

Determination of attitudes of healthcare personnel working in surgical services towards the use of gloves

Murat Urkan,¹ Yasin Uzuntarla,¹ Fatma Uzuntarla²

(1) University of Health Sciences, Gulhane Training and Research Hospital, Organ Transplantation and Coordination Center, Ankara, Turkey

(2) Çankaya University, Occupational Health and Safety, Ankara, Turkey

Date submitted:

Jun 09, 2018

Date accepted:

Jul 23, 2018

Online publication date:

September 15, 2018

Corresponding Author:

Yasin Uzuntarla
University of Health
Sciences, Gulhane
Training and Research
Hospital, Ankara, Turkey,
yasinuzuntarla@gmail.com

Keywords: Gloves, patient safety, employee safety, surgery, healthcare personnel

ABSTRACT

Aims: This study aimed to determine the attitudes of healthcare personnel working in surgical services towards the use of gloves and whether these attitudes differ according to sociodemographic characteristics.

Methods: This was a descriptive study conducted on healthcare personnel working in the surgical services of a training and research hospital. The "Attitude Scale for the Use of Gloves-ASUG" was used to collect data.

Results: A total of 347 healthcare personnel participated in the study. Of the participants, 56.2% were female, 61.7% were married, 43.8% were under the age of 30, 66.9% were university graduates, 42.9% were nurses, and 44.7% had professional experience of over 11 years. Mean ASUG score was 44.55 ± 5.59 . We detected significant differences in glove use according to participants' gender, education level and occupation ($p < 0.05$).

Conclusions: Attitudes of healthcare personnel towards the use of gloves were found positive in this study. Training on the use of gloves should be prioritized for healthcare personnel, especially for the health technicians and fellows.

Introduction

Healthcare personnel face many biological, physical, chemical risks and ergonomic hazards in their professional life. As a result of the nature of the environment in which they work and the natural consequence of healthcare services, these personnel are most often exposed to infections (1-2). Infections should be minimized to ensure patient and employee safety. In this context, hand hygiene and the use of gloves are of great importance as standard infection control methods (3-4). This is because microorganisms are mostly transmitted through the hands (5).

Hand hygiene is the use of hand disinfectants when there is no visible contamination of hands or washing hands with soap or antiseptic soap (6). In a study, it was found that 36% of healthcare personnel used antiseptic soap and water, 32% used soap and water, and 27% used alcohol-based hand disinfectants (7). Although hand hygiene should ideally take between 30 seconds and 3 minutes, it was found that 59% of the nurses washed their hands for 15 seconds and only 40% washed their hands for 30 seconds or more (8) in a study. In a

study conducted with surgical service personnel, the frequency of hand washing was found to be 48% in nurses and 28% in physicians (9). It is seen that the behavior and method of hand washing among healthcare personnel are not at desired levels and universal measures have been taken by Centers for Disease Control (CDC) in terms of infection control. The use of gloves is among these measures (10).

The glove is a protective barrier worn by healthcare personnel in order to protect the hands against contact with infected material and to prevent the transmission of infectious agents from patient to healthcare personnel or from patient to patient (11-12). Gloves are usually made from the essence of latex plant because of its protective, flexible and elastic nature (13). Contamination may occur due to lacerations prior to or during the use of gloves, or while taking the gloves off. In such situations and when switching from patient to patient, gloves should be changed, and the same gloves should not be used for a long time. Gloves should not replace the hand wash and should be used in conjunction with hand washing. Studies have shown that gloves improve hand hygiene (12,14).

The aim of this study was to determine the attitudes of health-care personnel working in surgical services towards glove use and whether these attitudes differ according to sociodemographic characteristics.

Methods

This descriptive study was carried out on healthcare personnel working in the surgical services of a training and research hospital in Ankara. Sample size was not calculated within the scope of the study and it was tried to reach all personnel in the study. Due to reasons such as work leave, rest, assignments and not willing to participate in the questionnaire, the study was completed with 347 healthcare personnel. The questionnaire was carried out between January and April 2018.

Questionnaire

Survey method was used as data collection tool in the study. The questionnaire consisted of two parts and 17 questions.

