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STANDARD PRECAUTION PRACTICES AMONG NURSES IN HEALTH CARE SETTINGS

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ABSTRACT

Background: Objective: To identify the level of practices among nurses towards standard precautions. To determine the level of knowledge among nurses towards standard precautions. To identify the available resources regarding Standard Precautions in DHQ Hospital, Faisalabad. **Study Design:** Cross sectional study. **Setting:** DHQ Hospital Faisalabad. **Period:** Oct 2017 to Feb 2018. **Material and Method:** This research is quantitative in nature; a self-administered questionnaire is the tool to analyze Standard Precaution practices among nurses in health care setting at District Head Quarter Hospital, Faisalabad. **Results:** This study shows that overall knowledge and practice level of nurses about standard precautions measures in DHQ Hospital Faisalabad. It displays that majority of the respondents i.e. 86.0% (N=172) have the knowledge about standard precautions measures and only 14.0% (N=28) don't have the knowledge about standard precautions. Above table also highlights the practice level of nurses about standard precautions measures as it shows that majority of the nurses i.e. 72.5% (N=145) do practices about standard precautions and 27.5% (N=55) don't do the practices regarding standard precautions. **Conclusion:** The results also showed that those who had more knowledge about infection control had a better practice. The results of the Pearson correlation coefficient test for the assessment of the relationship between the knowledge and practice of nurses showed that the attitude of nurses was significantly correlated with their practice ($p<0.01$ and $r=46$).

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INTRODUCTION

The main principles of Universal Precautions and Body Substance Isolation practice were mixed by CDC in 1996 in new precaution system called Standard precautions (SP) which now, replacing the "Universal Precautions". Standard precautions defined as “a group of infection prevention practices that apply to all patients, regardless of suspected or confirmed diagnosis or presumed infection status”. These Precautions are the basic level of infection control precautions which are to be used, as a level of precautions while caring of patient as all where all patients are considered to be possible carriers of blood-borne pathogens. The fact that “standard precautions” are recommended for delivering the care to all patients, in spite of their presumed infection status, it is also recommended when handling equipment and devices that are contaminated or suspected of contamination, and in situations of contact risk with blood, body fluids, secretions and excretions except sweat, without considering the presence or absence of visible blood and skin with solution of continuity and mucous tissues, they included precautions against agents that are transmitted by the following routes of transmission ; air-borne , droplet and contact rotes.

The nurses play a vital role for treatment and prevention of HIV. This problem is considered a worldwide problem so; nurses and health care should have proper knowledge of how to treat these patients by using standard precaution. Health care workers especially nurses are at high risk of HIV/AIDS when they does not follow the

standard precautions e.g. unsafe injection is the main risk of infection. That's why there is important to bring up to date the nurse's knowledge regarding nature of HIV/AIDS, prevention and treatment is essential to provide the better care (de Carvalho Nagliate et al., 2013). It is very important for nurses to increase their knowledge regarding standard precaution. Accurate knowledge, appropriate practices and positive attitude towards the standard precaution and standard care to minimize the cases of hospital acquired infection.

Standard precaution practice is aimed at protecting both patient and health care worker. This study aims to determine the role of knowledge, attitude and practice in performing standard precaution among nurses at clinical setting. If, they have adequate knowledge regarding the purpose of this study is to determine if nurses comply with, and if they have adequate knowledge regarding standard precautions; and to establish the factors that could influence the compliance or non-compliance of standard precautions. A better understanding of how much nurses know and the factors that influence their compliance towards standard precautions or infection control, could improve the nurses' knowledge and compliance.

The aims of standard precautions are the following: Prevention and or reduction of transmission of HAI, and in the same time, protection of Nurses from percutaneous injuries and sharp injuries, these aims can be achieved by the application of SP measures that consists of the following elements: hand hygiene, Personal protective equipments (gloves, gown, gaggle, facemasks, head protection, foot protection and wearing face shields) and prevention of sharp injuries (WHO, 2007; CDC[1] 2007; Casanova et al., 2008). Hand washing is the most important element of SP measures, this concept includes hand washing with soap (plain or antiseptic soap) and water or rubbing hands by using alcohol-based products without using water. Hand hygiene is recommended in following situations: (NHMRC,2010) (WHO,2009)

After and before direct contact with patients after exposure to blood, body fluids, secretions, excretions, non-intact skin, and contaminated items. After contact with patients surrounding and before doing aseptic tasks like using an invasive device. After using gloves.

