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Full Length Research Paper

Standard precautions: Nurses' knowledge and use in a tertiary health institution in Southeast Nigeria

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ABSTRACT

The risk for hospital-acquired infections (HAIs) is high among nurses. This study is aimed at assessing nurses' knowledge and use of standard precautions (SP) in a tertiary health institution in Enugu, southeast Nigeria. The study was descriptive cross-sectional among nurses at University of Nigeria Teaching Hospital, Ituku-Ozalla, Enugu State. A pre-tested questionnaire was used and analysis was done using SPSS version 17. There were 290 respondents, most of them were females (91.7%), married (65.9%) and between the ages of 20 and 59 years. Almost 98% have heard of SP, 77.2% could define it while about 80% knew the indications and could identify most components of SP. Only 43.8% knew about respiratory hygiene. Over 90% agreed that SP is useful in protecting against hospital infections and that employers should provide SP training for their workers. Decontamination of hands was 100% prior to an aseptic procedure and 97.9% before leaving patient's care area. Gloves were the most commonly used PPE (55.2%) while irregular access was the major reason for non-consistent use of PPEs (64.6%). Over 70% of respondents discard needles without recapping. The nurses who work in the ICU ranked highest in exposure to patients' serum (100%) and use of PPEs (88.9%). Those who were trained on SP (68.6%) and PPE (69%) were more likely to use PPEs. In conclusion, knowledge and attitude to SP were good but the practice is suboptimal. Regular training and supply of required materials for SP are indicated.

Keywords: Standard precautions, hospital-acquired infections, nurses, Enugu.

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INTRODUCTION

The nursing profession is saddled with many occupational hazards such as physical, chemical, ergonomic, social and biological hazards (Labrague et al., 2012). The biological hazards are however paramount as nurses are often exposed to various infectious agents while at work. This can occur when carrying out routine nursing procedures such as wound dressing, bed making, and drug and injection administration. Again, while providing services, nurses move from one patient to another and could therefore serve as a crucial vehicle for the transfer of infectious agents from one patient to the other and sometimes to the environment. The risk of exposure to nosocomial infections is particularly high in resource-limited countries of Africa where government prospects of ensuring safe delivery of healthcare services are usually not met (Mashoto et al., 2013). This is often due to inadequate resources on one hand and poor management of available resources on the other.

Exposures to hospital-acquired infections (HAIs) are frequently associated with various devastating and serious consequences (Beyera and Beyen, 2014). For the healthcare worker (HCW), it could result in severe anxiety, chronic illnesses and premature death. For the patient, it is associated with a variety of co-morbidities, worsening prognosis among others and for the health institution, it often leads to increase in absenteeism, poor productivity and low uptake of services.

It was in the bid to prevent hospital-acquired infections that the United States' Centers for Disease Control

(CDC) in 1996 introduced Standard precautions (SP) to protect HCWs from biological hazards. Standard precautions can be defined as a set of infection prevention practices that equally apply to all patients irrespective of their diagnosis in all settings where health care is delivered (CDC, 2011). These precautions are designed to protect the patients, visitors and health workers from nosocomial infections and include hand hygiene, use of appropriate personal protective equipment (PPEs), respiratory hygiene and cough etiquette, safe injection practices and safe handling of potentially contaminated equipment or surfaces (Valim et al., 2014). Hence, when SP are consistently adhered to as prescribed, safety in the healthcare delivery industry is largely ensured. According to World Health Organization (WHO), worldwide improvement in the use of SP will remarkably decrease unnecessary risks associated with healthcare delivery (WHO, 2007).

Despite these benefits, reports of suboptimal knowledge and practice of SP among the nursing profession are numerous (Teshager et al., 2015; Fashafsheh et al., 2015; Gogia and Das, 2013). This is probably why occupationally acquired infections are still prevalent in the health industry. Regular training of nurses and other HCWs on the use of SP as well as the creation of an enabling environment have been variously suggested as the way forward (Okhiai et al., 2014; Abou El-Enein and El Mahdy, 2011). However, quite often in developing countries, hospitals are usually unable to provide the facilities required to implement the infection control processes. Such facilities include personal protective equipment (PPEs), materials for hand and environmental hygiene and injection safety. Occasionally, even the infection control guideline documents are not found in some health institutions. Thus, limiting accessibility to vital information is fundamental to the prevention and control of hospital-acquired infections.

The need for strict adherence to SP in all places where healthcare is delivered is a clarion call. However, this could only be achieved if all stakeholders are committed to the process. The present study is aimed at assessing nurses' knowledge and use of SP in a tertiary health institution in Enugu, southeast Nigeria. It is hoped that findings will also reveal factors that affect compliance to SP and provide an insight into credible interventions capable of preventing nosocomial infections and ensuring safety in health institutions particularly in sub-Saharan Africa.

