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Awareness of Hand Hygiene Practices among Laboratory Technicians: A Study Conducted in the Laboratories of a Tertiary Care Hospital

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Abstract

Introduction:

Healthcare workers unceasingly deal with an infectious environment. The laboratory personnel though doesn't come in contact with patients, but deals with various patient specimens and should follow proper hand hygiene activities to protect themselves from unwanted harm. Therefore, it was proposed, to assess the extent of awareness about hand hygiene among the laboratory technical staff.

Materials and Methods:

A questionnaire-based cross-sectional study was conducted. A questionnaire prepared using various study resources and World Health Organization (W.H.O.) guidelines was given to the participants to update their knowledge. The data obtained was fed into a Microsoft Excel spreadsheet and analyzed using descriptive statistics.

Results:

The overall awareness among the technicians was 72%. A 39% of subjects did not know that waterless antiseptic agents require no exogenous water for its use. 41 % were not aware of the steps involved in handwashing techniques as recommended by W.H.O. 22% had knowledge deficit of the time duration necessary for appropriate hand washing to ensure sufficient hygiene.

Discussion and Conclusion:

One of the commonest mode of cross transmission of infection is through the hands of health care workers and proper care will prevent the same and development of antimicrobial resistance. The one simple measure to contain the infection spread is proper hand hygiene as suggested by various studies.

A laboratory technician continually handles various infectious samples and is at a high risk of infection, which can be partly prevented by effective hand hygiene. Furthermore, it is also important to impart hand hygiene training to the administrative staff as well as the house keeping staff who deals with obnoxious substances in the process of maintenance of cleanliness. In addition, it is immensely essential to throw light on the need of adequate time duration to ensure clean hands.

Keywords: Hand hygiene, Laboratory technicians, Infection, Specimens.

Introduction

Health care workers unceasingly deal with an infectious environment in their day to day work. This will have harmful effects in terms of transmission of infections and thereby even spread to the community levels. A proper hand hygiene is one such simple measure to prevent this catastrophe in any lab environment. It's true that laboratory technicians do not come across directly with the patient, but deals with a lot of specimens including infectious ones.

The studies have shown that hand hygiene is a healthcare issue which is important in order to reduce the incidence of hospital-acquired infection. [1] Previous studies have shown that hand hygiene compliance among healthcare workers is generally low.[2] Hospital-acquired infections due to poor hand hygiene are a major cause of increased morbidity, mortality and health care costs among hospitalized patients worldwide.[3] Hand hygiene is considered as the single most cost-effective public health measure to prevent hospital-acquired infection.[4] A study done by Emine Alp et al. amongst microbiology laboratory staff stated that, pathogenic microorganisms were exclusively found on hands of laboratory personnel who wore jewellery. Laboratory workers are at a high risk of infection because of their daily exposure to infectious material. Many cases of laboratory-associated infection have been reported.[5]

However, there are few studies, indicating the awareness and compliance, of laboratory staff working in laboratories about their hand hygiene practices. We conducted a study to assess the awareness of knowledge and techniques regarding hand hygiene knowledge among the laboratory staff in a tertiary multispecialty hospital.

Materials and Methods:

The study done after obtaining the Institutional ethical committee clearance. Informed consent was obtained from all participants. A total of 54 laboratory technicians working in the Biochemistry, Microbiology and Pathology laboratories of the hospital were included in the study. A pre designed pre validated questionnaire was prepared using indexed research articles. The validation of questionnaire was done by applying questionnaire on few subjects who were not involved in the study. The Cronbach alpha used to validate the questionnaire in SPSS version 18. The questions with a value of more than 0.6 were used for the study and others were modified to suite for our study with a feedback from the subjects.

The validated questionnaire was applied on 54 laboratory personnel during their free time. Sufficient time was given to fill the questionnaire and collected by the investigators. After their completion, a World Health Organization (W.H.O.) guidelines pamphlet was given to the participants. For scoring, 1 point were given for each correct response and for positive attitude and 0 point given for poor level of knowledge and negative attitude. The data obtained was fed into a Microsoft Excel spreadsheet and analyzed using descriptive statistics.

