

# **“A STUDY TO ASSESS THE EFFECTIVENESS OF HEALTH AWARENESS PROGRAMME REGARDING KNOWLEDGE ON POST EXPOSURE PROPHYLAXIS (PEP) TO BLOOD BORNE PATHOGENS AMONG STUDENT NURSES OF SELECTED SCHOOL OF NURSING, DEHRADUN, UTTARAKHAND”.**

**SURICHA**

STATE COLLEGE OF NURSING DEHRADUN

107, CHANDAR NAGAR, DEHRADUN

UTTARAKHAND

## **ABSTRACT**

The aim of study was to assess the effectiveness of health awareness programme regarding knowledge on post exposure prophylaxis to blood borne pathogens among students nurses of selected school of nursing, Dehradun, Uttarakhand. A pre-experimental one group pre- test post test design was adopted for this study. 60 GNM 1<sup>st</sup> year students were selected by using non probability purposive sampling technique from Sai school of nursing and SGRR college of nursing at Dehradun. The data were collected by self-structured knowledge questionnaire on post exposure prophylaxis to blood borne pathogens and analyzed by using descriptive and inferential statistics with help of SPSS package.

The result revealed that the mean pre-test knowledge score of the student nurses were 18.52, mean percentage 51.44% with standard deviation 4.459 whereas the mean post test knowledge score were 24.30, mean percentage 67.5% with standard deviation 4.830.

In pre test knowledge majority 68% of the student nurses had average knowledge, 16.7% had good knowledge and 15% of them had poor knowledge regarding post exposure prophylaxis to blood borne pathogens. in post test knowledge. majority 75% of the student nurses had average knowledge, 25% had good knowledge and none had poor knowledge regarding post exposure prophylaxis to blood borne pathogens.

The combined 't' test value was significant i.e. 43.636 at  $p < 0.05$  level. Which indicate health awareness programme was effective in improving knowledge of student nurses regarding post exposure prophylaxis to blood borne pathogens.

No significant association between pre-test knowledge score of student nurses regarding post exposure prophylaxis to blood borne pathogens with selected demographic variables. Hence, the research hypothesis rejected and null hypothesis accepted.

The study was concluded that the health awareness programme was effective in increasing knowledge regarding post exposure prophylaxis to blood borne pathogens among student nurses. It is recommended that well design lecture, seminar and education programme should be conducted on time to time for student nurses. So that they can practice preventive approach.

## CHAPTER – 1

### INTRODUCTION

#### ONE WAY OF PREVENTING DISEASE IS WORTH FIFTY WAYS OF CURING IT

#### TREVOR HOWARD

Post exposure prophylaxis (PEP) is a medical response to prevent transmission of pathogens after potential exposure and refers to comprehensive management to minimize the risk of infection following potential exposure to blood borne pathogens (HIV, HBV, HCV). It includes first aid, counseling, risk assessment, relevant laboratory investigations based on the informed concern of the exposure person and source and depending on the risk assessment, the provision of short term (28 days) of anti-retroviral drugs, along with follow-up evaluations. PEP must be started as early as it may take up to 72 hours after being potential exposure to blood borne pathogens. the prophylaxis needs to be continued for 28 days. PEP is available as either basic regimen (2 nucleoside reverse transcriptase inhibitor (NRTI) or expended regimen (2 NRTI and 1 PI (protease inhibitor) drugs). <sup>1</sup>

Blood borne pathogens are micro-organisms such as viruses or bacteria that are carried in blood and can cause disease in people. These are many different pathogens including malaria, syphilis and brucellosis and most notably hepatitis B, hepatitis C and human immunodeficiency (HIV).<sup>2</sup>

Exposes occur through percutaneous injury (e.g. needle stick injury or cut with sharp instrument) contact with the mucous membrane of the eye or mouth, contact with the non- intact skin (particularly when the exposed skin is chapped, abraded and dermatitis) or contact with intact skin when duration of contact is prolonged with blood or other potentially infectious body fluids.<sup>3</sup>

**Potentially infectious blood and body fluids include** blood semen, vaginal secretions, cerebrospinal fluids, synovial, pleural, peritoneal, pericardial and amniotic fluid. Unless visible blood is present in body

fluids are not considered to be potentially infectious such as feces, nasal secretions, saliva, sweat, tears, urine and vomit.<sup>3</sup>

