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Hand Hygiene Attitude of the Health-care Professionals during the COVID-19 Pandemic Period

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ABSTRACT

Objectives: This study aimed to evaluate the hand hygiene compliance of health-care professionals during the pandemic.

Methods: In this descriptive study, a questionnaire which was accessible on “Google Forms” was applied to the doctors and nurses working across Turkey between June and July 2020. The questionnaire consisted of four parts, including sociodemographic data, working status during the pandemic period, hand hygiene compilation, and the hand hygiene belief scale (HHBS).

Results: Nine hundred and forty-four individuals were included in this study. It was found that 312 (33.1%) participants were working with gloves before the pandemic, whereas this number increased to 614 (65.0%) after the pandemic ($p<0.001$). The number of people using double gloves during the pandemic was 307 (32.5%). There was no difference between gender, profession, duration of the profession, and encounter with a COVID-19 individual in terms of HHBS score ($p=0.119$, $p=0.055$, $p=0.203$, and $p=0.450$, respectively). While the HHBS score of those who were concerned about COVID was 80.9 ± 16.5 , those who did not concerned were 80.3 ± 13.3 ($p=0.035$). Moreover, the HHBS score was 71.6 ± 23.1 for those who washed their hands 1–4 times, 80.7 ± 13.3 for those who washed their hands 5–9 times, and 80.9 ± 13.8 for those who washed their hands ten and more times ($p=0.021$). The number of participants who agreed that hand hygiene education was a part of the curriculum was 501 (53.1%).

Conclusion: Although health-care professionals are more careful about hand hygiene during the pandemic period, personal habits may be effective in this behavior.

Keywords: COVID-19, hand hygiene, health belief model, medical staff



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INTRODUCTION

COVID-19 disease is a respiratory disease caused by a new strain of virus called SARS-CoV-2.^[1] The worldwide mortality rate was 3.4% on March 03, 2020, and as of July 15, 2020, 13.465.183 cases had been confirmed, 7.855.837 patients recovered, and 581.405 people died due to the virus worldwide. COVID-19 disease has been known to spread in direct and indirect ways.^[2] It can be transmitted from person to person directly by inhaling suspended respiratory droplets at a distance of fewer than 2 m or indirectly by touching surfaces that someone with the virus has coughed or sneezed on and touching with the contaminated hand to the mouth. It is obvious that the hands are one of the most important factors affecting contamination in this regard.

Hand hygiene is cleaning one's hands that substantially reduces potential pathogens (harmful microorganisms) on the hands.^[3] Hand hygiene procedures include the use of alcohol-based hand rubs (containing 60–95% alcohol) and hand washing with soap and water. It is a fact that the hands that touch many common areas in social life play an essential role in the transmission of COVID-19 between individuals.^[4] In a study investigating the role of hand hygiene in contamination, it was observed that washing hands only with water reduced the presence of bacteria by 77.0%, and hand washing with soap and water reduced the presence of bacteria to 92%.

Since the health-care professionals who work in the front-line during the COVID-19 pandemic contact infected individuals most frequently, having an accurate knowledge of hygiene is very important for them.^[5-7] For this reason, hand hygiene compliance of healthcare workers, especially for primary health-care personnel, is an important issue for their health and public health. The belief in the importance and necessity of hand hygiene is essential and increases hand wash.

This study aimed to evaluate the hand hygiene compliance of healthcare workers during the pandemic.

METHOD

This study was designed as a descriptive study. An internet questionnaire was applied to the doctors and nurses working across Turkey between June and July 2020. The snowball sampling method was used, and all participants who filled out the questionnaire for the study and were approved to participate in the study between the specified dates were included in the study.

The participants were asked to fill in the questionnaire through online access voluntarily. The questionnaire consisted of four parts, including sociodemographic data, working status during the pandemic, hand hygiene compilation, and the hand hygiene belief scale (HHBS). The participants were informed about the study, and their consent was obtained.

HHBS was developed by Mortel et al. in 2012, and Turkish reliability and validity study was conducted by Karadag et al.^[6,7] The HHBS consists of 22 items which are answered on a Likert scale where 1=strongly disagree, 2=disagree, 3=not sure, 4=agree, 5=strongly agree. A higher score shows a higher belief in hand hygiene.

