

ORIGINAL RESEARCH

Mastery of the World Health Organization's techniques of handwashing by the nursing students at the University of Namibia

Amakali Kristofina *, Ndjalo Peneyayambeko

School of Nursing, University of Namibia, Windhoek, Namibia

Received: January 20, 2016

Accepted: April 11, 2016

Online Published: June 13, 2016

DOI: 10.5430/jnep.v6n10p110

URL: <http://dx.doi.org/10.5430/jnep.v6n10p110>

ABSTRACT

Hand hygiene practice is essential to prevent cross infection during health care delivery. Poor hand hygiene by health care providers can be a source of hospital acquired infections among patients. In their first year of studies, nursing students are taught the skills of correct hand washing according to the World Health Organization (WHO)'s techniques to prevent cross infection. Hence, they are expected to demonstrate the mastery of hand hygiene practice and to apply the skills in clinical practice when providing care to patients. A quantitative, cross sectional descriptive study assessed the practice of hand hygiene by the second year nursing students at the University of Namibia (UNAM), main campus during their placement in clinical practice. The primary quantitative data was gathered through a structured questionnaire with the sections on the students' demographic and the practice of hand washing according to the WHO set standards. The findings revealed that in exemption to the few (33%), the majority (67%) of the participants have low compliance with hand hygiene practice. In conclusion, recommendations were made with regard to teaching, environmental factors, processes of caring and attitudes of health care staff which may influence the practice of hand hygiene by the nursing students.

Key Words: Hand hygiene, Nursing students, Clinical practice

1. INTRODUCTION

A typical health care setting or a hospital is associated with the risk of nosocomial infections. The hands are the vehicle for the transmission of cross infection and as such, are considered the dirtiest parts of the body. Recent scientific studies indicate that more than 2 million bacteria are found on the hands especially the fingertips and the spots under the fingernails.^[1] Therefore, the literature^[2] argues that nurses' hands are frequently contaminated during routine patient care and can be the source of cross infection among hospitalized patients.

Nevertheless, the World Health Organization (WHO) indicates that almost 50% of health care providers around the globe do not comply with the practice of hand hygiene when providing care to patients.^[3] Concurrently, hospital-based studies have revealed that non-compliance with hand hygiene practice by health care providers is associated with hospital acquired infection, the spread of multi-resistant organisms and even the outbreaks of infectious diseases.^[4] Therefore, nursing students have to learn and enculturate correct practice of hand hygiene for prevention of cross infection to the patients.

*Correspondence: Amakali Kristofina; Email: kamakali@unam.na; Address: School of Nursing; University of Namibia Private Bag 13301; 340 Mandume Ndemufayo Avenue, Windhoek, Namibia.

Hand hygiene in health care facilities is a method of cleansing hands preferably by washing hands with soap and running water between patients' contacts and after contact with body secretions, contaminated items and immediately after removing gloves.^[5]

Scientific studies indicate that the prevalence of health care associated infections decreased with the improvement of hand hygiene measures. As a result, the WHO who is a custodian for global health advocates for the promotion of hand hygiene practice by health care providers as a priority measure. The organization recommended new methods of hand washing for health care providers to eradicate diseases causative micro-organisms, thereby preventing hospital acquired infections.^[6]

Thus, the World Health Organization instituted the techniques of hand washing to control the spread of infections in health care facilities.^[6] These techniques of hand washing were adopted by the Namibian Ministry of Health and Social Services. Health care providers, including nursing students are expected to adhere to the guidelines of hand washing when providing care to patients to prevent cross infections. Additionally, this guideline on hand washing are to be displayed in all health facilities to serve as cues to health care providers on correct hand hygiene practice for health care providers in order to prevent cross infection.

Despite the induction to the correct hand washing practice, during clinical placement of the nursing students, the researchers observed that some of the second year nursing students do not comply with the correct techniques for hand-washing as recommended by the World Health Organization. This trend can increase the risk of cross infection among patients. As a result, this study was conducted in partial fulfillment of the 4th year nursing student's research project to assess the mastery of the WHO's techniques of handwashing by the second year nursing students at UNAM, main campus.

