

Full Length Research Paper

Awareness and attitude of health care workers in a teaching hospital in southwestern Nigeria towards nosocomial infections

Adebimpe Wasiu Olalekan^{1*}, Bamidele James Olusegun², Asekun-Olarinmoye Esther Olufunmilayo¹ and Abodunrin Olugbenga Lanre²

¹Department of Community Medicine, College of Health Sciences Osun State University, Osogbo, Nigeria.

²Department of Community Medicine, College of Health Sciences, Ladoke Akintola University of Technology (LAUTECH), Ogbomoso, Osun State. Nigeria.

Accepted 19 November, 2012

Despite advances in health care system, Nosocomial infections (NIs) still remain a preventable disease threatening public health. This study assessed awareness and attitude of health care workers in LAUTECH teaching Hospital Osogbo towards Nosocomial infections. Descriptive cross sectional study among hospital workers using multistage sampling method was used. Research instruments were semi structured self administered and pre-tested questionnaires, and data analyzed using the SPSS software. Eighty three (91.2%), 77 (84.6%) and 59 (64.8%) of the health workers were aware of patients, hospital staff and hospital environment, respectively as causes of nosocomial infections. Thirty one (34.1%) were aware of presence of their hospital policy on control of nosocomial infections, while 36(39.6%) were aware of presence of infection control committee in the hospital. Twelve (13.2%) has ever notified nosocomial infection. Preventive practices towards nosocomial infections were favourable for hand washing, and unfavourable for self reporting to the staff clinic when sick. There is no significant association between ever reported or willingness to report nosocomial infections and awareness of hospital policy or presence of infection control committee in the hospital ($P > 0.05$). There is a need to raise awareness on nosocomial infections among health care workers as well as preventive measures against these infections.

Key words: Nosocomial infection (NIs), infection control committee, health care workers (HCWs).

INTRODUCTION

Nosocomial infections (NIs) are a significant and serious public health problem throughout the world (Alvarado, 2000). These are infections occurring in a patient in a hospital or other health care facility in whom the infection was not present or incubating at the time of admission. This includes infections acquired in the hospital but appearing after discharge, and also occupational infections among staff of the facility (WHO, 2002).

Several studies have however reported a prevalence of

Nosocomial infections between 5 and 10% (Somwang et al., 2007; Olawale et al., 2011; Pittet et al., 2008; Hopmans et al., 2007). These infections pose serious threat to hospital admissions and those who work or dwell around hospital premises and often increase costs of health care both for patients and the health services. Despite advances in the health care system, the threat to public health due to NIs still remains. NI also caused the suffering of about 1.4 million people across the world at any given time (Allegranzi et al., 2007). NIs are estimated to cause or contribute to nearly 80,000 deaths annually in the United States (Rosner, 2000). They are also regarded as a substantial factor in 3% or 15,000 deaths per year in Britain (Comptroller and Auditor General, 2000).

*Corresponding author. E-mail: ilekanadebimpe@yahoo.com, ilekanadebimpe@gmail.com.

Many Nosocomial infections are caused by pathogens transmitted from one patient to another, by way of health care workers who do not routinely observe simple hospital hygiene measures like handwashing, and also between patients. Susceptibility to these infections has been associated with use of invasive devices, extremes of age, immune status and infection control practices (Amita et al., 2003). Most nosocomial infections are thought to be transmitted by the hands of health care workers. It has long been known that hand hygiene among health care workers plays a central role in preventing the transmission of infectious agents. Handwashing has been reported as one of the most effective way of preventing the spread of infectious diseases (Anderson et al., 2008). It is thus important to assess knowledge and attitude of these health care workers towards NIIs prevention and control.

