International Journal of Scientific Engineering and Research (IJSER)
ISSN (Online): 2347-3878
Index Copernicus Value (2015): 62.86 | Impact Factor (2015): 3.791

Knowledge and Practices Regarding Standard Precaution among Nurses Working in B. P. Koirala Institute of Health Science, Dharan, Nepal

BD Aryal[1], DD Baral[2]

[1]Assistant Professor, Department Of General Practice and Emergency Medicine, B. P. Koirala Institute of Health Science, Dharan, Nepal
[2]B. P. Koirala Institute of Health Science, Dharan Nepal

Contact address: bijayadeviaryal[at]yahoo.com

Abstract: ***Background: Standard Precautions combine the major features of Universal Precautions and Body Substance Isolation and are based on the principle that all blood, body fluids, secretions, excretions may contain transmissible infectious agents[1]. Standard Precautions include a group of infection prevention practices that apply to all patients, regardless of suspected or confirmed infection status, in any setting in which healthcare is delivered[2]. Standard precautions are designed to reduce the risk of transmission of microorganisms from both recognized and unrecognized sources of infection in hospitals. Objectives: To assess the knowledge on Standard Precautions and to observe the use of Standard Precautions into practice. Methods: This was a cross sectional observational study conducted in the different department of B.P.K.I.H.S. Nurses of different departments was considered in this study. Questionnaires were distributed to know the knowledge and attitude of Standard precautions and they were observed to assess the utilization of their knowledge into practice. Collected data were entered in Microsoft Excel 2007 and converted it into SPSS 11.5 version for statistical analysis. Results: Although 89.3% of all the respondents have heard the term Standard Precaution, only 53.7% were familiar with the concept of Standard Precaution. Of these 89.3% believe that the Standard Precautions should be applied to all irrespective of disease pattern. BPKIHS has Guidelines terms "Infection control Guidelines" which follow Standard Precautions to some extent. Only 72.2% were aware of these Guidelines. Most of the correct knowledge was found to be relating to sharp disposal in the respective department (100%) but the knowledge on treatment of sharps after use was only 93.2%. knowledge on hand washing, using soap/disinfectant during hand washing, was 76.6%, 91.7% respectively. From the components of standard precautions for which correct knowledge was expressed, practice of washing hand before touching patient was 38%, before putting on gloves was 21.5%, and after removing gloves was 90.2%.77.1% of respondent expressed recapping of needle before disposal but only 65.4% had correct knowledge using one handed technique. Although the entire participant (100%) disposed sharps properly despite knowledge (93.2%), only 22.9% participant use appropriate method (one handed) of recapping before disposal. CDC guidelines take a broader approach for infection prevention which include blood borne, airborne, and epidemiologically important pathogens, in this context knowledge of wearing mask during providing services was only 58.5%, practically only 32.2% used it. Conclusion: Knowledge of standard precautions has a direct impact in the health of patients and HCW. To convert Knowledge of standard precautions into practice respective organization must create the safe environmental climate during patient care. Intervention should be made to improve SP compliance for all healthcare workers. All healthcare worker needs to be addressed not only their knowledge and understanding but also the safety climate created by them. High level of exposure to blood and blood product while working highlights the urgent need for intervention to enhance occupational safety to prevent unnecessary transmission of BBD during work. Strategies should be made for promoting injection safety to prevent transmission of nosocomial infections via unsafe injection practice.***

Keywords: Standard Precautions, Blood Borne diseases, Infection control, Universal Precautions, Injection safety

1. Introduction

1.1 Background of Study

Standard Precautions (SP) combine the major features of Universal Precautions (UP) and Body Substance Isolation (BSI) and are based on the principle that all blood, body fluids, secretions, excretions except sweat, nonintact skin, and mucous membranes may contain transmissible infectious agents.[1]

Standard Precautions include a group of infection prevention practices that apply to all patients, regardless of suspected or confirmed infection status, in any setting in which healthcare is delivered[2].

These precautions are design to reduce the risk of transmissible disease from health practitioner to patient, patient to patient and patient to health care worker from both recognized and unrecognized source of infection in hospital.

CDC guidelines say that all body fluids are highly infectious until prove otherwise except vomitus, feces until contaminated by blood or other body fluid. The unpredictable nature of diseases that all healthcare worker encountered during patient care make the differentiation of different types of fluid difficult like during increased patient flow, poor lightening etc, so in this situation, they should treat all body fluids as potentially hazardous.

