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Original Article

Promotion of Successful Hand Hygiene practices in the Intensive Care Units of a Tertiary Care Hospital

Juhi Taneja ^{a,*}, Bibhabati Mishra ^b^a Dr Dangs Laboratory Pvt. Ltd., New Delhi, India^b Department of Microbiology, GB Pant Institute of Postgraduate Medical Education and Research, New Delhi, India

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ABSTRACT

Background: Control of nosocomial infections is a major health concern in a hospital setting and hand hygiene is considered as the most important tool in nosocomial infection control. **Methods:** This prospective study about the practice of hand washing by 106 HCWs (Health Care Workers) working in Intensive Care Unit (ICU) before and after patient contact in a tertiary care hospital was conducted to find out the hand washing compliance rate in ICU of GB Pant Institute of Postgraduate Medical Education and Research and the factors associated with noncompliance and to find out the impact of a task-orientated hand hygiene education and intervention program.

Results: 462 opportunities of hand hygiene were observed in the ICUs over 30 h. Adherence was found to be 52%. A positive intention to comply with hand hygiene was found among 94% of the respondents. Most respondents (78.2%) believed that they could improve compliance with hand hygiene on their own. Intervention included education on hand hygiene indications and technique, hand hygiene performance feedback, and discussion of the previous assessment of HCWs' beliefs toward hand hygiene. After intensive promotion of hand hygiene, observation sessions were performed on 98 nursing staff, which provided 425 opportunities of hand hygiene, and hand hygiene adherence was increased to 63% as an impact of measures taken.

Conclusions: The study revealed that hand hygiene compliance can be effectively increased among HCWs by regular reminders and surveys. Training programs on hand hygiene should be systematically planned, regularly conducted, and evaluated for staff nurses so as to keep them motivated.

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1. Introduction

Control of nosocomial infections is a major health concern in a hospital setting. Colonization of healthcare workers' (HCWs')

hands with *Staphylococcus aureus* has been described to range between 10.5% and 78.3%.^{1,2} Similarly, colonization rates with Gram-negative bacteria ranged from 21% to 86.1%, the highest rate being found in the intensive care unit (ICU) setting.³ Hand hygiene is considered as the most important tool of infection

* Corresponding author at: Tel.: +91 9910899815.

E-mail address: drjuhitaneja@gmail.com (J. Taneja).

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control in the hospital setting. However, HCWs' adherence to recommended hand hygiene practices is unacceptably low. Hand hygiene promotion requires a complex approach which should consider personal factors affecting health workers' attitudes. It is also important to know the hand hygiene compliance in one's facility, and to select and implement effective interventions accordingly. The current study was carried out to find the hand washing compliance rate of HCWs in the ICU of our hospital and the factors associated with noncompliance, and to educate and sensitize the HCW for hand hygiene practices. A series of hand hygiene education was carried out, and the impact of a task-orientated hand hygiene education and intervention program was estimated.

2. Material And Methods

This prospective study was conducted over a period of six months in the ICUs of the GB Pant Institute of Postgraduate Medical Education and Research, which is a tertiary care hospital. One hundred and six nursing staff posted in postoperative ward of the hospital were included in the study. The study was carried out in 3 phases. Phase 1 consisted of the evaluation of HCW's knowledge, beliefs, and perceptions toward hand hygiene using questionnaire issued by WHO and observation sessions. Questionnaire with a set of 51 questions (modified from WHO leaflet⁴ comprising of 3 sections pertaining to personal data (19 questions), knowledge of hand hygiene (22 questions), and 12 questions pertaining to cognitive factors were prepared. Phase 2 (intervention) was based on the results of studies conducted during phase 1. The intervention included reminders in the workplace (posters) and focus group sessions. Phase 3 was follow up study, where observation surveys were conducted to find out the impact of the training program. Observation sessions included noting down opportunities for hand washing which included all situations in which hand washing is indicated according to the published guidelines.⁵ For each observed contact with the

target patient, there are 2 hand hygiene opportunities, before and after, which were recorded separately. If the HCW contaminated his or her hands by contacting contaminated objects outside the patient's area, then a separate hand hygiene opportunity was required in the same manner. Failure to do so was counted as noncompliance. Adherence rates were calculated as follows:

$$\frac{\text{Total number of acts of hand hygiene when opportunity existed}}{\text{Total number of hand hygiene opportunities}} \times 100$$

3. Results

Of the 110 questionnaires distributed to the nurses, 106 were returned and included in the analysis. 76% were staff nurses and 24% were nursing sisters. The staff nurse had experience of 0–5 years and nursing sisters had work experience of 6 years and more. 92 (86.8%) of the respondents believed that the main route of cross-transmission of potentially harmful germs between the patients occurred through hands of HCWs. There was no significant difference of hand hygiene behavior and knowledge among staff nurse and nursing sisters.

A positive intention to comply with hand hygiene was found among almost 94% of the respondents, but this rate was as low as 35.8% before contact between different sites on the same patient (Table 1). Most respondents (81.1%) believed that they could improve their own compliance with hand hygiene. Most respondents considered it useful to perform the hand hygiene (56.6–84.9%), as expressed by a positive attitude either before or after any type of direct contact with the patient. 66% of the respondents believed that noncompliance with hand hygiene before direct patient contact implies a risk of cross-transmission.

A preference for the use of gloves, skin irritation, and high workload were reported as the main reasons for the

Table 1 – Cognitive determinants of hand hygiene.

Cognitive factor	Question	Global no. (%)
Intention to comply with hand hygiene	“Do you perform hand hygiene before/after patient contact”?	94 (88.7)
	“Do you perform hand hygiene after glove removal”?	90 (84.9)
	“Do you perform hand hygiene between different sites”?	38 (35.8)
Perceived difficulty/easy to comply	“Is it difficult to comply with hand hygiene according . . .”?	24 (22.6)
Perceived behavioral norm	“Do you perceive hand washing as a useful measure before IV care”.	94 (88.7)
	“Do you know the recommended indications for hand hygiene”?	98 (92.4)
	“Do your colleagues perform hand hygiene according to recommended guidelines”?	24 (22.6)
	“Do you think that your positive behaviour hygiene is taken as an example by your colleagues”?	58 (54.7)
Motivation	“Do you feel that you can improve your compliance”?	86 (81.1)
Perception of risk of transmission	“Does noncompliance with hand hygiene before direct patient contact imply a risk of cross-transmission”?	70 (66)
Attitude toward hand hygiene	“Do you consider it useful to perform hand hygiene after patient contact”?	60 (56.6)
	“Do you consider it useful to perform hand hygiene after a risk of body fluid exposure”?	90 (84.9)

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