Aim and objectives for the study

The aim of this study was to observe hand washing by the second year nursing students at UNAM, main campus. The specific objective(s) was to assess the mastery of the WHO's standards of handwashing by the second year nursing students at UNAM, main campus.

2. METHODS

A quantitative, cross-sectional descriptive approach was applied and the skills and frequencies of hand hygiene practice by the second year nursing students were assessed and findings were described.^[7] The study population included all 73 second year nursing students, both males and females of

the academic year 2014. at the University of Namibia, main campus. The target population was the twenty (20) second year nursing students who were allocated at KHC at the time of the study.^[8] The target population was the twenty (20) second year nursing students who were allocated at Katutura Health Centre (KHC) at the time of the study.^[8] A probability random sampling of the 95% confidence intervals (expected frequency 50%, confidence limit 5%) was used to draw a representative sample of 19 nursing students for the data collection in order to ensure validity of the data^[7] as illustrated below.

$$n = \frac{N}{1+N \times a^2} = \frac{20}{1+20 \times 0.05^2} = \frac{20}{1+0.05} = 19 \text{ sample size.}$$

n = sample size, N = total population, and a = confidence limit 5% or 0.05.

However, given the availability of the second year nursing students during clinical hours at the time of the study, a convenient sample of 15 second year nursing students was enrolled and participated in the observation of hand washing.

The data were collected at Katutura Health Centre through a structured questionnaire^[8] that assessed the skills of hand hygiene practice by the second year nursing students in accordance the WHO techniques of hand washing. Content and face validity of the data were ensured through a structured questionnaire (checklist) with the content analogous to the techniques of hand washing as recommended by the WHO.

Data analysis

The data were analyzed using the Statistic Package for Social Science (SPSS).^[7] Descriptive statistics were performed on the demographic information of the participants and their skills on hand hygiene according to the WHO's techniques of hand washing to prevent cross infection in health care facilities. The findings were described by means of tables, bars and charts of frequency distribution and percentages as presented in the next sessions.

3. THE FINDINGS

The findings present the demographic information of the participants which may have a bearing on the student's mastery of hand hygiene practices and their mastery of the WHO's techniques of hand washing to prevent cross infection. The Figure 1 describes the gender of the participants.

The findings indicate that of the total sample (15) from the second year nursing students who participated in the study, 80% were females while 20% were males. The second demographic factor that was analyzed in this study was the ages of the participants as described in the Figure 2.

The findings indicated that the majority of the participants

were of younger age. The mode age of the students who participated in the study was between 18-20 years. In the next session, the findings on the skills of hand hygiene practice according to the WHO's techniques of hand washing are presented.

