

## KNOWLEDGE, ATTITUDE, AND PRACTICE OF STANDARD PRECAUTION AMONG NURSES IN STATE SPECIALIST HOSPITAL, JALINGO

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### ABSTRACT

**Background:** Standard precaution is a sure way of preventing occupational infection. **Methodology:** Descriptive survey design was used to gather information from 150 participants using validated interviewer-administered questionnaires. Ethical permission was obtained from the Taraba State Ministry of Health, followed by informed consent from participants. Descriptive statistics and frequency distributions were used to analyze the data collected. The Study instrument was subjected to validity and reliability tests with Cronbach Alpha 0.705 computed. **Results:** The Study enrolled 146 participants with mean age ( $\bar{X} = 36.19 (0.81) \pm 9.9$ ), age range= 21-61), the majority were married (61%), females (71.9%) of Christian faith (78.8%), and RN professional qualification. Knowledge on 24-point scale reported  $\bar{X} = 21.8 (0.17) \pm 2.06$  (highest among Graduate Nurses  $\bar{X} = 22.9 (0.3) \pm 1.8$ ); Attitudes on 44-points,  $\bar{X} = 35 (0.34) \pm 4.12$ ; Constraints on 40-points  $\bar{X} = 23.4 (0.32) \pm 3.90$ ; Self-efficacy on 28-points scale  $\bar{X} = 20.7 (0.29) \pm 3.59$  and Practice on 38-points,  $\bar{X} = 24.9 (0.37) \pm 4.55$ . Regression analysis shows that Knowledge accounted for 2.6% of practice ( $r = 0.051$ ;  $R^2 = 0.026$ ; P-Value 0.050); Attitude, 15% ( $r = 0.039$ ;  $R^2 = 0.150$ ; P-value = 0.001) and Self-efficacy, 4.7% ( $r = 0.060$ ;  $R^2 = 0.004$ ; P-value = 0.047). **Conclusion:** Knowledge and Attitude are essential for professional practice in Nursing. Recommendation: Nurses should adequately be prepared to have a level for efficient practice.

**KEYWORDS:** Demography, Knowledge, Practice, attitude, self-efficacy.

### BACKGROUND TO THE STUDY

Standard precautions are a set of precautionary measures designed to prevent transmissions of blood born infectious diseases (CDC, 2018). Blood-borne pathogens such as HIV, HBV, and HCV are the most serious and contribute to being a major threat in the workplace (Carine & Sakr et al., 2021). Health Care Workers (HCWs) are prone to infection by blood-borne pathogens whenever they come in contact with infected body parts, blood, and body fluids in the course of carrying out their duty (Lee, Cho, Kim, et al., 2017). Most occupational exposure to blood pathogens usually results percutaneously, mucocutaneously, or through blood contact with non-intact skin (Carine & Sakr et al., 2021).

According to the World Health Report (2013), about three million HCWs all over the world experience percutaneous exposure to blood-borne viruses, such as Hepatitis C, B, and HIV viruses, annually. Similarly, it has been estimated that about 2.5% of HIV cases and 40% of HBV and HCV cases among HCWs worldwide are the result of these exposures (Kale, Gholap & Shinde, 2013).

Hepatitis B Virus (HBV) has a high level of endemicity in such regions as sub-Saharan Africa (Nigeria inclusive), South East Asia, Amazon Basin, and China, accounting for least 8% of the HBV chronic carrier in the population, as compared to Europe and North America

(Franco, Bagnato, Marino, Meleleo, Serino, & Zaratti, 2012) coupled with the scourge of HIV AIDS in Nigeria. Therefore, the need for protection among HCWs calls for the strict application of standard precautions in health care settings because HCWs are at risk of infection regularly through contaminated hands, relatives/friends of the patients, contaminated environmental surfaces, drugs, and intravenous solutions (Eskander, Morsy & Elfeky, 2013).

The elements of standard precautions include the use of personal protective equipment and other self-protection behavioral practices such as hand hygiene, the use of gloves, and other barriers, for example, masks, eye protection, face shield, and gown. Others include proper handling of patient care equipment and linen, environmental control, and prevention of injury from sharp devices (Vaz, McGrowder, & Crowford, 2010).