This study has identified the gap between practices of nurses regarding standard precaution and also generated the knowledge regarding standard precaution among nurses. This research work has provided the awareness in organization about practices and knowledge among nurses regarding standard precaution. After conducting the study the findings were shared to the hospital organization so that the results have been presented to the higher authorities and policy makers. They will be motivated to make certain policies and strategies to enhance the knowledge of nurses regarding standard precaution. After the motivation of Organization and setting of certain policies the nurses can be improved their knowledge, attitude and practices towards standard precaution.

Research Questions

1. What is the practice level and compliance of nurses regarding standard precautions?
2. What is the association between nurses' knowledge about standard precautions and their experience, place of work and gender?

MATERIAL AND METHOD

This research was quantitative in nature; a self-administered questionnaire is the tool to analyze Standard Precaution practices among nurses in health care setting at District Head Quarter Hospital, Faisalabad. The study population is the healthcare workers in District Head Quarter Hospital, Faisalabad, Punjab Province of Pakistan. Two hundred (200) nurses from DHQ will be population of this research. The sample of current study was comprised of 200 nurses at

District Head Quarter Hospital, Faisalabad. The questionnaire which was self-administered, together with the informed consent forms are distributed by the researcher to the participants in the hospital wards, nurses' stations, OPD, offices, etc. Participants were requested to complete that questionnaire after obtaining a written consent. The data of current research study was analyzed with the help of statistical software which known as SPSS (Statistical Package for Social Sciences) version 21. Descriptive statistics i.e. Mean, Standard Deviation and Frequency Distributions were be used for the description of trends in the data.

RESULTS

In table 1, demographic characteristics of the nurses are given, i.e., marital status, education, shift rotation etc. and Table 2 is portraying the demographic information of patients.

In table 1, demographic characteristics of the respondents are given, i.e. gender, marital status, education, shift rotation etc. is given

Table 1. Demographic characteristics of the respondents

Gender	Frequency	Percentage (%)
Male	5	2.5%
Female	195	97.5%
Total	200	100.0%
Marital Status	**Frequency**	**Percentage (%)**
Single	168	84.0%
Married	32	16.0%
Total	200	100.0%

Education			Total
Diploma	Bachelor	BSN	
182 (91.0%)	16 (8.0%)	2 (1.0%)	200

Shift	Morning	Evening	Night	Rotation
	96 (48.0%)	23 (11.5%)	51 (25.5%)	30 (15.0%)

Wards Duty									Total
Wards	Medical	Surgical	Neuro	Gen. OT	Emergency	PEADS	L. Room	Psychiatry	
Frequency	74	38	11	8	28	20	19	2	200
%age	37.0%	19.0%	5.5%	4.0%	14.0%	10.0%	9.5%	1.0%	100.0%

Knowledge & Training of Nurses about Standard Precaution

Table 2 portrays the distribution of the respondents according to their knowledge about standard precautions. It reveals that majority of the nurses i.e. 86.0% were having knowledge about standard precautions measures, while on the other hand only 14.0 percent of the nurses don't have knowledge about SP measures.

Table 2. Distribution of nurses according to their knowledge about Standard Precautions

Knowledge of SP	Frequency	Percentage (%)
Yes	172	86.0
No	28	14.0
Total	200	100.0%

Table 3. Distribution of nurses according to their training regarding Standard Precautions

Training of SP	Frequency	Percentage (%)
Yes	159	79.5
No	41	20.5
Total	200	100.0%

Table 4. Knowledge and practices of nurses about Standard Precaution Practices

Variable	Level	Frequency	Percentage	Mean ± SD
Knowledge	Yes	172	86.0%	41±8.6
	No	28	14.0%	
Practice	Yes	145	72.5%	39±7.4
	No	55	27.5%	

Table 3 highlights the distribution of nurses according to their training regarding Standard Precautions. It shows that majority of the nurses i.e. 79.5 percent have the trainings about SP and 20.5 percent of the nurses don't have trainings regarding SP measures.

Table 4 reveals the overall knowledge and practice level of nurses about standard precautions measures in DHQ Hospital Faisalabad. It displays that majority of the respondents i.e. 86.0% (N=172) have the knowledge about standard precautions measures and only 14.0% (N=28) don't have the knowledge about standard precautions. Above table also highlights the practice level of nurses about standard precautions measures as it shows that majority of the nurses i.e. 72.5% (N=145) do practices about standard precautions and 27.5%

(N=55) don't do the practices regarding standard precautions.

