Knowledge, Perception and Practices on Hand Hygiene Among Health Care Workers of Southern Philippines Medical Center

Mary Grace B. Alestante, MD; Charito Saniel-Casia, MD, FPAFP and Ella Joy Nogas-Perez, MD, DPSCOT

Background: Health care associated infections (HCAI) lead to prolonged hospital stays, serious illnesses, and long-term disabilities, thereby become an economic burden to both patients and families. Substantial evidence demonstrated the effectiveness of hand hygiene in preventing the spread of infection. Study results would help improve campaign practices among hospital staff to reduce HCAI, hospitalization costs and enhance safety among patients and health care workers.
Objective: This study determined the knowledge, perception and practices on hand hygiene among the health care workers of Southern Philippines Medical Center in Davao City.
Design: A cross-sectional study using a self-administered questionnaire.
Results: There were 166 respondents. Majority (94.58%) had adequate knowledge, positive perception (98.80%) and correct practices (89.16%) on hand hygiene. Mean knowledge ($p \leq 0.01$) scores were significantly higher for the resident physicians compared to other health care workers. However, mean practice scores were higher ($p \leq 0.01$) for other health care workers compared to resident physicians. There was no significant difference on the mean perception score ($p = 0.59$).
Conclusion: This study reflects a high level of awareness on hand hygiene among the health care workers in Southern Philippines Medical Center. This over-all good performance was attributed to daily campaign on hand hygiene heard on PA system, reminders posted on every working area, availability of alcohol- based hand rub, and on- the-spot hand hygiene performance which positively affects compliance to hand hygiene among HCWs of this Institution.

Keywords: knowledge, attitude, performance, hand hygiene, nurses, health care workers

Introduction

Millions of patients worldwide are affected by health care associated infections (HCAI) annually. These infections lead to prolonged hospital stays, more serious illnesses, and long-term disabilities, thereby become an economic burden to both patients and families in terms of their health care, and at times would result to tragic loss of life. The burden of the disease affects about 5 to 15% of hospitalized patients in developed countries. HCAI pervades every health care facility globally with a universal risk of acquiring the infection. Often serving as the conduit for the spread of infection to other patients are the Health care workers (HCW).[1]

In the Southern Philippines Medical Center (SPMC), the 2015 census of HCAI showed a total of 989 cases of HCAI from January 1 to December 31, 2015. Out of these 989 patients with HCAI, 66.83% recovered while the remaining 33.16% died.[2]

According to the WHO, appropriate infection measures can probably prevent at least 20% of HCAI.[3,4] To reduce the occurrence of HCAI, hand hygiene (HH) is recognized as a primary intervention to prevent spread of microorganisms.[5,6] However, reports show that healthcare workers, in both developed and developing countries, have insufficient or very low compliance rates in hand hygiene indicators at different levels. Despite these evidences, however, adherence of HCWs to recommended hand

* From the Department of Family and Community Medicine, Southern Philippines Medical Center, Davao City

hygiene procedures has been reported as variable, with mean baseline rates ranging from 5% to 89% and an overall average of 38.7%.[7,9,10] There are numerous studies documenting the essential role of HCW's hands in the spread of microorganisms within the healthcare environment and ultimately to the patients. Hence, WHO strongly emphasizes the essential need for hand hygiene during healthcare delivery and launched various programs in this line. [8]

This study was conducted to determine the knowledge, perception and practices on hand hygiene among the health care workers of Southern Philippines Medical Center (SPMC). Since there was no local data regarding the knowledge, perception and practices on hand hygiene among health care workers, study results will help improve the campaign practices among hospital staff to reduce healthcare associated infection, hospitalization costs and enhance safety among patients and healthcare workers.

Review of Related Literature

The World Health Organization advocates hand washing with soap and water and considered it as a measure of personal hygiene. The importance of the hands in the transmission of hospital infections has been well demonstrated, and can be minimized with appropriate hand hygiene practices. However, compliance with handwashing, is oftentimes low. This can be due to a variety of factors, including: lack of available supplies, the high patient census compared to health care workers on duty, allergies to hand hygiene products, not enough knowledge about the risks and procedures, duration recommended for washing, and the time required.[9]

The WHO recommends the implementation of standard precautions for all patients at all times in order to prevent the spread of microorganisms and multi-drug resistant organisms in particular hand hygiene performance according to recommendations is the most important measure among standard precautions. Further, because the role of patients and the civil society in combating anti-microbial resistance is essential at different levels, the WHO encouraged patient education because hand hygiene is a simple yet central measure that can be practiced and advocated for.[9]