### **Factors influencing the risk of infection**

The risk of infection may vary with factors such as there: -

- The pathogen involved
- The type of exposure
- The amount of blood involved in the exposure
- The amount of virus in the patient's blood at the time of exposure <sup>4</sup>

### **After exposure first aid**

1. immediately following an exposure to blood: -

- Wash needle stick and cut with soap and water
- Flush splashes to the nose, mouth or skin with water
- Irrigate eyes with clean water, saline or sterile irrigates <sup>4</sup>

2. Report the exposure to the department (e. g. occupational health, infection control) responsible for managing exposure. Prompt reporting is essential because, in some cases, post exposure treatment may be recommended and it should be started as soon as possible discuss the possible risk of acquiring HBC, HCV and HIV and the need for post exposure treatment .<sup>4</sup>

PEP was first used after occupational HIV exposure in the late-1980s with the centers for disease control and prevention issuing the first set of guidelines that included consideration regarding the use of antiretroviral agents for PEP after HIV exposure in 1990. A case control study of HIV seroconversion in health care workers after percutaneous exposure published in 1997 provided the first evidence in humans that PEP with a single antiretroviral agent appeared to be protective against infection.<sup>5</sup>

### **Post exposure prophylaxis for HIV infection**

primary infection indicated that systematic infection does not occur immediately, leaving a brief “window of opportunity” “during which post exposure antiretroviral intervention may modify viral entry into cell and replication. Selection of the post exposure prophylaxis regimen should be decided after considering comparative risk represented by the exposure and information about the source patient including detailed of antiretroviral therapy and current clinical condition based upon CD4 count, viral load and stages of disease. among the several antiretroviral agents available from at least 3 classes of drugs-nucleoside analogue reverse transcriptase inhibitors, non - nucleoside analogue reverse transcriptase inhibitors and protease inhibitors.<sup>6</sup>

The public health service recommended a 4week course of a combination of either 2 antiretroviral drugs or 3 antiretroviral drugs for reduce the risk of transmission. Person should be tested for HIV antibody as soon as possible after exposure ( baseline) and periodically for at least 6 months after exposure ( e.g. at 6weeks, 12 weeks and 6 months).<sup>7</sup>

for percutaneous or mucosal exposure to blood. Several factors must be considered when making a decision to provide prophylaxis, including the HBsAg status of the source and the hepatitis B vaccination. The vaccine is safe and effective, producing immunity in more than 90% of those immunized. Currently HBV vaccination is mandatory for health care workers. if the source individual is HBsAg positive and the exposure person is unvaccinated or antibody level is less than 10 ml/kg, hep. B immunoglobulin (0.6 ml/kg) should be administered preferably within 24 hours along with the vaccine series given. Person should be tested 1-2 months after the vaccine series is complete to make sure that vaccination has provided immunity to HBV infection. The chance of seroconversion can be reduced by 90% with this post exposure prophylaxis. If the exposed person was vaccinated earlier and had an adequate antibody response .10 mlU/ml no treatment is required.<sup>6</sup>

### **For hepatitis C infection**

there is no vaccine against hepatitis C and no treatment after an exposure that will prevent infection. Neither immune globulin nor antiviral therapy is recommended after exposure. infection control practice to prevent percutaneous injuries is important. Person should be tested for HCV antibody and liver enzyme level as soon as possible as after an exposure (baseline) and at 4-6 months after the exposure .to check for infection earlier, can be tested for the virus (HIV RNA) 4-6 weeks after the exposure.<sup>4</sup>

### **Prevention of infections with HBV, HCV and HIV**

Transmission of blood borne pathogens requires a diversified approach to reduce blood contact and percutaneous injuries including improved engineering control (e.g. safer medical device), work practice( e.g. technique change to reduce handling of sharps) and use of personal protection equipment (e.g. impervious material for barrier precautions).<sup>7</sup> Comprehensive training programs for health care workers are fundamental and important tools in preventing the transmission of blood borne pathogens .the training should include general information about blood borne pathogens, mechanisms of transmission, method to prevent exposure to blood and other potentially contaminated fluids and way to implement those methods during various procedure.<sup>8</sup>

## **NEED OF THE STUDY**

As a nursing students become more involve in patient contact during their training, they are at higher risk of exposure to blood borne pathogens (HIV, HBV, HCV) because they have insufficient knowledge to recognized the level of risk and unsafe practices such as careless handling of contaminated needles, unnecessary injection on demand, re -use of inadequately sterilize needles and improper disposal of hazardous waste .

