International Journal of Science and Research (IJSR)
ISSN (Online): 2319-7064
Impact Factor (2012): 3.358

Knowledge and Practices of Universal Precautions among Basic B.Sc. Nursing Students

Milind Kale[1], Manisha Gholap[2], Mahadeo Shinde[3]

[1]Principal, Mes College of Nursing
[2]Assistant Professor, Krishna Institute of Nursing Sciences Karad

[3]Professor, Krishna Institute of Medical Sciences University's
Krishna Institute of Nursing Sciences University Karad

Abstract: ***Every day while caring for patients, nursing students are at risk for exposure to blood borne pathogens which results in infections. Study was aimed to assess the knowledge and Practices of Universal Precautions among Nursing Students and Find out association between Universal Precautions and students. Methodology descriptive co relational design was used for 50 students selected from Purposive sampling technique from H.S.K. hospital Bagalkot. Findings - majority (66%) of the student nurses had an average, majority (66%) of the student nurses had an average knowledge whereas 20% students showed a satisfactory performance of universal precautions. there was no significant association between the level of performance of universal precautions and students Conclusion-The nursing management of people with blood borne diseases involves the risk of occupational hazards to health care workers. As student health care workers become more involved in patient contact during their training, they are at risk of exposure to blood borne pathogens. The safety of student health care workers themselves, and subsequently that of their patients, depends directly upon the degree to which student nurses have knowledge of occupational hazards specific to their jobs and management mechanism for mitigating those hazards. The level of occupational safety and health training resource available to student nurses, as well as management support, are critical factors in preventing adverse out comes from routine job- related hazards.***

Keywords: Knowledge, Practices, Universal Precautions, Nursing Students

1. Introduction

"Universal precaution" is the international term used by the medical industry to describe the set of measures introduced to allow medical staff to safely handle material that may carry blood or body fluids infected with diseases."Universal precautions" are designed to prevent infection from inoculation; contact with mucous membranes such as mouth or eye, or through skin damages such as cuts [2].

It is essential for all nurses to follow universal precautions during their clinical posting, as ……..

- Any percutaneous or per mucosal exposure to blood or body fluids, represent a potential HIV. Infection these includes skin–piercing procedures with contaminated objects and even broken skin, open wounds, cuts and mucosal membranes (mouth or eyes) to the blood and body fluids of an infected person.
- Although they account for a minority of HIV infections, health care procedures represent preventable source of HIV infection, injections are of particular concern, accounting for an estimated 3.9% to 7.0% of new cases worldwide. In addition, unsafe practices in haemodialysis and plasmapheresis centres are associated with HIV transmission.
- Health care worker protection is an essential component of any strategy to prevent disease against HIV infected patients by health care workers.
- If health care workers feel they can protect themselves from HIV infection, they can provide better care.

Shinde M concluded there is need for introducing measures in order to increase the knowledge, attitudes, practices Teaching Hospital, which may play a very important role in increasing hand hygiene compliance among the staff and reducing cross transmission of infections among patients[1].The main principles of universal precautions are washing hands, care of intact skin, protection of damaged skin, proper handling and disposal of sharp objects, good hygiene practices, and careful handling of blood and body fluids[3].Biological safety, CDC, states following guide lines for universal precautions[2].

- Barrier protections should be used at all times to prevent skin and mucous membrane contamination with blood, body fluids containing visible blood or other body fluids. (Cerebrospinal, synovial, pleural, peritoneal, pericardial, and amniotic fluids, semen and vaginal secretions).

Barrier protection should be …….

They type of barrier protection used should be appropriate for the type of procedures being performed and the type of exposure anticipated. Examples of barrier protection include disposable lab coats, gloves, and eye and face protection.

- Gloves are to be worn when there is potential for hand or skin contact with blood, other potentially infections materials or items and surface contaminated with these materials.
- Wear protective body clothing when there is a potential for splashing of blood or body fluids.
- Wear face protection (face shield) during procedures that are likely to general droplets of blood or body fluids to prevent exposure to mucous membrane of the mouth, nose and eyes.
- Wash hands or other skin surfaces thoroughly and immediately if contaminated with blood, body fluids

containing visible blood, or other body fluids to which universal precautions apply.
- Wash hands immediately after gloves are removed.
- Avoid accidental injuries that can be caused by needles, scalpel blades, laboratory instruments, handling sharp instruments and disposing of used needles, pipettes etc.
- Used needles, disposable syringes, scalpel blades and other sharps are to be place in puncture resistant containers marked with a biohazard symbol for disposal.
- Worker education and training in preventive measures should be carried out and safe work procedures developed for all activities having the potential for exposure.