Statistical analyses were conducted by SPSS 20.0 program. Descriptive statistics were presented by frequency and percentage for categorical variables and mean and standard

deviation for numerical variables. The Chi-square test was used for percentages, and the student t-test and one-way ANOVA tests were used for arithmetic means. A value of $p < 0.05$ was accepted as statistically significant.

RESULTS

Nine hundred and forty-four individuals were included in our study. The mean age was 31.4 ± 8.2 years. The sociodemographic and working features of the participants are summarized in Table 1.

When the participants who received hand washing training were evaluated, 232 (24.7%) of those who received training on hand washing in the past 1 year, 199 (21.1%) in the past 1–3 years, and 357 (37.8%) earlier than the 3 years. In addition, it was found that 664 (83.5%) participants received at least one training when they were students.

There were 862 (91.3%) people who thought that they washed their hands properly to avoid COVID-19. Four hundred and seventy-one (73.6%) of females and 182 (59.9%) of men washed their hands ten or more times a day ($p < 0.001$). Four hundred and fifty-one (64.1%) doctors and 202 (84.1%) washed their hands ten or more times a day ($p < 0.001$). It was found that 933 (98.8%) participants were washing their hands with soap for hand hygiene, while 11 (1.2%) participants were using alcohol-based antiseptics. The number of people who were worried about COVID-19 to the degree that it affected their daily life was 286 (30.3%).

Table 1. The socio-demographic and working features of the participants

	n (%)
Gender	
Female	640 (67.8)
Male	304 (32.2)
Profession	
Doctor	704 (74.6)
Nurse	240 (25.4)
Duration of profession	
0–3 years	471 (49.9)
3–5 years	104 (21.0)
>5 years	369 (39.1)
Daily hand wash	
<10 times a day	291 (30.8)
≥10 times a day	653 (69.2)
Receiving hand washing training	
Yes	794 (84.1)
No	150 (15.9)

The number of participants who thought that hand hygiene is as important as using personal protective equipment was 923 (97.8%). When the frequency of use of gloves before and after the pandemic was evaluated, 312 (33.1%) participants were working with gloves before the pandemic, whereas this number increased to 614 (65.0%) after the pandemic ($p < 0.001$). The number of people using double gloves during the pandemic was 307 (32.5%). The number of healthcare workers who changed their gloves after each patient was 865 (91.6%). The before and after the pandemic periods in terms of environmental and personal precautions are summarized in Table 2.

The mean score on the HHBS was found to be 80.4 ± 14.3 . The number of participants who agreed that hand hygiene education was a part of the curriculum was 501 (53.1%). There was no significant relationship between age and the HHBS scores ($p = 0.331$). HHBS scores according to the sociodemographic and working features are summarized in Table 3.

DISCUSSION

Health-care professionals' washing or disinfecting hands prevents bacterial contamination and the development of infections.^[8] A study conducted in our country showed that the hand hygiene compliance of health-care personnel was insufficient.^[9] In our study, 91.3% of participants stated that they think that they wash their hands correctly to achieve

protection against COVID-19. The majority of our participants were washing hands ten or more times daily. The importance given to the preventive measures and the emphasis on hand washing during the pandemic period may have led to an increase in hand washing. Likewise, in our study, 60.2% of the participants stated that they washed their hands significantly more frequently during the pandemic period. As a result, the training given during the pandemic period increased the attention of health-care professionals, especially in hand washing and hand hygiene during patient care.^[10] It showed that these issues and activities that will increase the knowledge and awareness of individuals should be given importance within the scope of in-service training, apart from the pandemic period.