The results also showed that those who had more knowledge about infection control had a better practice. The results of the Pearson correlation coefficient test for the assessment of the relationship between the knowledge and practice of nurses showed that the attitude of nurses was significantly correlated with their practice ($p<0.01$ and $r=46$).

DISCUSSION

This study shows that overall knowledge and practice level of nurses about standard precautions measures in DHQ Hospital Faisalabad. It displays that majority of the respondents i.e. 86.0% (N=172) have the knowledge about standard precautions measures and only 14.0% (N=28) don't have the knowledge about standard precautions. Above table also highlights the practice level of nurses about standard precautions measures as it shows that majority of the nurses i.e. 72.5% (N=145) do practices about standard precautions and 27.5% (N=55) don't do the practices regarding standard precautions. The results also showed that those who had more knowledge about infection control had a better practice. The results of the Pearson correlation coefficient test for the assessment of the relationship between the knowledge and practice of nurses showed that the attitude of nurses was significantly correlated with their practice ($p<0.01$ and $r=46$).

The results of this study are not consistent with the finding of the study by Gould et al. on 173 nurses working in three wards (ICU, Medical-surgical wards), in which they assessed the knowledge of nurses about standard precautions as low (Gould & Chamberlain, 1994). The results of a study by D'Alessandro et al. showed that 90.8% of students had a poor knowledge about infection control (D'Alessandro et al., 2014). The results of another study by Sodhi et al. showed that more than 90% of ICU nurses had a very good knowledge of infection control (Sodhi et al., 2013). Chan's study also showed that 56% of nurses had a good knowledge about infection control and 79% of them had a good practice in relation to standard precautions for infection control (Chan et al., 2002). Allah-Bakhshian et al. assessed the knowledge, attitude and practice of ICU nurses working at training centers in Tabriz, Iran, about hospital infection control and concluded that the majority of nurses in this study had an average knowledge about HAI control (Allah-Bakhshian et al., 2010).

It is important to note that the knowledge of nurses about HAI depends on many factors, including individual and educational characteristics, training courses, and managerial and motivational factors. In their study on the knowledge, attitude and practice of different groups of healthcare personnel about infection control, Suchitra et al. concluded that training has a positive impact on the improvement of knowledge, attitude and practice in healthcare personnel. They also suggested that the development of a continuous training program for all healthcare workers is necessary (Suchitra, 2007). Training courses have been shown to be effective in promoting the knowledge and practice of health care personnel in the UK (Elliott et al., 2005).

Training and knowledge improvement are the most effective ways to fight HAI. Obviously, continuous training and knowledge improvement besides the use of appropriate and effective methods of disinfection and sterilization will reduce the frequency of developing HAI (Askarian et al., 2004). The results of a study by Nasirudeen et al. on the knowledge and practice of students in Singapore showed that 66.3% of them had a have good practice and 48.9% of them had a good knowledge about hand hygiene (Nasirudeen et al., 2012). It seems that since infection control topics are not included in academic nursing courses and since they are not dealt with in the work environment either, nurses have a poor

knowledge in this area. Therefore, considering the guidelines on the treatment of hospital infection - that nurses should be trained and retrained at least twice a year (Bischoff et al., 2000)- differences in the results can be interpreted. There was a significant relationship between knowledge and gender which is consistent with the results of the study (Ghadmgahi et al., 2011).

The results of the present study showed that nurses have a poor practice in the prevention of HAIs (Akyol, 2007). Bischoff et al. claimed that under normal conditions, the frequency of hand washing by doctors and nurses was at an unacceptably low level. A study in India reported less than desirable levels of practice among healthcare personnel (Bischoff et al., 2000). Akyol (2007) noted that hand hygiene compliance by healthcare workers was at a poor level. This is not consistent with the results of the study by Allah-Bakhshian in which almost all participants (99.1%) had an average practice in relation to infection control (Allah-Bakhshian et al., 2010).

A study in Jamaica showed that 85% of nurses, despite having the knowledge, did not observe all safety precautions when performing nursing procedures (Figueroa et al., 1997). Mahmoudi and Hassani (2000) stated that the mere having of knowledge does not lead to good practice so attitudes should also change and belief structures should be reworked in a rigorous and scientific manner to achieve proper practice. There was a significant relationship between knowledge and practice in the present study. The study by Lou also reported a significant relationship between knowledge and practice(Luo et al., 2010).

