



Patients and caregivers' compliance with hand hygiene measures in a tertiary health facility in Port Harcourt, Nigeria.

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ABSTRACT

Background: Several guidelines are available on hand hygiene measures for health workers however, few research studies appear to exist on hand hygiene measures among patients and their caregivers. The importance of hand hygiene measures and their benefit in preventing unwanted complications, especially with the epidemic of haemorrhagic fever in the West African Sub-region, have been reported severally. The aim of this study is to determine compliance of patients and their relatives (caregivers) with hand hygiene measures in the surgical wards and clinics of a tertiary healthcare centre in Port Harcourt.

Materials and Methods: The study adopted a cross sectional descriptive approach. Systematic sampling method was used to select the respondents for a period of three months in the year 2019. Self-administered semi-structured questionnaires were with a sample size of 200. The observational aspect of the study was randomized.

Results: Forgetfulness and absence or inadequate amenities were the most frequent reason for non-compliance with hand hygiene measures.

Conclusion: Public education, use of posters and provision of amenities for hand hygiene practices should be given due consideration in the drive to improve compliance with hand hygiene measures.

INTRODUCTION

The bacterial count colonizing the hand (and other body parts) of medical staff has been studied and reported to be significant in several researches around the world. (Price, 1938; Maki, 1978; Larson, 1984; Larson et al., 1998; Boyce & Pittet, 2002) Dirt from the hands of health personnel has been found to contribute to the spread of puerperal sepsis (Rotter, 1999), warranting introduction of measures (including hand-washing) to prevent spread of infection in healthcare facilities (Boyce & Pittet, 2002). However, patients and their caregivers exposed to similar environment are not immune to such bacterial load and the consequent risk of contamination of the healthcare environment (Sanderson & Weissler, 1992; Ward, 2003). The need to prevent this potential risk has also been advocated in research works (Ward, 2003; WHO, 2009a; Ward, 2003; Banfield & Kerr, 2005; Prasad, 2017)

Despite the role that hand hygiene measures play in the control of health care-associated infections, it has been documented that the compliance of health workers, patients and their visitors with these measures is low. (WHO, 2009b; Tharaldson et al., 2017) After critical times e.g. after defecation, urination, handling of body fluid or associated item(s), rate of compliance has been reported to be low, a real challenge with existing gap between knowledge and actual practice especially when subjects become aware of monitoring. Several guidelines are available for hand hygiene measures for health workers; however, few research studies appear to exist on hand hygiene measures among patients and their caregivers. (Sanderson & Weissler, 1992; Ward, 2003) This is becoming an issue brought to the fore especially with the epidemic of haemorrhagic fevers in the West African subregion. The importance of hand hygiene measure and their benefit in preventing unwanted complications have been reported severally. (WHO, 2009a WHO, 2009b; Tharaldson et al., 2017)

The microbial flora on the hands of general the population or in patients have been found to be different from that of healthcare professionals with higher prevalence of gram-negative bacteria and increased resistance to several antibiotics. The World Health Organization has clearly spelt out the indications for hand hygiene measures for which patients are not excluded. The link between compliance with hand hygiene measures and knowledge, attitudes and accessibility of facilities has been reported by researchers. (Ward, 2003; Banfield & Kerr, 2005) In Nigeria, unavailability of soap and irregular water supply have been named as the main reasons for non-compliance. (Ango et al., 2017)

The aim of this study is to examine compliance of patients and their relatives with hand hygiene (hand-washing and hand sanitizers) measures in the surgical wards and clinics of a tertiary healthcare centre in Port Harcourt by knowledge of patients and their relatives, ascertaining the extent of compliance, establishing the factors affecting compliance with hand hygiene measures among patients and their relatives in the

surgical wards of the University of Port Harcourt Teaching Hospital within the period of study; and make useful recommendations for advancement of efforts on infection control in the surgical wards of the tertiary healthcare centre.

METHODOLOGY

The study was carried out at the surgical wards (and clinics) of The University of Port Harcourt teaching Hospital – a tertiary healthcare facility in Port Harcourt, the capital of Rivers State. The study adopted a cross sectional descriptive study with systematic sampling method to select sample for a period of three months in the year 2019, using self-administered semi-structured questionnaires. The direct (covert) observational aspect of the study was carried out at random.