Sociodemographic characteristics

In the first part of the questionnaire, 6 questions were asked by the researchers based on literature data, including age, gender, educational level, marital status, profession and working years of participants.

Attitude Scale for the Use of Gloves (ASUG)

The scale developed by Alacam (2009) to determine the attitudes of healthcare personnel towards glove use consists of 11 questions and 3 dimensions and is shown in Table 1. The dimension of awareness consists of the first 4 questions of the scale and measures the awareness of healthcare personnel regarding the method of using gloves. The usefulness dimension includes questions 5-8 showing that glove use is effective-useful. The necessity dimension consists of the last 3 questions and covers the places where glove use is considered necessary. In the original study, the reliability coefficient was 0.66 in the awareness dimension, 0.60 in the usefulness dimension, 0.64 in the necessity dimension, and 0.83 in the overall scale.

Table 1. Attitude Scale for the Use of Gloves (ASUG) Questions

1. I wash my hands after I take off my gloves.
2. There is no need to change the gloves when switching from patient to patient.
3. Gloves should be used only on patients with risk of infection.
4. I think there is no difference between the use of gloves and hand washing to prevent cross-contamination.
5. I believe that I know the rules for using gloves.
6. I do not use gloves because I wash my hands often.
7. I do not have enough knowledge about the standards for the use of gloves.
8. I think that gloves are not protective.
9. I think that healthcare personnel should be informed about the importance of using gloves to prevent infection.
10. Gloves are used to protect both healthcare personnel and the patient.
11. Every patient should be treated as a patient with a blood-borne disease, treated under standard precautions and gloves should be used.

The scale consists of 5 point Likert type questions. "Completely disagree" is given 1 points, whereas "Completely agree" is given 5 points. Questions 2, 3, 4, 6, and 7 are negative statements, therefore necessary corrections were made in the analyses. The lowest score that can be obtained is 11 and the highest score is 55. High scores on the scale indicate that healthcare personnel use gloves in accordance with standards, while low scores indicate that gloves are not used in accordance with standards (12).

Statistical analysis

SPSS (Version 22, Chicago IL, USA) statistical software program was used to evaluate the research data. In the analyses of the data, arithmetic mean, standard deviation, and frequency analysis were used for descriptive statistics, whereas Independent t-test, One-way analysis of variance, and Post hoc Tukey test were used for intergroup comparisons since data fit normal distribution. The level of significance was accepted as $p < 0.05$

Results

347 health personnel participated in our research. 56.2% (n = 195) were female and 43.8% (n = 152) were male according to the gender distribution of the participants. In terms of marital status, 61.7% (n = 214) were married and 33.3% (n = 133) were single. When the age groups of participants are examined; 43.8% (n = 152) were under 30 years of age, 32.3% (n = 112) were between 30-41 years of age, 23.9% (n = 83) were found to be 42 and over in the age group. When the educational status is examined; 66.9% (n = 232) were university graduates, 14.1% (n = 49) graduate of master, 10.1% (n = 35) were graduated from doctorate or medical specialization, 6.3% (n = 22) high school graduates, 2.6% (n = 9) were found to have graduated from primary education (primary or secondary school). When the participants were examined in terms of their profession, it was seen that the highest group was nurses with 42.9% (n = 149). 3.9% (n = 83) were health technicians, 15.6% (n = 54) physicians, 17.6% (n = 61) were found to be assistant personnel who assist the health staff in the care and treatment of the patient. When the participants in the survey are evaluated from the point of view of professional experience; 44.7% (n = 155) 11 years and over, 39.2% (n = 136) of 5 years and less, 16.1% (n = 56) were found to be that the professional experience of 6-10 years.

When the questions that participants responded positively at the highest level were examined, it has been found that 94% (n = 326) of participants gave the answer completely agree or agree to the question "Gloves are used to protect both health-care personnel and the patient". 89.1% (n = 309) of participants gave the answer completely agree or agree to the question "I wash my hands after I take off my gloves". When the questions that participants responded negatively at the highest level were examined, it has been found that 89.9% (n = 312) of participants gave the answer completely disagree or disagree to the question "There is no need to change the gloves when switching from patient to patient". 85.3% (n = 296) of participants gave the answer completely disagree or disagree to the question "I do not use gloves because I wash my hands often".