Acharya et al., assessed the nurse's practices regarding standard precautions. They described that nursing personnel were at a greater risk of acquiring and transmitting blood-borne pathogens. Knowledge about standard precautions and practicing them was very critical in preventing blood borne transmitted infections. This cross sectional hospital-based study sought to assess the level of knowledge and practices regarding standard precautions for infection control amongst nurses and to determine their source of information. In a tertiary care hospital in Delhi, 293 nurses were administered a semi structured questionnaire in December 2011. Questions were asked on knowledge and practices about standard precautions, transmission of blood-borne pathogens, use of gloves, hand washing. Data was entered and analysed in SPSS version 12.

The study revealed that the nurses had poor knowledge about standard precautions (97.9%). 189 (64.5%) nurses had inadequate knowledge about the transmission of blood-borne pathogens; more than three-fourth (77.5%) were aware about hepatitis-B vaccine; majority (72.7%) practiced washing soiled hands immediately; and more than half (58.7%) used Gowns and Gloves very often. Refresher training (34.5%) was the major source of information. They highlighted major gaps between the knowledge and practices of nurses regarding standard precautions.

Arinze-Onyia et al., assessed the practices of standard precautions among HCWs in tertiary health-care facilities. The study was descriptive and a pretested questionnaire was used and analysis done using SPSS version 13. The HCWs studied were 629, mostly females (64.4%), married (62.3%), Christians (94%), and within 20–59 years. Majority were nurses (46.1%) working in the wards. Over 90% of respondents had heard of SP, mainly from formal training (62%). Over 70% could define SP, 74.6% had knowledge of when SP is needed and >70% identified most components of SP. Over 90% agreed that SPs are useful and that employers should provide SP training. Most respondents washed hands after removal of gloves (73.6%) and before leaving patient's care area (33.1%).

More than 70% had been exposed to patient's body fluids and washed the exposed part with water, soap, and disinfectant (52.1%). Gloves were the most commonly used personal protective equipment (PPE) (53.4%) and the major reason for inconsistent use was irregular access (57.7%). Over 50% recap needles before discarding. Exposure to patients' serum was significantly higher among doctors and nurses $P < 0.05$, while the use of PPEs was highest among the laboratory scientists (82.4%). Those who were trained on SP (70.8%) and PPE (69.7) were significantly more likely to use PPEs, $P < 0.05$. Conclusions: SP training and regular provision of PPEs are vital in compliance to SP.

Powers et al., conducted a research to evaluate the factors influencing nurse's compliance with standard precautions at healthcare settings. They conducted a descriptive correlational study was conducted that measured self-reported compliance with SP, knowledge of HCV, and perceived susceptibility and severity of HCV plus perceived benefits and barriers to SP use. Relationships between the variables were examined. They explored the explored reasons why nurses fail to adopt behaviors that protect them and used the Health Belief Model for the theoretical framework. It concentrated on SP and HCV because more than 5 million people in the United States and 200 million worldwide are infected with HCV, making it 1 of the greatest public health threats faced in this century. Understanding reasons for noncompliance will help determine a strategy for improving behavior and programs that target the aspects that were less than satisfactory to improve overall compliance. It is critical to examine factors that influence compliance to encourage those that will lead to total compliance and eliminate those that prevent it.

Duarte Valim et al.,[1] identified instruments for measuring knowledge and information from health professionals on standard precautions (SP); to describe the knowledge and the information of workers; to check dimensions and contents evaluated; to inform the instruments psychometric characteristics and factors affecting standard precautions knowledge. The final sample was 18 cross-sectional studies, being heterogeneous concerning places and sectors of achievement, and countries located in the different classifications of the Human Development Index (HDI). No one of the instruments contemplated all topics recommended and content validation was the largest worry of authors. They revealed that the knowledge was below the recommended and the majority of workers do not understand the goals of standard precautions (SP). They suggested the validation of existing instruments for which reliable results can be found.

Piai-Morais et al.,[2] evaluated and correlated individual, work-related and organizational factors that influence adherence to standard precautions among nursing professionals of psychiatric hospitals. They conducted an exploratory cross-sectional with 35 nursing professionals, using the assessment tool for adherence to standard precautions through the Likert scale, ranging from 1 to 5. The results revealed that there was a strong correlation between the magnitude adherence scale and the personal protective equipment availability ($r = 0.643$; $p = 0.000$). The training scale for prevention of HIV exposure ($p = 0.007$) was statistically different between the nurses and nursing assistants. They concluded that the organizational factors negatively contributed to adherence to standard precautions, indicating that psychiatric institutions lack safe working conditions, ongoing training and management actions to control infections.

