

An Evaluation of Hand Hygiene Practices and Beliefs of Hospital Cleaning Workers

Hastane Temizlik Çalışanlarının El Hijyenine Yönelik İnanç ve Uygulamalarının Değerlendirilmesi

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ABSTRACT

This study aims to examine the knowledge, beliefs, attitudes and behaviors of hospital cleaning workers concerning hand hygiene. This descriptive cross-sectional study was conducted with 130 cleaning workers working at a university hospital. The questionnaire forms are individual introduction questionnaire, Hand Hygiene Belief Scale (HHBS), and Hand Hygiene Practices Inventory (HHPI). The median HHBS score was 80.0, and the median HHPI score was 73.0. When we compared the participants' HHBS mean scores with their sociodemographic-occupational characteristics and their knowledge and attitudes about hand hygiene, a statistically significant relationship was found between gender ($p=0.048$), total working years ($p<0.001$), item preferred for hand hygiene ($p=0.008$), duration of hand hygiene ($p=0.034$). When we compared the participants' HHPI mean scores with their sociodemographic-occupational characteristics and their knowledge and attitudes about hand hygiene, gender ($p=0.010$), education level ($p=0.015$), total working years ($p=0.001$), item preferred for hand hygiene ($p<0.001$), number of hand hygiene items ($p=0.001$), duration of hand hygiene ($p=0.002$), a statistically significant relationship was found. This study indicated that hospital cleaning workers generally have positive beliefs and practices regarding hand hygiene.

Keywords: Cleaning Worker, Hand Hygiene, Hand Hygiene Belief.

ÖZET

Çalışmamızın amacı, hastane temizlik çalışanlarında el hijyeni konusundaki bilgi, inanç, tutum ve davranışlarını incelemektir. Bu tanımlayıcı kesitsel çalışma, bir üniversite hastanesinde çalışan 130 temizlik personeli ile gerçekleştirilmiştir. Anket formları, bireysel tanıtım anketi, El Hijyeni İnanç Ölçeği (EHİÖ) ve El Hijyeni Uygulamaları Envanteri'dir (EHUE). Ortanca EHİÖ puanı 80,0, ortanca EHUE puanı 73,0 idi. Katılımcıların EHİÖ puan ortalamaları ile sosyodemografik-mesleki özellikleri ve el hijyeni konusundaki bilgi ve tutumları karşılaştırıldığında cinsiyet ($p=0,048$), toplam çalışma yılı ($p<0,001$), el hijyeni için tercih edilen madde ($p=0,008$) ve el hijyeni süresi ($p=0,034$) arasındaki ilişki istatistiksel olarak anlamlı bulunmuştur. Katılımcıların EHUE puan ortalamaları ile sosyodemografik-mesleki özellikleri ve el hijyeni konusundaki bilgi ve tutumları, cinsiyet ($p=0,010$), eğitim düzeyi ($p=0,015$), toplam çalışma yılı ($p=0,001$) ile karşılaştırıldığında, tercih edilen madde el hijyeni ($p<0,001$), el hijyeni madde sayısı ($p=0,001$) ve el hijyeni süresi ($p=0,002$) için istatistiksel olarak anlamlı bir ilişki bulunmuştur. Çalışma, hastane temizlik personelinin genel olarak el hijyeni ile ilgili olumlu inanç ve uygulamalara sahip olduğunu göstermiştir.

Anahtar Kelimeler: El Hijyeni, El Hijyeni İnanç, Temizlik Çalışanları.

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I. INTRODUCTION

Over the past ten years, epidemic diseases have increased significantly worldwide. Health workers are the group most affected by such epidemics. The state of hand hygiene among healthcare workers is an important factor in the spread of healthcare-associated infections [1]. Hand hygiene is the simplest and most effective method of preventing the transmission of microorganisms and reducing the incidence of infection [2]. A recent study conducted in the United States revealed that hand hygiene compliance among healthcare workers ranges from 25% to 51% [3]. In the literature, it has been reported that compliance with standard hand hygiene protocols in health services is generally insufficient [4]. According to the World Health Organization Guidelines, studies conducted in hospitals have determined that healthcare professionals wash their hands an average of 5 to 30 times while on duty [2]. Durduran et al. in their study on caregivers and cleaning staff in a university hospital, they found that 61.3% of the participants knew that hand hygiene should be provided before and after the procedure [5]. Koşucu et al. in their observation-based study, it was reported that the hand hygiene compliance of the health workers was 58%, the highest rate was the nurses' compliance, and the lowest rate was the auxiliary service personnel's compliance [6].

