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Review Article

IMPROVING HAND HYGIENE FOR INFECTION CONTROL – A REVIEW

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ABSTRACT

Hand hygiene (HH) is the most important infection control intervention that has proved to decrease the risk of hospitalacquired infections in medical care. Health care associated infections are drawing increasing attention from patients, insurers, governments and regulatory bodies. This is not only because of the magnitude of the problem in terms of the associated morbidity, mortality and cost of treatment, but also due to the growing recognition that most of these are preventable. The medical community is witnessing in tandem unprecedented advancements in the understanding of pathophysiology of infectious diseases and the global spread of multi-drug resistant infections in health care set-ups. This review focuses on one of the simplest, low cost but least accepted from infection prevention: hand hygiene. With "Clean Care is Safer Care" as a prime agenda of the global initiative of WHO on patient safety programmes, it is time for developing countries to formulate the much-needed policies for implementation of basic infection prevention practices in health care set-ups. The most important challenges encountered in different settings and cultural backgrounds.



INTRODUCTION

Nosocomial infections are a major challenge to the health-care system and are associated with significant mortality, morbidity and an economic burden. Hand hygiene (HH), i.e. hand washing with water and detergent and/or the use of alcohol-based hand sanitizers, is the single most important method of preventing nosocomial infections [1], and compliance with effective HH practices is recognized as the most important strategy for reducing the transmission of pathogens in health care settings [1,2]. The importance of hand hygiene in the control of infection cannot be under emphasized. Recognition of the importance of hand hygiene in the control of the spread of infectious diseases is reflected in the increased number of publications in the medical literature during the last few years, including major articles on hand hygiene in prominent general medical journals [3,4,5]. Several studies have reported that hand hygiene (HH) is the most important, easy, and economical measure to reduce HAI(Hospital Associated Infections) [6,7]. It has been demonstrated that enhancing HH compliance results in a reduction of HAI and antimicrobial resistance [8].

IMPORTANCE OF HAND HYGIENE AND INFECTION CONTROL

The effect of the increase in the HH compliance rate on the nosocomial infection rate was remarkable. The study spanned a period of 7months (February2011—August2011) and consisted of education about HH indications and techniques, workplace reminder posters, focused group sessions, and feedback on the HH compliance and infection rates. The WHO HH

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observation protocol was used both its before after a hospital-wide HH campaign directed at all staff members, particularly those in the ICU. Compliance was measured by direct observation of the HCWs, using observation record forms in a patient-directed manner, with no more than two patients observed simultaneously. The study showed that HH observation, in addition to the other orientation tools used in our campaign, is a useful tool for improving HH compliance in health care settings, especially in ICUs. Repeat of this study covering a longer period of time is needed to confirm the observed improvements in the rates of nosocomial infections and infections due to multidrugresistant bacteria associated with the improved rate of HH compliance in ICU. To sustain current level of improvement, an ongoing observation of HH performance is needed[9].

Compliance with hand hygiene recommendations is poor worldwide. While the techniques involved in hand hygiene are simple, the complex interdependence of factors which determine hand hygiene behavior makes the study of hand hygiene complex. It is now recognized that improving compliance with hand hygiene recommendations depends on altering human behavior. Input from behavioral and social sciences is essential when designing studies to investigate compliance. Interventions to increase compliance with hand hygiene practices must be appropriate for different cultural and social needs. New strategies to promote hand hygiene worldwide include the formation of publicprivate partnerships[10].

It is reported that based on 27,852 observations in a 17-month period, the rate of compliance with HH improved from 37.78% at baseline to 75.90% after intervention. Significant improvement in compliance and an increase in consumption of HH products was observed after intervention. The per patient day consumption of alcohol-based hand rub products and hand wash agents increased by 4.75 mL and 4.55 mL, respectively. The consumption of paper towels increased 3.41 sheets per patient-day. During the same period, the prevalence rate of HAI decreased 0.83%. This study demonstrates that a significant improvement in compliance with HH can be achieved through systemic, multidimensional а intervention approach involving all categories of healthcare workers in a hospital setting, which may result in a decrease of the HAI rate[11].

A descriptive, cross-sectional, self-reported study was conducted among 198 Saudi nursing students. Knowledge, attitude, and practice of hand hygiene were assessed using the WHO Hand Hygiene Knowledge Questionnaire for Health-Care Workers and its adopted scales. A regression analysis was performed to identify the predictors of hand hygiene practice. The respondents demonstrated moderate knowledge of hand hygiene (mean 13.20 ± 2.80). The majority displayed a moderate attitude toward hand hygiene (52.1%), while only a few reported a poor attitude (13.1%). Approximately 68.7%, 29.8%, and 1.5% of the respondents reported moderate, good and poor practice of hand hygiene. respectively. Having a good attitude toward hand hygiene, being male, being aware thathandhygiene is an effective preventing healthcare-associated intervention in infections(HAIs), attendance at hand hygiene trainings and seminars, and being in thelower academic level of nursing education were identified as predictors of better hand hygiene practice. The importance of ensuring a positive attitude toward hand hygiene and improving awareness of hand hygiene is emphasized, as are educational interventions. Educational interventions should be implemented to reinforce knowledge and instill a positive attitude toward hand hygiene [12].