The sample size for the survey was derived from the formula developed by Yaro Yamen was used based on bed space in all surgical wards of the department where the study was carried out, which is 166 (166 x 2 being 1 relative for each patient hence 332) as provided by the management.

$$n = N/1+Ne^2$$

n = minimum sample size, N = Total population size and e = desired precision/level of significance, usually 5% (0.05) at 95% Confidence Interval (CI). Hence, we have $n = 181$. To cater for 10% attrition, we have 10% of 181 = 18; hence 181 + 18 = 199. Thus, approximately 200 participants were included in the study.

RESULTS

This cross-sectional analytical study was carried out among patients and their relatives who visited surgery department at University of Port Harcourt Teaching Hospital, Rivers State, Nigeria. A total of 189 respondents who are civil servants, business men and women, artisan etc were included in the survey.

The demographic characteristics of the respondents summarized in Table 1.0 indicated that 82 (43.4%) were males and female respondents were 107 (56.6%). Almost half (47.0%) of the respondents were less than 35 years of age and only 2.1% were between 55 and 64 years old. Some 38.1% had primary education, 36.0% had secondary education and 25.9% possess tertiary education.

Awareness of respondents about hand hygiene measures (see table 2) was assessed and it was identified as indicated in Table 2.0 that more than half (54.0%) of the respondents asserted to be aware about hand hygiene, 32.3% had no knowledge about hand hygiene and 13.8% were not sure of having knowledge of hand hygiene measures. Many (65.6%) of the respondents affirmed that hand hygiene was achieved at their work place by hand washing, 19.0% by hand sanitizers and 15.3% by both hand washing

and hand sanitizers. Respondents revealed when they use hand hygiene measures, 59.8% do so after contact with patient and their immediate surroundings while 57.1% considers hand hygiene before touching or coming into contact with a patient.

Majority (73.0%) of the respondents claimed to practice hand hygiene (see table 3). Out of these, 63.5% asserted to always doing it, 24.9% sometimes practice hand hygiene while 21 (11.1%) said their practice of hand hygiene is conditional. The respondents' practice of hand hygiene showed that 34.4% practiced hand hygiene before patient's contact while 28.0% sometimes do it, 47.6% practiced hand hygiene after visiting the toilet while 15.9% sometimes practice hygiene after toilet use. Some 51.3% practice of hand hygiene after exposure risk to bodily fluid and glove removal, 46.6% after patient contact or their surroundings and 36.5% after touching an inanimate object in the patient's immediate surroundings.

Factors responsible for poor hand hygiene practices in respondents (see table 4) was evaluated, majority (74.1%) attributed it to negligence – forgetfulness, 72.0% to lack of water, 68.3% to lack of hand lotions 66.1% to absence of sanitizers, 57.6% to no enough soaps, 37.0% and 46.6% due to absence of sinks and lack of towels respectively contributed to their poor hand hygiene practices. Some 61.9% and 40.7% claimed that perceive lack of time and poor knowledge of standard practice respectively contributed to their poor hand hygiene practices.

Respondents were asked why they practice hand hygiene measures. It was revealed that 63.5% did this to prevent infection. Although, perhaps due to poor knowledge on hand hygiene 5.8% said they practice hand hygiene to avoid staining ones' cloth as indicated in Table 5.0

The relationship between level of education and knowledge on hand hygiene measures of the

respondents in this study is presented in Table 6.0. It shows that proportion of respondents who had knowledge on hand hygiene measures were higher among respondents with higher level of education. The higher they are educationally, the higher the tendency to have knowledge on hygiene measures. And this relationship between level of education and knowledge on hand hygiene measures was statistically significant ($P < 0.05$).

Table 7.0 shows that 189 direct secret observations of patients' relatives was carried out to ascertain use of any of the hand hygiene measures in between patient contact. Out of this total number, 70 (37%) were found to have practiced hand hygiene while 119 (63%) did not. The comparison indicated that there was significant difference ($P < 0.005$) between in number (and percentage) of those who were observed to have practiced and those who did not practice hand hygiene measures.

