamwork among health workers is necessary both to ensure patient safety and to increase job satisfaction and reduce stress levels (26,27). The findings of the present study also are similar to the literature. In addition, nurses aged 21-25 years were found to have higher mean scores than those aged 26 or more on safety climate, perceptions of management, stress recognition and attitudes to patient safety. Stress recognition concerns nurses' recognition of the effect of work-related stress factors on their work performance (22). It can therefore be said that nurses between the ages of 21 and 25 have better mechanisms to recognize stress in the workplace, and that they think that their daily work performance is affected in stressful situations. For this reason, their awareness of potential risk factors concerning patient safety may be better.

It is reported in the literature that nurses have a positive attitude to patient safety (5,17,19,21). In studies examining attitudes to patient safety in nurses, it has been found that among nurses in the working population, the mean scores on attitude to patient safety of those who are younger was lower (8,19,26,28). In contrast to these findings, it was seen in the present study that the attitudes of younger nurses to patient safety was at a better level. This difference may be related to the fact that the information obtained in the professional training of the nurses participating in the study was new. No correlation was found in different studies between the age and professional experience of nurses working in surgical units and their attitudes to patient safety (8,21,25).

No correlation was found in the study between the nurses' attitudes to patient safety and their levels of compliance with isolation measures, but significant correlations were found between the nurses' teamwork climate and worker and patient safety and hand hygiene and glove use, and between safety climate and worker and patient safety. Teamwork climate describes the quality of cooperation between health professionals. The importance accorded to patient safety in the workplace shows the safety climate (22). Situations which may affect teamwork and the importance given to patient safety may affect hand hygiene and glove use and worker and patient safety, which are important isolation measures.

Limitations of the Study

Selection bias because of the use of a questionnaire is a limitation of this study. The research was conducted with nurses at a tertiary teaching and research hospital. Therefore, the results of the study are limited to the responses given by the nurses in the sample group. Moreover, the cross-sectional nature of the study prevents the attribution of causative effects. The results obtained do not express definite causative relations between the variables.

CONCLUSION

It was found in this study that the nurses' levels of compliance with isolation measures was high, and that their attitudes to patient safety were positive. It was found that the correlation between the nurses' attitudes to patient safety and their levels of compliance with isolation measures was not significant. It is recommended that the effectiveness of training given in the reduction of health service related infection rates should be evaluated, and that compliance with isolation measures should be reviewed. A computer alert system can lead to improvement in the implementation of isolation precautions in health care institutions.

DECLARATIONS

Ethics Approval

This research was conducted in accordance with ethical principles and the Declaration of Helsinki. Institutional permission was obtained from the institution where the research was performed, and permission was obtained from Başakşehir Çam and Sakura City Hospital Clinical Research Ethics Committee, dated 5 January 2022, approval No. 2021.06.204. Informed written approval was obtained from the participants concerning their willing and voluntary participation.

Consent for Publications

All the authors of the study provide their consent for publication.

Authors' Contributions

All authors had substantial contributions to the research and written of the manuscript S.E., B.E. and S.T. were responsible for the overall design of this study. All listed authors meet the authorship criteria and that all authors are in the agreement with the content of the manuscript.

Conflict of Interest

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

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