They are potential exposure to infectious material such as blood, tissue, special body fluids or environmental surface contaminated with these substance .they are frequently exposure through percutaneous injury such as needle stick , cut with sharps, contact with the mucus membrane of eyes or mouth of an infected person, contact with non-intact skin exposed with blood. Ideally all nursing students should receive the hepatitis B vaccine during orientation or training time.

### **World health organization (WHO) estimation**

2005 report estimated that worldwide more than 3 million percutaneous exposure annually among 35 million health care workers globally. Moreover, about 40% of HBV and HCV infections and 2.5% of HIV infections in health care worker were due to percutaneous injuries. As a consequence of these exposures, an estimate that 66,000 hepatitis B, 16,000 hepatitis C and up to 1000 HIV infections occur each year. More than 90% of these infections occurred in developing countries.<sup>9</sup>

### **Risk of infection after exposure**

#### **HIV**

- The average risk for HIV transmission after a percutaneous exposure to HIV infected blood is 0.3% (i. e. 1 in 300).
- The risk after exposure of eye, nose or mouth (mucous membrane contact) to HIV infected blood is estimated on average 0.1% (1 in 100).
- The risk after exposure of non- intact skin to HIV-infected blood is estimated less than 0.1%.<sup>4</sup>

#### **HBV**

Health care personnel who have received hepatitis B vaccine and developed immunity to the virus are at virtually no risk for infection. For a susceptible person, the risk from a single needle stick or cut exposure to HBV-infected blood ranges from 6-30% and depend on the hepatitis B e antigen (HBeAg) status of source individual.<sup>4</sup>

#### **HCV**

the average risk for infection after a needle stick or cut exposure to HCV – infected blood is approximately 1.8%.<sup>4</sup>

**Kalpana sharma, et.al (2018)** A descriptive survey design was carried out among 116 randomly selected nurses working in different ward of tertiary care hospital, bharatpur, Nepal to assess knowledge regarding post exposure prophylaxis for hepatitis B infection. Data was collected by using pre-tested selfadministered questionnaire. The study revealed that only 22.4% nurses had good, 21.6% had average and 56.0% had poor knowledge on PEP for HBV. There is need of regular in- service education and training for nurses on post exposure prophylaxis for hepatitis B to enhance their knowledge and to prevent potential infections.

**Aswin kumar et.al (2017)** A cross section study was carried out among final year GNM and B.Sc nursing students of a nursing college in central Karnataka to assess the knowledge of nursing students about HIV/AIDS and post exposure prophylaxis (PEP) and association of knowledge level with different course of nursing, total of 108 nursing student took part in the study, data regarding knowledge about HIV infection and PEP was collected by using self-administered semi structure questionnaire .BSc nursing students contributed 66.7% of the study subjects. Mean HIV knowledge score was 7.86. subject studying B.Sc. nursing had better knowledge when compare to GNM subject. Seventy-two (66.67%) students had heard about post exposure prophylaxis. Majority were unaware about time of initiation (94.6%) and duration of PEP (86.1%). Knowledge about HIV and PEP are inadequate among nursing students. It is recommended to incorporate practical issues effectively in their teaching curriculum.

## **PROBLEM STATEMENT**

**“A STUDY TO ASSESS THE EFFECTIVENESS OF HEALTH AWARENESS PROGRAMME REGARDING KNOWLEDGE ON POST EXPOSURE PROPHYLAXIS (PEP) TO BLOOD BORN PATHOGENS AMONG STUDENT NURSES OF SELECTED SCHOOL OF NURSING, DEHRADUN, UTTARAKHAND”.**

## **OBJECTIVES**

- To assess the pre-test and post- test knowledge level of student nurses regarding post exposure prophylaxis to blood borne pathogens.
- To compare the pre-test post- test knowledge scores of student nurses regarding post exposure prophylaxis to blood borne pathogens.
- To determine the effectiveness of health awareness programme regarding knowledge on post exposure prophylaxis to blood borne pathogens among student nurses.
- To find out association between pre-test knowledge score regarding post exposure prophylaxis to blood borne pathogens with their selected demographic variables.

## **HYPOTHESIS**

**H1** - There is significant difference between the pre and post-test knowledge score of student nurses regarding post exposure prophylaxis to blood borne pathogens.

**H2** - There is significant association between the pre-test knowledge score regarding post exposure to blood borne pathogens with their selected demographic variables of student nurses.