When the reliability analysis results of ASUG were examined, it was found that reliability coefficient was 0.68 for the awareness dimension, 0.73 for the usefulness dimension, 0.79 for the necessity dimension and 0.75 for the overall scale. It was concluded that the scale was reliable.

The mean scores of responses the questions regarding glove use were found to be (17.04 ± 2.81) for the awareness dimension, (14.51 ± 2.17) for the usefulness dimension, (13.00 ± 2.29) for the necessity dimension, and (44.55 ± 5.59) for the overall scale. As can be seen, the scores obtained are above the average and the attitude of healthcare personnel towards glove use is positive (Table 2).

	Num-ber of items	Cron-bach Alfa	n	M	SD	Min	Max
Awareness	4	0.68	347	17.04	2.81	7	20
Usefulness	4	0.73	347	14.51	2.17	7	20
Necessity	3	0.79	347	13.00	2.29	3	15
ASUG	11	0.75	347	44.55	5.59	19	48

When the attitudes towards the use of gloves were examined according to the gender of participants, it was found that the mean scores of women were higher compared to men ($p < 0.05$). In terms of educational level, the mean score of primary school graduates was found to be lower than other groups (p

< 0.001). In terms of overall scale scores, a significant difference was found between primary school graduates and post-graduates ($p = 0.04$) and participants with doctorate ($p = 0.01$) degrees.

When attitudes towards the use of gloves were examined according to the professions of participants, a significant difference was found between groups in the awareness dimension ($p = 0.01$). Awareness of nurses was higher than healthcare technicians ($p = 0.03$). In the usefulness dimension and the overall scale, the mean scores of nurses were found to be higher than healthcare technicians and assistant healthcare personnel ($p < 0.05$).

In addition, there was no statistically significant difference in the use of gloves attitudes according to marital status, age and working years ($p > 0.05$) (Table 3).

Discussion

In surgical services, healthcare service consists of the entire preoperative, intraoperative and postoperative care and one of the methods used to control infection is the use of gloves in accordance with appropriate standards (15). The aim of this study was to determine the attitudes of healthcare personnel

Table 3. Glove use according to sociodemographic characteristics of participants

Variable	Awareness		Usefulness		Necessity		ASUG	
	M±SD	p	M±SD	p	M±SD	p	M±SD	p
Gender								
Female	17.54±2.39	<0.001	14.86±2.26	0.001	13.31±2.16	0.004	45.71±4.87	<0.001
Male	16.40±3.16		14.05±1.97		12.59±2.40		43.06±6.11	
Marital status								
Married	17.18±2.82	0.25	14.50±2.10	0.91	13.06±2.42	0.50	44.74±5.59	0.42
Bachelor	16.82±2.79		14.52±2.29		12.89±2.08		44.24±5.60	
Age (years)								
≤29	17.26±2.47	0.44	14.55±2.15	0.77	13.23±1.84	0.18	45.05±5.00	0.28
30-41	16.90±3.14		14.56±2.06		12.91±2.36		44.38±5.75	
≥42	16.84±2.93		14.36±2.37		12.67±2.87		43.87±6.34	
Education level								
Primary education ¹	16.17±3.40	0.24	12.43±3.10	<0.001	12.82±3.21	0.18	41.43±8.09	0.01
High school ²	16.52±2.74		14.32±2.25		12.66±1.99		43.50±5.56	
University ³	17.16±2.72		14.68±2.02		12.94±2.23		44.79±5.13	
MSc. ⁴	17.44±2.43		14.50±2.07		13.13±2.63		45.08±5.44	
PhD./ Specialist MD. ⁵	17.32±3.26		15.17±1.46		13.85±1.89		46.35±5.67	
1-2=0.004								
1-3<0.001								
1-4=0.003								
1-5<0.001								
2-3=0.002								
2-4<0.001								
2-5=0.01								
Profession								
Physician ¹	16.61±3.46	0.01	14.66±1.73	<0.001	13.40±2.07	0.06	44.68±6.13	0.01
Nurse ²	17.62±2.27		15.02±2.09		13.16±2.24		45.81±4.80	
Health technician ³	16.59±2.94		14.08±1.69		12.42±2.61		43.09±5.69	
Assistant personnel ⁴	16.63±2.98		13.70±2.88		13.01±2.03		43.36±6.15	
2-3=0.03								
2-4=0.002								
2-5=0.018								
Professional experience (years)								
≤5	17.38±2.55	0.15	14.64±2.29	0.59	13.16±1.84	0.21	45.19±5.14	0.17
6-10	17.05±2.44		14.32±2.09		13.25±1.69		44.62±4.80	
≥11	16.74±3.11		14.45±2.10		12.76±2.78		43.96±6.17	