Occupational exposure to bloodborne pathogens from needle sticks and other sharps injuries is a serious but often preventable problem (Abadiga, Mosisa, & Abate, 2020). The world health organization (WHO) estimated that, of the 35 million healthcare workers worldwide, three million experience percutaneous exposures to blood-borne pathogens each year. Among these exposed healthcare professionals, two million were exposed to HBV, 0.9 million to HCV, and 170,000 to HIV. The incidence of needle stick injury in Ethiopia is 17.5% annually due to risky habits and inappropriate standard precaution compliance (Reda, Fisseha, Mengistie & Vandeweerd, 2010).

Building Knowledge, practice, and compliance with standard precaution guidelines by HCWs have been highlighted to be a sure way of preventing occupational infection (Ibrahim Al-Faouri, Suhil Hussein Okour, Nemeh Ahmad Alakour, Nasr Alrabadi, 2021). However, despite the establishment and launching of detailed standard precaution guidelines for HCWs, knowledge and practice of standard precautions remained low among health workers in developing countries, especially Nigeria (Abuduxike, Acar Vaizoglu, Asut, & Cali, 2021).

The differences in knowledge of standard precautions by healthcare workers might be influenced by their variable type of training. The absence of an enabling environment in the health institution, such as a lack of constant running water or shortage of personal protective equipment, can lead to poor practices with standard precautions (Abdulraheem, Amodu, Saka, Bolarinwa, Uthman, 2012). Compliance with standard precaution practice requires an appropriate attitude of health workers over long periods demanding motivation and technical knowledge of them (Abuduxike, Acar Vaizoglu, Asut, & Cali, 2021).

Standard precautions are often practiced partially, thereby exposing healthcare workers to unnecessary risk

of infection with blood-borne pathogens (Abuduxike, Acar Vaizoglu, Asut, & Cali, 2021). Assessing knowledge and practice of standard precautions against blood-borne pathogens, particularly in those health professionals working in the emergency department, is a life-saving procedure.

The purpose of this study is to assess the knowledge, attitude, and practice of standard precautions among nurses in Federal Medical Centre Jalingo with the specific objectives to:

1. Determine the level of knowledge of standard precautions among nurses in Federal Medical Centre Jalingo, Taraba State.
2. Ascertain the attitude of nurses in Federal Medical Centre Jalingo towards standard precautions.
3. Determine the Barriers to the practice of standard precautions among nurses in Federal Medical Centre Jalingo, Taraba State.
4. Determine the level of practice of standard precautions among nurses in Federal Medical Centre Jalingo, Taraba State.

## METHODOLOGY

### Research Design

The research design used in this study was a descriptive survey.

### Population

The population for the study was all the 203 nurses working in Federal Medical Centre, Jalingo.

### Description of Study Area

The study setting was the clinical environment of a Federal Medical Centre, Jalingo, Nigeria, which consists of general wards, high-risk multidrug resistance, surgical ward, gynecology, post-natal, maternity, special baby care unit, intensive care unit, casualty, outpatient, theatre, orthopedic and the psychiatry unit. The study was conducted at the Federal Medical Centre, situated in an urban area of the city of Jalingo, the state capital of Taraba State, Nigeria.

The Federal Medical Centre, Jalingo, was established in November 1999 with Dr. Daniel N. Bobzom as its first Medical Director. The Centre could not take off immediately due to lack of space. As an alternative, the management decided to take off from rented private premises with about 50-bed space in 2001. The major clinical departments like Medicine, Obstetrics and Gynecology, Pediatrics, Surgery, Laboratory, Pharmacy, and all supporting departments were operational.

### Sample Size Determination/ Sampling Technique

A multi-stage and systematic random sampling protocol was used in this study, with a selection of a total of 150 participants. First, a simple random sampling gave rise to a selection of State Specialist Hospital, Jalingo, out of the two tertiary Hospitals in the State. This was followed

by a systematic selection of every third from the sampling frame. The study was conducted over 8 weeks. The Taro Yamane sample size formula was used to determine the sample size for the study.

Taro Yamane formula

$$n = \frac{N}{1 + N(e)^2}$$

n = sample size

N = Population

e<sup>2</sup> = standard error of 5% or 0.05 significance level

$$n = \frac{203}{1 + 203(0.05)^2}$$

$$n = \frac{203}{1 + 203(0.0025)}$$

$$n = \frac{203}{1.5075}$$

**Sample size = 134.66**

Approximately a sample size of 135 nurses will be used for this study.

To cater for losses and incompleteness, 10% was added to the above number = 135 X 10/100 = 14, hence, 135+14= 149 = 150

**Bias:** There was no form of bias in this study. Samples were drawn systematically from the population with equal chances of being picked within the frame.