Compliance with hand hygiene is a complex issue. Some of these factors are personal factors such as knowledge, attitude, practice, belief, and perception, and their determination is vital in increasing the behavior of complying with hand hygiene [7]. Individuals' beliefs and practices are important in transforming effective hand-washing techniques into real behavior. The qualitative literature review conducted by Smiddy et al. identified several factors associated with noncompliance with hand hygiene

and identified them as motivating factors (social influences, diligence of patient care, self-protection, and use of cues), as well as perceptions of the work environment (resources, knowledge, information, and organizational culture) in a related theoretical model [8].

While hand hygiene knowledge, compliance behaviors, practices, and beliefs have been extensively studied in nurse groups, there are relatively few studies on hand hygiene in hospital cleaning workers [1]. Although cleaning workers are not primarily responsible for providing health services in health institutions, they are affected by all risks in their working environment [9]. While biological risks come to mind first in the risks affecting the health of healthcare workers, there are also physical, ergonomic, chemical and psychosocial risks in the working environment [9]. Team work is very important for healthcare services in hospitals and cleaning workers are a natural part of this team. Cleaning workers have the same risk as all healthcare workers in the transport of microorganisms. It is extremely important that cleaning staff work efficiently and in accordance with the rules in order to prevent infections and provide a healthy working environment [10].

In this study, the aim was to examine the knowledge, beliefs, attitudes, and behaviors of hospital cleaning workers concerning hand hygiene.

II. METHODS

A. Study Design and Participants

This study is a descriptive cross-sectional research conducted with the cleaning workers working in a university hospital in Istanbul between January and February 2023 by face-to-face interview method. The research population consisted of 216 cleaning workers working in the hospital. It was planned to reach the whole population without any

sampling. A total of 130 (60.1%) cleaning workers who accepted to participate in the research were included in the study. Exclusion criteria were not available for the participants.

B. Measurement Tools

Researchers collected the data through a questionnaire based on up-to-date literature. The questionnaire form used in the study consists of three parts. There is an individual introduction questionnaire in the first part of the questionnaire. This section includes questions about the employees' sociodemographic characteristics and their hand hygiene behaviors. The Hand Hygiene Belief Scale (HHBS) in the second part and the Hand Hygiene Practices Inventory (HHPI) in the third part were included in the questionnaire. Participants were informed before completing the questionnaire that the data would not be used outside the scientific platform of this study, and necessary information was provided regarding the questionnaire and its questions. Improved in 2009, the HHBS and HHPI were adapted to Turkish by Karadağ in 2012, and their validity and reliability were studied [11, 12]. The HHBS is a five-point Likert-type scale in which strongly disagree = 1, disagree = 2, not sure = 3, agree = 4, and strongly agree = 5. As a result, the HHBS consisting of 22 items and two subscales was obtained. These subscales are; The Importance of Hand Hygiene, consisting of 14 items (items 1,2,3,4,6,7,9,11,12,13,14,15,21 and 22), and Faith, consisting of 8 items (items 20,19,8,5,18,10,16,17) subdimension. HHPI is a five-point Likert-type scale consisting of fourteen items scored as never=1, sometimes= 2, often= 3, often= 4, and always= 5. The HHBS total score ranges from 22 to 110, and the HHPI total score ranges from 14 to 70. There is no cutoff score on both scales. The score obtained from the scales allows inferences to be drawn about healthcare professionals' beliefs and compliance with

hand hygiene standards. A large-scale total score indicates that the person adheres to strong hand hygiene practices and beliefs.