Inclusion criteria:

The laboratory technical staff were included in the study.

Exclusion criteria:

Newly appointed technical staff who were not yet trained nor familiar with the hand washing techniques were excluded from the study.

Results:

The study found that overall awareness among the technicians was 72% and 93% of the technicians were aware that contaminated hands are the most common route of hospital-acquired infection and hand hygiene is the single most effective way to prevent it. To our surprise, the study found that 100% were unfamiliar with the

W.H.O. definition of hand washing and had a relatively poor insight with regards to agents like soaps, waterless antiseptic agents as shown in chart 1.

A 22% subjects assumed that plain soaps contain antimicrobial agents and 39% did not know that waterless antiseptic agents, eg., hand rubs require no exogenous water for its use. 85% had the knowledge that hand rubs contain isopropyl alcohol as solvent. Though, a good 96% knew that while washing hands, soap should cover all hand surfaces, but they had poor knowledge with regards to the number of hand moments as recommended by W.H.O. Only a few 31% of the laboratory technicians were aware of the five hand moments, a majority 69 % of them were ignorant. 41 % of the laboratory technicians were not aware of the steps involved in hand washing techniques as recommended by W.H.O. 22% of the staff had knowledge deficit of the time duration necessary for appropriate hand washing to ensure sufficient hygiene.

A majority 85 % were of the opinion that single use towel should be used to dry hands after washing, but a 15% thought a reusable towel or any paper would serve the same. 39% of them were aware of the fact that medicated soaps are more likely to cause skin dermatitis , but a majority 61 % had a false notion that alcohol based hand rubs induced dermatitis commonly.

The study also found that, 94% were aware that accessories like artificial finger nails, jewellery and uncut long nails should be avoided to improvise hand hygiene. Around 89% of them agreed that adherence to hand hygiene could be increased by awareness and training programs, apart from inculcating a positive attitude towards hand hygiene.

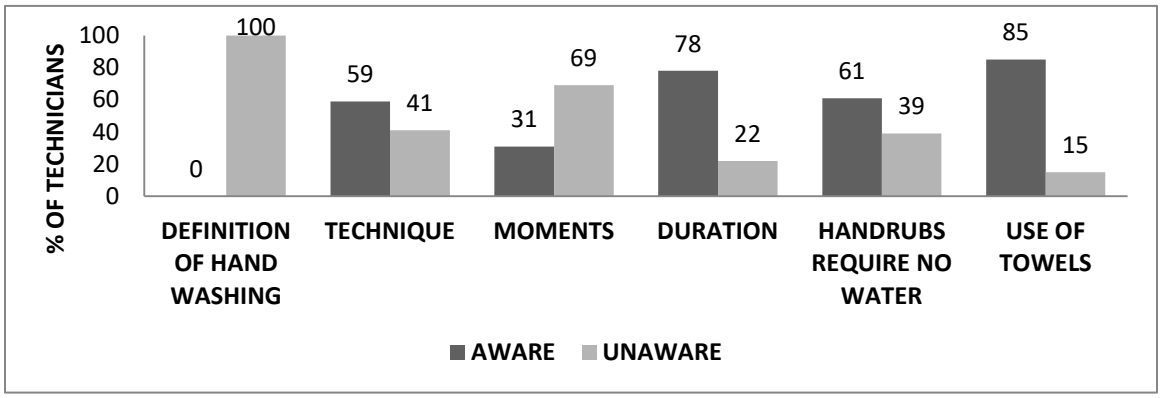

Chart 1: Showing the knowledge aspects of hand hygiene practices among laboratory technicians

Discussion:

The study found mixed results with some sections the subjects had good knowledge and in some needed assistance. A very good number of technicians were in opinion to have more knowledge with regards to the hand washing techniques involved in appropriate hand hygiene, despite the half yearly training program conducted in the hospital. Moreover, a fair number of technicians were unaware that hands should be washed for 40 to 60 seconds to ensure clean hands. Surprisingly, a good 39% also thought that hand rubs required water for usage and they induce skin dermatitis, which is reverse from reality.

