Original Research Article

DOI: http://dx.doi.org/10.18203/2394-6040.ijcmph20171755

Hand washing among health workers in tertiary health facilities in Bayelsa State, Nigeria

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Received: 06 August 2016 **Accepted:** 10 March 2017

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ABSTRACT

Background: Hand washing is a cheap and effective method of preventing nosocomial infections by health workers, but it has not been given strong policy support for resource allocation. Objectives: To describe knowledge, attitude and practice of hand washing among health care workers and to identify the factors affecting the practice in tertiary health care facilities in Bayelsa State.

Methods: Four groups of health workers who work directly with patients at the Niger Delta University Teaching Hospital and Federal Medical Centre, both in Yenagoa Local Government Area of Bayelsa state, were studied. A multi-stage sampling was conducted to select 224 respondents. Self-administered and interviewer-administered questionnaires were used to collect data which were then analysed on the Microsoft Excel programme. Response rate of 91.50% (205 respondents) was achieved. Krejcie and Morgan's sample size formula was used at 95% confidence level.

Results: 140 (68.30%) of all respondents had good knowledge of hand washing and about half have excellent hand washing practice. But only 44 (21.5%) had very good knowledge of nosocomial infections. The lack of materials such as soap, water and towels are limiting good hand washing practice.

Conclusions: Although there is good knowledge of hand washing and of nosocomial infections as well as good attitude towards hand washing, they have no positive correlation with practice. Inadequate resources may be worsening nosocomial infections. Improved health policy for more health manpower and accessible resources for more regular hand washing are recommended.

Keywords: Health resources, Hand washing, Health policy, Nosocomial infections

INTRODUCTION

Hand washing is an aspect of good hygiene. It is a process of decontaminating the hands or removing dirt from the hands. In health care practice it involves washing the hands before and after examining different patients or between examining an infected and a clean body site on the same patient. It utilizes soap and water or water alone. Good hand hygiene however, utilizes hand

sanitizers or alcohol rubs.¹ The World Health Organization (WHO) guideline recommends that for safety hand rubbing with alcohol-based products is better tolerated than washing with soap and water.² Even so, the simple act of hand washing with water in a less developed country like Nigeria can save lives, especially when health workers do it routinely and thoroughly.³ This is because nosocomial infections (hospital acquired infections) which have constituted a major challenge to

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modern medicine have been linked with contaminated hands. For instance, Pittet and colleagues observed that transmission of microorganisms from the hands of health care workers is the main source of nosocomial infections.⁴

Unfortunately the determinants of adequate hand washing in hospitals are largely unknown.⁵ This is despite that infections that become clinically evident after 48 hours of hospitalization are considered hospital-acquired. Even infections that occur after the patient's discharge from the hospital, whose organisms were acquired during the period of stay in the hospital, can also be considered to have a nosocomial origin.⁶ Thus doctors and other health care workers put themselves and their patients in danger when they fail to observe routine hygiene practices.⁴ This is important because the deadliest pathogens encountered in hospital practice have been widely reported to invade the skin, urinary tract, lower respiratory tract, and surgical wounds.^{2,7-13}

It has also been reported that nosocomial infection rates are likely to be higher in teaching hospitals, compared to non-teaching ones.³ The reason is the wide range of activities performed in the tertiary health care facilities as a result of the large number of departments and units in these facilities. Thus doctors in particular departments tend to be more meticulous in the practice of handwashing than others.¹⁴ Several factors including economic and environmental (physical terrain) influence the practice of hand washing. Hence, considering the difficult environment in Bayelsa State, this study was aimed at describing the knowledge, attitude and practice of hand washing as well as knowledge of nosocomial infections among health care workers in tertiary health care facilities in the State. The study was also aimed at identifying the factors that influence the effective practice of and attitude towards hand washing among healthcare workers. These factors will assist effective policy development in resource allocation and distribution.