Every day while caring for patients, nursing students are at risk for exposure to blood borne pathogens which results in infections such as HIV/AIDS has stimulated a focus on health care workers health and safety and has galvanized efforts towards the prevention of occupational injury and illness.

2. Need for the Study

Nurses are the largest occupational group in any health care agency. By virtue of their job responsibility they are frequently exposed to blood and body fluids. The nurse's risk of exposure to health hazards and the nurse as a cause of iatrogenic infection to the patients are equally challenging issues to the nurses all over the world. By using simple techniques of universal precautions nurse can avoid dangerous occupational hazards and the knowledge of prevention of blood borne diseases can make nurses confident to deal with patients suffering from HIV and HBV. Thus the researcher felt it as a need to educate the nursing students regarding universal precautions as an effective strategy to prevent blood borne diseases [4].In view of importance for prevention of occupational hazards and minimizing the spread of blood borne diseases. Almost every nation and their government have appointed separate committees. These committees and WHO together make standards and policies by which emphasis is given over universal precautions, these policies are reviewed time to time.

Faculty need educated according to current occupational safety and health administration (OSHA) guidelines. The administration, faculty in the nursing institutes are responsible for disseminating information about blood borne infections and its transmission and educating students about the hazards involved in contact with a diverse population in which HIV /HBV may be present. The curriculum must reflect content related to HIV /HBV and other blood borne infections and the practice of universal precautions [5].

The policy of strict use of universal precautions for all health workers including nursing students must be an operational policy within every hospital, this includes, hand washing, use of cap, mask, disposable gloves and prevention of needle stick injuries. The adequate performance of such practice has wide rising of implications with body fluids such as blood, urine, faeces to prevent blood borne diseases [6].

The student nurses are potentially more exposed to contact infections disease at work. This risk becomes true if the universal precautions are not utilized and the students don't work according to the standard protocol. The students begin their clinical training without the right knowledge [7].

3. Review of Literature

The review of literature is a summary of current knowledge about a particular practice, problem and includes what is known and what is unknown about the problem. Literature is reviewed to summarize knowledge for use in practice or to provide a basis for conducting a study[8].

3.1 Literatures related to knowledge and practices of universal precautions:

Learning is the addition of new knowledge and experience Interpreted in the light of past knowledge and experience. Teaching and learning is an integral part of nursing. Nurses have the responsibility to educate patients related to various aspects and keep themselves updated. Various teaching strategies are used to increase knowledge, such as lecturing, demonstration, discussion and self-education. These methods of self-education has an advantage over the others as the learner can educate himself at his own pace and it also stresses on rereading [9].

The study was suggested that, recapping of used needles is prevalent in the health facilities studied. Non compliance with universal precautions place HWC's at significant health risks. Training programs and other relevant measures should be put in place to promote the appropriate use of protective barrier equipment by HCW's at all time[10]. A study was concluded as, interventions to improve UPs compliance among HCW's in rural north India need to address not only their knowledge and understanding but also the safety climate created by the organizations that employ them[11].

A study found that the educational profile of staff had improved. Use of disposable needles and syringes, disposal of needles and syringes had improved but disposal of blood contaminated material had not. Given the risks of improper practice, a policy of universal precautions is essential [12]

3.2 Review of literature related to education programme

Kadam, A.(2014) found that Structured education programme was highly effective to improve the knowledge score and to improve the attitude score of subjects/ caregiver towards colostomy care of patient [13]. Anjum, S.(2014)conducted study to assess knowledge of contraceptives methods and appraisal of health education among married women and concluded After the health

education married women knowledge was improved to 100% about female sterilization followed by condom 99%, skin implants 86%, oral pills 85% and emergency contraceptives 85%.Sociodemographic variable were significantly associated with existing knowledge and level of married women specially age at marriage, age at first child, occupation,, income ,education [14][15].Babu, R. L. (2014) concluded that care takers had inadequate knowledge regarding non-curative care of terminally ill cancer patients. The planned education programme on non-curative care of terminally ill cancer patients was highly effective in improving the knowledge of care takers regarding non-curative care of terminally ill cancer patients [16].

3.3 Literatures related to health risks due to blood borne pathogens

The assessment provided further evidence that more than a single intervention is needed to achieve health behavior change. The number of nurses who never used safety equipment did decrease slightly, from 13.3% (191) to 8.2% (132) and nurses who received information were more likely to talk to patients about viruses, 49% (414) compared to 21% 9120). Hepatitis information aimed at nurses may help control this emerging epidemic [17].