In a Nepalese study on Nosocomial infection among HCWs, only 16, 14, and 0.3% of the respondents achieved maximum scores for knowledge, attitude, and practice items, respectively (Paudyal, 2008). Poor knowledge of definition of NI amidst good attitude and poor compliance with simple procedures such as handwashing and use of gloves has also been reported among HCWs (Raka et al., 2006; Flores and Pevalin, 2006; Khaled et al., 2008). It is interesting to note that approximately one-third of hospital-acquired infections may be preventable (Comptroller and Auditor General, 2000), and that their rates can be reduced by up to one-third if healthcare workers comply with guidelines issued by their hospitals and notable regulating bodies such as the Centers for Disease Control (Pittet et al., 2000). However, compliance rarely exceeds 50% (Bischoff et al., 2000; Maury et al., 2000; Moongtu et al., 2000), and this will have a bearing effect on disease prevalence.

With reports of low compliance, cases of multi-drug resistance infections and poor awareness of NIIs, a study on knowledge, attitude and practice of nosocomial infections is long overdue. This is so in an environment like ours in which personal and organizational attitudes towards interventions such as hand washing, cost containment and logistical barriers may be described as still existing at low pace. The objective of this study was to assess the awareness and attitude of tertiary level health care workers towards nosocomial infections in Osogbo, Southwestern Nigeria.

MATERIALS AND METHODS

This descriptive cross sectional study was carried out among health care workers in selected Teaching Hospital in Osun state in Southwestern Nigeria. The state has two teaching hospitals, and both admit patients and employ various cadres of health workers relevant to their settings. Both LAUTECH and Obafemi Awolowo University Teaching Hospital have NI control committee, hospital policy on control of NIIs as well as adequate protective and other facilities required for effective control of NIIs for the use of their staff. LAUTECH Teaching Hospital has about 300 beds and 400 workers, Obafemi Awolowo Teaching hospital have about 480 beds and 650

members of staff. Administrative and non clinical related staff and health workers who have spent less than a year working in the hospital environment were excluded from this study. Clinically related staff eligible for this study should have spent at least 2 years in the employment of the hospital, a period enough to have familiarized one with hospital policies and systems.

Using a prevalence figure of 5.9% in the calculation of sample size for population less than 10,000 using Leslie Fischer's formula (Olawale et al., 2011; Olawuyi, 1996), a sample size of 85 was calculated. The sample size was approximately brought up to 100. Multistage sampling method was used in selecting respondents into this study. In the first stage, one teaching hospital (LAUTECH Teaching Hospital) was chosen by simple random sampling employing simple balloting. In stage two, a list of clinically related categories of health workers in the hospital were obtained from the hospital administrative unit, and three (nurses, ward orderlies and doctors) were chosen by simple random sampling. Questionnaires were proportionately allocated according to the ratio of the total number of health care workers on the group list. In stage three, a systematic sampling of one in three health workers in each group were selected until number of allocated questionnaires were exhausted. These health workers were located where they were in the hospital and subjected to the research instruments. A total of 91 health care workers returned completely filled questionnaires, giving a response rate of 91.0%.

A pre-coded semi structured self administered questionnaires was administered on sampled health care workers. Questionnaires for ward orderlies were interviewer administered for better and direct understanding of the contents of the questionnaires. Questionnaires were pre-tested among ten health care workers in a nearby general hospital in neighboring Oyo state. Validation of questionnaires was conveniently done by 2 of the lead researchers during pre test. During pretest and data collection proper, 2 research assistants were trained for the administration of the questionnaires on the professional HCWs while 2 additional assistants were used in the translation and back-translation of the Yoruba language version of the questionnaires for ward orderlies who may prefer local language for better understanding. Data were validated by data cleaning, double entry, manual and random checks and location of outliers' data. About six visits to each of the facilities were made over a period of one month including weekend in order to meet the health workers on rotational duty.

Study variables include socio-demographic data of respondents, their awareness of NIIs as well as attitude and practice of HAIs and preventive measures. The index used to assess awareness was how they knew about NIIs based on the questions asked. Practices were explained under discussions as favourable, less favourable and un-favourable based on grading of the practice responses to the questions asked. Ethical issues were settled at the levels of the ministry of health, the health workers as well as the management and ethical review committee of LAUTECH Teaching Hospital, Osogbo. Data was analyzed using the SPSS software version 13.0 after sorting out the questionnaires. Consistency of data entered were done by double entry and random checking. Data was presented in forms of frequency tables. Association between categorical variable were done using chi-square test at a level of significance of $P < 0.05$.