C. Ethics Committee Approval

This study was confirmed by the Ethics Committee of Cerrahpasa School of Medicine at Istanbul University-Cerrahpasa (Date: 13.01.2023, decision no. 589446). Written informed consent was obtained from each participant. This study was conducted by Declaration of Helsinki

D. Statistical Analysis

The research data was evaluated by SPSS 21 package program. Measurement variables are presented as the mean±standard deviation (SD), and grouped data are presented as number (percentage) tables. The conformity of the data obtained with the measurement to the normal distribution was analyzed through the Kolmogorov-Smirnov test. The Mann-Whitney U test was used to compare measurement variables in paired groups, and the Kruskal-Wallis test was used to compare measurement variables in more than two groups. Bonferroni test, one of the post hoc tests, was used to determine the reason for the difference between the groups.

III. RESULTS

The total number of cleaning workers was 130, the majority of whom were males (59.2%). The mean age of cleaning workers was 41.15±9.16, and 61.5% were primary school graduates. The mean total working years of the participants was 11.90±6.7 years. Of all participants who received training on hand hygiene, 94.6% of it was in the form of in-service training, 45.4% applied hand hygiene 11-15 times a day, 72.3% spent an average of 15-30 seconds washing their hands, and 93.1% stated that she used soap and water to practice hand hygiene (Table 1).

Table 1. Sociodemographic-professional characteristics of cleaning workers and their knowledge and attitudes about hand hygiene

Variables	Statistical data
Gender (n,%)	
Male	77 (59.2)
Female	53 (40.8)
Age (mean±SD)	41.15±9.16
Age group (n,%)	
40 years and under	55 (42.5)
Over 40 years	75 (57.7)
Educational status (n,%)	
Primary education	80 (61.5)
High School – University	50 (38.5)
Unit worked (n,%)	
Surgical branches	44 (33.8)
Internal branches	56 (43.1)
Intensive care	8 (6.2)
Emergency department	10 (7.7)
Basic medical sciences	12 (9.2)
Total working years (mean±SD)	11.90±6.70
Total working years (n, %)	
10 years and below	48 (36.9)
Over 10 years	82 (63.1)
Source of information (n, %)	
In-service training	123 (94.6)
Others	7 (5.4)
Preferred for hand hygiene (n, %)	
Soap+water	121 (93.1)
Others	9 (6.9)
Reason preventing hand hygiene (n, %)	
No	115 (88.5)
Yes	15 (11.5)
Number of hand hygiene (n, %)	
1-5	9 (6.9)
6-10	46 (35.4)
11-15	59 (45.4)
more than 15	15 (11.5)
Duration of hand hygiene (n, %)	
Less than 15 seconds	19 (14.6)
15-30 seconds	94 (72.3)
More than 30 seconds	16 (12.3)

In the study sample, the mean HHBS score was 76.68±18.55, the mean HHPI score was 65.83±12.16, the mean score for the importance of Hand Hygiene subdimension of the HHBS was 51.44±12.45, and the mean score for the Belief subdimension was 27.23±7.75 (Table 2).

Table 2. Hand hygiene belief scale and hand hygiene practices inventory data

Scale	Mean±SD	Median	Min.-Max
Hand Hygiene Belief Scale	76.68±18.55	80.0	22-109
Hand Hygiene Practices Inventory	65.83±12.16	73.0	15-75
Hand Hygiene Belief Scale/ Importance of Hand Hygiene	51.44±12.45	54.0	14-70
Hand Hygiene Belief Scale/ Belief subscale	27.23±7.75	28.0	8-40

When we compared the participants' HHBS mean scores with their sociodemographic-occupational characteristics and their knowledge and attitudes about hand hygiene, a statistically significant relationship was found between gender (p= 0.048), total working years (p<0.001), item preferred for hand hygiene (p=0.008). Duration of hand hygiene was associated with the mean score of HHBS, and statistically significant difference was between the group with less than 15 seconds and those with more than 30 seconds (p=0.048) (Table 3).