A study concluded that there was no consistent pattern of differences in negative attitude and practices across the different health specialties surveyed study was concluded as lack of protective and treatment materials and in adequate education appear to contribute to these practices and attitudes [18].

A study was conducted at Poland to assess the knowledge of nurses regarding post exposure prophylaxis of blood borne infections at the workplace. The study population of nurses revealed inadequate knowledge in this area. They showed the best knowledge of principles concerning HIV, and the worst concerning HIV. In the population of nurses under study, the hospital training courses on PEP principles proved to be unsatisfactory, and thus there is an urgent need to improve this situation [19].

A report of the department of Molecular and Clinical Medicine, faculty of health sciences, Linkoping University. Sweden, reviewed the issue of blood exposure factors promoting health care workers, compliance with guidelines in connection with risk. The aim of this article is to describe and analyses different forces that promote adherence to universal precautions. Behavioral variations are seen as a consequence of differences between words with regard to the safety culture. Further it was stressed that, the outcome of an occupationally acquired infection can be fatal. Hence it is important that health care workers take protective measures. The results imply that more information about safe practices alone is insufficient to achieve that goal. All factors of importance for compliance must be taken in to consideration in clinical work and in education [20].

A study was conducted to assess German nursing student's knowledge of and attitudes to HIV and AIDS: two decades after the first AIDS case a questionnaire was used to collect the data. The results indicated that the nursing had a rather high knowledge level concerning AIDS. However, there were gaps of knowledge, such as regarding AIDS immunopathology or the symptoms of the disease. It was concluded that, students having positive attitudes towards people with HIV /AIDS had less homophobia compared to those having negative attitudes towards persons suffering from AIDS. The students having a high AIDS knowledge level tended less towards negative attitudes and homophobia than those with a low level of knowledge [21].

A study was conducted to examine changes in a group of Bachelor of Science nursing students perceptions knowledge of and attitudes towards HIV/ AIDS, occurring from attempts in knowledge and attitudes resulting from intense instructions on HIV /AIDS, AIDS patient care and compliance with universal for education about HIV /AIDS to be incorporated within current undergraduate and in service training programs for Nigerian Nurses [22].

A cross sectional survey was conducted, to record descriptions of occupational exposures to blood, determine factors predictive of exposure, and identify interventions that might reduce the frequency of exposure further the study was concluded as, because of he large number of occupational exposures to blood, especially those due to injuries with hollow –bore needles, nurses should adopt more adequate behavioral strategies to prevent the transmission of blood borne pathogens. Policies for providing adequate education programs tailored to encourage nurses to report all exposures are urgently required [23].

3.4 Literature related to education and prevention of occupational risk:

A study was conducted at university of Pennsylvania, hazards in the emergency department. This study identified gaps in self protective safety education for registered nurses working in emergency departments as well as for nursing students. The study had three parts, first a literature review was performed to summarize the nature and scope of occupational nursing hazards, second the safety components of positive descriptions from 29 veterans affairs hospital across the united states were obtained and evaluated by an expert panel of occupational health nurses the study was concluded as, prevention of job related injuries for nurses, and subsequently their patients will depend directly on the degree to which nurses can identify and control the varied occupational hazards specific to jobs neither accreditation standards nor position descriptions adequately integrate common occupational hazard recognition and control strategies, nor do they adequately prepare nurses to identify and control hazards specific to nursing[24].

A questionnaire based survey was conducted among nursing students in Australia, and analyzed needle stick and sharps events as a percentage of all students and also as a proportion of all cases. The results showed a total of 39.5% of needle stick injuries were not reported the main reason for non –reporting was that the item was un used, further it was concluded that, although hepatitis B vaccination coverage among the student was excellent, it is important that the principles of infection control training and reporting of all injuries to be emphasized throughout undergraduate nursing education [25].

A questionnaire survey was conducted to survey, community nurses experience and practices of using universal precautions at UK. It was concluded as community nurses work in a unique and unpredictable environment, which may result in nurses being unable to comply with existing universal precautions guidelines for the community by the national institute of clinical excellence in June 2003, has addressed some of the difficulties faced by community nurses[26].

A cross sectional study was conducted among first, second and third year nursing students of college of nursing attached to a tertiary care hospital of Pune, India to assess, knowledge and awareness amongst the nursing students regarding risk of HIV infection through accidental needle stick injuries. The study findings suggested i.e. 89.6% were not aware of the correct method of disposal of disposable needles and syringes and against 8.9% of the third year students the study concluded that, there is an urgent need of correcting the existing misconceptions through educational program early in the course and providing supportive policies[27].

