International Journal of Health Sciences and Research
www.ijhsr.org ISSN: 2249-9571

Original Research Article

Knowledge and Predictors of Hand Hygiene Practices among Nurses and Midwives in a Tertiary Care Maternity Hospital in Sri Lanka

Vishnukumar S[1], Jayamanne MDCJP[2], Kumara S[3]

[1]Lecturer in Paediatrics, Faculty of Health Care Sciences, Eastern University' Sri Lanka
[2]Postgraduate Institute of Medicine, University of Colombo
[3]Consultant neonatologist, Castle Street Hospital for women, Colombo

Corresponding Author: Vishnukumar S

ABSTRACT

Hand hygiene is an important component in infection control, which is crucial to prevent hospital acquired infection among patients' especially preterm babies. The aim of this study was to assess the knowledge and adherence of the hand hygiene practices among nurses and midwives working at a tertiary care maternity hospital in Sri Lanka. Descriptive cross sectional study with self-administered questionnaire. Most questions were drawn from a previous similar study done in Canada in 2011 by Ryan and colleagues. All nurses and midwives were included in the study.
The response rate was 54.7% (127/232). Nurses were 79.5% (101/127) and midwives were 20.5% (26/127) among participants. Most of the respondents (62.2%) had not participated in a hand hygiene training programme. The self-reported hand hygiene practices were 94.4% (SD ±13.75) and intention to adhere on was 96.5% (SD ±7.98) among participants but there were no statistical significance in the intention and the self-reported hand hygiene practices. However there was a statistical significance between the self-reported hand hygiene practices and number of years working at the current institution. Most of the health care workers reported that workload (52.8%) and urgent patient's needs (58.2%) were the barriers for the maintenance of the hand hygiene. In our study only 35.4% and 36.2% of participants practice hand hygiene as per the recommendation by WHO with respect to soap and water hand wash and alcohol based hand rub respectively. In our current study, even though the intension and self-reported hand hygiene compliance are higher among the participants, the participants are not aware about the proper hand hygiene techniques. Therefore regular hand hygiene training programmes are required to maintain good quality of care.

Key Words: Barriers, Hand hygiene, Healthcare associated infections, Nurses, Self-reported hand hygiene practices

1. INTRODUCTION

Healthcare associated infections (HAIs) in the Neonatal Intensive Care Unit (NICU) and post natal wards are the most significant cause of morbidity and mortality among critically ill neonates specially preterm babies. An HAI is confirmed when the neonate manifests clinical symptoms of an infection and/or positive bacteriologic cultures 48 hours after birth or admission to the NICU. [1] Hand hygiene, a term referring to any action of hand cleansing (HH) is the simplest, most effective measure for preventing such infections. [2] In fact, HH has been incorporated as a core component of the Global Patient Safety Challenge initiative 'Clean Care is Safer Care', set up by the WHO in 2009 with the goal of

reducing the burden of HAIs worldwide. [2] Despite advances in infection control, healthcare workers (HCWs) adherence to recommended hand hygiene practices is unacceptably low. [2-5] Average compliance with hand hygiene recommendations varies between hospital wards, among professional categories of healthcare workers and according to working conditions. [6-8] These problems are more common in developing countries compared to developed countries. [9] The factors influencing non-compliance with HH have been determined by several observational studies. [10-12] Promotion of hand hygiene is a major challenge for infection control experts around the world. [7] In service education, distribution of information leaflets, workshops and lectures, and performance feedback on compliance rates have been associated with transient improvement. [2]

With the above background, this study was undertaken to assess the knowledge and adherence of the hand hygiene practices among the participants to improve such practices in the hospital through in service stimulation programs with the help of infection control unit.

2. MATERIALS AND METHODS

This study was a descriptive cross sectional study conducted at Castle Street Hospital for women-Colombo, Sri Lanka, which is a tertiary care hospital in the capital of Sri Lanka providing health care services to pregnant mothers and neonates with level III NICU.

Recruitment of participants

All the nursing officers from Neonatal Intensive Care unit, Special Care Baby Unit Mother Baby Unit and post-natal wards and all midwives from post-natal wards were recruited for the study. Total number of 179 nursing officers and 52 midwives were included to participate to the study.

Data Collection Techniques and Tools

A predesigned and pretested self-administrated questionnaire was used to collect the demographic details and to determine the level knowledge, practices and barriers in the hand hygiene practice. Eight clinical situations were given to mark the frequency to assess the knowledge and self-reported HH practices. Most questions were drown from a previous study done in Canada in 2011 by Ryan and colleagues. [13] This study was conducted between 1st of October and 30th of November 2016. All the participants were females as male nurses are not employed in the maternity hospital. The questionnaire was individually distributed to the participants and a visit done in two weeks' time to collect the data.