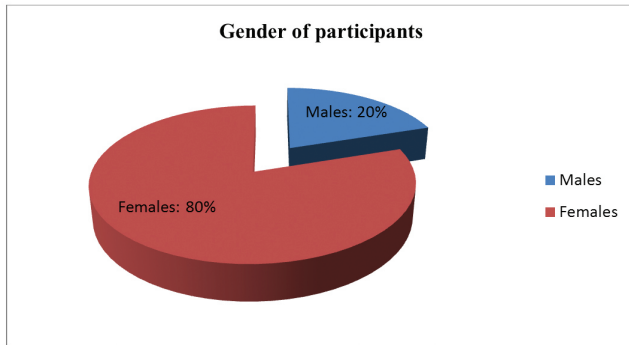


Figure 1. Gender of the participants

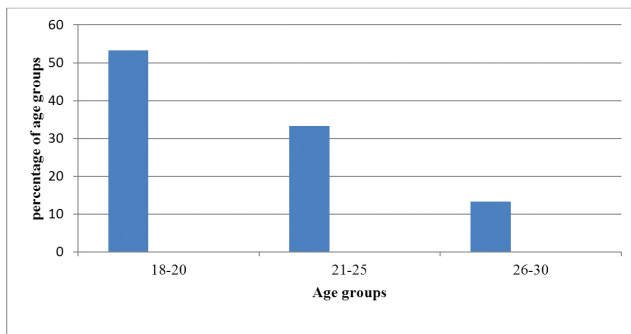


Figure 2. Age groups of the study participants

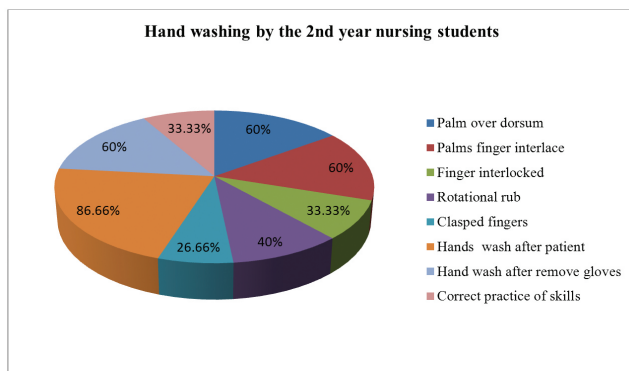


Figure 3. The participants' compliance with the WHO's techniques of hand washing: Steps with the lowest scores

Mastery of the WHO's techniques of handwashing

The findings indicated that all (100%) the participants complied with wetting of hands, soap application and rubbing

of palm to palm. However, only 60% of the participants performed palm over dorsum interlaced, and palm interlaced respectively. Only 40% of the participants performed rotational rubbing of thumbs. Furthermore, only 27% of the participants performed rotational rubbing backwards and forwards with clasping fingers. Only 86.3% of the participants washed their hands with soap after patient contact. Moreover, none (0%) of the participants used a towel or a facet to turn off the tap as a measure to prevent contamination of cleansed hand. The overall compliance with the WHO's techniques of hand washing was 33.33%. The Figure 3 displays the scores for the compliance with the WHO's techniques of hand washing by the study participants.

4. DISCUSSION, CONCLUSIONS, LIMITATIONS AND RECOMMENDATIONS

The aim of the study was to assess if the second year nursing students apply the techniques of hand washing correctly as prescribed by the WHO guideline to prevent cross infection. The next sessions provide the discussions of the findings in accordance the study objectives and contextualized with the relevant existing literatures.

4.1 Discussion

The findings indicate that the majority of the respondents were females. This is in concurrence with the high female-male ratio phenomenon in Namibia. Thus female students are also inclined to have a high representation in the study programme. More than half (53.3%) of the participants were younger than 21 years old as they were also just in their inception into the nursing profession. Therefore, they were still learning the mastering of the basic skills of nursing care including the practice of the techniques of hand washing. As a result, they need constant supervision for the reinforcement of correct hand hygiene practice in health care facilities, to prevent cross infection.

The findings demonstrated a decline in compliance with the WHO's techniques of hand washing as the steps of hand washing advanced. The overall rating of handwashing demonstrated low compliance with the techniques at 33.33% as compared to 67% of those who demonstrated non-compliance with the WHO's techniques of hand washing or who did not demonstrate the mastery of the recommended hand hygiene practice for prevention of cross infection. Therefore, the findings indicated that compliance with the techniques of hand hygiene is a challenge among the second year nursing students, who as prospect nurse practitioners are to prevent cross infections among the patients.

Nevertheless, the literature indicates that there are three causes of barriers to hand hygiene practice by health care

providers and which were also observed in this study. These barriers are of environmental, process of caring and attitudinal nature.^[10]

4.1.1 Environmental barriers

As much as there are scientific evidences that the environment plays a significant role for the practice of hand hygiene by health care workers,^[2,9,10] the findings from this study revealed that in addition to non-mastery of handwashing techniques, there were environmental aspects, among others a lack of the WHO's guidelines for hand hygiene practice in the dressing room, lack of single-use toilet papers for drying of hands. These factors predispose health care providers including the students nurses to noncompliance with the correct practice of hand hygiene to prevent cross infection in health care facilities. Hence, low compliance with practice of handwashing by the study participants.

It is therefore important that the organization of a care unit should promote the practice of hand hygiene by health care providers through the provision of facilities for the appropriate practice of hand washing by health care providers in order to prevent of cross infection.^[2,10,12,13]

Thus, the organizational aspects of the health care facilities and the behaviors of senior nurses on compliance with hand hygiene practice either reinforces the student nurses to practice proper hand hygiene or causes non-compliance thereof. However, as the focus of this study was to assess the students' mastery of the WHO's hand washing techniques, the discussion is confined to that perspective.

