

# Knowledge of Hand Hygiene among the Medical Students at the General Sir John Kotelawala Defence University

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## Abstract

**Background.** Hospital acquired infections are commonly transmitted by the hands of healthcare workers. The objective of this study was to compare the knowledge of hand hygiene among the preclinical students and the students with clinical exposure.

**Method.** A self-administered, pre-tested validated questionnaire from previous publications, based on hand hygiene guidelines by the WHO, was distributed among all the medical students at the General Sir John Kotelawala Defence University.

Results were analyzed by comparing the knowledge of the WHO guidelines with the appropriate hand hygiene behaviour of the medical students. The percentages were calculated and compared using the statistical test for proportions. A  $p < 0.05$  was considered to be statistically significant.

**Results.** All 104 (58.75%) preclinical students and 73 (41.24%) students who had clinical exposure participated in the study.

Of the preclinical students the percentage who knew the that the hands should be washed before having direct contact with patients, after having direct contact with the patients, if moving from a contaminated body site to a clean body site in the same patient, before clean/ aseptic procedures, after contact with body fluid/blood and after contact with any object in patient's immediate surrounding were 67.30%, 50%, 50.96%, 88.46% and 34.61% respectively. Of the student with clinical exposure, these were 49.31%, 63.01%, 31.50%, 87.67%, 94.52% and 27.39% respectively.

Twenty-two (21.15%) of the preclinical students and 29 (39.72%) of the students with clinical exposure knew the correct duration of hand washing ( $p = 0.007$ ).

**Conclusion.** Correct duration of hand washing ( $p = 0.007$ ) and knowledge of hand hygiene before clean/ aseptic procedures ( $p < 0.001$ ) were significantly better among students with clinical exposure. The knowledge on other aspects showed no significant difference between the two groups ( $p > 0.05$ ). In general, the hand hygiene knowledge and practice among medical students was not satisfactory. Therefore, further education with regard to hand hygiene is necessary.

**Keywords:** Hand hygiene, Medical students, General Sir John Kotelawala Defence University

## I. INTRODUCTION

Health-care associated infections continue to pose a serious threat of increasing mortality and morbidity among the hospitalized patients. World Health Organization reports that at any time, over 1.4 million people worldwide suffer from infections acquired in health-care settings (WHO guidelines on hand hygiene, 2005). The rates of nosocomial infections tend to be as high as 39% in hospitals located in resource-poor countries (Rizvi, et al., 2007).

Organisms that cause nosocomial infections are most commonly transmitted by the hands of healthcare workers (Kusachi, et al., 2006). Therefore, hand-hygiene is considered to be the single best measure for infection control and it has been observed that rates of nosocomial infection are considerably reduced when healthcare workers act in accordance with recommended guidelines for hand hygiene (Kusachi, et al., 2006, Lam, et al., 2004, Pittet, et al., 2000). Despite this fact, adherence to hand-hygiene practices remains consistently poor among the health care workers (Pittet, et al., 2000, Kaplan, et al., 1986, Danchaijitr, et al., 2005). Notable factors for poor compliance include inaccessibility or shortage of hand-washing equipment (Kaplan, et al., 1986, Danchaijitr, et al., 2005, Akyol, et al., 2007, Sax, et

al., 2005, Harris, et al., 2000), hand irritation (Akyol, et al., 2007), heavy work load (Akyol, et al.,2007, Sax, et al., 2005, Pittet, et al., 2004), and poor knowledge (Danchaivijtr, et al., 2005, Sax, et al., 2005).

Medical students are an integral part of the health care team. Therefore it is important to assess their knowledge of hand hygiene, to reduce the incidence of health care associated infections. To bring about a change it is necessary to first collect information about medical students' assessment of their own behaviour towards hand-hygiene and their attitude towards possible interventions. Many studies in this domain have been carried out in the West (Graf, et al.,2012, Scheithaner, et al., 2011), but sparse data is available from developing countries.

The objective of this study was to compare the knowledge of hand hygiene among the preclinical students and the students with clinical exposure.

## II. MATERIALS AND METHODS

**Study design and setting:** This study was a descriptive cross sectional study. The study was carried out at the Faculty of Medicine, General Sir John Kotelawala Defence University in September 2013.

