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Determination of Hand Hygiene Beliefs and Practice Levels of Intensive Care Nurses in Türkiye

Türkiye'deki Yoğun Bakım Hemşirelerinin El Hijyeni İnançları ve Uygulama Düzeylerinin Belirlenmesi

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ABSTRACT

Objective: Nurses are in frequent hand contact with patients in intensive care units. With effective hand hygiene, health care-associated infections can be prevented and death rates from infections can be reduced. This research was conducted to determine the hand hygiene belief status and hand hygiene practice levels of intensive care nurses.

Methods: The research is of descriptive type. In this study, the snowball sampling method was adopted, and the research sample consisted of 228 intensive care nurses in Türkiye. Data were collected with the "Nurse Descriptive Information Form", "Hand Hygiene Belief Scale (HHBS)" and "Hand Hygiene Practice Inventory (HHPI)".

Results: As a result of the study, it was determined that the hand hygiene beliefs and hand hygiene practices of the intensive care nurses were high, and there was a moderate positive correlation between HHBS and HHPI.

Conclusion: It is recommended to make plans to improve hand hygiene culture in institutions in order to increase nurses' hand hygiene beliefs and to develop appropriate hand hygiene behavior.

Keywords: Hand hygiene, intensive care nursing, infection control

ÖZ

Amaç: Hemşireler, yoğun bakım ünitelerinde hasta ile en sık temas halinde olan sağlık çalışanlarıdır. Hemşireler tarafından uygun el hijyeni sağlanması, sağlık hizmetiyle ilişkili enfeksiyonların neden olduğu olumsuz sonuçları ortadan kaldırabilir ve bu bağlamda etkili el hijyeni uygulamaları sağlık bakımı ile ilişkili enfeksiyonlara bağlı ölüm oranlarını azaltabilir. Aynı zamanda hemşireler ünite içerisinde çalışan diğer sağlık profesyonelleri için de rol model olabilirler. Bu araştırma, yoğun bakım hemşirelerinin el hijyeni inanç durumlarını ve el hijyeni uygulama düzeylerini belirlemek amacıyla yapılmıştır.

Yöntem: Araştırma tanımlayıcı türdedir. Çalışmada kartopu örnekleme yöntemi kullanılmış, örneklem Türkiye'deki 228 yoğun bakım hemşiresinden oluşmuştur. Veriler "Hemşire Tanımlayıcı Bilgi Formu", "El Hijyeni İnanç Ölçeği (EHİÖ)" ve "El Hijyeni Uygulama Envanteri (EHUE)" ile toplanmıştır.

Bulgular: Çalışmanın sonucunda yoğun bakım hemşirelerinin el hijyeni inançlarının ve el hijyeni uygulamalarının yüksek olduğu, EHİÖ ile EHUE arasında orta düzeyde pozitif korelasyon olduğu belirlendi.

Sonuç: Hemşirelerin el hijyeni inançlarının arttırılması ve uygun el hijyeni davranışının geliştirilmesi için kurumlarda el hijyeni kültürünün geliştirilmesine yönelik planlamaların yapılması önerilmektedir.

