Information, Motivation and Behavioural Skills as Predictors of Utilization of Universal Precautions among Nurses in Sagamu, Ogun State, Nigeria

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Abstract: *Health-care providers are at major high-risk for contracting blood-borne infections during the discharge of their duties. Universal precautions framed into daily operation procedures at health-care facilities will probably increase percentage of compliance, which will transit to minimal occurrence of infection(s). This study aimed at assessing information, motivation and behavioural skills of nurses as predictors of utilization of universal precautions among nurses in health facilities in Sagamu, Ogun state, Nigeria.*

A cross sectional design was adopted for this study, and all-inclusive sampling technique was used to enroll two hundred and nine qualified nurses from the total population of nurses from health facilities in the study location. Data was collected using a self-administered questionnaire consisting of 41-items on demographic characteristics, information on universal precautions, motivation towards utilization of universal precautions, behavioural-skills to utilize universal precautions and adherence practice of universal precautions. Frequency, correlation and regression analysis were conducted to give statistical responses to the research question and hypothesis using the SPSS v21.

The mean age of participants was 38.09 ± 10.47years. The females (93.3%) were more than males (6.7%). Majority (80.4%) of the participants were Yorubas while 14.4%, 0.5% were Igbos and Hausas respectively and 4.8% belonged to the other ethnic groups. Although 66.0% of the participants were married, 26.6%, 2.4%, 4.8% and 0.5% were single, separated, widowed and divorced respectively. The least qualification of participants was Registered Nurses (23.4%) and the highest qualification was Master's Degree in nursing (1.9%). The highest occupational level of participants was Director of Nursing Services (0.5%) while the least was Nursing Officers I (27.8%). Among participants, 24.9% had worked less than 5years and 13.9% had practiced nursing more than 25years.Participants had a mean score of 10.31± 2.09 in level of information on utilization of universal precautions measured on a 13-point rating scale, 31.93±5.12 in level of motivation to utilize universal precautions measured on a 45-point rating scale, 12.44±2.06 in level of behavioural-skills to utilize universal precautions measured on a 15-point rating scale and 9.86±2.62 in level of adherence practice of universal precautions measured on a 15-point rating scale. The relationship between information and adherence was insignificant ($R=0.068$; $R^2=0.005$; $P>0.05$). There was a relationship between motivation and adherence practice of universal precautions ($R=0.274$; $R^2=0.075$; $P<0.05$), and behavioural-skills predicted the adherence practice of universal precautions ($R=0.563$; $R^2=0.317$; $P<0.000$). Adherence practice of universal precaution was common among nurses with more years (20-25years) of working experience (11.83; 95% CI: 10.66-12.99).

In conclusion the study addressed various issues on non-compliance to universal precautions among nurses. It is recommended that activities should be geared towards improving the behavioural-skills of the nurses. Training and retraining will improve the nurses' knowledge through adequate information on safe handling of all equipment, and necessary provision of kits to utilize universal precautions.

Keywords: *Universal Precautions, Nurses, Information, Motivation, Behavioural-Skills*
Word Count: 463

I. Introduction

Health-care providers are at major high-risk for contracting blood-borne infections during the discharge of their duties in health-care facilities now than ever before. Despite the introduction of these preventive procedures in the training of healthcare workers such as nurses, doctors, medical laboratory scientist among others, the possibility of an occupational injury is high due to risk practices among these individuals. Various studies have revealed that blood-borne infections constitute a sizeable number of serious risk exposures for health-care providers from patients diagnosed with Hepatitis virus (HBV) and Human immunodeficiency virus (HIV) in the course of providing care for these patients (Anozie, Anozie, Lawani, Mamah, Ajah&Nwali, 2016; Sheth, Leuva&Mannari, 2016) .