A study conducted by A. Karaaslan, et al. in Turkey concluded that although handwashing procedure is simple, compliance among healthcare workers is so low that it cannot be easily explained or changed. The authors believed that a lack of motivation and increased workload may be the two causes of poor compliance. They also pointed out in the study that the highest compliance rates were after patient contact and contact with patient environment, and for this reason they believed that HCWs prefer to protect themselves to a greater extent than the patient.[10]

A similar study conducted by N. Adbella, et al. found out that HH compliance among health-care providers was low (16.5%). The authors concluded that good knowledge and training on HH is significantly associated with good HH compliance and the presence of materials like alcohol-based hand rub and individual towel or tissue paper are also positively associated with HH compliance.[11]

A research done by B. Al-Wazzan, et al. showed that observed compliance rate was poor (33%). However, a self-reported compliance was extremely high at more than 90%, which reflects a high level of awareness among nurses but may also indicate that improving compliance through increasing awareness has probably reached saturation. They concluded that regular auditing for hand hygiene and properly applied feedback on performance should be explored to promote hand hygiene practices.[12]

In the Philippines, a study conducted by A.F. Gaboy and R. Berba revealed that the overall compliance was low (10.9%) despite years of hand hygiene campaign in the hospital. Several factors affecting compliance were also noted such as demographic characteristics, work conditions, infrastructure and cognitive factors. The authors further concluded that knowledge, attitudes and perceptions toward hand hygiene seem to play a minor role in the overall hand hygiene performance of health care workers.[13]

This study aimed to determine the knowledge, perception and practices among health care workers assigned at the inpatient wards of the Southern Philippines Medical Center. The findings of this study can help improve hand hygiene campaign and practices within the hospital and among hospital staff, and in effect reduce the possible spread of hospital-acquired infections, thus reducing hospitalization cost, and enhancing safety not only to the patients but to the health care workers as well.

Methods

Study Design and Setting

A cross-sectional study using self-administered questionnaire and direct observation was conducted at the Southern Philippines Medical Center, Davao City.

Participants

A total of 83 resident physicians and 83 other health care workers were recruited since they met all of the inclusion and none of the exclusion criteria listed.

Inclusion criteria:

Resident physicians, nurses, nursing aids, phlebotomists, therapists, radiology technicians, and transporters who have direct contact with patients during the data collection period and willing to give consent

Exclusion criteria:

Health care workers who have no direct, skin to skin, contact with the patients such as housekeeping and dieticians and student affiliates not employed by the institution.

Data Gathering

A certificate of approval from the DOH XI Cluster Ethics Review Committee was obtained before study commencement. A permission to use the research tools from WHO was granted prior to conducting the survey. Modifications were done to make the questions appropriate for study participants with permission from WHO. The original questions were written in English and translated to Visayan by a translator. Participants had a choice whether to answer the English questionnaire or the Visayan translation. Informed consent was secured from the randomly-chosen study participant. Privacy and confidentiality of participants information were ensured. There were 2 sets of questionnaires distributed. The first set was Hand Hygiene Knowledge Questionnaire for Health Care Workers and the second set was Perception Survey for Health Care Workers. Completed questionnaires were gathered and identified participants were informed that they will be observed in the ward while delivering routine services.. Study participants were directly observed and recorded using the WHO Observation Form when indications for hand hygiene were noted. Observation was done for 10 to 20 minutes.

Independent Variables

Socio-demographic data included age, gender, profession and department.

Dependent Variables and Outcome Measures

Knowledge was evaluated through a 21-item questionnaire which included demographics, 5-item questions answerable by yes or no, 4-item multiple choice questions, 1 true or false item and 1 item which requires participants to choose it by rubbing, washing or none. Knowledge was computed by assigning 1 point for every correct answer. The total score was converted to percentage. A score of ≥50% was considered an adequate knowledge while a score of <50% was considered inadequate knowledge.

Perception was determined by a 24-item questionnaire. Questions 14, 18 and 24 required participants to indicate the values from 0% to 100% based on their own opinion. Items 15, 16 and 17 required participants to rate as "high" or "very high" in order to get a positive perception. Items under number 19 required ticking the last 3 boxes towards the "very effective" to record a positive perception. For items 20, 21 and 22, participants needed to choose "very high importance" to get a positive perception. Item 23 required participants to respond "no effort" to get a positive result. One (1) point was given to each positive response so that the maximum score for perception is 14. A score of more than 7 (>50%) was considered positive perception and a score of less than 7 (<50%) was considered negative perception.