A random selection of participants was made with blind data collection to avoid selection bias, careful framing of research questions, and prospective design to avoid recall bias.

### 3.5 Variables

The study measured primary and secondary dependent variables of the practice of Universal Precautions. Independent and moderating variables were also measured, developed from the Health Belief Model (HBM) of demographic characteristics, Knowledge, attitudes, Barriers, and behavior practice.

### 3.6 Null Hypothesis Testing

Null Hypotheses were tested to verify relationships among/ between variables.

### Data Collection Methods and Instruments for the Study

A well-structured validated questionnaire was designed considering the Variables (Information) to be obtained from the target population. This questionnaire was divided into five main sections covering socio-demographic characteristics, Knowledge, Attitude, Constraints, and Practice.

Section A: included demographic information with six questions about age and marital status. The second part of the questionnaire assessed Knowledge constructs. In this section, there were six questions for perceived susceptibility, seven questions for perceived severity, six questions for perceived benefits, seven questions for perceived barriers, six questions for cues to action, and seven questions for self-efficacy. The third section was the measurement of knowledge construct (8 questions) and performance (11 questions). The scoring was done as follows: 'Yes' responses received 2 scores, and 'No' or 'I don't know' received 1 point in the 'knowledge' and 'cues to action' sections. The range of score for knowledge was 8–16, and for cues to action was 6–12.

The questions were answered based on a four-point Likert scale, and the responses were Strongly Agree (4), Agree (3), Disagree (2), and Strongly Disagree (1).

### 3.6 Data Validity and Reliability

A Literature review was thoroughly done to identify the variables that constitute the questionnaire. This was followed by necessary adjustments to the instrument before the final administration. The instrument for this study was also scrutinized by my research guide, which made necessary corrections. A measurement scale was developed to ensure the accuracy of data collected using a construct from a suitable model. The Modified Information-Motivation Behavioral Skills Model (IMB) was used to unveil the variables for designing this instrument.

Reliability was ensured by pilot testing and by test-retest of the developed instrument to ensure that consistency was maintained in the measurement of what was intended to measure. The questionnaire was then modified, technical terms eliminated, and some questions reformed. The *Study* Instrument was subjected to validity and reliability tests with Cronbach Alpha 0.705 computed.

### Procedure for data collection

The researcher utilized a validated questionnaire (Addendum B) to collect data. The researcher collected the data with the help of a qualified healthcare provider as a field worker. The Distribution of questionnaires to identified participants for the main study was by hand, with a response rate of 100%.

Computer software Statistical Package for Social Sciences (IBM SPSS version 21) was used to statistically analyze the data, which was reported using descriptive statistics, such as frequency tables and relative

frequencies, means and standard deviations, and descriptive statistics.

### Measures

A structured questionnaire enabled data collection on demographics, including Age, Sex, Marital status, Religion, Education, Occupation, and the Precede Model constructs. Multiple-item summative scales were constructed from these questions to measure the items and potential mediators of interest in this study. Constructs of the HBM model included Knowledge of universal precaution, Attitudes, and constraints to the practice of universal precaution and the practice of universal precaution.

For each of these constructs, a scale of measurement was developed, and the mean scores of responses were converted to a percentage of the maximum scores on the scale and rated in quartiles. For example, a mean score of 13.8 for a variable on a maximum scale of 14 was computed as  $\frac{13.8}{14} \times \frac{100}{1} = 98.6\%$ . In each case, percentages  $\leq 25\%$  were considered low scores;  $\geq 25\%$  and  $\leq 49\%$  as below average scores and scores  $\geq 50\%$  of the maximum score on the scale as average scores, and then  $\geq 75\%$  as high (good) scores. These precede construct measures are independently described below.

**Knowledge:** Twelve items constitute this construct on a reference scale of 24, where a rating scale of 0–1 was used to measure this on a “Yes” or “No” response pattern. When Health workers should practice universal precaution, Consistency of hand washing with soap and clean, running water, meaning of universal precaution, handling of body fluids, etc.”.

**Attitude:** This consisted of 11 items on a reference scale of 44 points. The indicators were related to the importance of observing Standard precautions, values of avoiding needle recapping, avoiding needle re-use, consistent hand washing, willingness to consistently observe universal precaution guidelines, etc.

**Barriers:** This variable consisted of ten items on a 40-point scale, with a response pattern “Agree” to “Disagree.” Indicators for this were related to the factors that serve as constraints to the practice of universal precaution, such as “being too busy at work, considering consistent hand washing as an inconvenience, considering consistent use of PPE as burdensome, etc.”