Health-care providers carry out a number of tasks which are not limited to administration of drugs by injection procedures, taking birth deliveries, wound dressing, handling blood samples and other body fluids which may result in exposure through percutaneous and needle-stick or other sharps injuries including accidental splashes (Elseviers, Arias-Guillén, Gorke& Arens, 2014).Evidence from a number of studies have reported risk exposures that have resulted to about two to four needle-stick injuries annually among o health-care providers during the process of discharging their duties particularly in Africa (Mbaisi, Ng'ang'a, Wanzala&Omolo, 2013). Among health-care providers in Nigeria who are exposed to these risks, the nurses are most affected and do not give incident report at each occurrence *(Diwe&Chineke, 2013).*

Health-care providers can also transmit infective agents associated with blood-borne pathogens from one person to another. Transmission occurs as a result of direct contact with infected blood or blood products, and other body fluids between health-care providers and infected patient. Also, infected body fluids such as blood, sputum and urine can penetrate mucus membranes or enter through open wounds, cuts, abrasions and damaged skin. Blood-borne pathogens may also be transmitted through mucous membrane of the eyes, mouth and nose occasional by splashes. The Needle-stick and sharp object injuries symbolize a major occupational challenge to health-care workers (Memish, Assiri, Eldatlaony, Hathouth, Alzoman&Undaya, 2013).

In 1995, Hospital Infection Control Practices Advisory Committee (HICPAC) in the United States introduced the concept of standard precautions which combines the major features of universal precautions and body substance isolation into a distinct set of precautions to be adopted by health-care workers for the care of all patients in hospitals regardless of their presumed infection status. These precautions are to help prevent the transmission of blood-borne infections. Should these standard precautions be framed into daily operational procedures at health-care facilities and enforced, probably the percentage of compliance would have been more adequate which will transit to minimal occurrence of infection(s).

Health-care workers (especially nurses) are at high risk of becoming exposed to blood-borne infections through needle stick and sharp object injuries (Zehnder, 2010). Various studies had posited a number of factors that affect the utilization of universal precautions by nurses. Three major areas that should not be overlooked include engineering factors such as the form of sharp devices and unavailability of devices (Wilburn &Eijkemans, 2004), organizational factors such as the existence of supplies and policies for reporting, and behavioral factors which are disposal-related issues (Hossein, Hosein, Eesa& Ali, 2016).

These three areas (engineering factors, organizational factors and behavioral factors) are in coherence with the information, motivation measures and behavioural skills the nurses may possess for the application of standard equipment and object-handling precautions. The use of available sharp devices should come with information guiding their usage for all professions, particularly nursing because of the sensitivity of their profession (Hughes, 2008; Rutala& Weber, 2008). Existing policies guiding the procedures for use and monitoring would serve as factors that motivate nurses to apply the precautionary measures (Houser & Oman, 2011). The behavioural factors revolved around their ability to carry out what they have received information about and their willingness to practice these precautions (Ryan, 2009). Majority of the health-care workers are still at high risk of contracting blood-borne infections due to the lack of application of the universal precautions. In view of This,the following hypotheses are tested:

H$_1$: There will be a significant relationship between information and the utilization of universal precautions among the respondents.

H$_2$: There will be a significant relationship between motivation and the utilization of universal precautions among the respondents.

II. Methodology:

Research Design

This study was a cross-sectional study. The study design entailed testing statistical hypotheses regarding the likely associations between variables using an analytical approach which focused on the nurses representing the population of interest. The survey also provided answers to the research questions and at the same time achieved the objectives of the study.

Population
The study population included all nurses in Sagamu local government with a formal qualification. This population comprised of those currently in service irrespective of their years of experience. The total population is therefore 330 nurses in teaching hospital, private hospitals, primary health care center and occupational medical center in Sagamu local government.

Those that were considered for inclusion in the study were:
1. Nurses that were currently in service at a particular health facility in the study location.
2. Qualified nurses in the study location.

Those that were considered for exclusion from the study were:
1. Nurses that were retired and not currently in service during the survey in the study location.
2. Nurses that were on leave during the period of the study.
3. Student nurses that were still undergoing training in in the study location.
4. Auxiliary nurses that were not formally trained in in the study location.
5. Nurses who refused to partake in the study.

The study was conducted in Sagamu local government situated in Ogun state.Sagamu Local Government came into being on 23rd September, 1991.

Sample size and sampling Technique:
Sample size
The total enumeration of nurses in the study location (330 nurses) was considered for the study. Therefore as many that accepted to participate in the study were included.

Sampling Technique
The sampling technique adopted was the all-inclusive sampling technique. Therefore as many that accepted to participate in the study were included.