METHODS

Study area

The study was conducted in one of the Local Government Areas (LGA), Yenagoa LGA, of Bayelsa State. The only two tertiary health care facilities in the state, the Federal Medical Centre (FMC), Yenagoa and Niger Delta University Teaching Hospital (NDUTH), Okolobiri are located in this LGA. But whereas FMC is in an urban area, NDUTH is in a rural community. Meanwhile Bayelsa State has one of the largest crude oil and natural gas deposits in Nigeria, yet majority of the people are rural dwellers. This is due to the peculiar terrain and lack of adequate economic and social infrastructure which past governments and petroleum prospecting companies have failed to provide.

Study design/population

The study is descriptive and cross sectional among a population of health workers with direct daily contact with patients. They include Doctors (305), Nurses (458), Laboratory Scientists (70) and Ward Maids (30). Sample size was determined from

Sample size/method

The health workers in this study comprises of different professional and nonprofessional groups. Sample size for each group was calculated using Krejcie and Morgan's sample size formula where P (prevalence of hand washing) is approximately 26%. ^{15,16} A margin of error at 0.05 confidence level and a sampling fraction of 0.26 were used. A two-stage sampling comprising cluster sampling of the professional groups that have direct contact with patients and a simple random sampling of the respondents from the selected clusters was conducted. For the non-professional groups a simple random sampling of the respondents was done. A total sample size of 224 respondents was derived as follows; doctors (79), nurses (119), medical laboratory scientists (18) and ward maids (8).

Ethical approval

Application for ethical approval was made to and received from the Ethics Committee of the College of Health Sciences, Niger Delta University. In addition informed consent was obtained from participants having been assured of confidentiality and privacy.

Study instrument

The study instrument consisted of a questionnaire, which was designed and pilot-tested for content validity among randomly selected health workers at one of the study facilities. It consisted of 31 questions in 5 sections. Some of the questionnaires were self-administered to literate respondents while others were administered by an interpreter, an Ijaw-speaking member of the research team, to the illiterate respondents. In section A, eight questions which assessed the socio-demographic characteristics of each respondent. Five questions from other sections had only one stream option response while questions from the other sections had streams of a-f response options and respondents were free to give their responses from more than one stream of the options. In section B, seven questions assessed the awareness and knowledge of hand washing and of nosocomial infections. Three questions in section C assessed attitude towards hand washing while in section D six questions assessed the level of practice of hand washing. In section E seven questions were designed to identify factors affecting the practice of hand washing among health care workers.

Data collection and scoring pattern

The design of the instrument and data collection lasted for fourteen weeks during which a total of 84 questionnaires were retrieved from NDUTH and 121 from FMC (a response rate of 91.50%). Data was processed and analyzed on the Microsoft Excel programme and the frequencies and percentages calculated as shown in the tables below. Each correct answer provided by the respondents earned a mark and each section had a total obtainable score per respondent. In Section B total obtainable score was 16 marks graded as 0-2 (not acceptable performance), 3-5 (poor), 6-8 (fair), 9-11 (good), 12-14 (very good) and 15-16 (excellent). In section C, total obtainable score per respondent was 6 marks graded as; 0-2 (poor), 3-5 (good) and scores greater than 5 (very good). In section D, total obtainable score per respondent was 20 marks graded as; 0-4 (poor), 5-8 (fair), 9-12 (good), 13-16 (very good) and 17-20 (excellent). On the practice of hand washing, the respondents were asked questions like when they washed their hands, what they washed their hands with and what they dried their hands with. The number of patients seen by each doctor per day was divided by the average number of times the respondents washed their hands per day to get the frequency of hand washing. Doctors for instance, are expected to wash their hands at least in between patient contact. In section E each factor was assessed independently based on answers obtained from each respondent and then summed up to obtain frequency for each factor assessed. Scores obtained per respondent were summed up with those of other respondents of the same professional category to get the frequencies, which were then represented as percentages. Data from the two hospitals were analysed separately. Using Chi square test, statistical difference between the hospitals was assessed.

Study limitations

Most of the health care workers were expected to be knowledgeable about hand washing. Some may have provided responses they considered to be "ideal" rather than what really obtains in their routine practices. Senior practitioners may refuse to admit poor hand washing practices so that they can protect their prestige.

RESULTS

Out of the 224 questionnaires distributed 205 were completed and retrieved from the respondents giving a response rate of 91.50%. The results are presented in tabular forms as shown in Tables 1 to 6 below.