**Behavioral skills:** was considered as seven items on a scale of 28 points. Indicators for this were related determination to use PPE, to always improvise PPE, and always overcome barriers and challenges against the use of PPEs, etc.

**Behavior practice of universal precaution:** For this variable, a rating scale of 0–3 was used on 9 items with a response pattern of “none of the time” to “all of the time” and measured on a 38-point scale. Indicator for this is related to how often respondents perform certain things that contribute to their adherence practices, e.g., “How often do you recap needles? how often do you decide you must use PPE, How often do you stop using PPE, etc.”

### Data Management and Statistical Analysis

A validated questionnaire for this study was used to collect information from participants. To ensure that respondents understand the questions and respond accurately, and because of the sensitive nature of the research, a total of six (6) research assistants were trained for data collection by interviewer-administered technique. The training covered aspects of the study procedures: the objectives of the study; research ethics and conduct; participants’ rights, confidentiality, informed consent, and identification of prospective respondents.

Data collected were collated and analyzed with the use of statistical software Statistical Packages for Social Sciences (SPSS) version 21, which allowed for the estimation of measures of central tendency and dispersion. Descriptive statistics and analytic/inferential statistics were used in expressing the data. Descriptive statistics, which described the shape, central tendency, and variability looking at variables one at a time: mean, range, and proportion, were reported.

Analytic/inferential statistics describing differences in means scores were applied, the test of hypotheses was presented, and the level of significance of  $\leq 0.05$  was considered statistically significant. Other statistical analyses included measures of levels of knowledge, Attitude, and behavioral practice of universal precaution for the sample as means, standard error of means, and variance to be used in the computation of confidence interval for population parameters.

### Validity and reliability

The instrument for this study was validated by considering the structure of constructs, contents, and items generated and scrutinized with necessary corrections to ensure face validity. Construct and content validity was enhanced through literature contents related to the problem under review. A measuring scale was also developed to ensure the accuracy of the data collected. The Constructs from a suitable model, the Health Belief Model (Rosenstock *et al.*, 1998), were used to unveil the variables for designing the instrument. Reliability was ensured by pre-testing and by a test-retest of the developed instrument to ensure that consistency was maintained in the measurement of what was intended to measure.

After carrying out the pilot study, the questionnaires were modified, technical terms eliminated, and some items reformulated in clearer and everyday vocabulary. The researcher also eliminated duplicate questions. However, the major challenge was a possible disguise in the translational meaning of the questions by the research assistants (interpreters) into the local languages and which was addressed during the training. The questionnaire scales were sufficiently reliable (Cronbach Alpha 0.705), although it was noted that some scales could be improved.

#### Ethical Issues

Ethical clearance was obtained from the National Open University of Nigeria ethics committee. A letter of permission was obtained from the academic secretary of the school to permit the researcher to carry out the research, and the letter was taken to the hospital management through the assistant director of nursing service.

Permission to conduct the study was obtained from

the Senior Medical Superintendent and the head of nursing of the tertiary hospital where the study was conducted.

Participation was entirely voluntary, and participants were informed that they were free to decline to participate at any time without suffering any negative consequences. Participants were given adequate information about the study. Written informed consent was obtained from participants before answering the questionnaire.

## RESULTS

### Demographic Characteristics of Respondents

This study enrolled **150** participants, with a response rate of 97.33%, who responded to the questionnaire. Their ages ranged between 21 years to 61 years, with a mean score of 36.19 and a standard deviation of 9.9 (See Table 4.1). the majority of the respondents were married (61%), females (71.9%) of the Christian faith (78.8) with registered nurse professional qualifications (63%).

**Table 4.1: Frequency distribution of demographic characteristics of respondents in this study.**

Variables	*** (N = 146)	
	N	(%)
<b>Sex</b>		
Male	41	28.1
Female	105	71.9
<b>Marital Status</b>		
Single	43	29.5
Married	89	61.0
Divorced	5	3.4
Separated	9	6.2
<b>Religion</b>		
Christianity	115	78.8
Islam	45	20.5
Traditional	1	0.7
<b>Education</b>		
RN	92	63.0
RN + Degree outside Nsg	12	8.2
Graduate Nurse	42	28.8
<b>Years of Exper</b>		
1-5 Yrs	72	49.3
6-10 Yrs	26	17.8
11-15 Yrs	23	15.8
16-20 Yrs	16	11.0
21-25 Yrs	8	5.5
26-30 Yrs	1	0.7

Respondents in this study

#### 4.2 Knowledge of Standard Precaution

Knowledge in this study was considered as 12 items on a 24-point scale assessing the basic knowledge of the nurse about universal precautionary measures. Results, as indicated in Table 4.3, showed that 95.5% of the respondents know that nurses should always practice Universal Precautionary measures and not only during the procedures; 74.7%; know that Consistent hand

washing with soap and clean, running water is the best and cheap way to prevent infection, to 8.2%, Universal precautions are designed to prevent transmission of infectious disease, and Recapping of needle is unnecessary and should not be done as Nurses must always wear PPEs when working on patients (95%). See Table 4.3 for detail of this information.