The adequacy of current HH monitoring systems; Goals of HH monitoring improvement; Access to HH monitoring data for patients; The value of MA to identify new possibilities for HH monitoring. The application of morphological analysis has highlighted how condition monitoring may improve HH monitoring. Condition monitoring measures, such as staff satisfaction, may be a useful addition to existing HH monitoring measures and aid meaning for the recipients of HH feedback data. Additionally, these may also potentially indicate a forthcoming change, both positive and negative, in HH behavior[13].

Undertake a systematic review and meta analysis to establish the effectiveness of hand washing in reducing absence and/or the spread of respiratory tract (RT) and/or gastrointestinal (GI) infection among school aged children and/or staff in educational settings. Eighteen cluster RCTs were identified; 13 school-based, 5 in child day care facilities or preschools. Studies were heterogeneous and had significant quality issues including small numbers of clusters and participants and inadequate randomization. Individual study results suggest interventions may reduce children' absence, RT infection incidence and symptoms, and laboratory confirmed influenza-like illness. Evidence of impact on GI infection or symptoms was equivocal. Studies are generally not well executed or reported. Despite updating existing systematic reviews and identifying new studies, evidence of the effect of hand hygiene interventions on infection incidence in educational settings is mostly equivocal but they may decrease RT infection among children. These results update and add to knowledge about this crucial public health issue in key settings with a vulnerable population. More robust, well reported cluster RCTs which learn from existing studies, are required[14].

Harmful microorganisms can be transferred to hands from contaminated surfaces people come into contact in daily life. Contaminated hands can transmit disease to one self as well as to others. A study was done to determine the extent to which hand hygiene practices and toilet door knobs contribute to the bacterial load of hands of toilet users in a medical school. Swabs were taken from a randomly selected sample of 60 medical students for bacterial count from both hands before and after toilet use and from door knobs of six toilets. Only 40 (66.7%) claimed they washed hands with soap. Significantly more females (83%) used soap to wash hands compared to males (50%). Bacterial load in the hands of both males and females showed an increase after\ toilet use. The increase was significant among male students. The dominant hand had a significantly higher bacterial load than the other. The mean bacterial load of male toilet door knobs (12 CFU/cm 2) were significantly higher than of female toilet door knobs (2.5 CFU/cm 2 (P < 0.05). Staphylococcus aureus was isolated from the hands of 21 students. Toilets and washrooms should be designed so as to eliminate the sources of contamination of the hands. The first landmark study using a multifaceted and multidisciplinary hand hygiene promotion strategy and showed significant and sustained hospital-wide compliance improvement associated with reduction of overall HAI prevalence and MRSA crosstransmission. The same approach of a multimodal culture-change campaign was adopted at state level in Victoria (Australia) and then at national level leading to significant sustained reductions of MRSA bacteremia and clinical MRSA isolates[15,16].

Hand washing interrupts the transmission of disease agents and so can significantly reduce diarrhoea and respiratory infections, as well as skin infections and trachoma. A recent review by Curtis and Cairncross[17] suggests that hand washing with soap, particularly after contact with faeces (post-defecation and after handling a child's stool), can reduce diarrheal incidence by 42-47 percent, while work by Rabie et al. suggests a 16 percent reduction in respiratory infections is possible through handwashing[18].Effective drying of the hands is an essential part of the hand hygiene process, but there is some debate over the most effective form of drying in washrooms. In 2008, a study conducted by the University of Westminster, London revealed that after washing and drying hands with the warm air dryer, the total number of bacteria was found to increase on average on the finger pads by 194% and on the palms by 254% and after washing and drying hands with a paper towel, the total number of bacteria was reduced on average on the finger pads by up to 76% and on the palms by up to 77%[19].Medicine reports that lack of hand washing remains at unacceptable levels in most medical environments, with large numbers of doctors and nurses routinely forgetting to wash their hands before touching patients[20].One study showed that proper hand washing and other simple procedures can decrease the rate of catheter-related bloodstream infections by 66 percent[21].

Evidence on the effectiveness of hand hygiene interventions in reducing infectious illness and/or absence in educational settings for children aged three to eleven years and/or staff working with them, and obtains a quantified estimate of the effect However, the majority (11/18) of the referenced studies are from developed countries, resulting in the review having less focus on developing countries, where the morbidity and mortality from infectious disease in children is the highest and contributes to most child death[18].In addition, the recent systematic review [22]did not distinguish between hand washing with soap and using hand sanitizer, even though the two may have different effectiveness and resource implications. Furthermore, its focus was not only on school children but combined with staff working with them. Addressing challenges that affect hand washing among schoolchildren can be vital in promoting health and reducing school absenteeism due to infectious diseases. While studies in this review tried to address some of these factors in their implementation, contextual and psychosocial factors were seldom used [23, 24]. Patient education was included in only one study [25]; the role of patients and the civil society in combating AMR is crucial at different levels and hand hygiene is one simple yet key measure that can be practiced and advocated for by them.

CONCLUSION

The WHO repeatedly point out that 'Patient Safety SAVES LIVES –Clean Your Hands'. This is the only solution to minimize HAI among patients, however, a multifaceted approach is needed to achieve it.Hand hygiene habits, for hands are the key carrier ofgerms that spread infections, and good hand hygiene is the one tool within easy reach of everyone that can reduce the risk of infection. Hand washing habits must be improved to ensure the individual health and thereby the socio-economic status.

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