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HAND HYGIENE TRAINING KNOWLEDGE AND PRACTICES AMONG HEALTHCARE WORKERS IN A HOSPITALS PROVIDING TERTIARY CARE

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Abstract
Hand hygiene (HH) is the primary and most crucial method for preventing infections that are acquired within a hospital setting. Our objective was to assess the level of knowledge, training deficiencies, and implementation of hand hygiene practices in a tertiary healthcare facility. These infections result in extended periods of illness, hospitalisation, long-lasting incapacity, unexpectedly large expenses for patients and their families, and a substantial rise in the financial strain on the healthcare system. A cross-sectional study was conducted in a tertiary healthcare facility in Karachi, utilising questionnaires and observations. A total of 137 healthcare workers (HCWs) employed in medical and surgical wards were included in the study. Out of all the participants, only 27% demonstrated a high level of understanding of HH, while 60% had a moderate level of knowledge, and 13% had a low level of knowledge. Regarding the act of practicing, only 31% of the participants reported engaging in regular hand hygiene. The results of this study indicate that there is inadequate understanding, practice, and training in regards to hand hygiene. Enhancing the training and retraining of healthcare personnel, with a specific emphasis on attendants, is of utmost importance. It is also advisable to implement administrative controls and prominently display clear signage in healthcare establishments.

Keywords: Hand hygiene, Health care workers, Tertiary care facility, Infection, and Hand washing.

Introduction
Semmelweis first introduced the significance of hand hygiene (HH) in healthcare settings in 1847. He noticed a higher death rate among women in the delivery ward, with 18% in a hospital where hand washing was not performed, compared to only 3% in a hospital where midwives cleansed their hands with chlorine water.[1] Several factors have contributed to the inadequate adherence to hand hygiene (HH) by healthcare workers. These factors include insufficient awareness regarding the significance of HH in reducing the transmission of infections, limited understanding of the correct technique for HH, inadequate staffing levels, overcrowding, limited availability of hand washing facilities, skin irritation caused by frequent exposure to soap and water, and a lack of institutional dedication to promoting good HH practises.[2-4] Alcohol-based hand rub (ABHR) is the most efficient way to perform hand hygiene (HH) and is the commonly advised approach for HH.[5,6] We conducted

a study to assess the degree of knowledge, training deficiencies, and implementation of hand hygiene practices at a tertiary healthcare facility in Karachi, Pakistan. Additionally, we investigated the factors that influence the adherence to hand hygiene protocols.

Material and Method

The research employed a quantitative study design. The quantitative design facilitates the researcher in identifying quantifiable facts. The sampling frame for this study consisted of all healthcare workers (HCWs) who provided patient care in the private tertiary care hospital of Karachi, Pakistan. From this sampling frame, a necessary sample was selected using the method of simple random selection. The study was done among the healthcare professionals, including nurses, doctors, pharmacist, and laboratory technicians. The researchers employed a multi-stage randomized sample technique to deliver the WHO standardized Hand Hygiene (HH) knowledge questionnaire to a total of 137 healthcare professionals. A questionnaire was developed based on recommendations from WHO, as well as existing research on hand hygiene. The questionnaire covered various topics such as understanding of pathogen cross-transmission, recommended hand washing methods, materials used, attitudes towards hand hygiene, and the availability of facilities in their ward or department. A database was constructed in MS Excel, and the requisite statistical analysis was performed.

Results

An impressive response rate of 100% was achieved, with around 53.28% of the participants were females and 46.71% of the participant were male. Additional baseline parameters are present in (Table: 1).

Table: 1. Demographic and Social Profiles of Respondents

Variables	Categories	Respondents	Percentage
Gender	Male	64	46.71%
	Female	73	53.28%
Age	18-28 Years	24	17.51%
	29-39 Years	48	35.04%
	Above 40 Years	65	47.44%
Profession	Nurses	64	46.71%
	Doctors	39	28.47%
	Pharmacist	23	16.79%
	Laboratory technician	11	8.03%

The percentage of those with good understanding of HH was 27% (37), while 60% (82) had moderate knowledge, and 13% (18) had low knowledge. Regarding the act of practicing, only 31% of the participants reported having a regular habit of performing HH. This habit was observed in 39% of doctors, 31% of nurses, 11% of laboratory scientists and technicians, and 19% of pharmacist. Approximately 36% of the participants had undergone official instruction on hand hygiene over the past three years (Figure: 1).

