

Effectiveness of Demonstration Method on Hospital Spill Management among Staff Nurses Working at Rural Hospital Latur Maharashtra

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Abstract

Background: In a hospital, hazardous substances such as body fluids, drugs, cleaning fluids and other chemicals are in very close proximity to hundreds of people each day. Thus, in hospital spillage of blood, body fluids or chemicals can occur at any time due to broken or faulty equipment or human error. Any such spill poses risk to the staff, visitors and patients who are extremely susceptible to infection. Occupational spill exposure continues to be the major worldwide public health problem, despite advances in our understanding and control of these infections.

Objectives:

1. To assess knowledge regarding hospital spill exposure management among staff nurses.
2. To identify the knowledge of staff nurses regarding hospital spill exposure management.
3. To determine the correlation between level of knowledge and effect of demonstration among staff nurses regarding hospital spill exposure management.

Material and method: Quantitative quasi experimental one group pre and post-test. Setting of the study: Hospital staff nurses.

Result: From the findings of the present study, it can be concluded that the demonstration programme regarding knowledge on spill management among staff nurses was effective to improve the level of knowledge on spill management.

Conclusion: From the findings of the present study, it can be concluded that the demonstration programme regarding knowledge on spill management among staff nurses was effective to improve the level of knowledge on spill management.

Keywords: Hazardous; Spill Management; Poses; Risk; Exposure.

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INTRODUCTION

A Spill, A Slip, A Hospital Trip', Slips, trips and falls are an everyday risk at hospitals and compromise one of the top accident categories. In a hospital, hazardous substances such as body fluids, drugs, cleaning fluids and other chemicals are in very close proximity to hundreds of people each day. Thus, in hospital spillage of blood, body fluids or chemicals can occur at any time due to broken or

faulty equipment or human error. Any such spill poses risk to the staff, visitors and patients who are extremely susceptible to infection.

Occupational spill exposure continues to be the major worldwide public health problem, despite advances in our understanding and control of these infections. Nurses are the major health care provider in the hospital and they are more potential in exposure with hospital spills.

Occupational exposures to the blood pathogens play a significant role in increasing the risk of the workers in the health care industry.

Body fluids are the fluids such as Blood, semen, vaginal secretions, cerebrospinal fluids, amniotic fluid, vomits, urine, sputum, saliva, etc which contains concentrated viruses and other fluids such as mercury having toxic effect on body.

In occupational exposure, the mode of exposure includes percutaneous, mucocutaneous and non-intact skin exposure.

Occupational blood and body fluids exposures place health care workers (HCW) at risk for numerous blood-borne infections, most importantly human immune deficiency virus (HIV), Hepatitis B virus (HBV), and hepatitis C virus (HCV).

Transmission of blood borne pathogens such as hepatitis B virus, hepatitis C virus and HIV from patient to workers is an important occupational hazard faced by the nurses.

Risk factor for transmission of blood borne pathogens after occupational exposure are likely related to the source patient, the type of injury, and quantity of blood / body fluids transferred to health care worker during the exposure, and the health status. The greatest risk of infection transmission is through percutaneous exposure to infected blood.

When intact, the integumentary system serves as an effective physical barrier to the entry of infectious elements into the body. A special situation exists in terms of mucous membranes. Across these membranes, lies a layer of mucous secreted by specialized columnar cells that are closely associated with each other through gap junctions, which are little more than specialized cell surface projections that allow inter cellular communication.

Universal precautions are intended to prevent parenteral, mucus membrane and non-intact skin exposures of health care workers to blood borne pathogens. Personal hygiene thus becomes fundamental principle in observing universal precautions.

Immunization with Hepatitis B vaccine is recommended as an important adjunct to universal precautions for health care workers who have exposure to blood. Clinical applications of universal precautions are important for every health care professional. There should take precautions to prevent injuries caused by needles, scalpels, and other sharp instruments or devices during procedures.

After Blood and Body fluid exposure, decontamination of blood splash is very important to avoid transmission of the blood pathogens. Avoiding occupational blood and body fluid exposures is the primary way to prevent transmission of pathogens in health - care settings. Immunization and post exposure management are integral components of a complete program to prevent infection following blood borne pathogens exposure and are important elements of workplace safety.