4. Statement of the Problem

"A study to assess the knowledge and practices of universal precautions during their clinical posting at Hanagal Shri Kumareshwar Hospital among III year and IV year Basic B.Sc. nursing students of Sajjalashree Institute of Nursing Sciences, Bagalkot, Karnataka"

4.1 Objectives

The objectives of the study are to:

- Assess the knowledge of III year and IV year basic B. Sc. Nursing student regarding the importance of Universal Precautions in prevention of spread of blood borne pathogens.
- Assess the practices of III year and IV year Basic B. Sc. Nursing students towards Universal Precautions.
- Find out association between Universal Precautions and year in which students are studying.
- Find out association between knowledge and practices of Universal precautions among III year and IV year Basic B. Sc. Nursing students.

4.2 Assumption

The study assumes that:

1. The B. Sc. Nursing students have some knowledge regarding Universal precautions.
2. B. Sc. Nursing students have potential to practice about universal precautions.
3. Knowledge of Universal precautions is measurable.
4. Adequate knowledge and strict adherence to Universal precautions reduces the risk of occupational hazards among III year and IV year B.Sc. Nursing students.

5. Methodology

Research methods refer to steps, procedures and strategies for gathering and analyzing data in research involved. Research methodology is a way to systematically solve the research problem. It is a science of studying how research is done scientifically [8].

a) **Research approach**
The descriptive study is designed to gain more information about characteristics within a particular field of study. Its purpose is to provide a picture of a situation as it naturally happens.

b) Research design
The research design of a study spells out the basic strategies that the researcher adopt to develop accurate and interpretable evidence. It is the overall plan for how to obtain answers to the questions being studied and how to handle some of the difficulties encountered during the research process. Therefore descriptive correlation design was considered as the appropriate design for this study.

c) Dependent variable
In this study knowledge and practices in performance of universal precautions, are the dependent variables.

d) Extraneous variable
In this study, extraneous variables are age and year in which students are studying.

e) Setting of the study
The study was conducted in H.S.K. hospital Bagalkot. It is a well equipped hospital, with 500 beds and a training hospital for undergraduate and post graduate medical and nursing students.

f) Sample
The sample comprised of 50 student nurses.

g) Sampling technique:
Purposive sampling technique was used to select the sample for this study. Purposive or judgmental sampling is based on the belief that researchers knowledge about the population can be used to handpick the cases to be included in the sample.

- **Inclusive criteria:**
  Student nurses who were
  1. III year and IV year basic B. Sc. Nursing students studying in Sajjalashree Institute of Nursing Sciences, Bagalkot.
  2. Willing to participate in the study.
  3. Posted for clinical experience in Medical, Surgical, Orthopedic, Casualty and Obstetrics and Gynaecology units of H. S. K. Hospital, Bagalkot.
  4. Present at the time of study.
- **Exclusive criteria:**
  1. Student nurses who were:
  2. On sick leave
  3. Working in Operation Theater and outpatient department.

h) Data collection process:

The data collection process involves the precise, systematic gathering of information relevant to the research purpose, questions or hypothesis of a study. The student nurses were taken by purposive sampling each student nurses was observed while performing patient care and adherence to universal precautions. After the participant observation, the knowledge questionnaire was administered which was collected on the same day. An average of 2-3 observations was done per day. Following which the knowledge questionnaire was administered to the participant. The data collection process was terminated after thanking participant for their participation and co-operation.

i) Plan for data analysis:

It was decided to analyze the data by both descriptive and inferential statistics on the basis of objectives and hypothesis of the study. Master data sheet would be prepared by the investigator to analyze the data. The data will be analyzed in terms of descriptive (frequency and percentage) and inferential statistics.

6. Findings and Discussion

A number of events have been organized to help create awareness about blood borne diseases in India. The harsh realities are however, far from ideal, and it will require a lot to achieve effective implementation. Statutory safeguard for occupational hazard in India hospitals have still not achieved the desired standard. In view of this, a study looking into the knowledge regarding universal precautions among III and IV year B.Sc. Nursing student was conducted which led to the following findings which have been discussed with reference to the objectives and hypotheses stated in the initial chapter. The major findings of the study were as follows.

6.1 Sample characteristics:

Majority (90%) of the students were within the age group of 19 - 22 years.
Majority (70%) of the students were female
None of the students had attended any workshop or any specific educational programme on universal precautions.

6.2 Level of knowledge regarding universal precautions

Out of 50 students nurses majority (66%) of the student nurses had an average knowledge and only (34%) had good knowledge.