4.1.2 Process of caring

The second barrier to the practice of correct hand hygiene by the health care providers is related to the processes of care and nursing workload. These process barriers were also observed in the context of clinical practice for the participants of this study. Correspondingly, the findings of this study indicated that the participants comply less with the steps of WHO's techniques of hand washing which are cumbersome and therefore which require spending extra time on them as displayed in Figure 3. High demand to care, where a nurse has to perform multiple tasks at once minimizes the opportunities for hand hygiene practices. Under pressure to provide care, nurses tend to feel that hand hygiene takes up precious time to complete routine care to patients.^[11] As a result, compliance to the five moments of hand hygiene, namely: washing of hands before patient contacts, before an aseptic procedure, after contact with body fluids, after patient contact and after contact with the surrounding or the patient's environment are compromised.^[13] However, for the purpose of this study, it is appropriate to reserve a detailed discussion on the processes which could have influenced the

mastery of the techniques of hand hygiene practice by the study participants.

4.1.3 Attitudes of health care providers toward practice of hand hygiene

Attitude of health care providers towards the correct practice of hand hygiene also influences compliance to the practice. This refers to instances when the nurses perceive the control of infection in health care facilities as a parameter by the staff at infection control department;^[14,15] when the nurses perceive the use of gloves as an alternative to hand hygiene or when a nurse is only concerned with her/his personal safety. As a result, in extreme cases, a nurse may use the same gloves to deliver care activities to multiple patients^[16] thus risking cross infection among the patients. This element was partially portrayed in this study as only 60% of the participants washed their hands after removing the gloves and only 86.66% of the participants washed their hand with soap after contact with a patient.

The findings from this study are in concurrence with the findings of similar studies conducted elsewhere, which indicate that indeed, health care providers have low compliance with hand hygiene practice and as a result, they put the patients at risk for cross infection and incur economic costs to health care services as related to prolonged hospital stay for the patients, extra laboratory investigations, prescription of expensive antibiotics^[9] while excess use of the antibiotics may results in serious resistance related morbidities.

4.2 Conclusions

The findings of this study indicated that the second year nursing students at UNAM, main campus have not mastered the necessary skills for the correct practice of hand hygiene in order to prevent cross infections to patients as demonstrated by a mere 33.33% of the sample who practiced hand hygiene correctly. Prospective inadequate reinforcement of hand hygiene practice by training institution is counteract to the student nurses' mastering and compliance with hand hygiene practice, while non-compliance with hand hygiene practices by health care providers in health facilities can be imitated by the student nurses, such that they never practice hand hygiene correctly. A lack of compliance with correct techniques of hand washing by the nursing students calls not only for the teaching of hand washing according to the WHO's techniques at the school of nursing but, also for the reinforcement and correct role-modeling of the student nurses in the clinical environment for them to master and apply hand hygiene practice appropriately.

4.3 Recommendations

The findings are suggestive of the recommendations with regard to teaching of hand washing, environmental factors, and processes of caring as well as the attitudes of health care staff which may influence the practice of hand hygiene by the nursing students.

Therefore, in addition to their induction to the techniques of WHO's hand washing in their first year of their studies, academic staff at School of Nursing should reinforce the skills in the clinical settings to instill compliance and as a result the mastery of the skills by the students. Health care facilities should display an environment that promotes the practice of hand hygiene, as may be characterized by accessibility of facilities for practice of hand hygiene. Display of the WHO's techniques of hand washing also reinforces the culture of correct hand hygiene practices for the prevention of cross infection. Equally, the positive attitude of qualified nurses towards correct hand hygiene practice for role-modeling of nursing students practice cannot be overemphasized.

4.4 Limitations of the study

The findings from the study were based on the observations of handwashing by the second year nursing students at the main campus of UNAM. As a result, they cannot be generalized to the students of same study level at neither other campuses of UNAM, nor of other local Universities. Equally, the findings are delimited to the second year nursing students and may not necessarily apply to the students in other years of studies at the University of Namibia, main campus.

One more important limitation is that the sample size in this study was small and therefore may not be a representative distribution of the population of the second year nursing students at the University of Namibia, main campus for the academic year 2014. Furthermore, the conclusions on the findings were based on the data that were corrected under the

context—health care facility, an environment which influences correct practice of hand hygiene by the student nurses.