Study Variables and Null Hypothesis Testing
Study Variables
The variables that were considered in the instrument to assess the participants were as follows:

Section A: Demographic data. This variable consisted of the nurse's age, sex, ethnicity, marital status, religion, current qualification of the nurse, the occupational level attained by the nurse and the years of experience on the job.

Section B: Information. This assessed their knowledge on universal precautions. This variable consisted of five dichotomous items and three multiple choice items. It was measured on a 13-point rating scale.

Section C: Motivation. The variable was segmented into two parts; the internal motivation (incentives, drives and value expectancy for utilizing universal precautions among nurses) and external motivation (supervision/sanctions and availability of resources to utilize universal precautions among nurses). There were fifteenth items in likert response format in this section, it was measured on a 45-point rating scale.

Section D: Perceived self-efficacy and perceived benefit to utilize universal precautions among nurses. The variable consisted of five items in likert response format and was measured on a 15-point rating scale.

Section E: Adherence practice of universal precaution among nurses. The variable consisted of five items in likert response format and was measured on a 15-point rating scale.

Validity
The following criteria were carefully looked into to ensure the validity of the instrument:
1. Face validity: The purpose for the research was apparent in the instrument prepared, it expressed the concern that aroused the study and the variables were coherent in measurement of the problem.
2. Item validity: Each of the items was valid to each of the variable. The items were carefully constructed to align with each of the variables
3. Construct validity: the conceptual frame work was valid to the variable and also to the study. The variables in the instrument were aligned with the behavioral change model used in the study

Reliability
To determine the reliability of the instrument, a pilot test was conducted using 10% of the estimated sample size (33 nurses) from Babcock University Teaching Hospital (BUTH) Ilishan town, Ogun state. Thereafter, a test re-test was conducted for reliability of the instrument using 10% of the estimated sample size 10% of the estimated sample size (33 nurses) from Babcock University Teaching Hospital (BUTH) Ilishan town, Ogun state. It was ensured that the sample for both the pilot-test and test-retest had the same characteristics as the study population (qualified nurses).

The data from the test-retest was statistically analyzed using Cronbach alpha standard score to test its reliability. Hence, a Cronbach alpha score of 0.824 was obtained after the test-retest and necessary corrections were made where required in the items. The weakness of the instrument was taken care of and ensured it was reliable enough to assess the situation of concern.

Data Collection

The selected health facilities included in the study were visited. The board of directors and the nurses were informed about the study, which aided easy access into the health facilities and eased the data collection process. There were a brief explanation of the study to the nurses and their consent was required. Two research assistants were employed and trained on instrument administration in an appropriate manner. The instrument was administered and data collection was done and health facilities were visited more than once which was due to the total number of nurses and the shift they were operating.

Ethical Considerations

Ethical approval was obtained from Babcock University Health Research and Ethics Committee (BUHREC). A proper self-introduction was done during the entry process to each of the selected health facilities. The purpose of the study was explained and the criteria for participating were also mentioned. It was stated that there are no risks involved in the study and there are no rewards for participation.

An informed consent form was filled by participants who willingly agreed to be part of the study before they enter data into the administered instrument. The researcher assured the participants of non-disclosure of every information provided and also ascertained that no third-party had access to the information given by the participants.

The participant's personal details that reveal their identity were not required. Each data on each instrument were filled anonymously. This made it difficult for anyone to match any instrument to any participant. Participation in the study was strictly voluntary. At any point, withdrawal from participation was accepted with no disrespect.

Data Analysis

Data acquired from completed inquiry-questionnaires was computed and analyzed using Statistical Package for Social Science (SPSS) version 21.0. The variables were computed and scores were allotted according to the rating scale for each variable. Correlation and linear regression were used to evaluated the research hypotheses.

III. Results

Regression analysis and association between independent variables and the dependent variable in the study

Independent Variables	B	β-Coefficient	R^2 value	F-Statistic	P-value
	Adherence practice of universal precautions Number of respondents in this study=209				
Information on the utilization of universal precautions	0.086	0.068	0.005	0.973	0.325
Motivation to utilize universal precautions	0.141	0.274	0.075	16.861	0.000
Behavioural skills to utilize universal precautions	0.716	0.563	0.313	95.858	0.000

The above table the regression analysis between the independents and dependents variables. The result reveals that behavioural skills tends to be the most potent follows by motivational and lastly by information.

