Hand Hygiene in a Developing Nation:

The Perception of Hand Washing in Foreign Medical Health Professionals

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Abstract

This is an observational study which uses surveys supplied by World Health Organization (WHO) to assess the perception of hand washing amongst foreign medical health professionals in the medical care setting. The research design consists of assessing perception with pre- and post- surveys in correlation with a WHO recommended hand hygiene presentation and demonstrations which will be given to the above mentioned health care profession population. The data will be collected during a one month research period of April 2015 in Calcutta, India.

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The topic of healthcare associated infections (HCAIs) has been circulating within the medical community for decades. As a result, healthcare professionals have seen a robust evolution towards hand hygiene in the efforts to combat the incidence along with morbidity and mortality associated with HCAIs. The most recent discussions on this topic emphasize the implementation of multimodal strategies including healthcare workers' education, audits of hand hygiene practices and performance feedback, reminders, improvement of soap and water availability, use of automated sinks, and/or introduction of alcohol-based handrub as well as improvement of institutional safety climate with participation at the institutional, healthcare worker and patient level. Although this multimodal strategy is universal, there are discrepancies in perception amongst healthcare workers of developed vs developing countries. Therefore, HCAI remains as a non-discriminating concern that no institution or country and claim to have solved as yet.

In developed countries, HCAI concerns 5-15% of hospitalized patients and can affect 9-37% pf those admitted to intensive care units. The estimated HCAI incidence rate in United States of America was 4.5% in 2002, corresponding to 9.3 infections per 1000 patient-days and 1.7 million affected patients and an annual economic impact of $6.5 billion in 2004. Approximately 99,000 deaths were attributed to HCAI. These figures can seem alarming, however, when put into the context that this is within a paradigm where hand hygiene is rigorously enforced one can only imagine the figures when assessing within a paradigm where hand hygiene is not given its due diligence.

As discussed above, HCAI is a major problem for patient safety and its prevention must be the first priority for settings and institutions committed to making the health care safer. Hands are the main pathways of infection transmission during healthcare and the most important measure to address when discussing preventing transmission of infection. In developing countries there are numerous obstacles to overcome aside from the general misguided conception that hand hygiene is inconsequential. In addition to rudimentary bacterial infection control methods there are numerous unfavorable factors such as understaffing, poor hygiene and sanitation, shortage and overcrowding, which all can be attributed to lack of financial resources.

The perception of hand hygiene is the first hurdle to overcome in most developing countries. This is an observational study which will assess the perception of hand hygiene amongst foreign medical health professional (physicians, nursing staff, administration, etc.), specifically in Calcutta, India during April 2015. We will use the WHO "Perception Survey for Health-Care Workers" to establish the baseline perception of hand hygiene within this community, which will then be followed up by a PowerPoint presentation and demonstration addressing the essential components of hand hygiene (supplied by WHO), and conclude with a post-survey "Follow-up Perception Survey for Health-Care Workers." The purpose of this study is to establish the baseline perception of hand hygiene within the developing nation healthcare network and to evaluate the degree of effect that the educational component of the multimodal strategy has upon the constituents. Hopefully, this will help encourage healthcare professionals in developing nations to understand the importance of addressing HCAI within their systems.

Statement of the Problem

During previous interactions with healthcare professional in Calcutta, India it became apparent that there is an obvious misconception about hand hygiene. There was a notion that hand hygiene was not as imperative in warmer climates because it would inadvertently kill bacteria. This posed as a major observational problem that needed to be addressed. This research is being conducted so as to understand the root of why medical professionals within developing countries did not find hand hygiene as a priority despite the evolving evidence advocating for hand hygiene. There are numerous studies that assess the efficacy of education and the direct correlation it has with increasing awareness and compliance of hand hygiene within developing countries medical communities. For example, Berg, Hershow, & Ramirez showed that adherence baseline was 56% for hand hygiene in the setting of an intensive care unit, but after demonstrations, lectures, and feedback the adherence intervention increased to 83% for hand hygiene compliance. However, the question still stands as to what are the initial perceptions and to what degree has this education impacted their perception?

Purpose of the Study

The purpose of this study is to determine the baseline perceptions of foreign medical professionals in a developing nation and the effects of multimodal education paradigm upon their perceptions. This study will not be addressing how education of hand hygiene will affect compliance of hand hygiene or infectious rates within the medical institutions. This is an important area of discussion because it will help demonstrate the areas of improvement needed within the developing nations' mentality towards hand hygiene. This will be an observational study with assistance of WHO surveys to assess for change in perception.

Research Question/Hypothesis

For the purpose of this study; the following questions will be addressed:

1. What is the baseline perception of hand hygiene amongst the foreign medical professionals in a developing country, specifically of Calcutta, India?
2. Based on World Health Organization's campaign "Save Lives: Clean Your Hands," will the multimodal educational component change the perception of foreign medical health professionals?