Knowledge on a scale of 24 points reported a mean score of 21.8 (0.17)  $\pm$  2.06 being 90.8% of the maximum score (a very high level of knowledge in favor of the practice of universal precaution. Even though all the groups scored high levels of knowledge, Graduate Nurses scored the highest  $\bar{X} = 22.9$  (0.3)  $\pm$ 1.8 on comparing the type of educational preparation in Nursing. These scores were followed by nurses who measured their degrees in other fields other than nursing  $\bar{X} = 21.0$  (0.5)  $\pm$ 1.8. This means that graduate nurses have better preparation for nursing roles than diploma nurses and nurses who are degree holders in other allied fields.

#### 4.3 Nurses' Attitudes to the Practice of Standard Precautions in this Study

Respondents were tested about their thoughts and feelings about the practice of universal precaution. Only about 2.8% of the respondents felt it was important to observe Standard precautions to prevent infections, and it is wrong to recap needles (86.3%), Washing hands all the time is non-negotiable (48.5%), and willing to observe universal precaution guidelines at all times (22%).

Attitudes to the practice of standard precautions on a scale of 44-points reported a mean score of 35 (0.34)  $\pm$  4.12 being 79.5% of the maximum score on the scale (See Table 4.8). Even though all the groups scored high levels of attitudinal disposition, Graduate Nurses scored the highest  $\bar{X} = 36.0$  (0.6)  $\pm$ 4.4 on comparing the type of educational preparation in Nursing. These scores were followed by diploma nurses  $\bar{X} = 34.9$  (0.4)  $\pm$ 3.9 and nurses who measured their degrees in other fields other than nursing  $\bar{X} = 34.8$  (1.2)  $\pm$ 4.3. This means that graduate nurses have a better attitudinal disposition to nursing practices than diploma nurses and nurses who measured their degrees in other 'allied fields.

#### 4.4 Constraints to the Practice of universal precaution

Respondents were tested about barriers to their practice of universal precaution. About 89.7% of the respondents were too busy at work and had no time to practice universal precautions, 72.6%. Perceived frequent hand washing is a real inconvenience, and PPEs are not available for use by healthcare providers at all times (31.5%). They do not have Soap, disinfectants, and hand sanitizers (68.5%), Running clean water (30.2%), and not enough color-coded waste bins (48.7%).

Constraints/ Barriers to the **practice of universal precaution** on a measuring scale of 40-points reported a

mean score of 23.4 (0.32)  $\pm$  3.90 being 58.5% of the maximum score on the scale (an intermediate score).

#### 4.5 Behavioral Skills to the Practice of universal precaution

In this section, the researcher measured **Behavioral skills in the practice of universal precaution**. For this section, only 10.2% of the respondents were determined to use personal protective equipment always, 19.2% Can always improvise PPE even when there is none, 44.6% are so creative and initiative to imagine & improvise PPE and still ensure to use PPE Even in an acute emergency with no time (26%).

The level of **Behavioral skills in the Practice of universal precaution** on a scale of 28-points reported a mean score of 20.7 (0.29)  $\pm$  3.59 being 73.9% of the maximum score (a high level of **Behavioral skills** or self-efficacy in the practice of universal precaution. **Behavioral Skills** to practice universal precaution were higher among the Graduate Nurses  $\bar{X} = 21.7$  (0.5)  $\pm$ 3.3 on comparing the type of educational preparation in Nursing. These scores were followed by nurses who measured their degrees in other fields other than nursing  $\bar{X} = 21.0$  (1.7)  $\pm$ 4.3 and diploma nurses  $\bar{X} = 20.7$  (0.3)  $\pm$ 3.6. This means that graduate nurses believe in selves and have more confidence to practice nursing than diploma nurses and nurses with degrees in other allied fields.