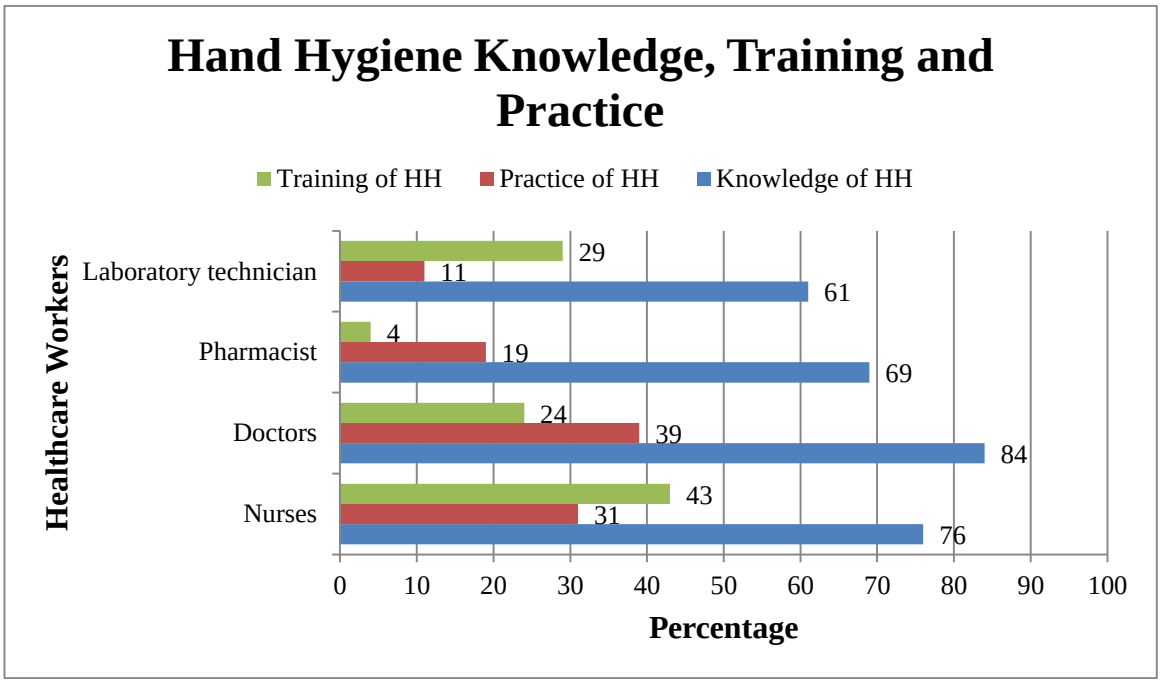

Figure: 1. Knowledge, Training and Practices of Hand Hygiene.

The proportion of individuals who were aware that sanitising their hands prior to making contact with a patient would effectively diminish the transmission of pathogens, and that unclean hands constituted a significant origin of cross-contamination, was 58.39% (Figure: 2).

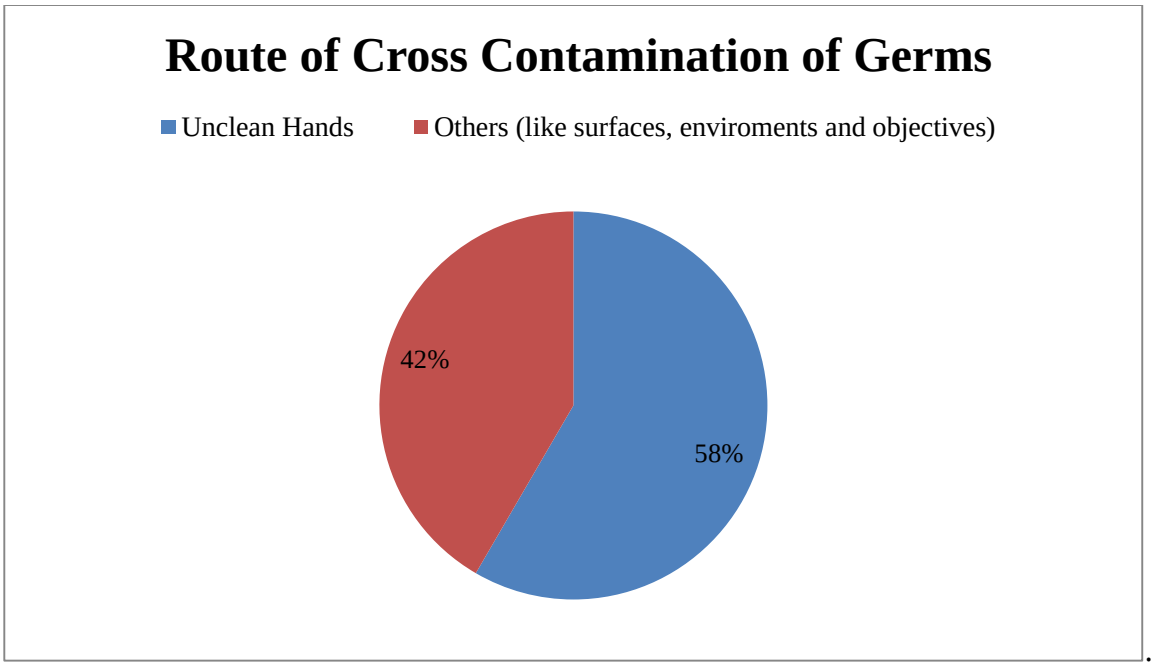

Figure: 2. Cross Contamination of Germs among Patients in Healthcare Facility.