In comparison to the demographic characteristics, majority 64% of the III year students exhibited an average knowledge where as 48% IV year students exhibited an average knowledge.

In area wise distribution of knowledge scores of the students it was revealed that, in all the areas of knowledge the students had an average knowledge and good knowledge (91.33%) was shown only in the area of use of vaccination. Out of 50 students, 20% students showed a satisfactory performance of universal precautions. In comparison to the demographic characteristics, the students studying in III year showed (16%) satisfactory performance and also, the students studying in IV year showed (24%) satisfactory performance. In area wise distribution of knowledge performance scores, all the students performed satisfactorily in the area of personal hygiene. Self protection and supervision of juniors (88 – 70%) where as unsatisfactory performance was seen in the area of eye, mouth protection, (40%) Handling and disposal of sharps (30%). Health promotion practices, (40%) protective clothing, (50%) use of gloves (60%).

There was no significant association between the level of performance of universal precautions and year in which studying. There was no correlation between knowledge of universal precautions and level of performance of universal precaution..

6.3 Sample Characteristics

In the present study, the demographic data revealed that majority (90%) of the students were between the age group of 19 – 22 years where as 10% students were in the age group of 23 – 30 years. On the contrary the survey that was conducted on student nurses knowledge of risk of infection through accidental needle stick injury at Pune, reported that, the mean age of the students was 17. 94 years.

With regard to year in which studying, 50% students of IV year had good knowledge of universal precautions and 30% of III year had good knowledge of universal precautions. Where as in contrary another survey that was conducted on student's nurse's knowledge and awareness regarding risk of HIV transmission through accidental needle stick injuries indicated that 97% junior student nurses were not aware of the correct method of disposal of disposable needles and syringes.

It was surprising to learn that none of the students observed had attended any workshop or any other specific educational programme related to universal precautions in the present study. A similar survey finding reported that no student nurses had undergone special training and educational programme related to universal precautions.

The results indicate that the hospital would have failed to organize policies, which would increase the student's level of competency and performance in specific areas. In the light of current nursing shortage extra workload, increased working hours and lack of motivation could have been one of the reasons of students in up grading their knowledge and competence.

With regard to the educational qualification the present study had included the students of B. Sc. Nursing programme only, whereas, a survey that was conducted on universal precautions had included nurses with various levels of qualifications training from diploma, to doctorate level. Another study conducted on compliance to universal precautions included, medical students, health care worker, dental students, as their subjects.

6.4 Level of knowledge regarding universal precautions

In the present study, majority (66%) of the students had average knowledge. It was also noted that none of the student had poor knowledge, which shows that the students had a potential to learn if conducive educational environment was arranged by the institution.

The findings of this study were not consistent with the findings of a survey, which was conducted on knowledge and performance of the universal precautions by nursing and medical students in Korea, which revealed that the education about universal precautions is indispensable; it is desirable to raise the relative importance for the curriculum of both nursing and medical colleges.

Another significant finding of the study was that the mean percentage of knowledge scores in the area of use of vaccination in prevention of occupational hazards was significantly high (91.33) which clearly indicate that the students showed greater interest in this area.

In the survey majority of the nursing students (90%) have higher knowledge level in contrast to the present study, which identified that only (67.54%) student nurses had definite knowledge regarding universal precautions. Although majority (60%) of the students has knowledge commonest cause of exposure to blood borne pathogen among nurses which was in consistent with the findings (68%) of another study conducted on needle stick and sharp injuries among nursing students in Australia. The study findings with regard to use of Hepatitis B vaccine to prevent hepatitis B correctly answered by majority (98%) of the students. These findings were congruent with findings of a survey study that revealed 90% of students had definite knowledge that vaccination is required to prevent blood borne diseases like hepatitis B.

With the above discussion and literature supports, we can draw a conclusion that in general though the students had an average knowledge regarding universal precautions still continuing education coupled with supervision, motivation and provision of adequate facilities from health care establishment are essential to create a feeling of personal and professional adequacy.

6.5 Level of performance of universal precautions.

In the present study, the level of performance was satisfactory among the 20 percent of the student nurses with regard to year in which studying, the performance level observed in the students, it was found that there is no much difference in performance level mean percentage of area wise performance score revealed that although the students exhibited satisfactory performance in areas of personal hygiene, self protection, and supervision of juniors but a poor performance was found in the area of eye, mouth protection handling and disposal of sharps, hand washing, protective clothing and health promotion practices.