Data entry and statistical analysis were done using SPSS version 22 software. Percentages were calculated for variables and factor analysis was done for selected variables. One sample students T test and P value calculations were done to estimate the level of significances.

3. RESULTS

Out of 232 questionnaires 127 were returned (54.7%) with the highest response rate from NICU (77.7%) nurses. Nurses were 79.5% (101/127) and midwives were 20.5% (26/127) among participants. Response rate was slightly higher among nurses (56.1%) compare to midwives (50%).

Socio demographic factors

Table 1 shows the demographic details of the respondents.

Table 1: Comparison of sociodemographic factors between cases and controls.

Demographic feature	**Mean (SD)**	**Range (No of Years)**	
		Minimum	**Maximum**
Age	34.3 (SD=8.25)	26	58
Working experience	8.9 (SD= 8.09)	0.5	43
Experience in the current institution	7.36 (SD=7.03)	0.5	30
Designation	**Number (n)**	**Percentage (%)**	
Nurse	101	79.5%	
Midwife	26	20.5%	
Educational level			
Advanced level	101	79.5%	
Diploma	24	18.9%	
Degree	02	1.6%	

The demographic details are shown in table 1. The mean age of participants was 34.31 (SD = 8.24), ranging from 26-58 years. Number of years working in their designation ranged from 6 months to 43 years, with the mean of 8.94 years (SD = 8.09 and number of years working at the current station ranged from 6 months to 30 years with the mean of 7.36 years (SD = 7.03). With regards to education majority (79.5%, n = 101) of the participants reported their highest education was Advanced Level Examination, 18.9% (n = 24) reported as Diploma and 1.6% (n = 2) reported as university degree as their highest education.

Table 2 shows the self-reported HH compliance and intention.

Table 2: Summary of participant's responses to self-reported HH compliance and intention

Clinical situation	Self-reported hand hygiene compliance		Intention towards hand hygiene compliance		*P* value
	Mean	±SD	Mean	±SD	
HH Before direct contact with a patient (%)	94.6	1.537	95.8	1.810	>0.05*
HH After direct contact with a patient (%)	92.8	1.577	96.7	1.604	>0.05*
HH before touching a clean site (%)	89.2	2.308	96.8	1.402	>0.05*
HH After exposure to a patient's body fluids (%)	97.8	0.744	97.1	1.316	>0.05*
HH After removing gloves used for patient care (%)	95.6	1.051	97.5	0.635	>0.05*
HH After touching an object in the immediate vicinity of patients (%)	86.6	2.124	93.6	1.740	>0.05*
HH Between touching two patients	93.1	1.330	98.4	0.635	>0.05*
HH between femoral pulse and NG tube (%)	94.6	1.825	96.6	1.595	>0.05*
Overall mean	94.4	13.75	96.5	7.98	

Table 3 shows the reported barriers to maintain proper HH practices by the participants.

Table 3: Summary of participant's responses to the barriers to maintain HH during the patient care.

Clinical situation	Not a barrier	Barrier	Extremely Barrier	Total
Workload	47.2%	15.7%	37.0%	100%
Forgetfulness	74.8%	13.4%	11.0%	100%
Lack of soap/alcohol rub	80.3%	5.5%	14.2%	100%
Limited access to sink	88.2%	3.1%	7.9%	100%
Limited number of hand towels	66.9%	15.7%	16.5%	100%
Urgent patient's need	40.9%	23.6%	34.6%	100%
Availability of gloves	64.6%	8.7%	26.0%	100%
Lack of motivation	81.9%	6.3%	11.8%	100%

4. DISCUSSION

Among participants only 34.6% (n = 44) has received any form of hand hygiene training compared to 62.2% (n = 79) who did not received a hand hygiene training programme. This finding was very much lower than a previous study done in Canada where 84% have had a formal HH workshop. [13] Overall 87.4% (n = 111) of participants believe that HH is the first priority by the top management of the hospital but 92.9% (n = 118) of participants give HH as their first priority. The same findings were observed in the study by C.Ryan *et al.* [13] In the current study 96.5% of intension to perform HH was observed for eight clinical situations.