As part of this study; investigation included one research hypothesis:

1. The delivery of the multimodal education component of World Health Organization's "Save Lives: Clean Your Hands" will have a direct effect with increased awareness of HCAI in foreign medical professionals' and a positive change in perception of hand hygiene.

Definition of Terms

1. *Health Care Associated Infections*- (HCAI) infections that patients acquire during the course of receiving treatment for other conditions within a healthcare setting
2. *Foreign Medical Health Professionals*- (aka Health Care Workers) these include any individual involved in patient care in the medical care setting such as physicians, medical residents, medical interns, nurses, nurses assistants, nursing students, and administration personal
3. *World Health Organization*- (WHO) organization supplying materials and tools in concordance with their "Save Lives: Clean Your Hands" campaign to promote and advocate for hand hygiene internationally

4. *Multimodal educational strategy*- educational tools provided by the WHO such as PowerPoint presentations, posters, demonstration models, and surveys for feedback.

Theoretical Framework

The theory behind this study exists in the establishment of a baseline of perception by the foreign medical health professionals. Through observations from previous interactions there is a general consensus and negative attitude towards hand hygiene. This study aims to establish the exact characteristics and quality of perception towards hygiene through the assistance of perception surveys supplied by WHO. After establishing baseline perception the participants will be given a presentation on hand hygiene and a demonstration on hand washing. The presentations and demonstrations are taken directly from WHO's "Save Lives; Clean Your Hands" protocol for implementation of hand hygiene awareness. This will help standardize the materials and education given to the participants in the study. After the educational component has concluded the participants will be offered a follow-up survey to assess the presence of a change in perception.

Literature Review

A systemic literature review from January 1980 to December 2013 was conducted using Medline, and various publications supplied and supported by WHO Clean Care is Safer Care

were evaluated in order to assessed the impact of hand hygiene improvement interventions to reduce transmission of infections.

Pittet et al published the first landmark study using a multi-faceted and multi-disciplinary hand hygiene promotion strategy and showed significant and sustained hospital-wide compliance improvement associated with reeducation of overall HCAI prevalence and MRSA cross contamination. Pittet and colleagues also estimated costs associated with hand hygiene to be less than $57,000 per year in a 2,600 bed hospital, an average of $1.42 per admitted patient. The same approach of multi-modal 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.

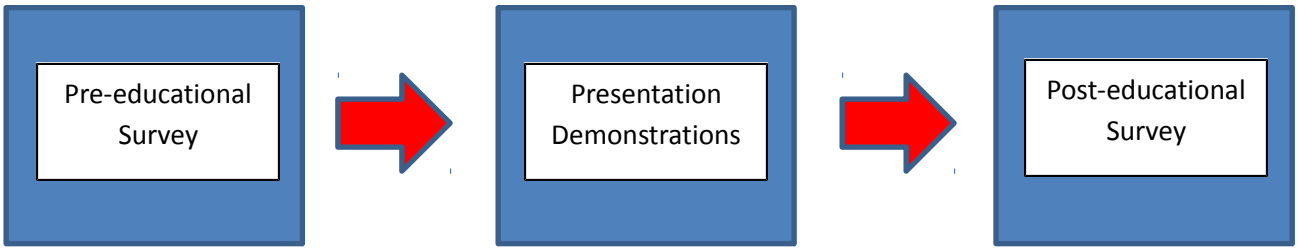
Numerous studies have also looked at the WHO multimodal strategy and have postulated that even with a 1% reduction in HCAI that there would be a significant cost benefit in the long-term. According to Chen and associates every $1 spent on hand hygiene promotion could result in a $23.70 benefit. In another study by Carbeoneau and associates, the overall prevention of 41 MRSA infections resulted in savings of $354, 276.00. Therefore, even a 1% increase in hand hygiene compliance would save close to $39,650.00 overall.

There overall conclusion for the literature review stated that to be successful in the changing the perception of culture of hand hygiene in developed or developing nations a multi-modal strategy (i.e. WHO recommendations) are required to sustain the context overtime.

Methodology

Research Design

This is an observational study with secondary data analysis of pre- and post- surveys. The results will be derived from measures set by the surveys and a comparison will be made between the two surveys (pre/post) to assess for a change in perception.



The surveys are standardized and the assessment of perceptions is based on various spectrum scales. The participants will be asked to answer the questions to the best of their ability. Once the surveys have been obtained, these will be placed into an Excel sheet to maintain continuity of records and to be able to evaluate any change in the spectrum. This cause and effect model will help determine if the educational component in the multimodal strategy has an influence upon the participants' perception.