Practice was assessed based on observation on the 5 moments of hand hygiene. Compliance was recorded against the opportunities for hand hygiene that occurred. The observer watched the participant and recognized the opportunity in which hand hygiene should be performed. The observer then marked on the form if the hand hygiene was performed at the appropriate times. Calculation of compliance was computed using this formula:

$$\text{Compliance} = \frac{\text{Total number of hand hygiene actions performed}}{\text{Total opportunities for hand hygiene}} \times 100$$

Correct practices were given to HCW who had >50% compliance rate while poor practices were given to HCW who had <50% compliance rate.

Data Analysis

Data were encoded in excel format and analyzed using Epi Info version 7. Descriptive statistics such as mean and standard deviations for continuous variables were determined. Categorical data were presented as frequencies and percentages. A p-value of <0.05 was considered significant.

Results

All 166 respondents completed the survey. Table 1 describes the baseline demographic characteristics of the 166 respondents included in the study. Their mean age was 30 years. Majority of the respondents were female. Majority (36.14%) of the resident physicians were internal medicine residents, followed by

pediatric residents (24.10%), then OB Gyne residents (15.66%), general surgery residents (14.46%) and family medicine residents (9.64%). Out of 166 respondents, only 59 or 35.54% received formal training on hand hygiene in the last 3 years.

Table 1. Demographic and other characteristics of the 166 respondents.

Characteristics	Values (n=166)
Mean age ± SD, years	30.25 ± 5.09
Sex, frequency (%)	
Male	45 (27.11)
Female	121 (72.89)
Profession, frequency (%)	
Resident physician	83 (50.00)
Nurse/Nursing aid	50 (30.12)
Phlebotomist	18 (10.84)
Therapist	9 (5.42)
Radiology technician	3 (1.81)
Transporter	3 (1.81)
Department, frequency (%)	
Internal Medicine	30 (36.14)
Pediatric	20 (24.10)
Obstetrics-Gynecology	13 (15.66)
General Surgery	12 (14.46)
Family Medicine	8 (9.64)
Received formal training in hand hygiene in the last 3 years, frequency (%)	59 (35.54)

Table 2 shows the mean scores and frequency of participants having adequate knowledge, positive perception and correct practice. A participant was considered to have adequate knowledge if the knowledge score was 50% or more (13 or more from 25 items). Majority (94.58%) of the participants had adequate knowledge on hand hygiene with a mean knowledge score of 69.90 ± 11.35. The mean perception score was 86.87 ± 13.60. A participant was considered to have positive perception if the perception score was 70 or more. Majority (98.80%) of the participants had positive perception regarding hand hygiene. A respondent was considered to have correct practice if hand hygiene was performed when there was indication based on the 5 moments of hand hygiene during observation. The study showed that 148 or 89.16% of the participants performed hand hygiene when indicated upon observation. The mean practice score was 71.79 ± 33.92.

Table 2. Mean scores and frequency of participants having adequate knowledge, positive perception and correct practice on hand hygiene.

Characteristics	Values (n=166)
Mean knowledge score ± SD	69.90 ± 11.35
Respondents with adequate knowledge, frequency (%)	157 (94.58)
Mean perception score ± SD	86.87 ± 13.60
Respondents with positive perception, frequency (%)	164 (98.80)
Mean practice score ± SD	71.79 ± 33.92
Respondents with correct practice, frequency (%)	148 (89.16)

Table 3 shows the comparison on the level of knowledge, perception and practices on hand hygiene among resident physicians and other health care workers. What is notable is that although knowledge is significantly higher among resident physicians than other health care workers, in terms of practice other health care workers have higher scores than resident physicians.

Discussion

The most important element of infection control activities is simple hand hygiene. Enough scientific evidence supports the observation that if properly instigated, hand hygiene alone can significantly lessen the risk of cross-transmission on infection in healthcare facilities.[14] Despite being simple and basic, yet it is one of the most neglected practices.[15] This study, however, reflects a high level of awareness on hand hygiene among the health care workers in Southern Philippines Medical Center. This study revealed that 157 out of the 166 participants (94.58%) had adequate knowledge on hand hygiene. This finding is much better than the findings of the study conducted in Lagos University Teaching Hospital in Nigeria where 83% of the health care worker had good knowledge.[16] The high level of knowledge on hand hygiene presented by the data was essential for improved patient quality of care in this Institution.