Table showing Correlation among the variables in this study

Variables	B	β-Coefficient	R^2 value	F-Statistic	P-value
	Number of respondents in this study=209				
Correlation between Information on the utilization of universal precautions and behavioural skills of respondents	0.289	0.293	0.086	19.374	0.000
Correlation between Motivation and information to utilize universal precautions	0.147	0.360	0.130	30.872	0.000
Correlation between motivation skills to utilize universal precautions and behavioural skills of respondents	0.159	0.393	0.154	37.765	0.000

Correlation is significant at P<0.05

The correlation analysis carried out revealed that there was a significant association among the variables in this study. The information variables in terms knowledge on universal precautions and behavioural skills in terms of perceived self-efficacy and perceived benefits to utilize universal precautions correlated with an R value of 0.293, R^2 value of 0.086 and a P value of 0.000. Also the motivation to utilize universal precautions and behavioural skills to utilize universal precautions showed a significant correlation (R = 0.393, R^2 = 0.154, P = 0.000). In addition, information to utilize universal precautions and motivation to utilize universal precautions among respondents also showed a correlation (R = 0.360, R^2 = 0.130, P = 0.000).

IV. Discussion

This study was conducted among nurses in both public and private health facilities in Sagamu, an urban community to assess how information, motivation and behavioural skills to utilize universal precautions can predict the adherence practice of universal precautions. From this study it was deduced that the adherence practice of universal precautions among the nurses was not optimal (9.86 (0.18) ±2.62) which is 65.73%. The study showed that participants scored 79.31% in information, 70.96% in motivation and 82.93% in behavioural skills.

Majority of the participants understood that universal precautions are means of protection against blood borne diseases and that utilization of universal precautions cannot result in transmission of infections during procedure. The participants were aware that protective barrier are needed to carry out universal precautions and that hand washing decreases the incidence of transmitting infections. However, only below average of the participants could identify the protective barriers necessary to carry out universal precautions and might be due to the fact that not a good number of them were informed regularly about the universal precautions.

This is consistent with findings from studies that stated that healthcare workers are knowledgeable about the hazards in healthcare facilities and the application of universal precautions, however were at variance with practice (Olufemi, Ayobami, Titilayo, Mathew, Abiodun&Bukola, 2016 and Watson, Williams-Johnson, Watson, Walters, Williams & Eldemire-Shearer, 2014).

Participants in this study received less motivation (70.96%) when compared to their information. Only 33% participant used the protective barrier even when it's not convenient and 51.7% believed hand washing should be done after each procedure even when the glove is intact. Also, only 69.9% of the participant could recognize the danger in recapping, disassembling used need and then take necessary measures when disposing it, and only 56% believe it's of great benefit to report every injury sustain. These are due to the fact that only 44.9% are supervised to strictly comply with universal precautions, while 52.2 % have access to puncture resistance container and policy for reporting needle-stick injury, post exposure prophylaxis program and awareness of reporting procedure are made available to 49.8%, 43.5% and 43.5% respectively.

However there is significant relationship between motivation to utilize universal precautions and adherence practice of universal precautions (B=0.141; β=0.274; R^2=0.075; P=0.000) has also been traced to relevant literature. Akinboro, Adejumo, Onibokun and Olowokere, (2012) indicated that lack of organizational sustenance; inadequate provision of necessary consumables and less supervision are responsible for the unsafe working environment for the health-care providers. Also, Sin, Lin, Chan and Wong, (2016) reported that percutaneous injury is very common but there was no regularity in the post-exposure prophylaxis. Also a study carried out by Isara, Oguzie and Okpogoro, (2016) reveals that most of these injuries are not reported and there was no post exposure prophylaxis.

V. Conclusion

The deficiencies identify in this study has revealed that nurses are prone to contacting blood-borne infections at work, which in turn have consequences on their health and the services provided. It is proven from this study that to address the issue of non-compliance to universal precautions among nurses; activities should be geared towards improving the behavioural skills of the nurses. This require improving the nurses' knowledge through adequate information on safe handling of all equipment, and practical display on how best to utilize the necessary kits for universal precautions. If possible complex equipment used by the nurses should come with instruction manual on how to be handled to avoid injuries.