In the performance phase it was seen that most (66%) of the students did not perform the handling and disposal of sharps as per the guideline, seventy percent students failed to protect eye and mouth during procedures which carries risk of splashing body fluids and fifty percent students were failed to perform hand washing after removal of gloves. These findings were consistent with another study conducted at Northern France where frequency of needle stick injury was determine as 60% among student nurses This explains that the standard practices of universal precautions in terms of frequency and appropriateness undertaken by the students nurses was not of a satisfactory standard. Inadequate practice of universal precautions has been the result of poor motivation on the part of student nurses. To a large extent various factors like availability of disposable gloves, Hand washing solutions (Liquid soap), Goggles, Aprons, and inadequate supervision could have been the other factors hindering the accurate performance of student nurses.

In one of the studies which was conducted on doctors and nurses, researcher suggested, education, monitoring, improved availability of resources, and disciplinary measures for poor compliance are necessary to improve practices of universal precautions. It was also noted that student nurses did not practice post – exposure follow up, which is the most important factor of universal precautions, similar findings were found in a questionnaire based methodology, conducted among nursing students the study revealed that, a total of 39.5% of needle stick injuries were not reported. The main reason for

nonreporting was that the item was unused (42%). The reasons for these drawbacks are complex and multifaceted. The issues resulting in this unsafe practice could be apparent knowledge deficit that was evident in the performance score and secondly inability of the student nurses to recognize their own responsibilities towards themselves, to prevent occupational hazards.

Critical analysis revealed that majority (60%) of the student nurses did not use eye and mouth protection during procedures where blood, body fluid splashing is likely to occur. In one of the study which was done on nurses working at trauma centre, at st. Louis concluded that most of the nurses and student nurses (50%) had failed to wear eye and mouth protections during procedures and attending trauma patients.

With the advent of new technology, variety of sharp disposal is being used. Choosing a correct method for handling and disposal of sharps becomes an integral component of universal precaution practices. An article review published on various products used for dispose of sharps, revealed that, a sharp container can be made from a variety of product from card board to plastic, but container must be closable, puncture resistant, leak proof o side and bottom, and labeled or color coded.

But the present study showed that the use of sharp disposal container is minimum in clinical area, recapping of needles in averagely high practice hence it is very essential that nurse practitioners should implement recent trends and technologies in the integrated clinical environment of comprehensive, scientifically validated universal precautions guidelines, standard of practice should be written down so that each process of care can be analyzed critically and the outcome can be audited.

6.6 Association between level of performance and year in which studying

In the present study, no significant association was found between the level of performance of universal precautions and year in which studying. As observation was one of the main components of this study, the researcher faced few limitations. The reason for poor performance, even with good level of knowledge could be due to the presence of an observes. This would have led to an underestimate of inappropriate performance. As performance is influenced by many personal factors, it applies to the observer as well as those being observed. For instance, the performance process could be influenced by a variety of affective, motivational, attentional and stylistic factors. The other contributing factors leading to unsatisfactory performance could be inadequate nurse-patient ratio, inadequacy of supplies, lack of supervision, lack of established protocols, and an absence of performance appraisal and nursing audit.

The literature support related to hands-on performance was lacking due to the methodological difficulties, which prevents the researcher to ponder over these issues. Hence a skill performance model should be developed which should judge the quality of performance, adherence to universal precaution guide lines and amount of assistance needed to demonstrate the action to enhance the skill and improve clinical behavior of the student nurses.

Correlation between knowledge of universal precautions and level of performance of universal precautions.

In this section, it was observed that there was no significant correlation between level of knowledge and level of performance. These findings are not supported with any of the literature. It is well known that with age comes experiences and apparently with age and experience comes knowledge. Students who lack confidence commit error.

7. Conclusion

The nursing management of people with blood borne diseases involves the risk of occupational hazards to health care workers. As student health care workers become more involved in patient contact during their training, they are at risk of exposure to blood borne pathogens. The safety of student health care workers themselves, and subsequently that of their patients, depends directly upon the degree to which student nurses have knowledge of occupational hazards specific to their jobs and management mechanism for mitigating those hazards. The level of occupational safety and health training resource available to student nurses, as well as management support, are critical factors in preventing adverse out comes from routine job- related hazards.

7.1 Nursing implications

The findings of this study have implications for nursing service, nursing education, nursing administration and nursing research.

7.2 Nursing Service

As member of the health care team, the nurses play an active role in promotion of health, prevention of disabilities, curation of illness and rehabilitation of deformities. It is widely acknowledged that nurses are crucial components in health care system. In their roles, nurses are regularly confronted with a variety of biological, physical and chemical hazards during the courses of performing their duties. The safety of nurses themselves, and subsequently that of their patients, depends directly upon the degree to which nurses have mitigating those hazards [7]. The findings of the study could be utilized as a basis for in-service education of nurses so that constant awareness and clear understanding may be created regarding universal precaution, and its adherence. It serves as a guideline for nurse administrators to plan continuing education program, additional instruction or training in the hospital.

