Assessment and Comparison of Knowledge and Awareness about Hand Hygiene among Health Care Workers from PHC and Medical College

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Abstract

Objectives: Present study was conducted to assess and compare the knowledge of hand hygiene (HH) according to WHO guidelines among healthcare workers (HCW) from medical college hospital and primary health care centre (PHC). Improvement in knowledge of HH was assessed after training.

Method: Cross-sectional study was conducted in two groups comprising of 167 HCW from a medical college hospital (GROUP A) and from PHC (GROUP B). The WHO "Hand Hygiene Knowledge Questionnaire" was used to collect data. Multiple choice questions were given to participants before and after training program for HH.

Results: Eighty & eighty seven HCW were recruited in group A & B respectively. Before HH training program, both the groups had very few people with good knowledge of HH (8.7% in group A & 5.7% in group B). After attending the HH training program, there was significant increase in the number of individuals having good knowledge of HH practise (52.5% & 35.6 % in group A and B respectively, $p<0.001$ for the groups).There was significant increase in the mean scores in both groups after HH training from 57.638+ 12.52% to 75.66 + 12.45%, $p <0.001$ in GROUP A & 46.66 +18.7% to 64.59 + 18.97%, $p<0.001$ in Group B.

Conclusions: There was low level of awareness about HH practices in studied population. Regular awareness program must be conducted to improve the knowledge of HH. Medical colleges should consider conducting such program for all HCW including PHC HCW at regular interval.

Keywords: *Hand hygiene, PHC, HCW, HH, WHO.*

Introduction

Healthcare workers (HCW) play a significant role in transmission of nosocomial pathogen.[1] Improper hand hygiene by health care worker is responsible for about 40% of nosocomial infections.[2] Health care associated infections (HCAI) are major cause of increasing morbidity, mortality and health care cost among hospitalized patients. Hand hygiene (HH) is an effective way of preventing the spread of infectious diseases and antimicrobial resistance.[3] Improved compliance with HH, with proper use of alcohol-based hand rubs (ABHR) can reduce the nosocomial infection rate by as much as 40%.[1] Practicing HH, either washing the hands with water and soap or using ABHR, is a simple effective way to prevent infections.

Compliance with recommended HH procedures for HCWs has been poor, with mean baseline rates as low

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as 5% and an overall average of 38.7%.[4] In our study, HCW's awareness and knowledge regarding hand hygiene before and after educating them with WHO guidelines was studied with the help of questionnaire. HCWs working in a medical college & those working in primary health care centres in Vidarbha (India) were randomly recruited for the study. Aim of our study was to assess and comparison of knowledge of hand hygiene according to WHO guidelines among healthcare workers from medical college hospital and primary health care centre workers. Also comparing the knowledge of HH among HCW before and after educating them by comprehensive awareness and training programme.

Material and Method

Research design and setting: This cross-sectional study was conducted in two groups. Group A comprised of HCW from medical college hospital and Group B comprised of HCW from primary health care centres (PHC). Both the groups included doctors and nurses.

Ethics: Ethical committee clearance was taken from institute. Health care workers were explained about the content and nature of the study.

Sample size and sampling: As per previous studies, 8-10.6% HCW had a good knowledge of hand hygiene practice (i.e. score ≥75%).[5,6] Considering 9% prevalence of good knowledge of HH practice in our population and 95% confidence level, we calculated sample size of 80 in each group.

Exclusion Criteria: HCWs who refused to give consent for participation were excluded. Incompletely answered questionnaire were also excluded from final analysis.

Methodology and Data Collection: The World Health Organization (WHO) "Hand Hygiene Knowledge Questionnaire"-revised 2009 edition was used to collect data. The questionnaire contained questions on the participant's profession, years of the experience working in hospital, attendance in previous HH programme and awareness about 7 steps and 5 moments of HH as described by WHO. Twenty one multiple choice questions were given to participants in English & Marathi. These questionnaires were filled by participants before and after taking educational hand hygiene training programme. Educational hand hygiene programme was conducted by medical college and primary health care centre workers between March to May 2020. All the participants were randomly assigned to 30 batches each comprising of 5-6 HCW for training. Training was conducted in the form of audio visual presentation and HH demonstration. To identify the level of knowledge, scores were given to responses from the participants. For the scoring, "1" point was given for a response that indicated a "good level of knowledge" and "0" point was given for a response that indicated a "poor level of knowledge".[3] A score of 75% and above was considered good, 50-74% was considered moderate, and below 50% was considered as poor knowledge of HH practice.[5-6]

Statistical Analyses: Statistical analysis was done with the help of SPSS version 16. Paired T test was used for analysis of pre & post test scores of individual respondents. Unpaired T test & Mann Whitney U test were used for comparing mean scores of two groups. Chi square test was used to compare categorical variables. P value of < 0.05 was considered significant.

Results

Total 167 HCWs which included doctors and nurses were enrolled in the study. HCWs were divided into two groups, 87 health care workers working at primary health care centre and 80 healthcare workers working at medical college. The demographic characteristics of the HCW are shown in Table 1. In group B, 42 were doctors and 45 were nurses while in group A42 were doctors and 38 were nurses. Median experience of HCWs was 3 years in group A & 4 years in group B. Out of 167 participants 115 had attended hand hygiene training in last three years.

Table 1: Demographic parameter of Group A and Group B Participants

Profession	Group A (%)	Group B (%)
Doctor	42(52.5%)	42(48%)
Nurse	38(47.5%)	45(51%)
Median experience working in hospital (years)	3	4
Attended any hand hygiene programme in last 3 years	55 (68.8%)	60 (68.9%)

There was significant increase in the mean scores in group B after HH training (from 46.66 +18.7% to 64.59 + 18.97%, $p<0.001$) Table 2.