Anahtar kelimeler: El hijyeni, yoğun bakım hemşireliği, enfeksiyon kontrolü

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INTRODUCTION

Infections that are not in the incubation period when patients apply to the institution and develop during the provision of health care services in health institutions are called health care associated infections (HAI) [1]. HAI causes an increase in the mortality and morbidity of patients and a prolongation of their hospital stay. In order to protect against HAI, both standard precautions and isolation precautions for infection should be followed within the framework of standard precautions. Hand hygiene practices are the first among the standard precautions taken to protect against contagious and infectious diseases [2]. Health care workers can try two ways to ensure hand hygiene [3]. The first of these is to wash hands with soap and water, and the second is to rub hands using alcohol-based hand sanitizers [4]. The basic criterion for the application of both correct methods to ensure effective hand hygiene is to comply with the 5 indication rules determined by the World Health Organization (WHO) [5]. Accordingly, hand hygiene should be provided "1. Before contact with the patient, 2. Before aseptic procedures, 3. After contact with body fluids, 4. After contact with the patient, and 5. After contact with the patient's environment". According to the WHO, a systematic organization should be established in the provision of health services to improve hand hygiene behavior in health workers [6]. This system should be organized with the contributions of institution managers, infection control committees, relevant unit authorities, patients and their relatives. In our country, hand hygiene practices have been standardized in the Health Quality Standards Implementation Guide [7]. These standards aim to establish similar hand hygiene policies in all health institutions. In terms of scope, regular training for employees, planning to encourage hand hygiene, supplying the necessary materials to ensure hand hygiene, and evaluating employees' hand hygiene compliance with informed observations have been accepted as quality criteria. However, nurses' beliefs about hand hygiene directly affect compliance. Intensive care units are the heart of critical patient care. Intensive care patients are vulnerable to HAI due to impaired consciousness, immunosuppression and multiple diseases [8]. HAI cause patients' quality of life to decrease, prolonged hospitalization and increased mortality. The simplest method to prevent this is to provide hand hygiene. Inadequate hand hygiene compliance threatens patient and staff safety. Intensive care nurses are health care workers who come into contact with patients the most. Effective hand hygiene practices of nurses depend on the accessibility of hygiene areas, the absence of missing materials, their belief in the practice and their personal values. Therefore, their belief in hand hygiene practices is an important component in providing effective hand hygiene [9]. In this context, this study was conducted to evaluate the beliefs of nurses working in intensive care units about hand hygiene and their compliance with hand hygiene practices.

MATERIAL AND METHOD

Study Design and Sample

Type, Population and Sample of the Research

The population of this cross-sectional is composed of intensive care nurses in Türkiye. Snowball sampling method, which is one of the non-probabilistic sampling methods, was used as the sampling method. Since the net number of critical care nurses in Türkiye could not be reached, the research was carried out using the snowball sampling method. In this method, after determining the reference persons, it was tried to reach other relevant persons through these persons. The research was completed with 228 critical care nurses who agreed to participate in the research. It was thought that there would be less difficulty in reaching nurses.

Data Collection

Research data were collected through an online survey conducted with the voluntary participation of intensive care nurses working in Türkiye between October and November 2022. "Nurse Descriptive Information Form", "Hand Hygiene Belief Scale (HHBS)" and "Hand Hygiene Practice Inventory (HHPI)" were used as data collection tools. The research was completed with a total of 228 intensive care nurses who volunteered to participate in the research.

Statistical Analysis

The data were evaluated using SPSS 26.0. Skewness and kurtosis values, Kruskal-Wallis test, Mann-Whitney U test, and Pearson correlation test were used in the analysis.

Ethical Considerations

Approval was obtained from the Human Research Ethics Committee of T.C Zonguldak Bület Ecevit University (approval number: 205760, dated: 29.08.2022). Before starting the survey, an information screen emphasizing the purpose of the research and an informed consent form were presented to all participants. After obtaining consent from the intensive care nurses who volunteered to participate in the study, the nurses were directed to the questionnaire items.

Data Collection Tools and Study Instruments

The data were collected using the "Nurse Introductory Information Form", which includes information such as age, gender, marital status, education level, and length of work in the profession, and HHBS and HHPI. HHBS and HHPI were developed by Van de Mortel [10] in 2009 and their Turkish validity and reliability study was performed by Karadağ et al [11]. The HHBS total score ranges from 22 to 110, and a high score is interpreted as having a positive belief about hand hygiene. The total score of the HHPI varies between 14 and 70, with a high score indicating that hand

hygiene practices are always performed. In the Turkish validity and reliability study, the internal consistency reliability coefficient was determined as 0.76 for HHBS and 0.85 for HHPI [10]. The test-retest reliability of the scale and inventory was determined as 0.66 and 0.60. In this study, Cronbach's alpha value was found to be 0.70 for HHBS and 0.73 for HHPI.

RESULTS

The mean age of the nurses participating in the study was 31.39±8.08 years, and most of them were women (82%), married (56.6%) and undergraduate (50%). It was determined that 39% of the intensive care nurses participating in the study had five years or less professional experience and 41.2% of them worked in the mixed intensive care unit. 37.7% of the intensive care nurses had 3 years or less intensive care experience. Most of the participants (60.1%) worked in shifts, giving care to 1-3 patients (52.6%) per shift. In addition, 96.9% of them had received training on hand hygiene and practices in their institutions (Table 1).