NEED FOR STUDY

According to the study held in 2013 on the official website of CDC, an estimated 385,000 percutaneous injuries occur in U.S. Hospitals each year. Prevention of occupational transmission of blood borne pathogens requires a diversified approach to reduce blood contact and percutaneous injuries including improved engineering controls, work practice and the use of personal protective equipment's. Since 1991, when the U.S. Occupational Safety and Health Administration (OSHA) first issued its Blood borne Pathogens Standard, the focus of regulatory and legislative activity has been on implementing a hierarchy of control measures. The federal Needle stick Safety and Prevention Act signed into law in November 2000 authorized Occupational Safety and Health Administration's revision of its Blood borne Pathogens Standard to more explicitly require the use of safety engineered sharp devices. Other strategies to prevent infection include hepatitis B immunization and post-exposure prophylaxis for HIV and HBV. Strategies for prevention of percutaneous injuries are addressed in CDC's Workbook for Designing, Implementing, and Evaluating a Sharps Injury Prevention Program.⁽¹⁾

An article from American Journal of Industrial Medicine/volume 46, issue 6 shows, the study population reported 2,730 BBF exposures during the study period, resulting in an overall annual rate of 5.5 events/100 FTEs and a rate of 3.9 for percutaneous exposures. Higher rates were observed for males, persons employed less than 4

years, Hispanic employees, and persons less than 45 years of age. Much higher rates were observed for house staff, nurse anaesthetists, inpatient nurses, phlebotomists, and surgical/operating room technicians. Poisson regression results strengthened and extended results from stratified analyses. Rates of percutaneous exposures from hollow needles were found to decrease over the study period; however, exposure rates from suture needles appear to be increasing.²

Case investigations of human immunodeficiency virus (HIV) infection in health care workers (HCWs) possibly acquired by exposure to HIV in the workplace are conducted by state health department HIV surveillance staff members with assistance from CDC. Since 1991, reports of occupationally acquired HIV in HCWs have been recorded by the National HIV Surveillance System following a standardized case investigation protocol. HCWs are defined as all paid and unpaid persons working in health care settings with the potential for exposure to infectious materials (e.g., blood, tissue, and specific body fluids) or contaminated medical supplies, equipment, or environmental surfaces. HCWs can include but are not limited to physicians, nurses, dental personnel, laboratory personnel, students and trainees, and persons not directly involved in patient care (e.g., housekeeping, security, and volunteer personnel). In 1987, CDC recommended the use of "universal precautions," which became a part of "standard precautions" in 1995, to prevent occupational HIV exposures. Since 1996, occupational postexposure prophylaxis with antiretrovirals to prevent infection has been recommended.

RESEARCH METHODOLOGY

The present study was conducted to "assess the effectiveness of demonstration method regarding hospital spill exposure management among the staff nurse working at YCR hospital in Latur". Maharashtra the study objective was

1. To assess knowledge regarding hospital spill management among staff nurses.
2. To identify the knowledge of staff nurses regarding hospital spill management.
3. To determine the correlation between level of knowledge and effect of demonstration among staff nurses regarding hospital spill management.

Research approach

A research approach tells the researcher as to what data to collect & how to analyse it. It is the overall plan of action or blue print chosen to carry out the study. It also suggests the possible conclusion to be drawn from the data. The research design selected for this study was quasi-experimental research design. In this study the level of knowledge and practice of staff nurses regarding hospital spill was assessed and described. The research approach refers to the way in which the researcher plans the research process. A quantitative research approach was considered the best to determine the level of knowledge and practice of staff nurses regarding hospital spill exposure.

Research design

Research design is the plan, structure and strategy of investigations of answering the research question is the overall plan or blue print the researchers select to carry out their study.

Research design is the backbone or the structure of the study. The term research design refers to plan or organization of scientific investigation. It provides a framework that supports the study and holds it together. Research design is an overall plan as in how to obtain answer to the question being studied and how to handle some of the difficulties encountered during research process. The research design is the structural framework for the study implementation. The research design selected for this study was quasi-experimental research design Quantitative - quasi - experimental one group pre and post-test. The data was collected from 03/02/2020 to 08/02/2020. A formal permission was obtained from the concerned authorities. Subjects were taken from the selected hospitals using non-probability purposive sampling technique. The investigator introduced self and informed the samples about the nature of the study, purpose, objectives, role of participant so as to ensure better co-operation during the data collection. Objectives of study were discussed and consent was obtained for participating in study. Subjects were assured about the confidentiality of the data. Each subject was given self-structure question naire to assess demographic data, structure knowledge questionnaire was used to assess the level of knowledge regarding hospital spill exposure management among staff nurse.

RESULT

Table 1: Area wise distribution of items on knowledge on spill management

Area	Questions
Knowledge on introduction	4
Knowledge on characteristics of spill	1
Knowledge on type of spill	17
knowledge on spill kit and spill prevention	5
Knowledge on spill management procedure	4
Knowledge on precaution	4
Total	35

Scoring

There were 35 items pertaining to the knowledge about spill management. Each item has four option with only one most appropriate answer. The maximum score was 35. The score for the correct response was 'one' and for wrong response was 'zero'. The level of knowledge was categorized based on the percentage of score obtained.