#### 4.6 Practice of Universal Precaution

Self-Reported **Practice of Universal Precaution** was measured on a 36-point scale. It enquired how often respondents did certain activities that contributed to their adherence to the practice of universal precaution. In this study, only 31.5% of the respondents reported not recapping needles, 21.9% Washed hands before and after the procedure, after touching patients or coming in contact with bodily fluids and secretions from patients, 18.5% did not throw saliva or catarrh (mucus) on the floor, only 4.1% Cover mouth and nose when coughing or sneezing and 8.2% not coughing and sneezing onto bare hands.

Self-reported Practice of Universal Precaution on a scale of 38-points reported a mean score of 24.9 (0.37)  $\pm$  4.55 being 65.5% of the maximum score on the scale. This means that the Practice of Universal Precaution was at above average level. However, from this study, respondents achieved an adherence prevalence rate of 65.5%, away from the minimum adherence rate of 95%. A Summary of Descriptive statistics for the analysis of variables is shown in Table 4.8.

**Table 4.8: Summary of Descriptive Statistics for Respondents in this study (N=165).**

Variable	Scale of measure	Mea $\bar{X}$	SE	$\pm$ SD
Knowledge	24	21.8	0.17	2.06
Attitude	44	35.0	0.34	4.12

Constraints	40	23.4	0.32	3.90
Self-Efficacy	28	20.7	0.29	3.59
Practice	38	24.9	0.37	4.55

SE: Standard Error of Mean; SD: Standard deviation

**Table 4.10: Mean Scores Comparisons for Knowledge, Attitude, Behavioral skills and Self-Reported practice of Universal Precautions according to the type of Educational Attainments in Nursing in this Study.**

Variables	Max. Score	Diploma Nurse (N=99)		Graduate nurse (N=103)		Nurse Diploma + Degree in other fields (N=215)		P-value
		$\bar{X}$ (SE)	$\pm$ SD	$\bar{X}$ (SE)	$\pm$ SD	$\bar{X}$ (SE)	$\pm$ SD	
Knowledge	24	20.7 (0.2)	2.1	22.9 (0.3)	1.8	21.0 (0.5)	1.8	0.001
Attitude	44	34.9 (0.4)	3.9	36 (0.6)	4.4	34.8 (1.2)	4.3	0.213
Behavioral Skills	28	20.7 (0.3)	3.6	21.7 (0.5)	3.3	21.0 (1.7)	4.3	0.029
Universal Precaution	38	24.4 (0.4)	4.5	26.7 (0.7)	4.7	25.0 (1.1)	3.9	0.016

SRA: Self-Reported Adherence; SE: Standard Error of Mean; SD: Standard Deviation

**Table 4.15: Summary of Outcome of Regression Analysis for Path Analysis (N=165).**

Variables	Behavioral skills		P-Value	Standard Precaution		P-Value
	R	R <sup>2</sup>		R	R <sup>2</sup>	
Knowledge	0.080	0.064	0.049	0.051	0.026	0.050
Attitude	0.010	0.007	0.000	0.039	0.150	0.000
Behavioral Skills				0.060	0.004	0.047

#### 4.1.7 Hypotheses Testing

In this study, four null Hypotheses were tested to determine which of the predictor variables produced a greater influence on the outcome variable of medication and information adherence. Regression analysis was used in conducting this test at a 0.05 level of significance. The Decision rule applied was that if  $P \leq 0.05$ , then the Null Hypotheses will be rejected in favor of alternative hypotheses, and if  $P \geq 0.05$ , then the Null Hypotheses will be accepted and the alternative rejected.

**Ho: 1.** There will be no significant relationship between Knowledge of Universal precaution and Behavioral skills to practice universal precaution among nurses in State Specialist Hospital, Jalingo, Taraba State.

Results from this study showed a significant positive relation with correlation coefficient analysis of knowledge of Universal precaution and Behavioral skills (self-efficacy) to practice Universal precaution ( $r = 0.080$  and  $R^2 = 0.064$ ) with a P-Value of  $<0.049$ . This is a significant relationship between knowledge of Universal precaution and self-efficacy in practicing Universal precaution. Hence, we reject the Null hypothesis in favor of the alternate.

**Ho: 2.** There will be no significant relationship between Attitude and Behavioral skills to practice Universal precaution among participants in this study.

Results showed a positive statistically significant relationship between attitude and Behavioral skills (Self-efficacy) to practice Universal precaution with a correlation coefficient of ( $r = 0.010$  and  $R^2 = 0.007$ ), P-value of  $<0.007$ . This showed a strong relationship

between knowledge and Self-efficacy to practice Universal precaution. Hence, we reject the Null hypothesis in favor of the alternate.