A positive perception towards hand hygiene was also demonstrated in this study. Majority or 164 out of the 166 respondents (98.80%) had positive perception. Similar findings have been reported in other studies. In Lagos, Nigeria health care providers demonstrated positive attitude (96.7%).[16] A study done in Cairo found out that nurses had positive attitude (96.0%) towards hand hygiene as being protective to health care personnel.[17] This positive perception exhibited by the participants

Table 3. Comparison on the level of knowledge, perception and practices on hand hygiene among resident physicians and other health care workers.

Characteristics	Medical doctors (n=83)	Other health care workers (n=83)	p-value
Mean knowledge score ± SD	72.53 ± 11.07	67.28 ± 11.07	<0.01*
Respondents with adequate knowledge, frequency (%)	81 (97.59)	76 (91.57)	0.087
Mean perception score ± SD	86.27 ± 15.24	87.47 ± 11.80	0.57
Respondents with positive perception, frequency (%)	82 (98.80)	82 (98.80)	1.00
Mean practice score ± SD	61.65 ± 30.21	81.93 ± 34.55	<0.01*
Respondents with correct practice, frequency (%)	75 (90.36)	73 (87.95)	0.62

*statistically significant

may be attributed to their knowledge on the ill effects of poor hand hygiene.

This study revealed a correct practice of 89.16% (148 out of 166 respondents). This result is higher compared to a study conducted by Chavali, et al. where overall compliance as per WHO guideline was 78%[18], while many other studies conducted on the practice of hand hygiene have reported a much lower compliance rate. In contrast, a local study conducted in a private hospital in the Philippines by Ahlstrom, M and Valles, CF resulted to a compliance rate of only 26.25%.[19] Hence, the over-all good performance of the healthcare workers in this study was attributed to the daily campaign on hand hygiene heard on the PA system, the reminders posted on every working area to do hand hygiene, the availability of hand rub as well as the on-the-spot hand hygiene performance done by the Nursing Service which positively affects performance and compliance to hand hygiene among HCWs of this Institution.

Although only 59 out of 166 (35.54%) participants had formal training on hand hygiene for the past 3 years this does not affect the respondents' overall performance to hand hygiene compliance. While majority of the participants did not have formal training, information on hand hygiene was readily available through posters, ads and actual demonstrations given by the Infectious Unit in the Institution.

The easy access and availability of hand hygiene supplies particularly alcohol based hand rub was an important factor in compliance to hand hygiene in this Institution. This is supported by a study done by Voss and Widmer which concluded that alcohol based disinfection, with its rapid activity, superior efficacy, and minimal time commitment allows 100% health care worker compliance without interfering with the quality of patient care compared with hand washing which required longer time to perform which may interfere with patient care.[20]

Wearing gloves was noted to be one of the important barriers for compliance with hand hygiene. It was also noted in the study that hand hygiene is required whether or not gloves are used or changed.[21] Failure to remove gloves and perform hand hygiene after patient contact constitutes non-compliance with hand hygiene recommendations. In this study, it was observed that some of the participants were wearing gloves during performance of routine patient care even when not indicated. WHO advised that using gloves does not replace the need for hand hygiene and gloves must be worn only when indicated according to the Standard and Contact Precautions. Gloves are indicated when there is a potential for touching blood, body fluids, secretions, excretions and handling items visibly soiled by body fluids and hand hygiene is strongly encouraged to be performed after glove removal.

As regards to resident physicians having slightly but significantly better knowledge ($p \leq 0.01$ compared to other health care workers as reflected in this study, these findings support the findings of the study conducted in Odisha, India where they reported an overall 71.42% knowledge of hand hygiene practices among nursing staff as compared to 100% of doctors having knowledge of hand hygiene practices.[22] However, as found in this study, higher knowledge does not automatically translate to better practice since the other health care staff had significantly higher practice scores.

Conclusion

Majority of the respondents included in this study were females with no prior formal handwashing training.

Most of the participants had adequate knowledge (94.58%), positive perception (98.80%) and correct practices (89.16%) on

hand hygiene. As shown in the data, the lack of formal training on hand hygiene did not hinder the participants to perform well in this study.

Mean knowledge scores were higher for resident physicians while mean practice scores were lower for the resident physicians compared to other health care workers. There was no significant difference on the mean perception score.

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