To minimize the risks of acquiring blood borne disease like HIV (Human immunodeficiency virus) and HBV (hepatitis B virus) during providing care for the patient, healthcare worker must adhere with the use of personal protective equipments (i.e., gloves, masks, goggles and protective clothing), which provide a barrier between the worker and the exposure source.
In 1985, in order to increase awareness among health care workers of the danger of sharp injuries and other types of disease transmission, the Center of Disease Control (CDC) and the Occupational Safety and Health Administration (OSHA) in the United States introduced the "Universal

Precaution Guidelines" which have been the worldwide standard in both hospital and community care setting.

A Study done in BPKIHS among nursing staff showed that knowledge among the staff is relatively good, but Standard Precautions are still not being fully utilized. [3]

Preliminary discussion done with interns of previous group indicate that lack of necessary supply as well as the rush of emergency department may also be the factor for non adherence to SP consistently.

Department of Health HIV post-exposure prophylaxis: Guidance from the UK Chief Medical Officers' Expert Advisory Group on AIDS. London, 2008, estimated that average risk for HIV transmission after percutaneous exposure to HIV-infected blood of 3 per 1000 injuries (0.3%), or of 1 per 1000 (0.1%) after mucocutaneous exposure. There is no risk of HIV transmission where intact skin is exposed to HIV-infected blood.

So adherence to SP for treating every patient is important tools to prevent transmission of infection.

Standard Precautions have been widely practiced in well-developed countries.[4] which helps all healthcare workers to prevent themselves from occupational exposure to blood borne diseases and the consequent the risk of infections. In low-income countries, SP is practiced partially which make the healthcare workers more vulnerable to the unnecessary risk of infections. This study, therefore, aims to identify the knowledge and understanding of SP and the factors influencing the use of SP and to make recommendations as to how these could be improved.

2. Review of Literature

In Kathmandu, a study done on Knowledge, Attitude and Practices among health care workers on needle-stick injuries showed that Knowledge of health care workers about the risk associated with needle-stick injuries and use of preventive measure was inadequate.[5]

Result showed that 4% and 61% of health care workers respectively were unaware of the fact that hepatitis B and C can be transmitted by needle-stick injuries. 74% had a history of needle-stick injuries and only 21% reported the injuries to the hospital authority. Only 23% were in the habit of using gloves for phlebotomy procedure all the time. 79% were of the impression that needle should be recapped after use. Only 66% were aware of Standard precaution Guidelines. They recommended that a standing order procedure should be formulated regarding needle-stick injuries in all the health institutions. One reason for the poor use of SP in resource limited settings is the cost of implementation.

Even fifteen years ago, in Iowa, Doebbeling et al report a large increase in costs when strict SP is applied. Most of the increases were from use of rubber gloves and disposable gowns [6].

Study done on Knowledge and Practice of Standard Precautions and Awareness Regarding Post-Exposure Prophylaxis for HIV among Interns of a Medical College in West Bengal, India showed that the majority of the respondents (84.6%) expressed awareness of washing sites of injured with soap and water, approximately 32.3% did not know that antiseptics could cause more damage. Also, only 63.8% expressed awareness of reporting any incidence of occupational exposure, while knowledge on post-exposure prophylaxis regimens was generally found to be poor.[7]

The main safeguards[1, 8, and 9] are:

1. Regular hand washing using the appropriate technique.
2. Wearing gloves when handling blood or body fluids or when in contact with soiled surfaces
3. Wearing plastic aprons
4. Wearing a mask and protective eyewear when there is risk from irrigation, splashes or aerosols.
5. Not recapping needles after use, especially two handed needle recapping.
6. Taking care to ensure that all soiled materials or waste is disposed of correctly.
7. Using needles or scalpel blades on one patient only.
8. Promptly and carefully cleaning spills involving blood or other body fluids.
9. Safely disposing of needles (hypodermic, sutures) and sharps in puncture and leak proof safety boxes.

Rationale of Study

Standard Precautions are the minimum infection prevention practices that apply to all patient care, regardless of suspected or confirmed infection status of the patient, in any setting where healthcare is delivered [2].

Standard precautions are the precautions taken by clinical staff to limit the risk of spread of blood borne viruses. In essence, the guidelines centre around safeguards aimed at reducing the risk of transferring blood borne virus from patient to practitioner, patient to patient or practitioner to patient. Staff come in contact with blood and body fluid of patients and thus faces a risk of acquiring Human Immunodeficiency Virus (HIV) and Hepatitis "B" or "C". Infection (Centre for disease control (CDC) (1998) update) so it is important to make all health personnel aware of the modes of transmission of blood borne diseases and to help protect them from acquiring such types of infections.

Nurses are the gatekeeper of the hospital premises. They are the one who looks after the patient most of the time. They are more vulnerable group for transmitting infectious agent. So Knowledge of standard precautions and applications of this into practice is very important in this group.

3. Aims and Objectives

General

To access the knowledge of Standard Precautions among nurses.
To observe the use of standard precautions into practice.