Table 1: Distribution of respondents by socio-demographic characteristics.

Variables	NDUTH	FMC	Total
	Frequency (%) n=84	Frequency (%) n=121	Frequency (%)
Age (years)			
20-29	42(50.0)	65(53.7)	107(52.2)
30-39	23(27.4)	39(32.2)	69(33.7)
40-49	16(19.1)	9(7.4)	27(13.2)
50-59	2(2.4)	6(5.0)	8(3.9)
≥ 60	1(1.2)	2(5.0)	3(1.5)
Sex			
Males	32(38.1)	55(45.5)	87(42.4)
Females	52(61.9)	66(54.5)	118(57.6)
Marital status			
Singles	40(47.6)	80(66.1)	120(58.5)
Married	43(51.2)	35(28.9)	78(38.1)
Separated	1(1.2)	5(4.1)	6(2.9)
Widow/'er	0(0.0)	1(0.8)	1(0.5)
Ethnicity			
Ijaws	50(59.5)	57(47.1)	107 (52.2)
Others	34(40.5)	64(52.9)	98 (47.8)
Religion			
Christianity	83(98.8)	119(98.3)	202(98.5)
Others	1(1.2)	2(1.7)	3(1.5)
Duration of practice(years)		
< 1	29(34.5)	47(38.8)	76(37.1)
1-5	31(36.9)	44(36.4)	75(36.6)
6-10	6(7.1)	16(13.2)	22(10.7)
11-15	6(7.1)	6(5.0)	12(5.9)
16-20	5(6.0)	2(1.7)	7(3.4)
>20	7(8.3)	6(5.0)	13(6.3)

Table 2: Distribution of knowledge of hand washing and nosocomial infection among the professional groups

	Rate (%) of responses				
Level of response	Doctors Hand washing/ Nosocomial infection	Nurses Hand washing/ Nosocomial infection	Med Lab Sc Hand washing/ Nosocomial infection	Ward maids hand washing/ Nosocomial infection	Total
Very good	20 (28.2)/32 (45.1)	14 (13.0)/11 (10.2)	0(0.0)/0(0.0)	1 (12.5)/1 (12.5)	35 (17.1)/44 (21.5)
Good	49 (69.0)/34 (47.9)	58 (72.2)/ 76 (70.4)	8 (44.5)/7 (38.9)	5 (62.5)/4 (50.0)	140 (68.3)/121 (59.0)
Poor	2 (2.8)/5 (7.0)	16 (14.8)/ 21 (19.4)	10 (55.6)/11 (61.1)	2 (25.0)/3 (37.5)	30 (14.6)/40 (19.5)
Total	71 (100)/71 (100)	88 (100)/ 108 (100)	18 (100)/18 (100)	8 (100)/8 (100)	49 (100)/205 (100)

Table 3: Group-based frequency distribution of attitude and practice of hand washing.

Frequency (%) of responses (attitude/practice)					
Level of response	Doctors - attitude/practice	Nurses - attitude/practice	MED.LAB. SC attitude/practice	Ward maids - attitude/practice	Total
Excellent	/ 2 (2.8)	/0(0.0)	 /0(0.0)	/ 0(0.0)	/ 2(1.0)
V. Good	30(42.3)/39(54.9)	37(34.3)/40(37.0)	1(5.6)/2(11.1)	5(62.5)/3(37.5)	73(35.6)/84(41.0)
Good	34(47.9)/23(32.4)	66(61.1)/41(38.0)	13(72.2)/7(38.9)	3(37.5)/5(62.5)	116(56.6)/76(37.1)
Fair	/4(5.6)	/18(16.7)	/4(22.2)	/0(0.0)	/26(12.7)
Poor	7(9.9)/3(4.2)	5(4.6)/9(8.3)	4(22.2)/5(27.8)	0(0.0)/0(0.0)	16(7.80)/17(8.3)

Table 4: Facility-based comparison of awareness and knowledge of hand washing/nosocomial infection.