Similarly, it was found that the use of gloves has increased 2 times compared to that frequency before the pandemic. In our study, the number of people using double gloves was 32.5%, and the number of healthcare workers changing gloves after each patient was 91.6%. Wearing gloves during intervention significantly reduces bacterial contamination in healthcare workers. However, wearing gloves routinely to prevent contact contamination are not recommended. It is observed that wearing gloves causes a feeling of confidence and health-care professionals to forget to wash their hands after removing the gloves.^[11] For these reasons, some rules should not be ignored when using gloves; gloves should be removed after contact with the patient,

Table 2. The before and after the pandemic periods in terms of environmental and personal precautions

	Increased a lot	It increased	Has not changed
The frequency of floor cleaning in the area I work has increased due to the pandemic.	276 (29.2)	73 (7.7)	595 (63.1)
Has your frequency of cleaning the surfaces you frequently used increased due to the pandemic?	338 (35.8)	68 (7.2)	538 (57.0)
Have you increased the frequency of cleaning the materials you use frequently (stethoscope, otoscope, blood pressure monitor, etc.) in the area you work due to the pandemic?	357 (37.8)	76 (8.1)	511 (54.1)
Have you increased the frequency of having hand cleaners (soap, disinfectant, and cologne) in the area where you work due to the pandemic?	456 (48.3)	63 (6.7)	425 (45.0)
Have you increased the frequency of airing the environments you are in during the pandemic process?	410 (43.4)	70 (7.4)	464 (49.2)
Has the frequency of changing work clothes (apron, jersey) increased during the pandemic process?	470 (49.8)	46 (4.9)	428 (45.3)
Has your hand washing frequency increased during the pandemic process?	568 (60.1)	13 (1.4)	363 (38.5)
Has the frequency of changing gloves increased during the pandemic process?	448 (47.5)	85 (9.0)	411 (43.5)

Data are presented as n (%).

Table 3. Hand hygiene belief scale score according to the socio-demographic and working features

	Score of HHBS	p
Gender		
Female	80.4±13.2	0.119*
Male	80.6±16.2	
Profession		
Doctor	80.3±13.2	0.055*
Nurse	80.7±17.0	
Duration of profession		
0–3 years	81.4±13.4	0.203 [†]
3–5 years	78.4±14.9	
>5 years	79.8±15.1	
Encounter with a COVID-19 individual		
Yes	80.3±14.8	0.450 [†]
No	80.1±16.7	
Receiving hand washing training		
Yes	80.9±13.5	0.160*
No	78.2±17.9	
Working with gloves before the pandemic		
Yes	81.5±15.9	0.003*
No	79.9±13.4	
Working with double gloves		
Yes	80.1±16.6	0.499*
No	80.7±13.1	
Number of hand washing		
1–4 times	71.6±23.1	0.021 [†]
5–9 times	80.7±13.3	
10 and more	80.9±13.8	
Who thinks they do hand washing correctly		
Yes	80.7±14.4	0.002*
No	77.9±13.1	
Those concerned about COVID		
Yes	80.9±16.5	0.035*
No	80.3±13.3	
Believing hand washing is protective		
Yes	80.8±13.6	0.080*
No	75.7±21.3	

HHBS: Hand hygiene belief scale.
Data are presented as mean±standard deviation.
*Student t test, [†]One way ANOVA test.

the same glove should not be worn for more than one patient, gloves should not be washed between patients, gloves should be changed when examining a clean area after touching a contaminated body area, and hands should be washed after the gloves are removed.^[12]

In the literature, studies investigating hand hygiene have mostly been conducted on nurses; therefore, it has been reported that nurses wash their hands more frequently.^[13,14] In a systemic review, the frequency of hand washing was found to be lower in physicians compared to nurses.^[15] In our study, it was found that nurses washed their hands more frequently. This difference may be due to population differences, and it can also be attributed to the fact that nurses use gloves more commonly because they are engaged in interventional procedures such as blood draw and injections more frequently. As a matter of fact, in our study, the use of gloves was significantly higher in nurses compared to doctors. It was thought that hand washing should not be forgotten, even when wearing gloves, especially during the pandemic period.

In the literature, most of the studies conducted using HHBS were conducted on nurses. In a study conducted on nursery students, the mean HHBS score was 85.0.^[16] In another study, the mean HHBS score of the nurses was found to be 85.3, and the mean HHBS score of the nursery students was 86.3.^[7] In our study, the mean HHBS score was found to be 80.4. The difference was based on the fact that our study was conducted on nurses and doctors.