Yasmin et al., conducted a quantitative cross-sectional study design to evaluate the factors influencing on standard precautions among Nurses in Lahore. They used a self-administered questioner. They revealed that

there was no significant association found in qualification and knowledge of nurses regarding recapping of infected needle, by recapping infected needle risk of AIDS was decrease. The qualification of participants did effect on the recapping of infected needle p=0.083 with chi-square value a which was >.05.Significant association in qualification and transmission of disease by infected needle. They revealed that every nurse should had a knowledge attitude and practice of standard precaution. They recommended that there was a need to improve the knowledge and provide training especially universal precautions transmission of disease.

Almurr assessed the knowledge and compliance of nurses about standard precaution measures and those related to sharp injuries and their compliance to these related standard precautions. They selected a systemic random sample of 249 of nurses was selected from different hospitals. They used a self-administrated questionnaire for data collection and analyzed the data by using SPSS version 17. They found that the percent of participants who had high level of knowledge about SP measures and those related to SI were (30%) and (36.4%%) respectively. They also found no significant association between mean of knowledge score of SP measures/those related to SI and different nurses' categories and there was no significant association or relation between mean of practice score of SP measures /those related to SI and nurses' categories(P value >0.05) . In addition to this it showed that the prevalence of SI and NSI in previous 12 month were (66.8%) and (46.4%) respectively.

Shah[3] explored the nursing professional's knowledge, perceptions and adherence to SPs at a local teaching hospital. He used a cross-sectional exploratory survey of nurses (n = 50) working at Central Park Teaching Hospital (CPTH) was, using a comprehensive questionnaire assessing their knowledge, compliance and attitude toward SPs as well as availability and accessibility of safety equipment. He found that most nurses (> 80%) perceived occupational health risks adequately but the practice of post-exposure screening and prophylactic vaccination was seen in less than 35% of the nurses. They revealed that a fair level of knowledge and compliance to SPs was observed with a few shortcomings identified particularly in the attitude and perception towards SPs. Institution of teaching programs, surveillance mechanisms and appropriate provision of safety utilities was recommended to strengthen knowledge, alter attitude and enhance adherence of nursing professionals to SPs.

Beghdadli et al., evaluated the practices among nurses of standard precautions. They stated that healthcare workers were exposed daily to blood borne injury and infection with a high risk of hepatitis B or C and human immunodeficiency virus (HIV) transmission. In the 1980s, the US Centers for Disease Control and Prevention (CDC) developed a set of protocols and guidelines known as standard precautions (SP) to prevent accidental transmission of pathogens. The SP should be followed for each intervention or delivery of care in order to protect health care workers from risks associated with contact with blood and other biological liquids. A survey was conducted in a Western Algerian university hospital to assess nurses' adherence to SP practices.

A questionnaire was administered to 450 nurses in the hospital workplace setting. A field survey was also conducted in order to take into account the means and support available to the nurses in these hospital departments, namely to determine availability of hand washing and drying facilities. A total of 133 nurses, 81 women and 52 men, participated in the survey. Personal and professional data, hand-washing frequency, glove wearing practices were collected as data. A large majority (95%) of nurses reported

washing their hands after removing their gloves, and 69% of them reported washing their hands between two patients. Male nurses wear gloves more often than females (respectively 77% and 53%). Sharp instruments were correctly disposed of in a puncture-resistant container more of the time. Recapping needles has been reported by two-thirds of survey respondents. Lack of liquid soap and alcohol-based washing solution were noted as major deficiencies as well as the lack of means to properly dry hands in many health care wards. Lack of SP adherence is primarily due to the lack of awareness and knowledge as well as insufficient supply of equipment and materials for good hand hygiene maintenance. This study highlights the urgent need to implement a programme to improve SP adherence among nurses and to increase the supply of hand washing and drying materials. Greater adherence to SP practices will also reduce the risk of occupational exposure to blood borne injury and infection.