RESULTS

Ninety one respondents returned completely filled questionnaires giving a response rate of 91.0%. Table 1 shows that 39 (42.9%) of respondents were in the age group 20 to 39 years, 20 (22.0%) were doctors while 52 (57.1%) were nurses and 32 (35.2%) of respondents have spent 1 to 5 years in practice. Table 2 shows that

Table 1. Personal data of respondents.

Personal data of respondents	Frequency	Percentage
Age range in years		
20-39	39	42.9
40-59	50	54.9
60 and above	2	2.2
Sex		
Male	21	23.1
Female	70	76.9
Occupation		
Doctors	20	22.0
Nurses	52	57.1
Ward orderlies	19	20.9
No. of years put in practice		
1-5 years	32	35.2
Above 5 years	59	64.8

Table 2. Awareness and attitude to hospital acquired infections.

Variables (n = 91)	Frequency	Percentage
Respondents have spent more than 5 years in hospital practice	8	8.8
Aware of patients as possible causes of HAI	83	91.2
Aware of hospital staffs as possible causes of HAI	77	84.6
Aware of hospital environment as possible causes of HAI	59	64.8
Aware of common examples of HAIs	53	58.2
Aware of common predisposing factors	38	41.8
Aware of possible consequences of HAIs	53	58.2
Aware of auto infection as route of transmission	17	18.7
Aware of cross infection as route of transmission	64	70.3
Aware of hospital staff/equipments as route of transmission	63	69.2
Aware of hospital policy on HAIs	31	34.1
Aware of presence of infection control committee in the hospital	36	39.6
Have ever witnessed HAIs of recent	56	61.5
Ready to notify in the event of an HAI	85	93.4
Respondents has ever notified a case of HAI	12	13.2
Ready to always report himself to staff clinic when sick	52	57.1
Ready to always wear protective gears on duty	82	90.1
Ready to always wash hands before and after procedures	89	97.8

83 (91.2%) of health workers were aware of patients as a possible cause of NIIs, while 77 (84.6%) and 59 (64.8%) of respondents were aware of hospital staffs and hospital environment, respectively as causes of NIIs. About 53 (58.2%) of respondents knew common examples of infections categorized as being nosocomial. About 38 (41.8%) were aware of common predisposing factors to NIIs while

53 (58.2%) were aware of possible consequences of NIIs. Thirty one (34.1%) were aware of presence of hospital policy on NI while 36 (39.6%) were aware of presence of infection control committee in their hospital. About 12 (13.2%) has ever notified NIIs while 85 (93.4%) were ready to notify in the event of cases of NIIs.

About 89 (97.8%) of the HCWs were ready to always

Table 3. Pattern of practice of nosocomial infections preventive measures.

Variable	N (%)			
	All the time	Sometimes	Occasionally	Never
Respondents said they report self to the staff clinic when sick	13 (14.3)	13 (14.3)	48 (52.7)	17 (18.7)
Respondents said they wear overalls or coats, gloves, face masks etc	40 (44.0)	28 (30.8)	14 (15.4)	9 (9.9)
Respondents said they wash their hands before and after examining patients	73 (80.2)	11 (12.1)	5 (5.5)	2 (2.2)
Respondents said they wash their hands before and after handling specimens	82 (90.1)	7 (7.7)	2 (2.2)	-

wash hands before and after procedures. Fifty two (57.1%) of respondents were ready to report themselves to staff clinic when sick, 82 (90.1%) were ready to always wear protective gears as required on duty while, 89 (97.8%) were ready to always wash their hands before and after procedures. Table 3 shows that preventive practices towards nosocomial infections were favourable for hand washing, less favourable for wearing gloves, and un-favourable for self reporting to the staff clinic when sick. There is no significant association between ever reported NIIs or willingness to report and awareness of hospital policy on NIIs, aware-ness of presence of infection control committee in the hospital or number of years put in practice ($P > 0.05$).