Nura Muhammed Abdella et al concluded in their study that, hand hygiene compliance among health care providers in Gondar University Hospital was found to be low. It is better to give training on hand hygiene compliance and provide alcohol based hand rub and individual towel or tissue paper for hand hygiene compliance.[6]

Again, frequent use of soaps and alcohol hand rubs could cause skin surface damage and induce dermatitis, which could be painful and hence, decrease the compliance to hygienic measures. To overcome this problem, it would be useful to use soaps or alcohol hand rubs with emollients.[7]

Alcohol-based rubs are less likely to cause dermatitis as compared to soaps and also have a low risk of contamination. Multiple-use bar soap should be avoided because it is difficult to store bar soap dry at a sink, in turn increasing the risk of contamination. Although, liquid soaps are preferred over bar soaps for hand wash, the risk for either intrinsic or extrinsic microbial contamination is still in existence.[2]

In a study conducted by Noskin GA et al, hands were washed with water alone or with soap and water. The soap and water studies were performed with a 5-second and a 30-second wash. A 5-second wash with water alone resulted in virtually no change; a 30-second wash with water plus either soap was necessary to eradicate the bacteria from hands completely.[8] In our study we found that, many were unaware of duration of hand wash and must be addressed.

According to W.H.O. guidelines, the entire procedure of hand hygiene requires 20 to 30 seconds when alcohol based hand rubs are used and 40 to 60 seconds using soap and water. However, the volume of hand hygiene product that should be applied to the hands is not known and may vary for different formulations. It is stated, if hands feel dry after being rubbed together for less than 10–15 seconds, it is likely that an insufficient volume of product was applied.[2]

In a study conducted in a microbiology laboratory, though the level of compliance at the end of duty was 100%; 36.7% of subjects wore a ring, 46.9% wore a watch, and 6.1% wore a bracelet.[5] In our study 94% were aware of not to wear these during their laboratory work.

Pathogenic microorganisms were exclusively found on hands of laboratory personnel who wore jewelry. After interventions, the level of compliance with the no-jewelry policy among laboratory personnel showed sustained improvement. Efforts to improve hand hygiene should be directed not only at healthcare workers but also at laboratory personnel.[5] Health care workers progressively accumulate microorganisms on their hands from direct patient contact or contact with contaminated environmental surfaces and devices.[9]

One of the commonest mode of cross transmission of infection is through the hands of health care workers and proper care will prevent the same and development of antimicrobial resistance. The study has shown various factors contributing for non-compliance to hand hygiene which includes, poor access to hand washing facilities , heavy work load, lack of knowledge, the failure of administrative staff to make hand hygiene an institutional priority, etc. In order to improve patient care, good hand hygiene must be one of the topmost priorities in a health care institution.[3] Multifaceted and dedicated efforts must be undertaken to rectify low rate of hand hygiene compliance.[10] Training sessions for hand hygiene practices among the health care workers to prevent infections is important.[11]

Conclusion:

All employees working in a health care set up are at potential risk of transmission of hospital acquired infection. A laboratory technician/ personnel continually handles various infectious samples and are at a high risk of infection, which can be partly prevented by effective hand hygiene. Furthermore, it is also important to impart hand hygiene training to the administrative staff as well as the house keeping staff who deals with obnoxious substances in the process of maintenance of cleanliness. Training should emphasize on importance of hand hygiene in transmission and prevention of hospital acquired infection. Moreover, information about hand hygiene products along with its usage instructions should be provided, in an attempt to increase compliance to hand hygiene practices and its

techniques. In addition, it is immensely essential to throw light on the need of adequate time duration to ensure clean hands. Regular internal surveys should be conducted by health care institutions to look for adherence to appropriate hand hygiene practices.

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