Shah explored the nursing professional's practices towards standard precautions at a local teaching hospital. A cross-sectional exploratory survey of nurses (n = 50) working at Central Park Teaching Hospital (CPTH)was conducted between March-May 2017, using a comprehensive questionnaire assessing their knowledge, compliance and attitude toward SPs as well as availability and accessibility of safety equipment. Forty eight of the 50 nurses surveyed had received formal training regarding SPs while 49 expressed fair knowledge of SPs. High compliance (97%) with hand washing while low compliance (65%) with the use of gloves was observed. A high proportion (72% of nurses) considered SPs as idealistic, waste of resource and interference in work and 84% accepted overlooking compliance with SPs when under heavy workload. Almost all respondents deemed institutional provision of sharps bins, masks, gloves and antiseptic liquids as acceptable but more than half described availability and/or accessibility to surgical gloves, eye goggles and plastic aprons as unsatisfactory. Most nurses (> 80%) perceived occupational health risks adequately but the practice of post-exposure screening and prophylactic vaccination was seen in less than 35% of the nurses. A fair level of knowledge and compliance to SPs was observed with a few shortcomings identified particularly in the attitude and perception towards SPs. Institution of teaching programs, surveillance mechanisms and appropriate provision of safety utilities is recommended to strengthen knowledge, alter attitude and enhance adherence of nursing professionals to SPs.

Batran et al., evaluated the standard precautions' knowledge and practice levels among the nurses in the Saudi Arabia private hospitals. A cross-sectional study was performed between March and May 2017 in four hospitals. Data were collected using a validated tool from a convenience sample of 198 nurses. The study showed that 88 (44.4%) had good knowledge while 109 (55.1%) had a fair knowledge of standard precautions. According to their practice, the majority 184 (92.9%) of the participants had good level while 13 (6.6%) had a fair level. It was revealed that the nurses have a good level of knowledge and practice with standard precautions. There is a moderate relationship between knowledge and practice of standard precaution. Nurses should practice standard precautions in their daily routine regardless of the patient diagnosis, updating knowledge, and improved specific operational guidelines/policies on the practice of standard precaution, regular supply of infection prevention materials, and routine immunization and screening for the staff against Hepatitis B.

Arinze-Onyia et al., assessed the practices of standard precautions among HCWs in tertiary health-care facilities. This descriptive study was done in October 2014 among 629 HCWs at the University of Nigeria Teaching Hospital,

Ituku-Ozalla, Enugu State. A pretested questionnaire was used and analysis done using SPSS version 13. The HCWs studied were 629, mostly females (64.4%), married (62.3%), Christians (94%), and within 20–59 years. Majority were nurses (46.1%) working in the wards. Over 90% of respondents had heard of SP, mainly from formal training (62%). Over 70% could define SP, 74.6% had knowledge of when SP is needed and >70% identified most components of SP. Over 90% agreed that SPs are useful and that employers should provide SP training. Most respondents washed hands after removal of gloves (73.6%) and before leaving patient's care area (33.1%). More than 70% had been exposed to patient's body fluids and washed the exposed part with water, soap, and disinfectant (52.1%). Gloves were the most commonly used personal protective equipment (PPE) (53.4%) and the major reason for inconsistent use was irregular access (57.7%). Over 50% recap needles before discarding. Exposure to patients' serum was significantly higher among doctors and nurses $P < 0.05$, while the use of PPEs was highest among the laboratory scientists (82.4%). Those who were trained on SP (70.8%) and PPE (69.7) were significantly more likely to use PPEs, $P < 0.05$. Conclusions: SP training and regular provision of PPEs are vital in compliance to SP.

Ndu & Arinze-Onyia aimed at comparing adherence and knowledge of standard precautions (SP) among Medical Laboratory Scientists (MLSs) and doctors. It was a cross sectional study done at University of Nigeria Teaching Hospital, ItukuOzalla. A semi structured pre-tested questionnaire was the study instrument. General knowledge of SP was high,76.2% in doctors and 67.6% in MLSs although there were differences between the two groups on the knowledge of components of SP. Safe injection practices, use of personal protective equipment as well as safe handling of contaminated equipment or surfaces was higher amongst doctors. Even though more than half of respondents in both groups, 53.1 % among doctors and 58.1% among MLSs had received training on standard precautions, this did not reflect in the practice. MLS reported more use of personal protective equipment such as gloves and coveralls (100% in MLS and 35% of doctors), $P<0.001$. Recapping of syringes was higher amongst doctors (63.6%) than MLS (55.1%).The doctors practiced better hand hygiene than MLS ($P<0.001$). Constraints that affected SP included non-availability of PPEs and emergency situations for both groups. It was revealed that SP knowledge and practice are still low, and as such, there is a need to train doctors and MLS on the components of SP. Policies on SP need to be enforced and facilities for practice regularly supplied.

CONCLUSION

The study suggested that there is necessity to increase the education for nurses regarding standard precaution especially transmission of disease. The workshops and seminars should be held to improve the nurse's knowledge. Family and friends also should increase the education and counseled about problem. Probability sampling technique should be used for accuracy of results.

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