Independent T-Test, One Way ANOVA, Post Hoc Tukey Test

working in surgical services towards the use of gloves and whether these attitudes differ according to sociodemographic characteristics.

In this study, we found that the attitude scores of healthcare personnel were above average. Similarly, the attitude towards the use of gloves was found to be positive in studies conducted with healthcare personnel working in laboratories and primary, secondary and tertiary health care facilities (16-19). However, studies conducted with nursing students have shown that gloves are not used in accordance with the standards (20). It is therefore evaluated that experience and education are influential in the fact that healthcare personnel have positive attitudes compared to students.

In our study, women's attitudes towards glove use were found to be more positive than men's. In studies conducted by Dinc and Askin, it was found that women were most concerned about occupational risks and the use of gloves was therefore higher among women (21). It is thought that women are more likely to use appropriate gloves for the reasons of biopsychosocial (more anxious, cautious and respectful to safety rules) features.

In our study, attitudes of nurses towards the use of gloves were found to be more positive than other occupations. In the study conducted by Bulut et al. on patients regarding the use of gloves in healthcare personnel, it was stated that that nurses should use gloves at the highest level. It was found that the patients regarded themselves as worthless and unprotected against infection when gloves were not used. Furthermore, it was also found that the most common mistake was using the same glove for a long time and not changing gloves frequently (22). Since nurses are the healthcare professionals having the most contacts with patients and taking an active role in the treatment process, it is thought that nurses should use gloves most frequently and in accordance with standards.

In our study, it was found that attitude towards the use of gloves increased as the educational level increased. These results are consistent with the literature. Previous studies have found that education increases knowledge and awareness, and thereby increases the use of gloves in accordance with appropriate standards (21, 23-26).

In conclusion, the attitudes of healthcare personnel participating in this study towards the use of gloves were at a positive level. Women had higher attitudes towards the use of gloves than males, nurses had higher attitudes than healthcare technicians and assistant personnel, and participants with higher educational level had higher attitudes than participants with lower educational level. Training of staff, increasing awareness and knowledge level with brochures and posters will be effective in the use of gloves in accordance with the appropriate standards.

Acknowledgements

We would like to thank health personnel who participated in the research helpfully and devotedly without expecting material compensation.

MU participated in the design of the study and performed the statistical analysis. YU participated in the design and conception of the study and its coordination, acquisition of data, carried out statistical analysis and drafted the manuscript. FU participated in the conception of the study and participated in the design of the study, acquisition of data and manuscript revision.

All authors read and approved the final manuscript.

Conflict of Interest

The authors declared they do not have anything to disclose regarding conflict of interest with respect to this manuscript.