When we compared the participants' HHPI mean scores with their sociodemographic-occupational characteristics and their knowledge and attitudes about hand hygiene, gender (p=0.010), education level (p=0.015), total working years (p=0.001), item preferred for hand hygiene (p<0.001), a statistically significant difference was found. The number of hand hygiene was associated with the mean score of the HHPI, with a statistically significant difference between those who washed their hands 1-5 times and those who washed 11-15 times, and those who washed 1-5 times

Table 3. Comparison of the participants' sociodemographic-professional characteristics, knowledge, and attitudes about hand hygiene and HHBS mean scores

Variables	HHBS Total Points (Mean±SD)	p
Gender		
Male	74.18±20.66	0.048^x
Female	80.32±14.4	
Age group		
40 years and under	79.36±18.48	0.143 ^x
Over 40	74.72±18.48	
Educational status		
Primary education	75.13±20.21	0.382 ^x
High school University	79.16±15.41	
Unit worked		
Surgical branches	73.56±19.05	0.156 ^a
Internal branches	77.12±16.43	
Intensive care	78.75±11.24	
Emergency department	72.10±30.06	
Basic medical sciences	88.50±15.24	
Total working years		
10 years and below	70.50±15.57	<0.001^x
Over 10 years	80.30±19.27	
Source of information		
In-service training	76.65±18.28	0.761 ^x
Others	77.28±24.57	
Preferred for hand hygiene		
Soap + water	78.31±16.80	0.008^x
Others	54.77±27.11	
Reason preventing hand hygiene		
No	76.28±18.49	0.280 ^x
Yes	79.73±19.37	
Number of hand hygiene		
1-5	59.44±30.96	0.151 ^a
6-10	75.60±16.61	
11-15	79.05±17.90	
More than 15	80.80±13.10	
Duration of hand hygiene		
Less than 15 seconds	64.36±22.91	0.034^a
15-30 seconds	78.14±17.64	
More than 30 seconds	82.50±12.55	

^x Mann-Whitneys U test, ^a Kruskal-Wallis test, HHBS: Hand hygiene belief scale

and those who washed more than 15 times (p=0.001, p=0.040). Duration of hand hygiene was associated with the mean score of the HHPI, with statistically significant

difference between less than 15 seconds and more than 30 seconds, and those with less than 15 seconds and 15-30 seconds duration (p=0.001, p=0.023) (Table 4).

Table 4. Comparison of participants' sociodemographic -occupational characteristics, knowledge and attitudes about hand hygiene, and HHPI mean scores

Variables	HHPI Total Points (Mean±SD)	p
Gender		
Male	63.51±13.40	0.010^x
Female	69.18±9.21	
Age group		
40 years and under	66.81±12.42	0.348 ^x
Over 40	65.10±11.99	
Educational status		
Primary education	64.41±11.50	0.015^x
High school University	68.10±12.93	
Unit worked		
Surgical branches	66.54±12.04	0.883 ^a
Internal branches	65.35±10.88	
Intensive care	68.25±10.72	
Emergency department	59.90±21.13	
Basic medical sciences	68.75±9.37	
Total working years		
10 years and below	62.83±10.71	0.001^x
Over 10 years	67.58±12.66	
Source of information		
In-service training	66.12±11.84	0.299 ^x
Others	60.71±17.18	
Preferred for hand hygiene		
Soap + water	66.88±11.77	<0.001^x
Others	51.66±7.90	
Reason preventing hand hygiene		
No	66.34±11.63	0.499 ^x
Yes	61.86±15.56	
Number of hand hygiene		
1-5	48.55±20.26	0.001^a
6-10	65.10±10.76	
11-15	69.11±9.44	
More than 15	66.86±10.71	
Duration of hand hygiene		
Less than 15 seconds	55.05±16.17	0.002^a
15-30 seconds	67.80±10.20	
More than 30 seconds	68.31±10.24	

^x Mann-Whitneys U test, ^a Kruskal-Wallis test, HHPI: Hand hygiene practice inventory

IV. DISCUSSION

Hand hygiene is essential in the healthcare sector to reduce healthcare-associated infections. It is essential to determine the hand hygiene beliefs and practices of healthcare workers, improve their pre-labor behaviors, change the hand hygiene practices of qualified healthcare personnel, and change the factors that lead to poor hand hygiene compliance and thus improve compliance [13]. This study shows hospital cleaning workers' knowledge, beliefs, attitudes, and behaviors regarding hand hygiene.