Level of	Rate of responses (%)			
response	NDUTH	FMC	Total	
Very Good	15(17.9)/19(22.6)	20(16.5)/25(20.7)	35(17.1)/44(21.5)	
Good	59 (70.2)/51 (60.7)	81 (66.9)/70 (57.9)	140 (68.3)/121 (59.0)	
Poor	10 (11.9)/14 (16.7)	20 (16.5)/26 (21.5)	30 (14.6)/40 (19.5)	
Total	84 (100)/84 (100)	121 (100)/121(100)	205 (100)/205 (100)	

For knowledge of Hand washing NDUTH $X^2 = 0.855$, df=2, p = 0.652, No significant difference exist between the two facilities. For knowledge of Nosocomial infection FMC $X^2 = 0.748$, df=2, p = 0.688, No significant difference exist between the two facilities.

Table 5: Facility-based comparison of respondents' attitude to/practice of hand washing.

Respondents' attitude/practice towards hand washing					
Level of response	Frequency of responses (%)				
	NDUTH	FMC	Total		
Excellent	/	/	/		
Excellent	1(1.2)	1(0.8)	2(1.0)		
V. Good	30(35.7)/	43(35.5)/	73(35.6)/		
	35(41.7)	49(40.5)	84(41.0)		
Cand	44(52.4)/	72(59.5)/	116(56.6)/		
Good	31(36.9)	45(37.2)	76(37.1)		
Fair	/	/	/		
	10(11.9)	16(13.2)	26(12.7)		
Poor	10(11.9)/	6(5.0)/	16(7.8)/		
T 001	7(8.3)	10(8.3)	17(8.3)		
Total	84(100)/	121(100)/	205(100)/		
	84 (100)	121 (100)	205 (100)		

For attitude NDUTH $X^2 = 3.310$, df=2, p = 0.173, No significant difference exist. For practice FMC $X^2 = 0.153$, df=4, p = 0.997, No significant difference exist.

Table 6: Factors affecting hand washing among health care workers.

Variable	Enhancing factors		Limiting factors	
	Responses	% of responses	Responses	% of responses
Material availability	188	95.9	106	42.4
Time			36	14.4
Nearness to washing facility	93	43.1	47	18.8
Source of water	103	49.8		
Constancy of water flow	189	66.8		
Type of soap			12	4.8
Forgetfulness			42	16.8

In Table 1 it is shown that a little over 50% of the respondents are in the age range of 20-29 years. Within that age range the respondents are single, females and they speak Ijaw. In the respective facilities a little over one third of the practitioners have less than one year experience. However, there are more of those with over five years of experience at NDUTH, which is located in a rural community.

In Table 2 apart from medical laboratory scientists with a poor knowledge of hand washing, the other professional groups have good knowledge of hand washing.

On attitude and practice of hand washing ward maids are better at keeping to the act compared to other hospital staff in Table 3.

In Table 4 awareness and knowledge of health workers are better for hand washing in both facilities than they are for nosocomial infections.

Attitude to and practice of hand washing are better at FMC than at NDUTH in Table 5.

Table 6 shows that hand washing materials are key factors in enhancing or limiting the practice of hand washing.

DISCUSSION

The absence of a statistically significant difference in attitude and practice of hand washing between health care workers in the two tertiary health care facilities, as shown in this study, is probably due to inadequate resources. This is despite that FMC is a Federal Government facility and NDUTH is a State Government facility. In Nigeria when resources from revenue accrued to the country are being allocated the Federal Government takes a larger share. Meanwhile, at the time of this study electricity supply (from hospital electricity generators) was intermittent at both facilities. Thus the availability of water was also insufficient as the taps were not running at appropriate capacity. Information by the respondents which shows that washing agents are also not routinely provided makes it more difficult for the health care workers to effectively practice hand washing. This is even worse when the sinks are inconveniently located.

For example, within the wards at the study facilities, most sinks are located one in each bay, and health workers find it difficult to walk to these bays each time there is a patient contact. A previous study ¹⁷ had similarly reported lack of materials, heavy workloads and poorly located sinks as reasons for ineffective practice of hand washing in Nigeria.