Research also revealed that 89% of participants consistently utilise an alcohol-based hand rub for hand hygiene (Figure: 3).

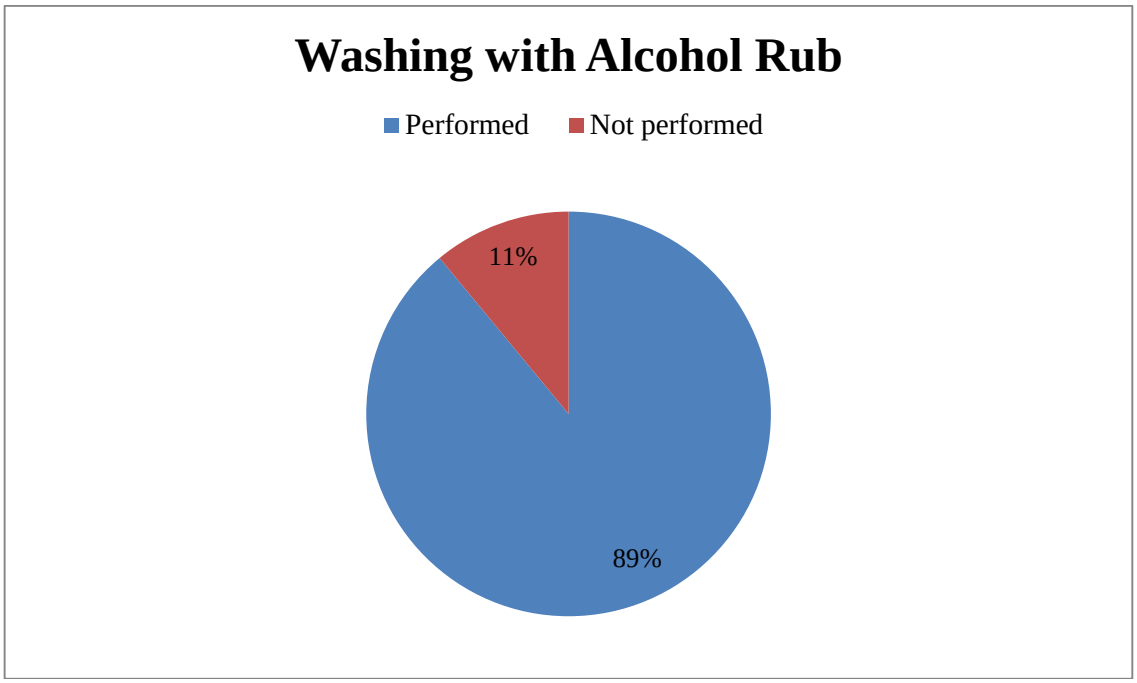

Figure: 3. Level of Alcohol based Hand Rub.

This survey also revealed that only 3% of participants were unaware of the appropriate times for hand hygiene, while an overwhelming 97% of participants were knowledgeable about the correct moments for hand cleanliness. In various scenarios, such as prior to administering an injection (57.66%), after disposing of a bed pan (72.27% of the time), after taking off examination gloves (51.10% of the time), after tidying a patient's bed (80.30% of the time), and after direct contact with blood (5.11% of the time) hand hygiene perform by washing hands with soap and water. Alcohol rub was almost similar in case of prior to administering an injection (42.34%) and after taking off examination gloves (48.90%), while alcohol rub was higher in case of after direct contact with blood (94.89%) (Figure: 4).