The HHBS mean scores of the intensive care nurses participating in the study were 89.79±8.36, and the HHPI score averages were 66.71±4.45 (Table 2).

There was no significant difference between the HHBS mean scores of the intensive care nurses and socio-demographic data, gender, marital status, educational status, working type, unit of work, number of patients given daily care, and hand hygiene training. However, there was a significant difference between the nurses' HHBS and the duration of working in the profession (p=0.004) and working in the intensive care unit (p=0.003). There was no significant difference between the HHPI score averages

Table 1. Demographic Characteristics and Professional Characteristics of the Nurses

Variable	n	(%)
Age (mean ± SD)	31.39±8.08	
Gender		
Female	187	82
Male	41	18
Marital status		
Single	99	43.4
Married	129	56.6
Educational status		
Secondary	46	20.2
Associate degree	40	17.5
Bachelor	114	50
Degree or above	28	12.3
Working time in the profession		
5 years and less	89	39
6-10 years	62	27.2
11 years and more	77	33.8
Intensive care unit		
Surgical intensive care unit	32	14
Internal diseases intensive care unit	51	22.4
Newborn intensive care unit	31	13.6
Pediatric intensive care unit	13	5.7
Emergency intensive care unit	7	3.1
Mixed intensive care unit	94	41.2
Working time in intensive care		
3 years and less	86	37.7
4-6 years	63	27.6
7-9 years	39	17.1
10 years and more	40	17.5
Working style		
Daytime	88	38.6
Night	3	1.3

Table 1. Continued		
Variable	**n**	**(%)**
Night and day	137	60.1
Number of patients given daily care		
1-3 patients	120	52.6
3-5 patients	85	37.3
5 patients or more	23	10.1
Have you received training on hand hygiene indications and practices in your institution?		
Yes	221	96.9
No	7	3.1
Total	228	100

Table 2. Hand Hygiene Belief Scale and Hand Hygiene Practice Inventory Average Scores		
Scale scores	**Mean ± SD ($\bar{X}$ ± SD)**	**Min-max**
Hand Hygiene Belief Scale	89.79±8.36	22-110
Hand Hygiene Practice Inventory	66.71±4.45	14-70
SD: Standard deviation, Min: Minumum, Max: Maximum		

of the intensive care nurses and their socio-demographic and occupational characteristics (p>0.05) (Table 3).

When the relationship between HHBS mean scores and HHPI mean scores was evaluated, a moderately positive significant (r=0.398, p=0.000) relationship was found between the two scales (Table 4).

DISCUSSION

Patients who are provided with health services in intensive care units are followed up more frequently than outpatients or inpatients due to the presence of comorbid diseases in addition to their diagnosis and are exposed to more invasive interventions [12]. In this context, hand contact with intensive care patients increases 5-10 times more than other patients in health care institutions [13]. When the literature is examined, it is seen that there are many studies on the evaluation of hand hygiene knowledge levels and practices of nurses, student nurses and health workers [14-16]. Although there are studies evaluating hand hygiene compliance for health care workers in intensive care units [17], no study has been found that examines hand hygiene beliefs and hand hygiene practices of intensive care nurses together. For this reason, it is thought that this study will contribute to the literature.

Considering the studies evaluating hand hygiene compliance in intensive care units, it is reported that the hand hygiene compliance of health care workers is high [18,19]. As a result of this research, hand hygiene belief and practice levels of nurses working in intensive care units were found to be high. When the studies evaluating hand hygiene compliance according to the intensive care units worked in were examined, it was found that the hand hygiene compliance rates of the health care workers, especially in the pediatric and neonatal intensive care units, were higher than those of the other intensive care unit workers [20,21]. Although there was no statistically significant difference in the current study, the high mean scores of HHBS and HHPI in neonatal intensive care and pediatric intensive care units are in line with the results of previous studies.