1. Consultation with guide and experts form the field

The closed ended questionnaire and demonstration method were given to the expert of child health nursing , obstetrics and Gynecology, mental health nursing , medical surgical nursing and community

Department	Question no.	Changes made
Child health nursing	Part 1- 1,5,6 Part 2 -3,7	Option change and spelling mistake
Child health nursing	Part 1-1 Part 2 -2,7	Option change Spelling mistakes, option change.
Obstetricsand gynecology	Part 2 -7, 14, 24, 29, 30, 31, 32, 33, 36, 37	Spelling mistakes, option change, question format change.
Community health nursing	Part 1-1 Part 2- 1, 2, 8, 9, 10, 18, 19, 20, 21, 27, 37	Option change, grammatical mistakes, question format change, sequence change
Community health nursing	Part 1-1	Option change
Medical Surgical Nursing	Part 1 -1,4,5,6 Part 2 -1, 8, 11, 12, 13, 14, 27	Change questions, change demographical variable
Medical surgical nursing	Part 2 -4,11,14,36	Spelling mistakes, change option
Mental health nursing	Part 1 -1,5,6	Change demographical variables
Mental health nursing	Part 1-1, Part 2 -1, 3, 24, 31, 39.	Option change
Mental health nursing	Part 2 -7	Spelling mistakes.

health nursing. Their opinion and suggestion were taken to modify the questionnaire and module.

Pre-test

Pretest was conducted among staff nurse working in YCR Hospital, Latur by using closed ended questionnaire to assess the knowledge on spill management before the implementation of computer assisted teaching. Pre test was conducted among 30 students each day approximately. The entire student to be gathered in one room necessary

instruction should be given, questionnaire will be distributed in the presence of investigator. The questionnaire will be taken back after half-an-hour by the investigator. Pretest was completed within one day.

a. Implementation of structured teaching program module

Immediately after pretestdemonstration regarding knowledge on spill management will be presented to the staff nurse under study in classroom. The time period for demonstration method on spill

management module was 45 to 50 minutes.

Post-test

Evaluation will be done by conducting posttest on the 6th day of the operation by using same closed ended question naire which was used for pretest.

DISCUSSION

Highest percentage of staff nurses (50%) were in the age group of more than 23 years and lowest percentage of staff nurse (10%). highest percentage (83.33%) of staff nurses were female and lowest percentage of (16.66%) of male staff nurse. highest percentage (96.66%) of staff nurses were Diploma in nursing and lowest percentage of staff nurse is B.B.SC nursing (3.33%). (59.99%) percentage of staff nurses were having experience more than 3 years and lowest percentage of staff nurse have experience of one year is (6.66%), highest percentage (89.99%) of staff nurses were vaccinated against Hepatitis B. and lowest percentage (9.99%) of staff nurse are not vaccinated against hepatitis B, and highest percentage (63.33%) of staff nurses were not having history of any exposure and lower percentage (36.66%) of staff nurse have history of exposure. Pre-test knowledge score about hospital spill exposure management among the staff nurses. Highest mean score ($14 \pm 2.83(\text{SD})$) which is 14% of the total score obtained in the area of "Knowledge on spill management procedure" whereas the lowest mean score ($0(\text{SD})$) which is 0% of the total score was in the area of "Knowledge on general information on spill management". Further, the overall mean was $10.13 \pm 3.73(\text{SD})$ which is 10.21 % of the total mean score. Post-test knowledge score about hospital spill exposure management among the staff nurse. Highest mean score (27) which is 27% of the total score obtained in the area of "Knowledge on characteristics of spill" whereas the lowest mean score ($18.6 \pm 4.72(\text{SD})$) which is 18.6% of the total score was in the area of "knowledge on spill kit and spill prevention". Further, the overall mean was $21.35 \pm 4.51 (\text{SD})$ which is 21.56% of the total means Effectiveness of demonstration program regarding knowledge on hospital spill exposure management among staff nurse. Comparison of pre-test and post-test level of knowledge on hospital spill exposure among staff nurses. During pre-test 33.33% of staff nurse had moderately adequate knowledge and 66.66% of staff nurse had inadequate knowledge whereas, during post-test 60% of staff nurse had adequate knowledge and 30% of staff nurse had moderately

knowledge and 10% of staff had inadequately knowledge.

CONCLUSION

From the findings of the present study, it can be concluded that the demonstration programme regarding knowledge on spill management among staff nurses was effective to improve the level of knowledge on spill management. Prior to the implementation of the demonstration programme the staff nurses had the mean percentage is 10.21% of the total mean score, whereas after the implementation of spill management, the staff nurses had the mean percentage which is 21.56% of the total mean score.

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