Table 8.0 shows the number and percentage of those who asserted that they practice hand hygiene measures 138 (73%) and those who were actually observed to have practiced hand hygiene measures 89 (36%) out of 241. There was significant difference ($P < 0.005$) between expressed and observed compliance with hand hygiene measures.

Relatively fewer patients/relatives (89:241) practice the measures compared to relatively more patients/relatives (102:189) who were aware of hand hygiene measures. The percentage of those who were observed to practice the measures (36.9%) was far less than those who are aware of hand hygiene measures (54%). This comparison indicated that there was significant difference ($P < 0.005$) between affirmed awareness (those who had knowledge of hand hygiene) and observed compliance (those who were directly observed to have practiced) of hand hygiene measures.

Table 1.0: Socio-demographic characteristics of respondents

Variables	Frequency	Percentage
Sex		
Male	82	43.4
Female	107	56.6
Age		
16- 24 Years	41	21.7
25- 34 Years	46	24.3
35 - 44 Years	55	29.1
45 - 54 Years	43	22.8
55 - 64 Years	4	2.1
Level of Education		
Primary	72	38.1
Secondary	68	36.0
Tertiary	49	25.9
Occupation		
Civil servant	46	24.3
Business	82	43.4
Artisan	61	32.3
Ward in surgery department		
Female surgical ward	86	45.5
Male surgical ward	6	3.2
Female Orthopedics ward	18	9.5
Male Orthopedics ward	45	23.8
Urology ward	9	4.8
Male Burns ward	14	7.4
Female burns and plastic ward	11	5.8
Total	189	100.0

Table 2.0: Awareness of respondents about hand hygiene measures

Variables	Frequency	Percentage
Know about hand hygiene measures		
Yes	102	54.0
No	61	32.3
Not Sure	26	13.8
How hand hygiene is achieved at work place		
Hand washing	124	65.6
Hand Sanitizers	36	19.0
Both Hand washing and Hand Sanitizers	29	15.3
Total	189	100.0
When use hand hygiene measures		
Before touching or coming into contact with a patient	108	57.1
After an exposure risk to bodily fluids and glove removal	117	61.9
After contact with patient and their immediate surroundings	113	59.8
After touching inanimate object in the patient's surroundings	124	65.6
All of the Above	102	54.0

Table 3.0: Respondents' practice of hand hygiene

Variables	Frequency	Percentage
Practice of hand hygiene measures		
Yes	138	73.0
No	51	27.0
Frequency of hygiene practice		
Always	120	63.5
Sometimes	47	24.9
Depends on the condition	21	11.1
Not at all	1	.5
Practice hand hygiene before patient's contact		
Yes	65	34.4
No	71	37.6
Sometimes	53	28.0
Practice hand hygiene after visiting the toilet		
Yes	90	47.6
No	69	36.5
Sometimes	30	15.9
Practice hand hygiene after exposure risk to bodily fluid and glove removal		
Yes	97	51.3
No	63	33.3
Sometimes	29	15.4
Practice hand hygiene after patient contact or their surroundings		
Yes	88	46.6
No	64	33.9
Sometimes	37	19.6
Practice hand hygiene after touching an inanimate object in the patient's immediate surroundings		
Yes	69	36.5
No	60	31.7
Sometimes	60	31.7
Total	189	100.0

Table 4.0: Factors responsible for poor hand hygiene practices by respondents

Variables	Yes		No	
	Freq	(%)	Freq	(%)
1 Absence of Sinks	70	37.0	119	63.0
2 Lack of hand lotions	129	68.3	60	31.7
3 No towels	88	46.6	101	53.4
4 Lack of soaps	108	57.1	81	42.9
5 Lack of water	136	72.0	53	28.0
6 Absence of sanitizers	125	66.1	64	33.9
7 Perceived lack of time	117	61.9	72	38.1
8 Negligence - Forgetfulness	140	74.1	49	25.9
9 Poor knowledge of standard practice	77	40.7	112	59.3
10 All of the above factors	22	11.6	167	88.4

Table 5.0: Why do you practice hand hygiene measures?