7.3 Nursing Education

"Quality care through excellence in advanced nursing education" is just apt to meet the demand of good quality of nursing. In the changing scenario of health care delivery system, since the emphasis is shifted from care oriented to health promotion oriented approach student nurse needs to gain more knowledge on various aspect of health. Inadequate knowledge regarding universal precautions is of concern to nurse educators.

Education is an integral part of the clinical governance agenda, which includes "education, clinical audit, clinical effectiveness, risk management, research and development and openness." The introduction of a formalized educational program provides a nurse with evidence –based rationales from which they can challenge their practice, build and improve on their knowledge and skills in universal precautions. The nursing education program therefore should prepare nurses for providing effective and efficient nursing care for patients as well as can prevent occupational hazards to themselves.

Inadequate knowledge regarding universal precautions is of concern to nurse educators, the findings of this study can be used as an informative illustration to student nurses and staff nurse. Active participation of student nurses can be encouraged by providing opportunity for self learning, classroom teaching, clinical teaching and demonstration on use of personal protective equipments junior most nursing students should be supervised and guided while performing patient care as to adherence to universal precautions.

7.4 Nursing administration

Like people in other professions, nurses operate in an "age of accountability" where quality and cost issue drive the direction of health care. Nursing administrator must plan a separate budget for continuing education program related to universal precautions for all health care worker including nursing staff, students and other workers. Periodic evaluation should be done to ensure safe practice of nursing care in order to prevent health risks related to blood borne pathogens.

7.5 Nursing Research

In the past, many actions of the nurses have been based on training or authorities which are no longer acceptable in the age of research based practice. Nurses should be able to justify the decisions they make and the care that they provide [59]. Research can help increase the body of nursing knowledge which improves the care provided. Research on nurse performance can reveal clinically significant findings. There is need for research based standards of practice. There is a lot of scope for exploring the skill attainment after training the nursing students on universal precautions.

8. Limitations

1. The study was confined to a small number of subjects, which resulted in reduced power in statistical analysis.
2. The possibility of Hawthorne effect.
3. No standardized tools were available; therefore the investigator prepared a tool for the purpose of this study.
4. The questionnaire with multiple choices must have prompted the students to give their responses. Hence the possibility of getting average or good score could be a chance factor in this study which was a limitation of the tool.

9. Suggestions

1. Emphasis in nursing curriculum on universal precautions and continuing education in the hospital for staff nurses.
2. Regular demonstration classes should be included for gaining skill in universal precautions and use of PPE.
3. Adequate supervision and guidance to students during their clinical postings.
4. A suitable environment for working could be maintained through provision of adequate supplies in the ward.

References

[1] Shinde, M., &Mohite, V. R. (2014). A Study to Assess Knowledge, Attitude and Practices of Five Moments of Hand Hygiene among Nursing Staff and Students at a Tertiary Care Hospital at Karad.*International Journal of Science and Research (IJSR)*, *3*(2), 311-321.

[2] Evanoff, Bradley MD, Kim, Lynn, Sunita, Mutha et al. Compliance with universal precautions among emergency department personnel caving for trauma patients. Journal of the American college of emergency physicians.Mosby –Year book February 1999, Volume 33 (2), 160-165.

[3] Digiacoma, Simmons BP, Wong ES. Perspective in Disease prevention and Health promotion up date. MMWR, Weekly June 24; 88 /37 (24): 377-88

[4] Chan R, Molassiotis A, Chan E, Chan V, HO B, Lai CY, et al. Nurses knowledge of and compliance with universal precautions in an acute care hospital. International Journal of Nursing Students 2002 Feb; 39 (2) : 157-63.

[5] Roup BJ. Factors associated with compliance of critical care nurses with universal precautions: a pilot study. American Journal of Critical Care 1997 May; 6 (3) : 218 –24.

[6] Barroso MG, Costa AW, Coarse MR, Pinherio PN. Education and prevention of occupational risk: a study with nursing students. Rev Bras Enfem 1996 Jan- March; 49(1) :121-34.

[7] Gillian M, Mc Carthy, Janathan E. A survey of final year dental, Medical and Nursing students; Occupational injuries and infection control.