**Ho: 3.** There will be no significant relationship between Knowledge and the practice of Universal precaution among nurses in State Specialist Hospitals, Jalingo, Taraba State.

Results showed a statistically significant relationship between knowledge and the practice of Universal precaution ( $r = 0.051$  and  $R^2 = 0.026$ ) with a P-value of 0.050. This showed that there is a relationship between knowledge and the practice of Universal precaution in this study. We, therefore, fail to accept the null hypothesis.

**Ho: 4.** There will be no significant relationship between Attitude and the practice of Universal precaution among participants in this study.

Results reported a significant correlation ( $r = 0.039$  and  $R^2 = 0.150$ ) with a P-value of 0.001 between attitude and the practice of Universal precaution. The null hypothesis, therefore, failed to be accepted in favor of the alternate.

**Ho: 5.** There will be no significant relationship between Behavioral skills and the practice of Universal precaution among participants in this study.

Results reported a statistically, positively significant relationship ( $r = 0.060$  and  $R^2 = 0.004$ ) with a P-value of 0.047 between Behavioral skills and the practice of Universal precaution among participants in this study. The null hypothesis is, therefore, rejected in favor of the alternate.

## DISCUSSION, CONCLUSION, AND RECOMMENDATIONS

### 5.1 Discussion of Findings

The study aimed at assessing the level of knowledge, attitude, and practice of standard precautions among nurses in Federal Medical Centre Jalingo, Taraba State, using the constructs of the Health Belief Model (Rosenstock *et al.*, 1998).

From the results, the age range of respondents was 21 – 61 Years. All the respondents were of accountability ages with various responsibilities for selves and others. The female gender constitutes about 71.9% of the participants recruited for the study; 61% were married, and Christians (78.8%) of Registered Nurse professional qualifications. This agreed with the point raised by UNAIDS, 2013, that informed decision-making power affects one's level of education.

A Majority of respondents know that nurses should always practice universal precautions during procedures, all body fluids should be treated as potential sources of infection, and recapping needles and sharps after use is unnecessary and may only endanger the life of the caregivers. The study further showed that consistent hand washing with soap and water may minimize the risk of infection and that running water remains the best and cheap way to prevent infection. The Study reported a high level of knowledge in the practice of universal precaution which contradicts the findings of Abuduxike, Acar Vaizoglu, Asut, & Cali, (2021) that many Health Workers practicing in tertiary institutions lack knowledge of some aspects of universal precaution especially recapping of needles and sharps after use, concluding that low knowledge may eventually lead to poor practice of universal precaution. Assessing knowledge, attitudes, and sources of information among Nursing Students towards infection control and standard precautions, Ghalya and Ibrahim (2014) results revealed that the overall knowledge scores for nursing students towards infection control and standard precautions were acceptable. Students achieved the highest score in the hand hygiene domain and the lowest score in sharps disposal and sharps injuries. Good practices of nurses in infection prevention and control reduce the potential for nosocomial infection, thereby promoting patient safety. However, patient safety can be jeopardized if nurses intentionally fail to comply with implemented infection control measures leading to negligence/malpractice.

The majority of the respondents felt it was wrong to recap needles and/ or reuse needles. Respondents felt washing hands all the time was non-negotiable, willing to observe universal precaution guidelines at all times.

**Attitudes to the practice of standard precautions**, on a scale of 44, points reported high mean scores. Conducting a study to assess the knowledge and attitude of healthcare workers (HCWs) and patients on

healthcare-associated infections (HAIs) in the central regional hospital in Ghana, Ocran and Tagoe (2014) indicated that attitudinal change is the best means of prevention. The study showed an increase in the number of subjects in each category scoring good and excellent in the post-education questionnaire. Sessa, Giuseppe, Albano, and Angelillo (2011) assessed the level of knowledge, attitudes, and practices regarding disinfection procedures among nurses in hospitals. The study revealed an extremely positive attitude toward the utility of guidelines and protocols for disinfection procedures.

Constraints or barriers to the practice of universal precaution, as reported, included being too busy with no time to practice universal precaution, lack of availability of PPEs, considering frequent hand washing as inconveniencing, and lack of availability of running clean water in health facilities. The study reported a low level of constraints or barriers in the study area which contradicts the documentation of Asmr, Beza, Engida, Bekelcho, Tsegaye, and Aschale (2019), that the absence of an enabling environment in health institutions, such as a lack of constant running water, shortage of PPEs, irregularities in hand washing, etc., can lead to the poor practice of standard universal precaution.