Hand washing for safety and intensity of care are very important factors in patient care. Thus, inadequate practices of hand washing, especially by key care providers, pose a great danger to patient care. For instance, where there is understaffing of doctors and nurses it may decrease quality of patient care as a result of increased exposure to nosocomial infections, the latter arising from inadequate time (due to heavy workload) to allow for adequate hand washing by these professionals. 18 McFubara et al. had reported low level of well-trained health care manpower in Bayelsa State, which also shows that there are indeed, inadequate resources in the health facilities.¹⁹ Furthermore, the fact that there is no significant difference in health care workers' practice of hygiene between those at FMC and their counterparts at NDUTH suggests that location of facility (rural or urban) is not a hindrance to effective practice of hand washing. However, it emphasizes that patients in the state are likely to be exposed to the same level of nosocomial infections irrespective of where they reside.

Furthermore since there are more highly trained practitioners with over five years' experience at NDUTH, it is the degree of the rural nature of the location of a health facility coupled with the reported dearth of well trained health manpower in the state that may make it more difficult to deliver effective health care to the people. By degree of rural nature it is meant to refer to the farther distance a community is from the capital city coupled with the level of development of that community. Moreover when it is considered that most of the respondents were within the age group of 20-29 years, single and female, and more than a third of them have been in practice for less than five years, it suggests that Bayelsa as a young state needs to pursue more vigorously its health developmental agenda. This means that the health policy of the State must be strengthened in both manpower development and material allocation to the health facilities for effective health care delivery.

Poor knowledge of nosocomial infections among medical laboratory scientists exposes this category of practitioners to a greater danger. This is because the laboratory scientists are a group of professionals that deals more directly with blood and body fluid samples. These materials which may carry pathogens can easily contaminate the professionals. Similarly despite the very broad nature of their training, doctors have also not translated that wealth of knowledge into good hand hygiene practice. In fact, Lipsett has reported a higher rate of compliance with hand hygiene guidelines among nurses (50%) compared to doctors (15%) and other support staff. 20 In the study by Pittet and colleagues, it was also observed that noncompliance with hand washing guidelines was more among physicians, higher in the intensive care units and during procedures that carry high risks of contamination.⁴ In the light of this Creedon suggests that there can be improvement in compliance with hand hygiene guidelines if multifaceted intervention is adopted.²¹ By multifaceted intervention the author means interventions to encourage, reinforce and enable hand cleansing behaviour. These observations are more emphasized in the light of the 2014 outbreak of Ebola Virus Disease in Nigeria. The country was able to free itself of the disease as a result of the vigorous containment measures, including hand washing, adopted by the health authorities, the schools, churches and most public places.

CONCLUSION

There is a high level of knowledge and awareness of hand washing and nosocomial infections among health care workers in the tertiary healthcare facilities in Bayelsa state. Similarly attitude to hand hygiene is good as respondents in this study were of the opinion that hand hygiene is necessary to reduce the spread of nosocomial infections. There is however, a low level of knowledge as to when the hands ought to be washed. This poses a great danger to both patients and hospital staff. Indeed because hand washing practices did not correlate with knowledge, practice should be taken up as part of professional conduct among health care workers. For instance, hand hygiene practices can be part of the activities at continuing professional development programmes. If that is taken up, it can serve as a reminder to the practitioners and this may encourage them to be more compliant with practice guidelines in their places of work. As a first step it is recommended that posters of hand washing practices and guidelines should be provided in areas such as the wards, clinics, nurses' and doctors' rooms. Furthermore as nosocomial infections constitute a great danger to the hospital community, the ethical principle of nonmaleficence (to do no harm) should always be highlighted by health managers to health care workers. This can be in the form of poster display as a reminder towards being compliant to practice guidelines. The outbreak of Ebola Virus Disease in Nigeria and the effect it had on health care workers call for a more proactive approach in the development of health policy for

preventing or containing the transmission of communicable diseases within health care facilities.

Funding: No funding sources Conflict of interest: None declared

Ethical approval: The study was approved by the

Institutional Ethics Committee

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Cite this article as: McFubara KG, Ogbe DK, Mbooh RT, Nwizia BP, Nasamu UP, Ogori DS. Hand washing among health workers in tertiary health facilities in Bayelsa State, Nigeria. Int J Community Med Public Health 2017;4:1459-65.