**Study population:** All the medical students at the Sir John Kotelawala Defence University were participated in the study.

Presently there are five batches of medical students. The numbers of medical students are one hundred and seventy seven.

**Data collection and data collection tools:** Self-administered, pre-tested validated questionnaire from previous publications, based on the hand hygiene guidelines laid down by the World Health Organization (WHO guidelines on hand hygiene, 2005) was used for data collection and the questionnaire was administered in English. The questionnaire was distributed to all the 177 medical students after a brief explanation. It was explained to the students that participation is voluntary and that there will be no repercussions for not participating in the study. If they do not give consent they can return the incomplete questionnaire. Filling of the questionnaire implies consent. The students were requested to hand over

the completed questionnaire to the Department of Para Clinical Sciences.

**Statistical analysis:** Results was analysed by comparing the knowledge of WHO guidelines with the appropriate hand hygiene behaviour of the medical students. The percentages were calculated and compared using z test for proportions. A  $p < 0.05$  was considered to be statistically significant.

## III. RESULTS

All 177 students to whom the questionnaires were distributed participated in the study. Of the students 132 (74.58%) were males.

There were 104 (58.75%) preclinical students and 73 (41.24%) students who had clinical exposure.

Thirty (28.84%) of the preclinical students and 25 (34.24%) of the students with clinical exposure knew that hand washing is the single most important event in the prevention of hospital acquired infections ( $p=0.445$ ).

The numbers and the percentages of the preclinical students who knew the importance of each component of hand hygiene is shown in Table 1.

**Table 1: The numbers and the percentages of the preclinical students who knew the importance of each component of hand hygiene**

Component of hand hygiene	Number	Percentage (%)
hands should be washed before having direct contact with patients	56	53.84%
after having direct contact with the patients	70	67.30%
if moving from a contaminated body site to a clean body site in the same patient	52	50%
before clean/ aseptic procedures	53	50.96%
after contact with body fluid/ excretion/ blood/ mucus membranes/ non intact skin/ wound dressings	92	88.4%
after contact with any object in patient's immediate surrounding	36	34.61%

The numbers and the percentages of the students with clinical exposure who knew the importance of each component of hand hygiene is shown in Table 2.

**Table 2: The numbers and the percentages of the students with clinical exposure who knew the importance of each component of hand hygiene**

Component of hand hygiene	Number	Percentage (%)
hands should be washed before having direct contact with patients	36	49.31%
after having direct contact with the patients	46	63.01%
if moving from a contaminated body site to a clean body site in the same patient	23	31.50%
before clean/ aseptic procedures	64	87.67%
after contact with body fluid/ excretion/ blood/ mucus membranes/ non intact skin/ wound dressings	69	94.52%
after contact with any object in patient's immediate surrounding	20	27.39%

None of these differences were significant except if moving from a contaminated body site to a clean body site in the same patient ( $p=0.014$ ) and before clean/ aseptic procedures ( $p<0.001$ ). Twenty-two (21.15%) of the preclinical students and 29 (39.72%) of the students with clinical exposure knew the correct duration of hand washing (40 to 60 seconds) ( $p=0.007$ ). Seventy-four (71.15%) of preclinical students and 56 (76.71%) students with clinical exposure said they need further education in hand hygiene.

#### IV. DISCUSSION

We compared the knowledge of hand hygiene among the preclinical students and the students with clinical exposure at the Faculty of Medicine, General Sir John Kotelawala Defence University, Sri Lanka.

Our findings indicated that the correct duration of hand washing ( $p=0.007$ ) and knowledge of hand

hygiene before clean/ aseptic procedures ( $p<0.001$ ) were significantly better among students with previous clinical exposure. The knowledge on other aspects of hand hygiene showed no significant difference between the two groups.

A study which was conducted in a Turkish medical school in 2010 also indicated that the knowledge and practices of hand hygiene among the medical students were insufficient (Ergin, et al., 2011).

Although hand hygiene is a simple procedure, in general, the hand hygiene knowledge and practice among these military medical students did not meet the current standards set by the World Health Organization (WHO). Therefore, development of hand hygiene promotion programs will be necessary to improve the hand hygiene of our students.

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