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Letter To The Editor

Knowledge, attitudes and practices of hand hygiene among Pakistani health professionals: A cross-sectional study

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Dear Editor,

Healthcare workers' (HCW) hands are considered to be a crucial vehicle for the transmission of nosocomial infections from them to patients [1]. Patients' skin can be colonized by pathogens that shed onto surfaces in the immediate surroundings resulting in environmental contamination [2]. During medical care provision, HCW touch not only patients' skin but also come across contaminated environment. Hand hygiene (HH) is a cost effective and easy-to-perform practice to reduce cross transmission of nosocomial infections [2]. However, adherence to HH practices is reported to be poorly observed [2,3]. A review by the World Health Organization (WHO) revealed that baseline compliance level of HCW to recommended HH procedures varied considerably, in some cases unacceptably poor, with an overall average of 38.7% (range 5%-89%) [4]. A recent systematic review of HH-related clinical trials reported that an overall mean baseline compliance rate prior to interventions was 34.1% (range 8.1-69.5%) [5]. Moreover, HH not only reduces the incidence of nosocomial infections but also the burden associated with these infections (prolonged hospital stay, long-term disability, increased antimicrobial resistance, massive additional financial burden on patients and their family, and excess deaths) [2,6,7]. These infections complicate 5%-10% of hospital admissions in the developed countries, while > 25% in the developing countries [7]. To address the problem of poor HH practices among HCW, the WHO introduced an evidence-based concept "My Five Moment of Hand Hygiene" that demonstrated the need of proper HH practices before touching a patient, while performing aseptic and clean procedures, and after exposure to body fluid, touching a patient and his/her surroundings [8]. This concept has been used for training, monitoring and reporting HH among HCW [2], however, its success counts on compliance of HCW with proper HH, that depends upon their knowledge, attitudes and practices. Therefore, we aimed to assess the knowledge, attitudes and practices related to HH among HCW working in health settings of Lahore division, Punjab, Pakistan. Our findings may help the authorities to take necessary actions in order to increase the adherence of HH practices in HCW in any healthcare setting.

Methods

A cross sectional study was carried out during a period of six months (November 2016-April 2017) at nine healthcare settings, both governmental and private, of different levels covering primary, secondary and tertiary care/specialized centers, namely Rural Health Centre and Basic Health Unit (Phool Nagar), Mayo Hospital, Children Hospital, Jinnah Hospital, Shaikh Zayed Hospital, Bilqees Sarwar Hospital, Din Children Hospital and Trauma Centre (Phool Nagar). All HCW who came in direct contact with patients (doctors, nurses, technicians and therapists) were eligible for inclusion in the study. HCW were approached by the investigators who explained to them the objectives of the study and the willing participants were recruited and administered the study instrument. Human Ethical Committee of Punjab University College of Pharmacy,

University of the Punjab, Lahore, Pakistan, reviewed and approved the protocol of this study. A written informed consent was obtained from every participant prior to their enrollment.

In the current study, the WHO's designed Hand Hygiene Knowledge Questionnaire for HCW was used to evaluate the level of knowledge of HH (Appendix) [9]. This instrument has 25-items that includes multiple choice and "Yes" or "No" questions. One point was given to every right response and zero to every wrong response. Possible scores ranged from 0–25; participants with score ≥75% were considered good knowledge, 50%–74% moderate knowledge, and <50% as poor knowledge. The attitude regarding HH were assessed by a modified 13- and 6-item questionnaire, respectively, designed by previous researches [10,11]. Attitudes and practices scores were obtained by giving zero point for every negative attitudes and bad practices and 1 point for each correct response to positive attitudes and good practices. Maximum score for attitude was 13 and for practice 6; participants with scores ≥ 75% were considered having satisfactory attitudes and practices related to HH. The study instrument was reviewed by 5 experts for the purpose of content validation. Content validity index on clarity and relevancy was assessed by examining the frequency of responses (yes or no). The content validity index reached to 1.0 for all items of the study instrument. Moreover, the study instrument had good reliability (Cronbach's alpha coefficient = 0.76).

Data were analyzed using IBM SPSS version 22.0 for Windows. Normality of continuous variables was determined by Shipiro-Wilk test which indicted non-normal distribution. Therefore, continuous variables were expressed as median, whereas categorical variables were presented as number and percentages. P values were obtained by Kruskal-Wallis H test to determine the significance of the results and a p value < 0.05 was considered statistically significant.