The study's median HHBS score was 80.0, and the median HHPI score was 73.0. Based on the HHBS and HHPI results, hospital cleaning workers believed that hand hygiene was essential and practiced it primarily. In a study conducted in Turkey, the mean HHBS score was 84.03 ± 8.28 , and the mean HHPI score was 63.97 ± 6.37 . According to this study, hand hygiene beliefs were found to be higher and hand hygiene practices were found to be lower [14]. It has been shown in the literature that healthcare workers have positive hand hygiene beliefs [15, 16]. Muto et al. found the rate of hand washing in cleaning workers to be 36% in their observational study, and they found it lower than physicians and nurses [17].

The findings of this study indicated that female cleaning workers believed in and practiced hand hygiene more frequently. Princci et al. reported that 64.9% of women and 61.0% of men, among cleaning workers, wash their hands after each work. Balcı et al., in their study in Kayseri, found that 98.4% of women and 96.8% of men wash their hands at the end of each job [18]. Najwa et al. reported that women had a higher level of hand hygiene compliance than men [19]. Skodova et al. reported that men spread nosocomial infections more often than women and were less diligent in maintaining hand hygiene [20]. It has

been stated in the literature that women exhibit higher hand hygiene skills and are more likely to comply with hand hygiene instructions. Based on the literature, hand hygiene beliefs are higher in women because they have more mature beliefs than men [21, 22]. In this study, it is thought that the HHBS and HHPI scores are higher in female cleaning workers than in men, which may be because women's hygiene behaviors become a habit depending on their gender roles and that women are more sensitive to hygiene than men.

The education level of healthcare workers can be a factor in maintaining awareness, belief, and hand hygiene behavior. While no significant relationship was found between education level and HHBS in this study, a significant relationship was found with HHPI. It is stated in the literature that education and training contribute positively to hand hygiene behavior [23]. Deveci et al., in their study of cleaning staff, reported that secondary school graduates or those with a higher level of education have a high rate of hand washing after eating [24]. In addition to increased education, in-service or individual training may positively reflect hand hygiene beliefs and practice.

In this study, it was found a significant correlation difference between the mean scores of HHBS and HHPI and the total years of employment. As the number of working years increased, hand hygiene beliefs and practices increased positively. Consistent with this study, the literature has reported that hand hygiene compliance increased dramatically in healthcare workers with more than ten years of work [25]. Pirincci et al., on the other hand, found that cleaning workers who worked for less than 5 years had higher rates of handwashing [18]. Awareness of hand hygiene may increase with increasing working time.

This study found that most participants used water and

soap for hand hygiene. The results of this study demonstrated a significant relationship between the HHBS and the preferred item for hand hygiene, as well as between the HHPI and the preferred item for hand hygiene, the number of hand hygiene items, and the duration of hand hygiene. The literature indicates that the majority of healthcare workers prefer to wash their hands with soap and water [26, 27]. Aydın et al. determined that 60.2% of the auxiliary service personnel working in the hospital provided hand hygiene with liquid soap, while 39.8% used liquid soap and disinfectant for hand hygiene [28]. In many studies, the results were consistent with the recommendations made by the US Centers for Disease Control and Prevention for hygienic hand washing; the recommended method of handwashing by healthcare workers is to use soap or antimicrobial soap for a period of 15-30 seconds [29].

There are some limitations in this study. Since the research was only applied to cleaning workers in a hospital, it can only be generalized to some healthcare workers. Since the study questionnaire was based on self-report, hand hygiene compliance and practices could not be directly observed. Since the study is cross-sectional, the cause-effect relationship cannot be determined. Despite these limitations, our study is important because there needs to be a study in the literature investigating hand hygiene in hospital cleaning workers.

IV. CONCLUSION

This study showed that hospital cleaning workers generally have positive beliefs and practices regarding hand hygiene. In line with the research results, awareness-raising training should be planned to turn handwashing behavior into a habit at specific periods to increase cleaning workers' beliefs and practices toward hand hygiene. Different methods should be developed to observe the handwashing

behaviors of cleaning workers, the beliefs and attitudes that are seen as problems should be determined, special training should be organized to transform them into positive beliefs, and institutional policies should be developed to reduce them. It is thought that in-service training programs should be planned at regular intervals, the lack of knowledge can be eliminated, and the wrong beliefs and attitudes of the cleaning workers can be corrected, and as a result, their compliance with hygienic handwashing can be increased.

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