MATERIALS AND METHODS

The study was descriptive cross-sectional conducted in October, 2014 among nurses at University of Nigeria Teaching Hospital (UNTH), Ituku-Ozalla, Enugu. UNTH is located in Ituku Ozalla a semi-urban community about 30 min - drive from the state capital. It is the biggest teaching hospital in south-east Nigeria and gets referrals from many parts of the country. Two hundred and ninety nurses who gave informed consent participated in the study. The nurses were drawn from departments that handle biohazards namely: Intensive Care Unit (ICU), Theatre, Wards, Casualty and Out-patient Departments.

A total of 600 nurses who work at UNTH were the study population. Retired nurses and nurses who work in other hospitals were excluded from the study. Cluster sampling was used for sample selection where the above departments/units served as clusters. The proportionate method was used to select the number of sub-departments/sub-units from each of the 5 major department/units listed above. All the 298 nurses who work in the selected sub-departments/sub-units were invited to participate in the study.

Data were collected using pre-tested self-administered questionnaires. The questionnaire was reviewed by Occupational Health Research Group, Enugu while pre-test was done among 20 nurses who work at Enugu State University Teaching hospital to ensure reliability of the study instrument. Contents of the questionnaire include demographical variables, knowledge, attitudes and compliance with SP and associated factors. Data was entered and analyzed in Statistical Package for Social sciences (SPSS) version 17. Frequencies were presented as percentages while Likelihood-ratio test was used to test for association.

Ethical permission was obtained from the Ethics Committee of University of Nigeria, Nsukka while informed consent was obtained from the respondents and the management of University of Nigeria Teaching Hospital

Scoring of knowledge questions: each correct answer was scored = 1 while each wrong answer or non-response was scored = 0. The percentage score was obtained by the total correct answer divided by the total possible correct answer multiplied by 100%. Scores of < 50% was regarded as poor knowledge; between 50% and less than 70% was fair knowledge while 70% and above was considered as good knowledge.

RESULTS

Of the 298 nurses who were invited, 290 participated in the study giving a response rate of 97.3%. The demographic information of the respondents is illustrated in Table 1. As well, Table 2 illustrates the respondents' knowledge and source of information on SP. More than 90% agreed that SP are useful in protecting against biohazards in the workplace and that employers should provide SP training for their workers. Similarly, over 90% disagreed with statements: SP are not necessary in hospitals and are meant only for theatre workers (Table 3).

While all the respondents wash or decontaminate hands before performing an aseptic procedure, 288 (97.9%) do so before leaving patient's care area. However, only 49 (16.9%) wash hands before touching a patient. Most of the respondents, 221 (76.2%) have come in contact with patient's blood or body fluids during work and the actions taken included but not limited to: washing with water, soap and disinfectant, 118 (53.4%); washing with soap and water, 70 (31.7%) and using an alcohol-based hand sanitizer only, 18 (8.1%). Gloves were the most commonly used PPE (55.2%) while irregular access to PPEs was the major reason for non-consistent use (64.6%). Over 70% discard needles without recapping while 20% recap needles before discarding.

Table 1. Socio-demographic distribution of respondents.

Demographic variables	Frequency N = 290	Percent
Gender		
Female	266	91.7
Male	24	8.3
Age range		
20 – 29	67	23.2
30 – 39	117	40.3
40 – 49	68	23.4
50 – 59	38	13.1
Marital status		
Married	191	65.9
Single	77	26.6
Widow/Widower	18	8.1
Divorced/Separated	4	1.4
Religion		
Christianity	278	95.9
Islam	9	3.1
African traditional religion	3	1.0
Location of work		
Ward	185	63.8
Outpatient dept.	51	17.6
Theatre	26	9.0
Casualty	19	6.5
ICU	9	3.1
Years of service		
1 – 5	113	39.0
6 - 10	85	29.3
11 - 15	35	12.1
16 - 20	26	9.0
21 - 25	14	4.8
26 – 30	11	3.7
31 – 35	6	2.1

Age range: 20 – 59
Years of service: 1 – 34.

DISCUSSION

A high proportion of the respondents have heard of SP and formal training is their main source of information. Present level of awareness is higher than previous reports (Gogia and Das, 2013; Edet et al., 2010). This positive trend should be applauded and sustained through regular refresher courses on SP and other infection control techniques. Despite the high level of awareness, the total knowledge score was only 69.2% showing that limited attention is paid to details. This could be a limiting factor to the proper application of SP in the workplace. A lower knowledge score was reported early this year among Jordanian nurses (Qasem and Hweidi, 2017). However, a previous study in Nigeria revealed a knowledge score of above 90% (Ogonia et al., 2015). The reasons for the wide variations in knowledge of SP across studies could be attitudinal in respect of the health workers' disposition to the detailed study of the SP policy. It could also be related to the Management's ability to provide the health workers with trainings and informational resources for easy reference.