In our study, there was not a relationship between the mean HHBS scores and age, gender, profession, and duration of the profession. However, HHBS scores were higher in those who washed their hands more frequently, believed that they applied the correct washing technique, were concerned about COVID-19 contamination, and wore gloves. Again, HHBS scores of those who use gloves, either invasive or non-invasive procedures, and those who washed their hands more frequently before the pandemic were significantly higher. These results indicate that people who pay attention to hand hygiene during the normal period also behave more cautiously during the pandemic. Although, the results of qualitative research show that the belief in the importance of self-protection is the main reason for the application of hand hygiene.^[17]

In a study conducted in China, it was found that 66.1% of healthcare workers washed their hands 10 times or above during the day, but the rate of using moisturizers was 22.0%.^[18] Washing hands more frequently and using moisturizers less frequently may lead to dermatitis.^[19] In our study, those who washed their hands 10 times or more during the day constituted the majority. It is known that washing hands more than 10 times a day increases the risk of dermatitis.^[20] Center for Disease Control and Prevention recommends hand washing with alcohol-based anti-septic because hand washing reduces all types of germs and chemicals on hands.^[21]

Acceptability and tolerability of hand sanitizer products are also very important for consistent hand hygiene. According to a study, most tolerated were alcohol-based anti-septic.^[22] In our study, 1.2% of our participants used alcohol-based anti-septic. Both washing hands with soap and using alcohol-based anti-septic were damaging the skin.^[23,24] In another study conducted for healthcare workers during the pandemic period, it was found that general hand-skin problems increased during this period. This has been attributed to the excessive use of gloves and alcohol-based antiseptics.^[25] It will be appropriate to emphasize the importance of moisturizing in protecting skin health.^[26]

The limitation of the study is that it is done over an internet questionnaire.

CONCLUSION

The importance of hand hygiene in infection control is an indisputable fact. In our study, it was determined that healthcare workers are more careful about hand hygiene during the pandemic period. However, the fact that those who paid attention to hand hygiene before the pandemic period are more careful during the pandemic period indicates that personal habits and personality traits are also effective in this behavior.

Disclosures

Peer-review: Externally peer-reviewed.

Conflict of Interest: None declared.

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Ethics Committee Approval: Ethical approval for the study was obtained from the Inonu University Non-Invasive Clinical Research Ethics Committee (Approval date: June 02, 2020, and Approval number: 692) and the Ministry of Health.