Journal of Canadian dental association 2000; 66-561.
[8] SHINDE, M., & ANJUM, S. (2007). Introduction to Research In Nursing. Sneha Publication India(Dombivili).
[9] Shinde, M., &Anjum, S. (2007). Educational Methods and Media for Teaching in Practice Of Nursing. *Sneha Publication India (Dombivili)*.
[10] Sadoh WE, Fawole AO, Sadoh AE, oladimeji AO, Sotiloye OS. Practices of universal precautions among health care workers. Journal of National Medical Association 2006 May; 98(5): 722-6.
[11] Michelle K, Damien J, Mathew S, Wendy H, Sandy M. Compliance with Universal /Standard Precautions among health care workers in rural north India. American Journal of Infection control Feb. 2005; Vol. 33(1): 27-33.
[12] Kahhalesh JG, Jurjus AR. Adherence to universal precautions among Laboratory personnel in Lebanon. East Mediterr Health Journal 2005 Sep – Nov ;11(5-6) :929-42.
[13] Kadam, A., &Shinde, M. B. (2014).Effectiveness of Structured Education on Caregiver's Knowledge and Attitude Regarding Colostomy Care.*International Journal of Science and Research (IJSR)*, *3*(4), 586-593.www.ijsr.net
[14] Anjum, S., Durgawale, P. M., &Shinde, M. (2014). Epidemiological Correlates of Use of Contraceptives Methods and Appraisal of Health Education on Status of Knowledge and Practices among Married Woman.*International Journal of Science and Research (IJSR)*, *3*(2), 203-210.www.ijsr.net
[15] Anjum, S., Durgawale, P. M., &Shinde, M. (2014). Knowledge of Contraceptives Methods and Appraisal of Health Education among Married Woman.*International Journal of Science and Research (IJSR)*, *3*(3), 584-590.www.ijsr.net
[16] Babu, R. L., Mali, N., &Shinde, M. (2014). Effectiveness of Planned Teaching Programme on Knowledge Regarding Non-Curative Care of Terminally ILL Cancer Patients among Care Takers.*International Journal of Science and Research (IJSR)*, *3*(4), 198-205.www.ijsr.net
[17] Keller S, Daley K, Hyde J, Greif RS. Hepatitis C prevention nurses. Nursing Health Science 2005 June; 7(2) :99-106
[18] Reis C, Heisler M, Amowilz LL, Discriminatory attitudes and practices by health workers towards patient with HIV/AIDS in Nigeria. Physicians for Human Rights 2005 Aug; 2(8) :246.
[19] Biski B, Wysocki J. The level of knowledge of post–exposure prophylaxis of blood borne infections at the workplace observed in nurses. Journal of Medical Practices 2005 ; 56(5) : 375-8
[20] Lymer UB, Richt B, Isaksson B. Blood exposure: Factors promoting health care workers compliance with guidelines in connection with risk. Journal of Clinical Nursing July 2004; 13 : 547.
[21] Lohrmann C, Valimaki M, Suominen T, Muinonen U, Dassen T. German nursing students knowledge of and attitudes to HIV and AIDS two decades after the first AIDS cases. Journal of Adv Nursing 2000 May ;31(3) :696 –703.
[22] Uwakwe CB. Systematized HIV /AIDS education for student nurses at the university of Ibadan, Nigeria: Impact on knowledge attitudes and compliance with universal precautions. Journal of Advanced Nursing 2000 Aug; 32 (2): 416-24.
[23] Maria G, Marta M, Nurses and occupational exposure to blood borne viruses in paland. Journal of Occupational Hazards 2006; 27:175-180
[24] Ramsay J, Denny F, Szirotnyak K, Thomas J. Identifying nursing hazards in the emergency department ; a new approach to nursing Job hazard analysis. Journal of Safety Res 2005; 37(1) :63-74.
[25] Derek R, Peter A. Issues and Innovations in nursing practice needle stick and sharps injuries among nursing students. Journal of Advanced nursing 2005 ; 51(5) : 449 –455.
[26] Bennett G, Mansell I. Universal precaution : a survey of community nurses experience and practice. Journal of Clinical Nursing 2004 May; 13(4) :413-21.
[27] GeetaBhat, Bandana P, Asha P, Anagha G, Anuja D. Knowledge and awareness amongst the nursing students regarding risk of HIV infection through accidental needle stick injury. Indian Journal of community July –Sep 2004; 29(3).

Author Profile

Milind Kale is working as Principal, MES College of Nursing

Manisha Gholap is working as Assistant Professor, Krishna Institute of Nursing Sciences Karad, Maharashtra, India

Mahadeo Shinde is working as Professor, Krishna Institute of Medical Sciences University's, Krishna Institute of Nursing Sciences University Karad, Maharashtra, India