Specific

- To assess the knowledge of standard precautions.
- To observe the use of standard precautions into practice

4. Materials and Methods

This cross sectional observational study was conducted at different department of B.P. Koirala institute of health science. Dharan.

Study Design: Cross sectional Observational study
Study Area**:** Various department of BPKIHS Dharan.
Study Period**:** 6 month
Sample Size: 140
Inclusion Criteria: Nurses working in different departments were included in this study.
Exclusion Criteria: Anyone unwilling to participate

5. Methods

This was a cross-sectional observational study. The sample was nurses working in different department of BPKIHS. Questionnaires were distributed to assess the knowledge of Standard precautions and all nurses were observed to assess the utilization of their knowledge into practice Direct observation was done to assess the practice whether they follow all components of standard precautions according to CDC guidelines or not. The questionnaire also included open ended questions regarding reasons for non-adherence to the practice of SP with an additional space for specific comments.

After obtaining informed consent from all the participants, they were asked to fill up this questionnaire within half an hour time. Data was collected according to the pick working hour of nurses in respective department.

The Data was entered in Microsoft Excel 2007 and converted it into SPSS 11.5 version for statistical analysis and reported in percentage. Adherence to the correct practice of different components of SP was assessed by analyzing the responses expressing the correct knowledge.

6. Results

Among the respondents 89.3% have heard the term Standard Precaution, only 53.7% were familiar with the concept of Standard Precaution. Of these 89.3% believe that the Standard Precautions should be applied to all irrespective of disease pattern.

BPKIHS has Guidelines terms “Infection control Guidelines” which follow Standard Precautions to some extent for infection control. Only 72.2% were aware of these Guidelines.

The majority of the correct knowledge was observed to be relating to sharp disposal in the respective department (100%) but the knowledge on treatment of sharps after use was only 93.2%.

Knowledge on transmission of disease is important to effectively utilizing standard precaution into practice. only 49.3% of respondent had complete knowledge on blood borne disease. Moreover most of the participant conveyed knowledge on Standard Precautions as follows:

Knowledge of participant regarding Standard Precautions (n=205)

Table 1

Knowledge on Standard Precautions	Correct	Incorrect
Standard Precautions should be applied to all irrespective of disease pattern	183(89.3%)	22(10.7%)
Regular Hand washing should be done before and after patient care	157(76.6%)	48(23.4%)
Soap/ disinfectant should be used for hand washing	188(91.7%)	17(8.3%)
Gloves should be worn during handling of patient	177(86.3%)	28(13.7%)
Gloves should be changed for handling every patient	161(78.5%)	44(21.5%)
Mask should be used during patient care	120(58.5%)	85(41.5%)
Used needle should be recapped before disposal	158(77.1%)	47(22.9%)
Methods of recapping from those who recapped	134(65.4%)	71(34.6%)
Method of disposal of sharps/needle after use	191(93.2%)	14(6.8%)
Method of cleaning of spills	174(84.9%)	31(15.1%)

Among the components of standard precautions for which correct knowledge was given, practice of washing hand before touching patient was 38%, before putting on gloves was 21.5%, and after removing gloves was only 90.2%. 77.1% has correct knowledge of not bending or recapping needle before disposal but in practice 31% bend/ recapped before disposing. The main reasons for non-compliance to the correct practice of SP were as follows: a) inconvenience in handling needles and sharps when wearing gloves because of unavailability of different sized gloves. and often no time to wear gloves during rush hours; b) unavailability of adequate PPE in our hospital esp. in wards c) unavailability of goggles for regular use; d) regular hand-washing not feasible due to huge workload, e) non-availability of hub-cutter in all department and also inadequate puncture-proof containers for safe handling and disposal of needles and sharps.

Table 2: Practice of participants on Standard Precautions

Practice of participants regarding Standard Precautions	Correct	Incorrect
Wash hand before touching a patient	78(38.0%)	127(62.0%)
Wash hands after touching a patient	172(83.9%)	33(16.1%)
Wash hand before putting on gloves	44(21.5%)	161(78.5%)
Wash hand after removing gloves	185(90.2%)	20(9.8%)
Applied soap for hand washing	175(85.4%)	30(14.6%)
Recapping of needle before disposal	158(77.1%)	47(22.9%)
Proper sharps disposal	205(100%)	--
Wearing mask in air borne diseases	66(32.2%)	139(67.8%)

Although the entire participant (100%) disposed sharps properly despite knowledge (93.2%), only 65.4% participant use appropriate method (one handed) of recapping before disposal.