References

1. Meydanlıoğlu A. Health and safety of health care workers. *Balikesir Health Sciences Journal* 2013;2(3):192-199.
2. Zenciroğlu D. Protective clothings and equipments in hospital and their use. *ANKEM Derg* 2011;26(Ek2):314-319.
3. Ozaras R. Protection of health workers from hospital infections. *Hastane Enfeksiyonları: Korunma ve Kontrol Sempozyum Dizisi* 2008;60:255-257.
4. Beser A, Topcu S. Use of personal protective equipment in the field of health. *Dokuz Eylül Üniversitesi Hemşirelik Fakültesi Elektronik Dergisi* 2013;6(1):241-247.
5. Caylan R. General measures for infection control. *Yoğun Bakım Dergisi* 2006; 6(1): 8-10.
6. Demir Z. Evaluation of the compliance of nurses and physicians working with children with isolation precautions. *Mersin University Health Sciences Institute Master Thesis, Mersin, 2014.*
7. Knapp MB, McIntyre R, Sinkowitz-Cochran RL, Pearson ML. Assessment of health care personnel needs for training in infection control: one size does not fit all. *Am J Infect Control* 2008; 36 (10):757-760.
8. Morritt ML, Harrod ME, Crisp J, et al. Handwashing practice and policy variability when caring for central venous catheters in paediatric intensive care. *Australian Critical Care* 2006; 19 (1): 15-21.
9. Yorgancı K, Elker D, Kaynaroğlu V. Compliance with handwashing in a surgical intensive care unit. *Yoğun Bakım Dergisi* 2002;2:58-63.
10. Boyce JM, Pittet D. Guideline for hand hygiene in health-care settings. *MMWR* 2002; 51:1-44.
11. Flores A, Pevalin DJ. Healthcare workers' knowledge and attitudes to glove use. *British Journal of Infection Control* 2006; 7(5):18-22.
12. Alacam I. A scale of attitude related to glove usage of healthcare workers. *Ege University Health Sciences Institute Master Thesis, İzmir, 2009.*
13. Sarıcaoğlu H, Toka SO, Algan Sİ. Latex allergy in health care workers. *Turkdem* 2013;41:94-98.
14. Yuçeer S, Demir SG. Prevention of nosocomial infections in intensive care unit and nursing practices. *Dicle Med J* 2009;36(3):226-232.
15. Uzunkoy A. Surgical site infections: risk factors and methods of prevention. *Turkish Journal of Trauma & Emergency Surgery* 2005;11(4):269-282.
16. Aksoy U, Özdemir MH, Usluca S, Ergonen AT. Biosafety profile of laboratory workers at three education hospitals in Izmir, Turkey. *Mikrobiyol Bul* 2008;42:469-476.

17. Altıok M, Kuyurtar F, Karacorlu S, Ersoz G, Erdogan S. Healthcare workers experiences with sharps and needlestick injuries and precautions they took when injuring. *Maltepe Üniversitesi Hemşirelik Bilim ve Sanat Dergisi* 2009;2(3):70-79.
18. Emerce E, Doğan BG. Knowledge and practices of pharmaceutical laboratory workers on laboratory safety. *Turk J Public Health* 2017;15(2):106-122.
19. Legese T, Hurissa BF. Assessment of the knowledge and practices of health care providers on hand-washing and glove utilization at Agora Health Center and Hospital, South West Ethiopia, 2015. *Journal of Prevention and Infection Control* 2016;2(1):1-5.
20. Karahmetoglu GU, Softa HK. Determination of nursing students' attitude towards the gloves usage. *J DU Health Sci Inst* 2016;6(3):168-172.
21. Dinc A, Askin A. Examining the opinions of healthcare professionals regarding occupational health measures; sample of a public hospital in Canakkale. *Duzce University Journal of Science & Technology* 2018;6:422-432.
22. Bulut S, Eşer İ, Khorshid L. Examination of patient' opinions on health personnel use of gloves. *Electronic Journal of Vocational Colleges* 2014; 4(1):151-156.
23. Akça AH, Keşaplı M. Hand hygiene practices in emergency clinic and effects of health-care policies to this practice in our country. *Van Med J* 2016;23(2):176-182.
24. Hayden MK, Bonten MJ, Blom DW, Lyle EA, van de Vijver DA, Weinstein RA. Reduction in acquisition of vancomycin-resistant enterococcus after enforcement of routine environmental cleaning measures. *Clin Infect Dis* 2006; 42(11): 1552-1560.
25. Kaya S, Kacmaz Z, Cetinkaya N, Kaya S, Temiz H, Inalcan M. Assessment of knowledge and behavior on hand hygiene in health care workers. *Erciyes Med J* 2015;37(1):26-30.
26. Diwan V, Gustafsson C, Klintz SR, et al. Understanding healthcare workers self-reported practices, knowledge and attitude about hand hygiene in a medical setting in rural India. *Plos One* 2016; 11(10):e0163347.