Table 2 shows the self-reported HH compliance and intention. The mean of overall HH compliance among the participants was 94.4% and this finding agrees with the previous studies that used self-reported tools. Mean overall compliance was 80% and 94.96% in two previous studies done by E.Alp *et al* [9] and C.Ryan et al [13] respectively. The HH range was 74% to 90% in some other studies. [14-16] The highest reported rate was observed after exposure to the patient's body fluids (97.8%), the same finding was observed in C.Ryan et al [13] (98.9%) which indicates

that the health care professionals are more concern about the contamination from the patient to themselves. The lowest percentage (86.6%) observed after touching the patients surroundings and which is also agrees with C.Ryan et al [13] where the observed percentage was 84.56. The overall reported intention towards HH compliance was 93.0% in our study. There was no statistical significance between the intention and the self-reported HH practices in our study. This result is consistent with those previous studies. [14,17] However this results contrasts with few other studies. [18,19] There is a statistical significance between the self-reported HH practices and number of years working in the current institution (p <0.038). This finding shows how high the management of the institution put the HH compliance as a top priority in the patient care. The result contradicts the finding in few previous studies [13,15,16,20] where they found no statistical significance in those two variables.

Table 3 shows the reported barriers to maintain proper HH practices by the participants. Most of them agree that workload (52.7%) and urgent patient's need (58.2%) are the barriers. The same result is also observed in several studies previously. [21,22] As our setting is a tertiary care Centre situated in the capital of the country the work load is inevitable unless there are enough HCWs and the asking them to walk away from the patient for hand washing invites noncompliance with HH recommendation. [6] Most participants reported that lack of soap/alcohol rub (80.3%) and limited access of sink (88.2%) the not the barriers for HH compliance. This result against the finding of a study done by J. Boyce *et al*. [8] Being a tertiary care centre our study setting is fully promotes the HH compliance by providing easy access to the sink, soap and alcohol based hand rub etc.

The recommended duration of hand washing with soap and water is 40 – 60 seconds and with alcohol based hand rub is 20 – 30 seconds. [2] Table X shows the average time duration by the participants on those two occasions. In our study only 35.4% and 36.2% of participants practice the HH methods as per recommended by WHO when washing with soap and water and hand rub with alcohol based solution respectively. This may reflects the fact that most of subjects in our study did not participate in a proper HH workshop. Even though their intention and self-reported HH practices are high, improper technique may adversely affects the outcome.

5. CONCLUSIONS

The intention and self-reported HH compliance are higher among nurses and midwives working at our institution even though most of the candidates did not participate in proper HH workshop. However the time taken for HH practices is not satisfactory as for the recommendations. This may reflects the lack of knowledge on proper HH techniques. Improvement of HH compliance and technique continuous to be a priority of hospital infection control programme.

Recommendations

Regular HH training programmes are required for the HCWs in order to maintain proper HH techniques thus prevents serious HAIs specially in preterm neonates.

6. REFERENCES

1. Raza MW, Kazi BM, Mustafa M, Gould FK, Jamison DT, Cutting WA, et al. Developing countries have their own characteristic problems with infection control. J Hosp Infect [Internet]. 2004 Aug [cited 2016 Dec 13]; 57(4):294–9. Available from: http://www.ncbi.nlm.nih.gov/pubmed/15262389
2. World Health Organization. Guidelines on Hand Hygiene in Health Care. First Global Patient Safety challenge: Clean is Safer Care. Who. 2009;
3. Pittet D, Allegranzi B, Sax H, Dharan S, Pessoa-Silva CL, Donaldson L, et al. Evidence-based model for hand transmission during patient care and the role of improved practices. Lancet Infect Dis