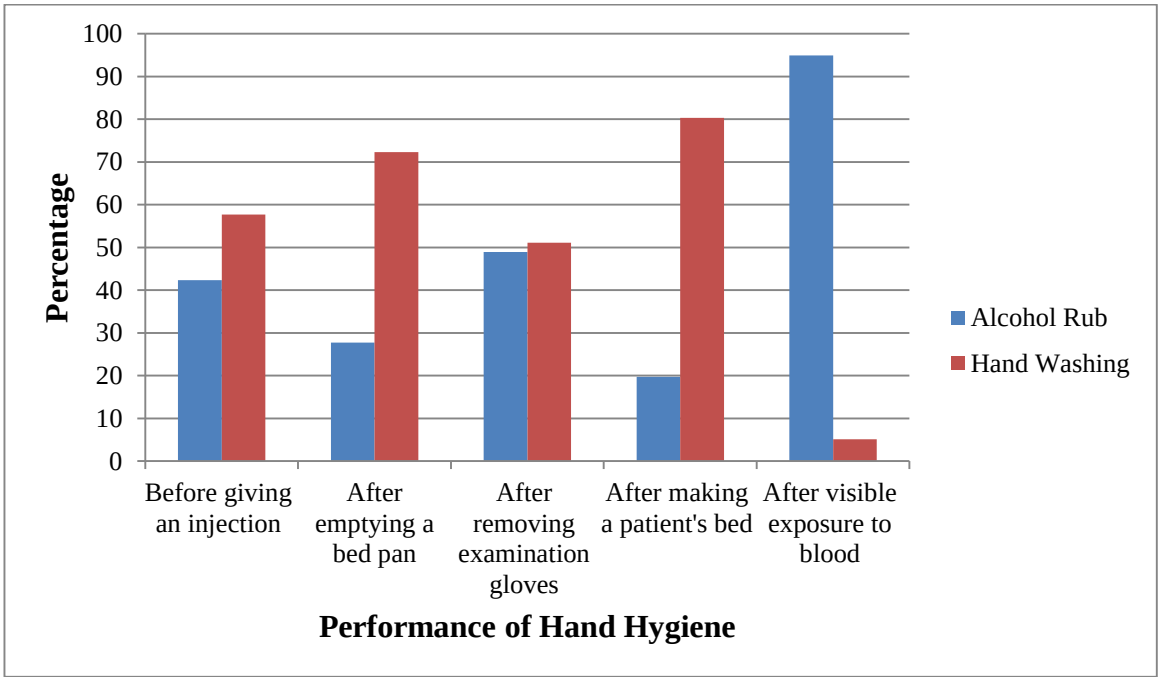

Figure: 4. Methods of Hand Hygiene Performed.

Discussion

This study highlights deficiencies in the implementation, education, and understanding of hand hygiene practices inside a tertiary healthcare centre located in a resource-limited environment. Approximately more than 50% of the healthcare workers included in this survey had a moderate level of awareness regarding hand hygiene. Nevertheless, the acquisition of knowledge does not consistently result in the application of that knowledge, as only a minority of our study participants, specifically fewer than 35%, reported engaging in the regular practice of hand hygiene. This could be attributed to the insufficient provision of consistent formal education, since our findings indicate that approximately 36% of healthcare professionals had formal training on hand hygiene over the past three years. Substandard hand hygiene facilities within the facility may have had a role in the inadequate adherence to proper hand hygiene practices, despite having strong understanding.[7]

The healthcare workers in our study exhibited a preference for utilising alcohol-based rubs for hand hygiene as opposed to soap and water. Our study revealed that within the context of working in tertiary hospitals, the adherence to the WHO standards for sufficient hand hygiene was greater for alcohol-based rubs (89%). An earlier investigation revealed that 82% of healthcare workers (HCWs) held the belief that hand rubbing with alcohol-based rubs was quicker and more efficacious in combating germs compared to hand washing with soap and water.[8]

The practice of health care providers is often influenced by a complex interaction of cognitive, socioeconomic, and technical factors. Many centres that excel in hand hygiene have instilled in their workforce a strong sense of duty towards hand hygiene through a mix of various training and retraining programmes, administrative restrictions, and prominent signs.

The insufficient healthcare facilities, elevated patient to healthcare personnel ratio, and absence of training in our context likely had a substantial role in causing this disparity. Thus, it is clear that it is vital to minimise the knowledge gap and practice of hand hygiene in our environment in order to decrease or avert healthcare-associated diseases.

In order to create effective interventions further investigation into the factors that influence behavior is necessary, specifically focusing on how these factors might be utilized to enhance hand hygiene. An appreciation of process indicators is essential, as it allows for discerning the reasons behind the success or failure of certain interventions. Given the variability of non-compliance reasons between countries, it is necessary to conduct comprehensive systematic investigations to identify these reasons and develop appropriate corrective solutions.

Conclusion

Based on the results of this study, there is a lack of adequate understanding, training, and practice of hand hygiene. Providing training and retraining for health care personnel is crucial. Implementing a comprehensive and diverse intervention and behavioural hand hygiene programme is crucial for enhancing hand hygiene practices. In addition, the introduction of HH training programmes for undergraduate doctors, house officers, nurses, pharmacist and all other healthcare personnel would greatly enhance HH practice in our environment, with a specific emphasis on attendants.

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