It is very important to inform health care professionals about correct hand hygiene practices in increasing compliance with hand hygiene [22]. In a study conducted in seven intensive care units in Europe, it was reported that individual and team compliance increased in the prevention of health care relationships through education and observation [23]. In five intensive care units in China, the initial period of 3 (three) months and a follow-up period were planned, and it was determined that the compliance rate increased within 2 (two) periods with administrative support, material accessibility, education and training, reminders, process monitoring and feedback. Hand hygiene strategies were emphasized [24]. Again, in a systematic review examining hand hygiene compliance in intensive care units, it was reported that education, effectiveness, environmental regulation, and hand hygiene belief had an effect on increasing hand hygiene compliance [22]. In addition, it has been reported that practices such as planning reminder techniques for hand hygiene and continuing trainings increase the awareness of employees about hand hygiene practices [25]. In our country, hand hygiene trainings are compulsory in the centers where health services are provided within the scope of quality standards in health, and it is seen that most of the participants in the research receive training on hand hygiene practices and its importance [7].

It can be thought that creating a positive organizational culture in institutions and providing appropriate working conditions will contribute to increasing compliance and belief in hand hygiene. The presence of hand hygiene reminders in the working environment of the employees (sink, soap dispenser,

Table 3. Examination of the Socio-demographic and Professional Characteristics of the Intensive Care Nurses and the Mean Scores of HHBS and HHPI

Socio-demographic characteristics	HHBS total points $\bar{X}$ ± SD	HHPI total points $\bar{X}$ ± SD
Gender		
Female	90.021±8.68	66.668±4.441
Male	88.7561±6.766	66.902±4.559
U	3321.500	3416.500
p	0.180	0.258
Marital status		
Married	90.359±8.303	66.759±4.275
Single	89.010±8.369	66.646±4.697
U	5628	6339.500
p	0.125	0.923
Educational status		
Health vocational high school	90.687±7.801	67.478±4.282
Associate degree	89.900±9.794	65.750±4.866
Licence	89.429±7.932	66.500±4.468
Master	90.960±8.881	67.600±4.072
Doctorate	93.333±11.547	68.333±1.154
X^2	2.036	7.841
p	0.565	**0.049**
Working style		
Daytime	90.477±9.098	67.090±4.314
Night	83.333±4.932	67.666±2.081
Night and day	89.496±7.891	66.445±4.577
X^2	3.910	1.245
p	0.142	0.537
Working unit		
Surgical intensive care unit	89.875±8.415	66.875±3.589
Internal diseases intensive care unit	91.058±8.276	67.058±4.216
Newborn intensive care unit	92.096±8.316	67.806±2.903
Pediatric intensive care unit	88.923±5.678	68.615±2.567
Emergency intensive care unit	88.142±5.678	65.000±6.879
Mixed intensive care unit	88.563±8.593	65.968±5.116
X^2	7.352	5.964
p	0.196	0.310
Working time in the profession		
5 years and less	87.561±8.807	66.157±5.047
6-10 years	90.645±7.393	66.919±3.526
11 years and more	91.688±8.090	67.181±4.376
X^2	10.906	1.765
p	0.004	0.414
Working time in intensive care		
3 years and less	88.941±7.987	66.709±4.539
4-6 years	87.460±9.205	66.015±4.746
7-9 years	93.743±8.110	68.102±2.479
10 years and more	91.450±6.404	66.450±5.093
X^2	13.892	4.361
p	**0.003**	0.225
Number of patients given daily care		
1-3 patients	89.783±8.134	66.408±4.825
4-5 patients	89.541±8.715	66.823±4.146
5 patients and more	90.782±8.570	67.869±3.334
X^2	0.316	2.725
p	0.854	0.256
Hand hygiene training in the institution		
Yes	89.846±8.374	66.687±4.476
No	88.142±8.649	66.426±3.866
U	660.500	760.500
p	0.510	0.937

X^2: Kruskall-wallis, U: Man-Whitney U Test, HHBS: Hand Hygiene Belief Scale, HHPI: Hand Hygiene Practice Inventory

Table 4. Examination of the Relationship Between HHBS and HHPI		
	HHPI	
	*r	p
HHBS	0.398	0.000
HHBS: Hand Hygiene Belief Scale, HHPI: Hand Hygiene Practice Inventory *Pearson correlation test		

hand antiseptics, etc.), workload, working conditions such as the department / unit they work in, as well as their individual characteristics such as cognitive perceptions, beliefs, health professional competencies have an important place in increasing hand hygiene compliance [26,27]. When the results of the research were examined, it was found that the levels of belief and practice in hand hygiene were found to be significantly higher in nurses with more professional working years and in nurses with professional qualifications who worked in the intensive care unit for more than 7 (seven) years. It is a thought-provoking finding that the average score of nurses who have only 10 years or more intensive care experience is lower than those who work for 7-9 years.