7. Discussion

This study focused more on finding whether the nurses has correct knowledge of Standard precautions and also is translated into correct practice in hospital practical setting. Standard precautions are the precautions taken to prevent transmission of diseases (both blood borne and air borne) from any sources. These precautions are important in our setting where healthcare delivery system has limited resources and healthcare workers are always at risk in transmitting blood borne diseases and possess a serious public health concern. Standard precautions have been advocated by the Centre for Disease Control (CDC, USA) as a means to reduce occupational exposures to HIV and other blood-borne pathogens.[9] These CDC guidelines take a broader approach than Universal Precautions, offering infection control precautions that are standard for all patients and include blood borne, airborne, and epidemiologically important pathogens.

Majority of nurses (40.2%) in our study were having 1-5years of working experience where most were from emergency department (9.8%).Study showed that the knowledge as well as practices was less as compared to nurses working for more than 5years durations. This concluded that institute must provide training on standard precautions on regular basis. As these nurses are from different institutional background, most of the nurse's curriculum does not cover Standard precaution. However, the results of this study revealed poor adherences to the main component of SP, like hand washing before touching a patient, using personal protective equipments, recapping of needle before disposal. The main reasons for non compliance were; heavy work load, unavailability of personal protective equipment in the department, unavailability of adequate numbers of properly sized gloves made them using the same gloves for many patients. Even though sharp box is not in accessible area all nurses have attitude of disposing needle in sharp box.

Study done in INF Pokhara showed that trained HCWs displayed good knowledge compared to untrained HCW. About 86% were aware of the need to take precaution while providing care, However correct knowledge of SP was lacking in both the group.

Another study done in Tertiary care referral center Infection Control Program at the University of Geneva Hospitals showed that it may not be prudent to wash and reuse gloves between patient. Further hand washing is strongly encouraged after removal of gloves. Among reasons reported for poor adherence with hand hygiene recommendations, some that are clearly related to the institution (i.e., the system) include lack of institutional priority for hand hygiene, need for administrative sanctions for noncompliance or rewards for compliance, and lack of an institutional climate that encourages safety.[10]

Our study showed that knowledge on hand washing before and after patient care is very good (76.6%) but in practice only 23.4% translated it into practice.

8. Conclusion

Knowledge of standard precautions has a direct impact in the health of patients and HCW. To convert Knowledge of standard precautions into practice respective organization must create the safe environmental climate during patient care. Regular training must be given to all new nurses before enrolling into her duty. Intervention should be made to improve SP compliance for all healthcare worker. All nurses needs to be addressed not only their knowledge and understanding but also the safety climate created by them. High level of exposure to blood and blood product while working highlights the urgent need for intervention to enhance occupational safety to prevent unnecessary transmission of BBD during work. Strategies should be made for promoting injection safety to prevent transmission of nosocomial infections via unsafe injection practice.

References

[1] Centre for disease control (**CDC) (1998) update: Universal Precautions for prevention of transmission of HIV, HBV and other blood borne pathogens in health** setting. MMWR (Morbidity and Mortality weekly report) 37(24): 377
[2] Nandini Shetty, Julian W Tang, Julie Andrews. Infectious disease, Pathogenesis, prevention and case studies. April 3 2009. Medical 664 pages.
[3] Uranw SK, Alam S. A correlative study between Knowledge and practice of UP among staff nurse working at the BPKIHS. DHARAN. Research report 2000. Done by B.Sc. nursing.
[4] S. Maheswari, G. Muthamilselvi, Assess the Effectiveness of Structured Teaching Programme on Universal Precaution among Class IV Employees Working at Aarupadai Veedu Medical College and Hospital, Puducherry, India. AJNR, ARCHIVE, vol2, issue 2
[5] Gurubacharya DL, Mathura KC, Karki DB. Knowledge, attitude and practices among health care

workers on needle-stick injuries. Kathmandu University Medical Journal 2003; 1(2): 91-94
[6] Doebbeling BN, Wenzel RP. The direct cost of Universal precautions in a teaching hospital. JAMA Oct 1990; 264(16):2083-7
[7] Oman Med. Journal.2013 Mar;28(2):141-145.
[8] Guidance for clinical healthcare workers: protection against infection with bloodborne viruses. London: UK Health Departments, 1998; Available on www.hpa.org
[9] Hospital-acquired infections; Guidelines for control BPKIHS, Dec.2002
[10] Universal precautions including injection safety. [Online]. 2007[cited 18.1.07]; Available from www.who.int/hiv/topics/precautions/universal /en
[11] Centers for Disease Control. Perspectives in disease prevention and health promotion update: universal precautions for prevention of transmission of human immunodeficiency virus, hepatitis B virus, and other blood borne pathogens in health-care settings. MMWR. 1988:37; 377–88.
[12] Ann intern med 1998 sep 1;109 (5): 394-8 infection control programme at the university of Geneva Hospital