DISCUSSION

In this study, majority of HCWs were aware of common causes of NIIs, half of them were aware of its conse-quences and about one third were aware of predisposing factors to HAIs. This awareness is higher when compared to a similar study in which only 16.8% of respondents knew the complete definition of nosocomial infection and sixty-nine percent of health care workers knew that contact is the most common mode of transmission (Raka et al., 2006). The higher

awareness rate obtained in this study could be as a result of inclusion of nosocomial infections as a topic taught in the medical curriculum in Nigeria, and it usually feature as part of sensitization seminars and continuous medical education for hospital workers. This poses a great prospect for control of nosocomial infections in Nigeria.

The fact that about one third of respondents were aware of presence of hospital policy and presence of infection control committee in their hospital suggested that health workers had a poor knowledge of the notification of NIIs and the legal backing for the notification process. This could be responsible for a low rate of notification of NIIs to the relevant authority observed in this study. The poor practice of reporting despite good attitude towards notification of NIIs however suggested that serial or routine on-the job sensitization seminars to the health workers could lead to a better practice of reporting of NIIs. This suggestion is supported by another study in which education sessions for health workers was found to improve knowledge and attitude scores of health workers towards nosocomial infections (Suchitra and Lakshmi, 2007).

In this study, reported preventive practices of HCWs towards NIIs were favourable for hand washing, and fair for wearing protective materials like gloves. This supports a similar study in which majority of health care workers reported hand

washing after using gloves (84%) (Raka, 2006). This study however disagreed with another in which routine handwashing before and after glove use was reported by fewer than half of the HCWs studied (Askarian, 2005). In yet another study, health care workers reported a good overall knowledge and positive attitude towards glove use (Flores and Pevalin, 2006). Many factors could have been responsible for low use in these comparative studies. This include availability of gloves, cost of gloves if clients are to buy, availability of hand washing facilities, and attitude of the health care workers towards these simple procedures. All these amenities were available in LAUTECH Teaching Hospital and may influence the prevalence of these infections.

Most of the HCWs in this study were ready to always wash their hands before and after procedures. This observation was better when compared with a study in which attitude to compliance of HCWs with the recommended hand washing practices remains low (Vincent et al., 1995). In order to reduce the incidence of nosocomial infections, good attitude and compliance with preventive interventions are mandatory (Suchitra and Lakshmi, 2007). In many settings, hand washing may be seen as a trivial issue that is not routinely taken serious, most especially in non surgical and non invasive sessions. To this effect, sensitization seminars for all categories of health

Care staff will go a long way in reducing prevalence of the different types of NIs within our hospital settings. Regular monitoring and mentoring of health workers, most especially by concerned authority would ensure routine universal precautions and regular hand washing practices. In addition, infection control committees in hospitals should live up to the task of making the provision of hospital NI prevention policy available and accessible to health care workers and take active part in creating awareness.

Conclusion

Majority of health care workers are aware of causes and transmission of NIs, but with a bad attitude towards reporting of NIs. Improved awareness through routine sensitization seminars for health care workers and monitoring of compliance could lead to a reduction in prevalence of nosocomial infections in our health care settings.

ACKNOWLEDGEMENTS

The authors would like to express their sincere gratitude to the management and staff of LAUTECH Teaching Hospital Osogbo and all (research assistants; constituted authorities and health care workers) who have contributed to making this study possible.