The result showed that many respondents were determined to use PPEs, to improvise PPEs, and to be creative and initiative to imagine and improvise PPEs. However, this study reported a high level of behavioral skills or self-efficacy in the practice of standard universal precaution. This agrees with the findings of Abuduxike, Acar Vaizoglu, Asut, & Cali (2021), which stated that compliance with the standard universal precaution is often difficult among nurses and other healthcare givers. Asmr, Beza, Engida, Bekelcho, Tsegaye, and Aschale (2019) also noted that the absence of an enabling environment may lead to poor compliance.

In this study, many respondents reported not recapping needles or sharps after use, washing their hands before and after every procedure, and do not throw saliva, catarrh, or mucus on the floor. Findings agree with that of Diekema, Schuldt, Albanese, & Doebbeling (1995) that compliance with universal precautions has been shown to reduce the risk of exposure to infectious agents. There was an intermediate level of practice of universal precaution, according to this study. This is consistent with the findings of Chaudhuri, Baidya, & Singh (2017) in a study conducted in two tertiary hospitals in Nigeria in 2011/2012. Though the overall knowledge and attitude were above high, the median practice was only 50%.

### 5.2 Lessons Learnt/ Contribution of the Study

This study has a new insight into the dynamics of standard precaution in a way to produce expected behavior practice among nurses. Evidence from this study demonstrates optimal adherence to the behavioral practice of standard universal precaution during nursing



practice, adequate knowledge, and a positive attitude as a pathway to success. It is worth mentioning, too, that having a healthy enabling environment in all health institutions and willingness on the part of the practicing nurses are key to achieving the desired behavioral change. Nursing information and educational programs should take into account that adequate information about the likely consequences of non-adherence behavior and the benefits of optimum adherence is very vital in building Behavioral skills. However, the mode of presenting information should be embedded in a framework that will address various factors that are either barriers or facilitators of the behavior.

Community interventions such as Information sharing should, therefore, not be isolated from community involvement/ participation. These together strengthen self-efficacy and then readiness to adhere to the practice of universal precaution.

The Instrument for this study can be a useful tool in similar studies, and the findings are a reference guide for professionals involved in supervisory tasks in nursing. Findings can also be useful guides in preparing training and counseling materials and strategies that will foster and/ or strengthen adherence.

All these will then promote a good and conducive infection-free work environment, serving as motivators for both the nurses and the clients.

### 5.3 CONCLUSION

This study addressed the problems encountered in the course of the practice of universal standard precaution among nurses working in the study area. An inculcation of the Motivational component in the Standard Precaution program will strengthen or address issues related to knowledge, constraints, behavioral skills, and the practice of universal precaution. It is, therefore, recommended that health information passed across to the clients should be adequately accompanied by motivational components to maximize or arouse the willingness and confidence to achieve the strength necessary for the behavioral practice of adherence, deal with barriers, and then enhance optimum adherence. A vivid application of the Health Belief Model in the personal life of a nurse can produce immeasurable behavioral change.

### 5.4 Recommendations

Many recommendations were drawn from the results of this study and are as follows:

- All Health care providers should be aware of their role in infection Prevention
- Government and/or proprietors should not forget the motivational ingredients necessary for the expected behavior practice of adherence to health information.

- Healthcare providers should build a trusting relationship with community members.
- The Government and proprietors of schools should work towards the adequate provision of relevant and modern IEC materials for effectiveness in the implementation of the various health programs.
- Health care leaders and stakeholders, the Ministry of Health should ensure regular supervision of health institutions to ensure adherence to standard precautionary guidelines.
- Government and stakeholders should extend supervisory activities to private Health Facilities to ensure conformity with National Guidelines and policies.
- There should be collaborative resource identification and mobilization for manpower development and adherence to standard universal precaution purposes between the government and non-governmental organizations, community-based organizations, and faith-based organizations.
- Adequate Provision of clean running water in all health institutions
- Adequate provision of PPEs at all the time

### Limitations of Study

Recall and social desirability bias from respondents might have influenced the objectivity of the respondents. The Lack of financial support from employers and philanthropists was another major limitation of this study. However, the report from this research was firsthand information from participants.

**Generalizability:** The responses given are true reflections of the situation with nursing in Nigeria. More importantly, the sample data was drawn from nurses in Taraba State, Nigeria.

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