Results

A total of 300 HCW were approached and 269 consented and filled the study instrument, with a response rate 89.7%. The median age was 28 years, with predominance of female (68.8%). Majority (81.4%) of the respondents reported that they had received formal training in HH. Moreover, 87.0% reported a routine use of an alcohol based hand rub for HH.

Comparison of HH knowledge, attitude and practices score among participant categories are shown in Table 1. The median knowledge score was 15 (range 9–19), with nurses had significantly higher knowledge scores than technicians and doctors. The overall knowledge on HH was moderate (85.1%). None of the respondents was found to have high HH knowledge. The median attitude score was 11 (range 3-13). Majority of the respondents were found to have positive attitude regarding HH (75.5%), with nurses having significantly better attitudes as compared to doctor ($p < 0.001$) and technicians ($p < 0.001$). Median practices score was 4.0 (range 1-6). Surprisingly, the majority of the respondents had poor HH practices (68.4%). In post hoc analysis, there was no significant difference of HH practices between doctors and nurses. However, both nurses and doctors had significantly better practices scores as compared to technicians.

Table 1. Knowledge, attitude and practices scores of study participants

	Knowledge score	**Attitude score**	**Practice score**
	Mean rank	**Mean rank**	**Mean rank**
Doctors	90.89	99.89	134.46
Nurses	160.34	159.78	143.90
Technicians	96.72	87.76	103.36
p-value	< 0.001	< 0.001	0.006
Post hoc analysis			
Doctor vs Nurses	69.62 vs 126.62	73.52 vs 124.90	105.96 vs 114.02
p-value	< 0.001	< 0.001	0.403
Doctors vs technicians	49.78 vs 53.60	54.88 vs 47.39	57.00 vs 44.80
p-value	0.508	0.198	0.035
Nurses vs technicians	118.12 vs 66.62	118.88 vs 63.87	113.87 vs 82.05
p-value	< 0.001	< 0.001	0.001

Discussion

The main findings of the current study revealed that overall knowledge regarding HH was moderate in Pakistani HCW. Despite of adequate knowledge and positive attitude scores, practice scores of HH by Pakistani HCW were not satisfactory.

Approximately one-fifth of our study participants did not receive any HH training in the past 3 years which was comparable to findings from the USA [12]. Our findings regarding the knowledge of HH were comparable to the findings reported earlier [10,13,14]. Moreover, Nobile *et al.* reported that 53.8% of Italian nurses and physicians gave right responses on knowledge about prevention of hospital acquired infection [15]. In our study, none of the participants had high HH knowledge. By contrast, Ashraf *et al.* conducted a multicenter study to evaluate knowledge, attitudes and barriers of HH at long-term care facilities in the USA and reported that 29.65% of HCW had top scores (> 85% score) of HH knowledge, 41.38% average scores (75-85% score) and 28.96% bottom scores [12]. Overall the attitudes of HCW towards HH were satisfactory in our study which was comparable to the findings of the earlier studies [13,12,15].

Although the majority (97.4%) of HCW in our study agreed that HH is an essential part of their role, 71.4% stated that they miss out HH simply because they forget it. Moreover, 50.6% reported that the frequency of HH made it difficult for them to carry it out as often as necessary and 70.3% found it difficult to follow HH due to time-pressure. Altogether the practices related to HH, assessed in this study were not satisfactory. Previous data also suggested that practices and compliance of HCW with HH guidelines were suboptimal [4,5,13,16]. Our findings highlight the need to improve HH practices among HCW and make available HH products (alcohol-based antiseptic solutions, antibacterial soaps, gloves, etc.) as this may reduce healthcare-associated infections and prevent the antimicrobial resistance. The financial benefits of employing preventive practices regarding hospital acquired infections have been estimated to be 25-31.5 billion dollars in medical cost savings per year [17,18].

This study involved HCW from only Lahore division, and we did not use a probable sampling method so we had disadvantages such as selection bias and non-generalizability. Moreover, we did not assess the compliance of HCW to HH guidelines. Future investigations (large-scale multicenter studies) are needed to assess the compliance of Pakistani HCW with HH guidelines and the impact of this adherence on the nosocomial infection control.

Conclusion

The results of the present study suggest that despite the satisfactory knowledge and attitudes, HH practices of Pakistani HCW at tertiary care hospitals of Lahore, Pakistan are unsatisfactory. Although our findings cannot be generalized to the overall HCW population of Pakistan, this study draws attention of the authorities to put greater emphasis on the education and training of HCW to improve the HH knowledge, attitudes and practices in the country.

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