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REFERENCES

1. WHO. WHO Characterizes COVID-19 As A Pandemic. Available at <https://www.who.int/emergencies/diseases/novelcoronavirus-2019/events-as-they-happen>. Accessed Nov 4, 2020.
2. Türken M, Köse Ş. Covid-19 bulaş yolları ve önleme. Tepecik Eğitim ve Araştırma Hastanesi Dergisi 2020;30(51):36–42.
3. Center of Disease Control and Prevention. Hand Hygiene. Available at: <https://www.cdc.gov/oralhealth/infectioncontrol/faqs/handhygiene.html#:~:text=Hand%20hygiene%20is%20a%20way,patients%20and%20health%20care%20personnel>. Accessed Dec 2, 2020.
4. Burton M, Cobb E, Donachie P, Judah G, Curtis V, Schmidt W. The effect of handwashing with water or soap on bacterial contamination of hands. *Int J Environ Res Public Health* 2011;8(1):97–104.
5. Ceylan B, Gunes U, Baran L, Ozturk H, Sahbudak G. Examining the hand hygiene beliefs and practices of nursing students and the effectiveness of their handwashing behaviour. *J Clin Nurs* 2020;29(21–22):4057–65.
6. Van De Mortel TF, Kermod S, Prozano T, Sansoni J. A comparison of the hand hygiene knowledge, beliefs and practices of Italian nursing and medical students. *J Adv Nurs* 2012;68(3):569–79.
7. Karadag M, Iseri OP, Yildirim N. Knowledge, Beliefs and practices Of Nurses and nursing students for hand hygiene. *Jundishapur J Health Sci* 2016;8(4):1–7.
8. Teker B, Ogutlu A, Gozdas HT, Ruayercan S, Hacialioglu G, Karabay O. Factors affecting hand hygiene adherence at a private hospital in Turkey. *Eurasian J Med* 2015;47:208–12.
9. Ataei B, Zahraei SM, Pezeshki Z, Babak A, Nokhodian Z, Mobarizadeh S, et al. Baseline evaluation of hand hygiene compliance in three major hospitals, Isfahan, Iran. *J Hosp Infect* 2013;85(1):69–72.
10. Alzyood M, Jackson D, Aveyard H, Brooke J. COVID 19 reinforces the importance of hand washing. *J Clin Nurs* 2020;29:2760–1.
11. Wilson J, Bak A, Whitfield A, Dunnett A, Loveday H. Public perceptions of the use of gloves by healthcare workers and comparison with perceptions of student nurses. *J Infect Prev* 2017;18(3):123–32.
12. Boyce JM, Pittet D; Healthcare Infection Control Practices Advisory Committee; HICPAC/SHEA/APIC/IDSA Hand Hygiene Task Force. Guideline for hand hygiene in health-care settings. Recommendations of the Healthcare Infection Control Practices Advisory Committee and the HICPAC/SHEA/APIC/IDSA Hand Hygiene Task Force. Society for Healthcare Epidemiology of America/Association for Professionals in Infection Control/Infectious Diseases Society of America. *MMWR Recomm Rep* 2002;51(RR-16):1–45.
13. Azim S, Juergens C, McLaws ML. An average hand hygiene day for nurses and physicians: the burden is not equal. *Am J Infect Cont* 2016;44(7):777–81.
14. Pittet D, Hugonnet S, Harbath S. Effectiveness of a hospital-wide programme to improve compliance with hand hygiene. *Lancet* 2000;356:1307–31.
15. Erasmus V, Daha TJ, Brug H. Systematic review of studies on compliance with hand hygiene guidelines in hospital care. *Infect Control Hosp Epidemiol* 2010;31(3):283–94.
16. Okgün Alcan A, Dolgun E. Student nurses' Hand hygiene beliefs and practices. *TJFMPC* 2019;13(3):279–86.

17. Whitby M, McLaws ML, Ross MW. Why healthcare workers don't wash their hands: a behavioral explanation. *Infect Control Hosp Epidemiol* 2006;27(5):484–92.
18. Lan J, Song Z, Miao X, Li H, Li Y, Dong L, et al. Skin damage among healthcare workers managing coronavirus Disease-2019. *J Am Acad Dermatol* 2020;82:1215–6.
19. Rundle CW, Presley CL, Militello M, Barber C, Powell DL, Jacob SE, et al. Hand hygiene during COVID-19: Recommendations from the American contact dermatitis society. *J Am Acad Dermatol* 2020;83(6):1730–7.
20. Cavanagh G, Wambier CG. Rational hand hygiene during the coronavirus 2019 (COVID-19) pandemic. *J Am Acad Dermatol* 2020;82(6):211.
21. Hadaway A. Handwashing: clean hands save lives. *J Consum Health Internet* 2020;24(1):43–9.
22. Tarka P, Gutkowska K, Nitsch-Osuch A. Assessment of tolerability and acceptability of an alcohol-based hand rub according to a WHO protocol and using apparatus tests. *Antimicrob Resist Infect Control* 2019;8(1):191.
23. Abtahi Naeini B. Frequent handwashing amidst the COVID-19 outbreak: prevention of hand irritant contact dermatitis and other considerations. *Health Sci Rep* 2020;3(2):1–2.
24. Jing JL, Pei Yi T, Bose RJ, McCarthy JR, Tharmalingam N, Madheswaran T. Hand sanitizers: a review on formulation aspects, adverse effects, and regulations. *Int J Environ Res Public Health* 2020;17(9):3326.
25. Altunisik Toplu S, Altunisik N, Turkmen D, Ersoy Y. Relationship between hand hygiene and cutaneous findings during COVID-19 pandemic. *J Cosmet Dermatol* 2020;19(10):2468–73.
- Xu S, Kwa M, Lohman ME, Evers-Meltzer R, Silverberg JI. Consumer preferences, product characteristics, and potentially allergenic ingredients in best-selling moisturizers. *JAMA Dermatology* 2017;153(11):1099–105.