[Internet]. 2006 [cited 2016 Dec 12];6(10):641–52. Available from: http://www.sciencedirect.com/science/article/pii/S1473309906706004
4. Karabey S, Ay P, Derbentli S, Nakipoglu Y, Esen F. Handwashing frequencies in an intensive care unit. J Hosp Infect. 2002;50(1):36–41.
5. Kuzu N, Özer F, Aydemir S. Compliance with hand hygiene and glove use in a university-affiliated hospital. Infect Control [Internet]. 2005 [cited 2016 Dec 13]; Available from: http://journals.cambridge.org/abstract_S0195941700078061
6. Pittet D. Improving adherence to hand hygiene practice: A multidisciplinary approach. Emerg Infect Dis. 2001;7(2):234–40.
7. Goldmann D, Larson E. Hand-washing and nosocomial infections. N Engl J Med [Internet]. 1992 [cited 2016 Dec 13]; Available from: http://www.nejm.org/doi/pdf/10.1056/NEJM199207093270211
8. Boyce JM. It Is Time for Action: Improving Hand Hygiene in Hospitals. Ann Intern Med [Internet]. 1999 Jan 19 [cited 2016 Dec 12];130(2):153. Available from: http://annals.org/article.aspx?doi=10.7326/0003-4819-130-2-199901190-00011
9. Alp E, Ozturk A, Guven M, Celik I, Doganay M, Voss A. Importance of structured training programs and good role models in hand hygiene in developing countries. J Infect Public Health [Internet]. 2011;4(2):80–90. Available from: http://dx.doi.org/10.1016/j.jiph.2011.03.001
10. Dubbert PM, Dolce J, Richter W, Miller M, Chapman SW, Larson E, et al. Increasing ICU Staff Handwashing: Effects of Education and Group Feedback. Infect Control Hosp Epidemiol [Internet]. 1990 Apr [cited 2016 Dec 12];11(4):191–3. Available from: http://www.journals.uchicago.edu/doi/abs/10.1086/646148
11. Jarvis WR. Handwashing- the Semmelweis lesson forgotten? Lancet 1994;344:1311-2. - Google Scholar. In: Lancet 1994;344:1311-2 [Internet]. Available from: http://www.appropedia.org/images/d/d4/Handwashing_the_Sammelweis_lesson_forgotten.pdf
12. Larson E, Kretzer EK. Compliance with handwashing and barrier precautions. J Hosp Infect. 1995;30:88–106.
13. Ryan C. Determinants of Hand Hygiene among Registered Nurses Caring for Critically Ill Infants in the Neonatal Intensive Care Unit. 2011;
14. O'Boyle CA, Henly SJ, Larson E. Understanding adherence to hand hygiene recommendations: The theory of planned behavior. Am J Infect Control. 2001; 29(6):352–60.
15. Tai JWM, Mok ESB, Ching PTY, Seto WH, Pittet D. Nurses and Physicians' Perceptions of the Importance and Impact of Healthcare-Associated Infections and Hand Hygiene: a Multi-Center Exploratory Study in Hong Kong. Infection [Internet]. 2009 Aug 27 [cited 2016 Dec 12];37(4):320–33. Available from: http://link.springer.com/10.1007/s15010-009-8245-x
16. Sax H, Uckay I, Richet H, Allegranzi B, Pittet D. Determinants of Good Adherence to Hand Hygiene Among Healthcare Workers Who Have Extensive Exposure to Hand Hygiene Campaigns •. Infect Control Hosp Epidemiol [Internet]. 2007 Nov [cited 2016 Dec 13];28(11):1267–74. Available from: http://www.jstor.org/stable/10.1086/521663
17. Pittet D, Simon A, Hugonnet S, Pessoa-Silva CL, Sauvan V, Perneger T V., et al. Hand Hygiene among Physicians: Performance, Beliefs, and Perceptions. Ann Intern Med [Internet]. 2004 Jul 6 [cited 2016 Dec 13];141(1):1. Available from: http://annals.org/article.aspx?doi=10.7326/0003-4819-141-1-200407060-00008
18. Jenner E, Fletcher B, Watson P, Jones F. Discrepancy between self-reported and observed hand hygiene behaviour in healthcare professionals. J Hosp [Internet]. 2006 [cited 2016 Dec 13]; Available from: http://www.sciencedirect.com/science/article/pii/S0195670106001976
19. Jenner E, Watson P, Miller L, Jones F. Explaining hand hygiene practice: an extended application of the Theory of Planned Behaviour. Psychol Heal [Internet]. 2002 [cited 2016 Dec 13]; Available from: http://www.tandfonline.com/doi/abs/10.1080/13548500220139412
20. Snow M, White G, Alder S, Stanford J. Mentor's hand hygiene practices influence

student's hand hygiene rates. Am J Infect [Internet]. 2006 [cited 2016 Dec 14]; Available from: http://www.sciencedirect.com/science/article/pii/S0196655305005699

21. Voss A, Widmer AF, Simmons B, Bryant J, Neiman K, Spencer L, et al. No Time for Handwashing!? Handwashing versus Alcoholic Rub: Can We Afford 100% Compliance? Infect Control Hosp Epidemiol [Internet]. 1997 Mar [cited 2016 Dec 12];18(3):205–8. Available from: http://www.jstor.org/stable/info/10.2307/30141985
22. Pittet D, Mourouga P, Perneger T V. Compliance with Handwashing in a Teaching Hospital. Ann Intern Med [Internet]. 1999 Jan 19 [cited 2016 Dec 12];130(2):126. Available from: http://annals.org/article.aspx?doi=10.7326/0003-4819-130-2-199901190-00006

How to cite this article: Vishnukumar S, Jayamanne MDCJP, Kumara S. Knowledge and predictors of hand hygiene practices among nurses and midwives in a tertiary care maternity hospital in Sri Lanka . Int J Health Sci Res. 2018; 8(8):29-34.

******