Table 2. Knowledge and source of information on standard precautions (SP) among the respondents.

Variables	Frequency N = 290	Percent
Ever heard of standard precaution	284	97.9
Main Source of information		
Formal training	231	79.7
Colleague/friend	42	14.4
Media	11	3.8
Have not heard	6	2.1
Detailed knowledge of standard precaution		
Definition of standard precaution	224	77.2
Components of standard precaution		
Hand hygiene	229	79.0
Safe injection practices	222	77.2
Use of personal protective equipment	219	75.5
Safe handling of potentially contaminated equipment or surfaces	201	69.3
Respiratory hygiene etiquette	127	43.8
Indications for standard precautions	230	79.3
Examples of body fluids to be guarded against	250	86.2
Advantages of standard precaution		
Protects both health workers and patients	248	85.5
Reduced spread of communicable disease	232	80.0
Not associated with stigma and discrimination	79	27.2
Indications for hand hygiene		
After contact with blood, body fluids or excreta	220	75.9
Prior to performing any aseptic procedure	197	67.9
After glove removal	176	60.7
Before touching a patient	167	57.6
Before exiting the patient's care area	106	36.6

Total Knowledge score = 3411/4930 × 100/1 = 69.2%.

Table 3. Attitude of nurses to standard precaution.

Attitude	Strongly disagree (%)	Disagree (%)	Indifferent (%)	Agree (%)	Strongly agree (%)
Employers should always provide training on SP	3 (1.0)	3 (1.0)	5 (1.7)	55 (19.0)	224 (77.3)
Standard precautions are useful in protecting against hazards in workplace	9 (3.1)	2 (0.7)	5 (1.7)	58 (20.0)	216 (74.5)
Standard precautions are not really necessary in hospitals	196 (67.6)	69 (23.8)	14 (4.8)	5 (1.7)	6 (2.1)
Standard precautions are meant only for theatre workers	205 (70.7)	70 (24.1)	8 (2.8)	4 (1.4)	3 (1.0)

In these days of prevalent life threatening respiratory infections like resistant tuberculosis, the need for strict application of respiratory hygiene and cough etiquette in public health institutions cannot be over-emphasized. It is

thus burdensome that more than half of our respondents did not know that respiratory hygiene/cough etiquette is a component of SP. The present finding is even worse than was reported in a community study in Korea where 56% of the respondents knew about respiratory hygiene/cough etiquette (Choi and Kim, 2016). In view of the foregoing, it is therefore expedient that regular training on SP should be given to nurses and indeed all health workers in this part of Nigeria with emphasis on the components and indications for SP.

Most of the respondents (over 90%) had positive attitudes towards SP. This is comparable to previous studies in Nigeria and Italy where most of the respondents were in favour of SP and implies that healthcare workers in general believe that SP is essential in protecting against HAIs (Ogonia et al., 2015; Parmeggiani et al., 2010). The discrepancies in the practice of hand hygiene among our respondents in respect of the moments of hand hygiene are most likely related to formal training. This is probably the reason for the high level of practice of hand hygiene prior to performing an aseptic procedure and before leaving the patient's care area while it is very low during the other moments of hand hygiene. Similar discrepancies in the practice of hand hygiene have been reported (Shobowale et al., 2016).

Exposure to patient's blood or body fluids occurs frequently during clinical work as seen in the present study and is a major means of acquiring HAIs. These needless exposures could be curbed if appropriate PPEs are consistently used. Unfortunately, use of PPEs by HCWs is hardly consistent. Our finding is comparable with 55% reporting high compliance with PPE use during patient care among Chinese critical care clinicians (Hu et al., 2012). Reasons given for inconsistent use of PPEs were mainly irregular access to PPEs and difficulty in working while wearing them. Similar reasons have been reported in previous studies and indicate the need for education of both the managers of health institutions and health workers on the importance of PPEs as well as SP (Ogonia et al., 2015; Amoran and Onwube, 2013).

It is disheartening that some nurses still re-use syringes on patients despite all the hue and cry against this practice. Every effort should be made to stop this dangerous habit using both educational and regulatory means for it is a known fact that unsafe use of syringes and needles constitute a huge health hazard for patients. Although not significant, the respondents who were trained are more likely to use PPEs and slightly less likely to come in contact with patient's serum. It is of utmost importance to regularly train health workers on SP in order to control HAIs.

CONCLUSIONS AND RECOMMENDATIONS

Although the level of awareness of SP was high, the total knowledge score was only slightly above average. The respondents were positively disposed to SP but the practice is largely suboptimal. It is therefore recommended that an enabling environment should be created in health institutions and regular training of health workers should be conducted in order to ensure absolute compliance with SP.

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