Variables	Frequency	Percentage
Why do you practice hand hygiene measures?		
To avoid staining ones' cloth	11	5.8
To prevent infection	120	63.5
To show how learned we are on hygiene matters	11	5.8
None of the above	15	7.9
All of the above	32	16.9
Total	189	100.0

Table 6.0: Relationship Between Level of Education and Knowledge on Hand Hygiene

Level of Education	Knowledge on hand hygiene			Total	(X ²)	P-Value
	Yes	No	Not Sure			
Primary	15(20.8%)	42(58.3%)	15(20.8%)	72	58.501	0.000
Secondary	44(64.7%)	16(23.5%)	8(11.8%)	68		
Tertiary	43(87.8%)	3(6.1%)	3(6.1%)	49		
Total	102	61	26	189		

Table 7.0: Those who were observed to uses hand hygiene measures in between patient care and those who did not

	Observed Done	Observed Did Not	Total Observations	Degree of Freedom	P-Value
No of Each Group	70	119	189	188	0.000
Percentage (%)	37	63	100		

Table 8.0: Comparison between the percentages of directly observed compliance and highest expressed compliance with hand hygiene measures

	Expressed Compliance	Observed Compliance	Degree of Freedom	P-Value
Total Number	138 (out of 189)	70 (out of 189)	188	0.000
Percentage (%)	73	37		

Table 9.0: Comparison between the percentages of directly observed compliance and percentage of awareness/knowledge hand hygiene measures

	Affirmed Awareness/Knowledge of Hand Hygiene	Observed Compliance	Degree of Freedom	P-Value
Total Number	102 (out of 189)	70 (out of 189)	188	0.000
Percentage (%)	54	37		

DISCUSSION

Majority of respondents were females, and of a younger age group. This could be explained from the fact that the relatives who accompany the patients to render help were mostly younger females. This conforms with former studies were females dominate caregiving among families. (Family Caregiver Alliance, 2016; Sharma et al., 2016; Yu et al., 2018). All respondents had some form of education. While majority had primary education, a reasonable number had tertiary education.

Majority of the patients were aware of hand hygiene measures while a few where not sure what it was all about. The result of this study on awareness is similar to that done in Ghana (Dajaan, et al., 2018) were awareness was also high, and hand washing was the most prevalent mode of practice as in the Ghana study (Dajaan, et al., 2018)¹⁹. Most of the respondents were also knowledgeable as to when to practice hand hygiene measures.

Majority of respondents admitted to practicing hand hygiene measures, and doing so always, however a good number of respondents do not practice these measures at critical times when it will be rewarding to ensure break in infection transmission process. They restrict it to only sometimes or not at all, and this negates the essence of the exercise. However, results of data collated from directly observed practices revealed that less than half of these patients/relatives practice the measures at critical moments. Also, the percentage of those who were observed to practice the measures was far less than those who are aware of hand hygiene measures.

Though absence of amenities and forgetfulness were given as reasons for poor compliance with hand hygiene measures, absence of amenities were dominant among respondents. This is also similar to reports from other studies. (Ward, 2003; Banfield & Kerr, 2005; Ango, 2017; Dajaan et al., 2018) However, forgetfulness was asserted with the highest frequency of responses with similarity to some other studied (Setyautami et al., 2012; Merenu et al., 2015; Gawai et al., 2016), though there were numerous other factors with high score bothering on absence of amenities and poor knowledge of standard hygiene practices. Most of the respondents asserted to infection control being the main reason for practice of hand hygiene.

This study also demonstrated a significant relationship between level of education and knowledge of hand hygiene. This agrees with a previous report where good education and tailored interventions were tied to compliance within a target population. (Lawson, 2016).

CONCLUSION

The provision of amenities for hand hygiene practices should be given due consideration as it been associated with poor compliance. There is need to explore the strong association between education and knowledge of hand hygiene through public education on hand hygiene measures. Use of posters placed desired in public places indicating when and how to do hand hygiene practices will serve as reminders. This will ensure freshness of information in the minds of the

public and indirectly reduce the risk of forgetfulness of hand hygiene measures.

Conflict of Interest: None

Ethical statement: The approval of the research ethics committee of the University of Port Harcourt Teaching Hospital was obtained before the study was carried out.

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