There was significant increase in the mean scores in group A after HH training 57.638 %(+ 12.52) 75.66 % (+ 12.45) Table 2.

Table: 2 Comparison between pre-test and post test score for awareness and knowledge about Hand hygiene among group A and B participants.

	Group A		Group B	
	Mean±SD (%)	P Value	Mean±SD (%)	P Value
Pre Test Score	57.638 +12.52	< 0.001	46.66 +18.7	< 0.001
Post Test Score	75.66 +12.45		64.59 +18.97	

Mean increase in the scores after attending the HH program was comparable in both the groups. (18.62+19.89 % vs. 18.02+11.40 % group B vs. group A respectively, p= 0.733) Table 3.

Table: 3 Comparison between growths in percent score between both groups

Groups	Growth in Percent (Mean±SD)	P value
Group A	18.02±11.40	0.733
Group B	18.62±19.89	

Before HH training program, both the groups had very few people with good knowledge of HH (8.7% in group A & 5.7% in group B). After attending the HH training program, there was significant increase in the number of individuals having good knowledge of HH practise (52.5% & 35.6 % in group A and B respectively, p<0.001 for the groups).

Before HH training, poor score i.e. < 50% was found in 19(23 %) and 40 (45 %) participants in group A and B respectively. There was significant reduction in the number of participants having poor score after HH training program. 2(2.5 %) and 19(21.8%) participants in group A and B respectively) Table 4.

Table: 4 Comparison of the participant's knowledge level in both groups.

Hand Hygiene Knowledge	Group A		P value	Group B		P value
	Pre Test N (%)	Post Test N (%)		Pre Test N (%)	Post Test N (%)	
Good (≥75%)	7(8.7%)	42(52.5%)	p<0.001	5(5.7%)	31(35.6%)	p<0.001
Poor (< 50%)	19(23%)	2(2.5%)	p<0.001	40(45%)	19(21.8%)	p<0.001

Discussion

Nosocomial infections constitute a major challenge of modern medicine. On an average, infections complicate 7% to 10% of hospital admissions.[7] Transmission of microorganisms from the hands of HCW is the main cause of nosocomial infections, and hand washing remains the most important preventive measure.[8] There is evidence that hand antiseptics reduce the transmission of health care associated pathogens and the incidence of Health Care Associated Infection (HCAI).[9]

Several hand hygiene studies have been conducted among medical students and nursing students and HCW including doctors and nurse from tertiary health care centre.[5-6, 10-14] In developing country like India, primary health care centre is the first point of health care contact for many patients. There are no previous studies conducted on knowledge and awareness about hand hygiene among health care workers from PHC. In our study we tried to assess the awareness and knowledge of HH in HCW working in a medical college & PHCs.

Rezaee et al had carried out an interventional study to assess the effect of an educational program on HH to medical students. The medical students were participating in a one-day teaching workshop about the importance of HH. The participants filled out the questionnaire before attending, on finishing, and 3 months after the

workshop. There was a significant difference between the pre-test and the late post-test scores in knowledge and performance categories.[10]

Ansari et al compared the level of knowledge attitude and practice (KAP) regarding hand hygiene among doctors and nurses, training sessions were conducted for 100 healthcare workers (56 doctors and 44 nurses) and their assessment for knowledge, attitude and practice was done through pre-test and post-test questionnaire. They found that there was a significant improvement in the KAP score for both doctors and nurses after the training session.[11]

In our study we conducted training session for health care workers from medical college and primary health care canters. Pre-test and post-test questionnaire were given to assess knowledge about HH. At baseline, very few HCW had good knowledge about HH (< 10% of the participants in both the groups). Our findings are similar to those observed in previous similar studies.[5]

We also observed that mean scores at baseline were significantly higher for the HCW working in medical college as compared to those working in PHC. This may be attributed to repeated training programs in medical colleges & presence of signage highlighting importance of hand hygiene being prominently displayed in the wards. There has been no published study comparing HH awareness between HCW in medical college & PHC.

After attending the training program, there was significant improvement in scores in both the groups. There was also a significant increase in the proportion of HCW having good knowledge of HH. Mean increase in the scores after training program was comparable in both the groups. This shows that, conducting HH awareness program in medical college as well as PHCs will lead to better awareness of HH practices in healthcare settings. Improving HH practices in HCW working in PHC can result in reducing HCAI at primary healthcare level. This can help reduce the spread of MDR organisms in the health care setting ultimately leading to reduced healthcare expenditure.[15]

Hence our study shows that training program is needed for both HCWs from medical college and PHC. A well conducted program can bring about remarkable improvements in HH awareness among HCW. We also suggest that such program should be conducted more frequently by medical colleges for HCWs. Regular reinforcement of HH practices among HCW will result in improved compliance and reduction in rate of HCAI.

Conclusions

All HCW should be educated about hand hygiene. Regular awareness program must be conducted to improve the knowledge of HH. Emphasis should be given on HH training programs for PHC HCW. Medical colleges should consider conducting such program for all HCW at regular interval.

Limitation: We conducted this study in one hospital and PHC workers from a small area. A larger study in wider geographical location may give better insights on the subject. Awareness of HH practice should be reassessed at longer time interval after training program to assess the long term retention of HH practices.

Ethical Clearance: Taken from institutional ethics committee.

Source of Funding: Self.

Conflict of Interest: Nil.

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