Sampling

Participants will be selected strictly by a voluntary basis. The study will approach various health-care settings such as urban charity hospitals, urban government hospitals, urban private hospitals, medical schools, nursing schools, private clinics, and charity clinics. As to date we have corporation from an urban charity hospital (Calcutta Mercy Hospital), and a charity based clinic (Calcutta Rescue) and are expecting participation from other cohorts. Participants will be adult individuals involved in patient care i.e. physicians, medical residents, medical interns, nurses, nursing assistants, nursing students, and administration personal. Majority of individuals will be of Indian origin and from Calcutta, India.

Instrumentation

This study will use materials offered by World Health Organization's campaign "Save Lives: Clean Your Hands". Materials include a condensed version of the PowerPoint presentation indicated to train healthcare workers on hand hygiene, two perception surveys titled "Perception Survey for Health-Care Workers" and "Follow-up Perception Survey for Health-Care Workers, also three different posters to supplement visual components for hand hygiene. Please refer to the examples given coordinating to the Figure numbers given below.

WHO PowerPoint Presentation (Figure 1)

This is a reliable tool because it has been used internationally by WHO for numerous educational purposes and been positively received by various health institutions. Also, this presentation is revised and adjusted yearly. This tool will be condensed for our purposes as only the areas regarding hand hygiene perception and technique will be discussed. Every participant will receive the same presentation.

WHO Surveys:

Perception Survey for Health-Care Workers **(Figure 2.0)** and Follow-up Perception Survey for Health-Care Workers **(Figure 2.1)** are tools that originally were used to assess feedback in the "Save Lives: Clean Your Hands" multimodal strategy implementation, however for the this study's purpose it will be used to assess if a change of perception occurs after the presentation has been delivered. They are a reliable tool because it has been used worldwide by numerous healthcare institutions and been revised continuously until a non-biased standardized survey which could be translated into several languages could be developed.

Posters:

How to Handwash? **(Figure 3.0)**, How to Handrub **(Figure 3.1)**, and Your 5 Moments of Hand Hygiene **(Figure 3.2)** are reliable tools for visual demonstrations when teaching participants when and how to perform correct hand hygiene. These tools have been used internationally are well known to the healthcare community as standard practices for teaching hand hygiene as the tools are samples from WHO.

Data Collection and Analysis Procedure

Participants will be given and informed consent letter informing of them of their rights as participants in the study, an example which is provided within the packet for review. After participants have signed the informed consent the study will progress with the design structure mentioned above. First the pre-survey will be given to assess a baseline perception; after the surveys have been completed they will be appropriately picked up. The initial survey will have participant identifiers so that the post-survey can be matched up to compare results. After the presentation a post-survey will be given and picked up appropriately after the survey has finished. When these results are entered into the Excel sheet for record keeping the personal name identifiers will be removed and a number will be assigned so that the study stays within confidentiality parameters. Once results are entered into Excel, we will compare results to assess for any change in spectrum of perception within the survey. Statistics will be assessed and assistance will be given by OU-HCOM statistician Dr. Dogby.

Protection of Human Rights

Any participation in a research study is completely voluntary. Participants are free to decline to participate for any reason. Participants may also stop participating at any time or refuse to

answer any individual questions. Even after they sign the consent form, they can stop. Should they decide to decline or stop participating, this decision will in no way influence any services to which they are otherwise entitled. For example, if they are a student, the teacher or professor cannot hold this against them when determining your grade. Patient identifiers will be held confidential and not revealed to anyone that is outside of the research investigators.

Discussion

Transmissions through contaminated Health-Care workers hands are the most common pattern in most settings. Insufficient or very low compliance in both developed and developing nations have are still evident and are mostly due to misconceived perceptions about hand hygiene. The most common offenders are doctors, nursing assistants, and nurses. The mentality that exists is usually contributed to time constraints or the disbelief that they are susceptible to transmitting infections.

With organizations such as WHO campaigning internationally with over 123 countries participating in “Save Life: Clean Your Hands” it is but a matter of time before this becomes a standard of compliance for hospital communities. Developing nations will have an uphill battle to overcome because changing the perception of health-care workers is just the first step in the right directions. They will have not only have to assess perception problems but also the financial hurdles in the future when it comes to making hand hygiene stations such as sinks and alcohol sanitizers readily available.

Addressing the breaks in foundation with perception will help developing nations to bring about change and hopefully install a system for measurement of hand hygiene. After all, if there one cannot measure change; how will a system improve? With the expected results of this study

it will hopefully open the door for discussion in developing nations to increase awareness of HCAI and start implementing programs such as WHO's "Save Lives: Clean Your Hands." The changes in perception come from the leaders within a system and the healthcare community in developing nations will surely see a revolution for hand hygiene on the forefront in the future.

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