VI. Recommendation

Conscious effort should be made by the government, policy maker and stake holders of health facilities to ensure a safe working environment for the nurses. Provision of safer devices that minimize injuries among the nurses should be made, more awareness on the danger of been exposed to blood-borne diseases and benefit of strict compliance with the universal precautions should be emphasized on. There should be provision for regular screening for blood-borne infections for nurses, more training section on regular basis and adequate supplies of the necessary kits. There should be full immunization program for nurses against vaccine preventable diseases,

with strict compliance and monitoring. The information given to the nurses should be screen to ensure the content of the messages are relevant.

References

[1]. Akinboro, A. A., Adejumo, O. P., Onibokun, C. A., &Olowokere E. A. (2012). Community health care workers' risk perception of occupational exposure to HIV in Ibadan, south-west Nigeria, *Africa Journal of Primary Health Care & Family Medcine,*4(1).
[2]. Anozie, O. B., Anozie, U. J., Lawani, O. L., Mamah, E.,Ajah, L. O., &Nwali, M. I. (2016). Knowledge of Occupational Hazards and Post Exposure Prohylaxis by Hospital Cleaners to HIV and Other Blood Borne Pathogens: Findings from Ten Hospitals in Abakaliki, Nigeria. *American Journal of Clinical Medicine Research*, *4*(2), 29-33.
[3]. *Diwe, C. K., &Chineke, H. N. (2013).* Prevalence of Needle Stick Injuries among Healthcare Workers in Imo State University Teaching Hospital (IMSUTH) Orlu South Eastern Nigeria. *Africa Journal of Family Practice,4*(2).
[4]. Elseviers, M. M., Arias-Guillén, M.,Gorke A., & Arens, H. J. (2014). Sharps injuries amongst healthcare workers: review of incidence, transmissions and costs. *Journal of Renal Care*,*40*(3), 150-156.
[5]. Houser, J., & Oman, K.S. (2011) Evidence-based practice; An Implementation Guide for Healthcare Organization.
[6]. Hughes, R. G. (2008) Patient Safety and Quality: An Evidence-Based Handbook for Nurses.*Nurses at the "Sharp End" of Patient Care*, *1*(2).
[7]. Hossein, M., Hosein, M., Eesa, M., & Ali, H. (2016) Factors Associated with Needlestick Injuries in Health Care Occupations: A Systematic Review.*Journal of Clinical and Diagnostic Research, 10*(8), 1-4.
[8]. Isara, A. R., Oguzie, K. E., &Okpogoro, O. E. (2015). Prevalence of needlestick injuries among healthcare workers in the Accident and Emergency Department of a Teaching Hospital in Nigeria. *Annals of Medical Health Science Research*, *5*, 392-396.
[9]. Mbaisi, E. M., Ng'ang'a, Z., Wanzala, P., &Omolo, J. (2013). Prevalence and factors associated with percutaneous injuries and splash exposures among health-care workers in a provincial hospital, Kenya, 2010. *The Pan African Medical Journal*, *14*(10). Retrieved from: http://doi.org/10.11604/pamj.2013.14.10.1373.
[10]. Memish, Z. A, Assiri, A. M, Eldalatony, M. M, Hathout, H. M, Azaloma, H., &Undaya, M. (2013). Risk analysis of needle stick and sharp object injuries among health care workers in a tertiary care hospital (Saudi Arabia). *Journal of Epidemiology and Global Health,3*, 123-129.
[11]. Sin, W. W, Lin, A. W., Chan, K. C.& Wong, K. H. (2016). Management of health care workers following occupational exposure to hepatitis B, hepatitis C, and human immunodeficiency virus.*Hong Kong Medical Journal*, *22*, 472-477.
[12]. Sossai, D., Guardo, M. D., Foscoli, R., Pezzi, R., Polimeni, A., Ruzza, L., Miele, M., Ottaggio,
[13]. Zehnder, N. G. (2010) What should I do if I get a needlestick. *The Hospitalist*, 10.