In a study Karahan et al. [28] conducted, it was determined that there is a weak relationship between the hand hygiene beliefs of health care professionals and their hand hygiene practices. As a result of this research, it was determined that there was a moderate positive relationship between two similar scales. Although this finding is an important finding in terms of strengthening hand hygiene practices, which is the most effective method in the prevention of HAI it does not embody the behaviors of nurses. Price et al. [29] argues that the level of evidence for practices / statements other than observing hand hygiene practices is low. Similarly, in a study conducted in a mixed intensive care unit, HAI rates were found to be high, although the hand hygiene compliance of health care workers was high [30].

Studies on nurses' hand hygiene beliefs are very limited in the literature. However, the belief of intensive care nurses in hand hygiene practices and their complete implementation play a key role in the prevention of HAI. In this context, nurses' perceptions of health-related attitudes and behaviors, beliefs and attitudes about hand hygiene practices, problems preventing compliance should be determined, and plans should be made to develop positive attitudes and behaviors. Planning multidisciplinary practices, including patients and employees, together with managers in health care institutions, will contribute to increasing the awareness of nurses [31].

Study Limitations

In this study, the number of intensive care nurses in Türkiye could not be reached and the sample size could not be determined. For this reason, the study was carried out with nurses who accepted to answer the questions by clicking on the survey link sent from social media applications and WhatsApp applications. Since the HHBS and the HHPI are mostly based on the statements of people, the data on hand hygiene practices could not be based on evidence. For this reason, it is thought that observing hand hygiene practices in future studies will lead to a more qualified result. In addition, it is thought that intensive care nurses with a high workload are insufficient in allocating time due to the large number of scale items.

CONCLUSION

As a result, hand hygiene belief and hand hygiene practice levels of intensive care nurses were found to be high. It was determined that there was a significant relationship between the two scales, which had a moderately positive effect on each other. As the seniority of the nurses in the profession increased, there was a significant difference in hand hygiene beliefs and practices. However, it was determined that the belief and compliance with hand hygiene practices in nurses working in intensive care units for more than 10 years were lower than those of nurses working between 7 and 9 years. The decrease in the belief of nurses in hand hygiene practices may have been caused by working under the same workload and with intensive patient circulation for many years. In this context, a similar study by increasing the number of samples can make a meaningful contribution to the literature. Determining new targets and strategies for hand hygiene practices in order to improve the attitudes and behaviors of intensive care nurses may decrease HAI rates by increasing hand hygiene compliance. For this purpose, it is thought that practices and measures such as increasing in-house training, forming hand hygiene compliance teams, determining intensive care representatives, observing hand hygiene practices, including nurses working in the unit as observers, being a role model for managers in hand hygiene, organizing hand hygiene events and campaigns in institutions, establishing a reward system for units with high hand hygiene compliance and a good workload planning will increase compliance with hand hygiene beliefs and practices.

Ethics

Ethics Committee Approval: Ethics comittee approval was comfirmed by T.C Zonguldak Bület Ecevit University Human Research Ethics Board (approval number: 205760, dated: 29.08.2022).

Informed Consent: Before starting the survey, an information screen emphasizing the purpose of the research and an informed consent form were presented to all participants.

Footnotes

Author Contributions

Surgical and Medical Practices: AÇB, DCK; Concept: AÇB, DCK; Design: AÇB, DCK; Data Collection or Processing: AÇB, DCK; Analysis or Interpretation: AÇB; Literature Search: AÇB, DCK; Writing: AÇB, DCK.

Conflict of Interests: The authors declare that there are no conflict of interests.

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