5. ETHICAL CONSIDERATIONS

Ethical principles of justice, autonomy, respect for a person and beneficence were observed in the study.^[17] The study was therefore conducted among the student nurses because they were well-placed to provide information on the effectiveness of their training and reinforcement of nursing practices as may be demonstrated by the degree of their mastery of the techniques of hand hygiene practice. Verbal informed consent was obtained from the potential participants after the purpose, objective and the duration of the study were explained to them. Participation was voluntary. Privacy of the participants was ensured as only the researchers had access to the information collected. Anonymity and confidentiality were maintained as the participants were identified by the given code numbers. As a result, no information or responses could be linked to an individual participant. The study is of benefit to the training institution(s) as the recommendations serve as a reference for teaching and reinforcement of the mastery of correct practice of hand hygiene by the student nurses to prevent cross infections. Correct hand washing practice would result into prevention of cross infection in health care facilities.

ACKNOWLEDGEMENTS

The second year nursing students of the academic year 2014 at the University of Namibia, main campus are sincerely acknowledged for their time and participation in this study to provide the data which are fundamental to the improvement of training of skills for clinical care, for promotion of patients' safety in health care facilities.

CONFLICTS OF INTEREST DISCLOSURE

The authors have no potential conflicts of interest.

REFERENCES

- [1] Center for Disease Control and prevention (CDC) Hand Hygiene in Health Care Settings, An Overview. 2015. Available from: www.cdc.gov/handhygiene
- [2] Kampf G, Löffler H. Hand disinfection in hospital—benefits and risks. *Journal German society of Dermatology*. 2010; 8(12): 978-983.
- [3] World Health Organization (WHO) Guideline on hand hygiene in Health Care (Draft). Geneva: World Health Organization. 2006.
- [4] Mani A, Shubangi AM, Saini R. Health hand hygiene among care workers. *Indian Journal of dental research*. 2010; 21: 115-118. PMID:20427920. <http://dx.doi.org/10.4103/0970-9290.62810>
- [5] Smelter SC, Bare BG, Hinkle GJL, *et al.* Textbook of Medical Surgical Nursing (12th edition). Philadelphia: Lippincott Williams & Wilkins. 2010.
- [6] World Health Organization (WHO) How to Hand Wash. Geneva: World Health Organization. 2009.
- [7] Brink H. *Fundamental of research methodology for health care professional* (3rd edition). Cape Town: Juta. 2012.
- [8] Burns N, Grove SK. *Understanding nursing research* (5th edition). University of Texas: Arlington. 2010.
- [9] Pitter D. *Hospital epidemiology & Infection Control* (2nd edition) Philadelphia: Lippincott, Williams & writing. 2005.
- [10] Suresh G, Cahill J. How “user friendly” is the hospital for practicing hand hygiene? An ergonomic evaluation. *Joint Commission Journal on Quality and Safety*. 2007; 33(3): 171-179.
- [11] Nazarko L. Potential pitfalls in adherence to hand washing in the community. *British Journal of community nursing*. 2009; 14(2): 64-

68. PMID:19223812. <http://dx.doi.org/10.12968/bjcn.2009.14.2.38762>
- [12] Sharma S, Sharma S, Puri S, *et al.* Hand hygiene compliance in the intensive care units of a tertiary care hospital. *Indian Journal of Community Medicine.* 2011; 36(3): 217-21. PMID:22090677. <http://dx.doi.org/10.4103/0970-0218.86524>
- [13] UK Essay Hand Hygiene Practice Among Health Care Workers. 2015. Available from: <http://ukessay.com>
- [14] Cambell R. Hand washing compliance health care and quality improvement. *Benchmarks.* 2010; 17(1): 5-6.
- [15] Maxfield D, Dull D. Influencing hand hygiene at spectrum health. *Physician Executive Journal.* 2011; 37(3): 30-34.
- [16] Ott M, French R. Hand hygiene compliance among health care staff and student nurses in a mental health setting. *Mental Health Nursing.* 2009; 30: 702-704. PMID:19874098. <http://dx.doi.org/10.1080/01612840903079223>
- [17] Parahoo K. *Nursing Research: Principles, Process and Issues.* (2nd ed.) New York: Palgrave MacMillan. 2014.