REFERENCES

- Allegranzi B, Storr J, Dziekan G, Leotsakos A, Donaldson L, Pittet D (2007). The First Global Patient Safety Challenge "Clean Care is Safer Care": from launch to current progress and achievements. *J. Hosp. Infect.* 65(2):115-123
- Alvarado CJ (2000). The Science of Hand Hygiene: A Self-Study Monograph. University of Wisconsin Medical School and Sci-Health Communications.
- Amita S, Chowdhury R, Thungapathia M, Ramamuthy T, Nair GB, Ghosh A (2003). Class1 Integrons and SXT Elements in EL Tor Strains isolated before and after 1992 Vibrio cholerae 0139 outbreak, Calcutta, India. *Emerg. Infect. Dis.* 9(4):500-502.
- Anderson JL, Warren CA, Perez E, Louis RI, Phillips S, Wheeler J, Cole M, Misra R (2008). Gender and ethnic differences in hand hygiene practices among college students. *Am. J. Infect. Control* 36 (5):361-8.
- Askarian M, Mirzaei K, Mundy LM, McLaws ML (2005). Assessment of Knowledge, Attitudes, and Practices Regarding Isolation Precautions Among Iranian Healthcare Workers. *Infect. Control Hosp. Epidemiol.* 26(1):105-108
- Bischoff W, Reynolds T, Sessler C, Edmond M, Wenzel R (2000). Hand-washing compliance by health care workers: impact of introducing an accessible, alcohol based hand antiseptic. *Int. Med.* 160(7): 201-214.
- Comptroller and Auditor General (2000). The management and control of hospital acquired infection in acute NHS trusts in England. National Audit Office. London.
- Flores A, Pevalin DJ (2006). Healthcare workers' knowledge and attitudes to glove use. *J. Infect. Prev.* 7(5):18-22
- Hopmans TE, Blok HE, Troelstra A, Bonten MJ (2007). Prevalence of hospital-acquired infections during successive surveillance surveys conducted at a university hospital in the Netherlands. *Infect. Control Hosp. Epidemiol.* 28:459-465.
- Khaled M, Abd Elaziz I, Bakrn M (2008). Assessment of knowledge, attitude and practice of hand washing among health care workers in Ain Shams University hospitals in Cairo. *Egypt. J. Community Med.* 26(2):81-93.
- Maury M, Elzieu A, Baudel J, Haram H, Barbut A, Guidet J, Offenstadt A (2000). Availability of an alcohol solution can improve hand disinfection compliance in an intensive care unit. *Am. J. Respir. Crit. Care Med.* 162(1):324-327.
- Moongtu W, Gauthier D, Turner J (2000). Using peer feedback to improve hand-washing and glove usage among Thai health care workers. *Am. J. Infect. Control* 28:365-369.
- Olawale KO, Fadiora SO, Taiwo SS (2011). Prevalence of hospital-acquired Enterococci infections in two Primary-care hospitals in Osogbo, Southwestern Nigeria. *Afr. J. Infect. Dis.* 5(2):40-46.
- Olawuyi JF (1996). Choosing the study subjects and sampling; In Biostatistics, a foundation course in health sciences. First edition. Yotson consult publishers, Ibadan. pp.110-118
- Paudyal P, Simkhada P, Bruce J (2008). Infection control knowledge, attitude, and practice among Nepalese health care workers. *Am. J. Infect. Control* 36(8):595-597.
- Pittet D, Allegranzi B, Storr J, Bagheri NS, Dziekan G, Leotsakos A (2008). Infection control as a major World Health Organization priority for developing countries. *J. Hosp. Infect.* 68:285-292.
- Pittet D, Hugonnet S, Harbarth S, Mourouga P, Sauvan V, Touveneau S, Perneger TV (2000). Effectiveness of a hospital wide programme to improve compliance with hand hygiene. *Lancet* 356:1307-1311.
- Raka L, Kalenic S, Zoutman D, Berisha L, Berisha M, Salihu D, Begolli L, Krasniqi S, Jaka A, Begolli I (2006). Knowledge, attitudes and practices of health care workers in Kosovo hospitals regarding nosocomial infections. 16th European Congress of Clinical Microbiology and Infectious Diseases Nice, France. p 659.
- Rosner B (2000). Fundamentals of biostatistics. 5th ed. Duxbury.
- Somwang D, Tepnimit J, Siriporn S, Kakanang N, Tanarak P (2007). Prevalence of Nosocomial Infection in Thailand 2006. *J. Med. Assoc. Thai.* 90(8):1524-1529.
- Suchitra JB, Lakshmi ND (2007). Impact of education on knowledge, attitudes and practices among various categories of health care workers on nosocomial infections. *Indian J. Med. Microbiol.* 25 (3):181-187.