## **OPERATIONAL DEFINITION**

**ASSESS** - it refers to evaluate and estimate the knowledge of GNM 1<sup>st</sup> year students on post exposure prophylaxis to blood borne pathogens.

**EFFECTIVENESS** - the extent to which the health awareness program has achieved the desired effect as measured by knowledge score of GNM 1<sup>st</sup> year students after administered health awareness programme.

**HEALTH AWARENESS PROGRAMME** - health awareness programme refers to planned educational activity regarding post exposure prophylaxis to blood borne pathogens.

**KNOWLEDGE** - it refers to level of understanding GNM 1<sup>ST</sup> year students regarding post exposure prophylaxis to blood borne pathogens.

**POST EXPOSURE PROPHYLAXIS** - post exposure prophylaxis is a medical response to prevent transmission of pathogen after potential exposure to blood borne pathogens.

**BLOOD BORN PATHOGENS** - Blood borne pathogens is pathogenic micro-organism that are carried in blood and cause disease in people. The most common pathogens include hepatitis B, hepatitis C and HIV.

**NURSING STUDENTS** - In this study, it refers to the students who are studying in the GNM 1<sup>St</sup> year in selected school of nursing, Dehradun.

## **ASSUMPTIONS**

- Information booklet will improve the level of knowledge regarding post exposure prophylaxis to blood borne pathogens.
- Improved knowledge will enable the students to take measures to prevent transmission of blood borne pathogens.

## **DELIMITATION**

- The study will be limited to GNM 1<sup>ST</sup> year students of selected school of nursing at Dehradun.
- Data collection period will be limited to 14 days.

## CONCEPTUAL FRAMEWORK

it presents logically constructed concept to provide general explanation of the relationship among the concept of the research study. Concept is a word picture or mental idea of phenomenon or is an image or symbolic representation of an abstract idea.<sup>12</sup>

A written or visual presentation that explains the main things to be studied in either graphically or in narrative form – the key factors, concepts, or variable and the presumed relationship among them. **(miles and huberman).**

Health belief model use to guide this study because study is trying to understand health behaviors of students nurses. if the students nurses developed the perceptions of susceptibility and severity, they may utilize PEP immediately after exposure to contaminated blood and body fluids. The health belief model assumes that feeling vulnerable to a condition is a motivating factor to take action to prevent illness.

### HEALTH BELIEF MODEL (HBM)

The conceptual framework for the present study has been taken from health belief model (HBM), it was initially developed in the 1950s by social scientists Hochbaum, Rosenstock and others at the U.S. public health service that used to guide health promotion and disease prevention program. Later the model was extended by Kirsch, Becker in 1974. It is used to explain and predict individual change in health behaviors .it is one of the most widely used models for understanding health behaviors. Key elements of the health belief model focus on individual belief about health conditions., which predict individual health related behaviors.<sup>13</sup>

The model define the key factors that influence health behaviors as an individual's perceived threat to sickness or disease ( perceived susceptibility) , belief of consequence ( perceived severity), potential positive benefit of action ( perceived benefits), perceived barrier to action, exposure to factors that prompt action( cues to action) and confidence in ability to succeed (self-efficacy).<sup>13</sup>

### COMPONENTS OF HEALTH BELIEF MODEL

There are 3 major components: -

- ❖ The individual perceptions about health
- ❖ The modifying factors
- ❖ Likelihood of Action



## 1. INDIVIDUAL PERCEPTION

Individual perceptions are a person's beliefs about one's own susceptibility to a disease and the seriousness with which one views the perceived threat of the illness.

## 2. MODIFYING FACTORS

Modifying factors such as socio-demographic and cue of action may affect an individual's perceptions and thus indirectly influence health related behaviors. In this present study socio-demographic variables are Age, Gender, Source of information about post exposure prophylaxis and Previous exposure to needle stick injury.

## 3. LIKELIHOOD OF ACTION

likelihood of action accounts for perceived benefits compared to perceived barriers, self-efficacy and preventive action.<sup>14</sup>

## CONCEPTS OF HEALTH BELIEF MODEL

**1. PERCEIVED SUSCEPTIBILITY** - This refers to a person's subjective perception of the risk of acquiring an illness or disease. In this study perceived susceptibility is risk of transmission blood borne pathogens (HIV, HBV and HCV) after an exposure to contaminated blood and body fluids through needle stick injury., Cut with sharp instrument, contact with mucous membrane of eye and mouth, contact with non-intact skin

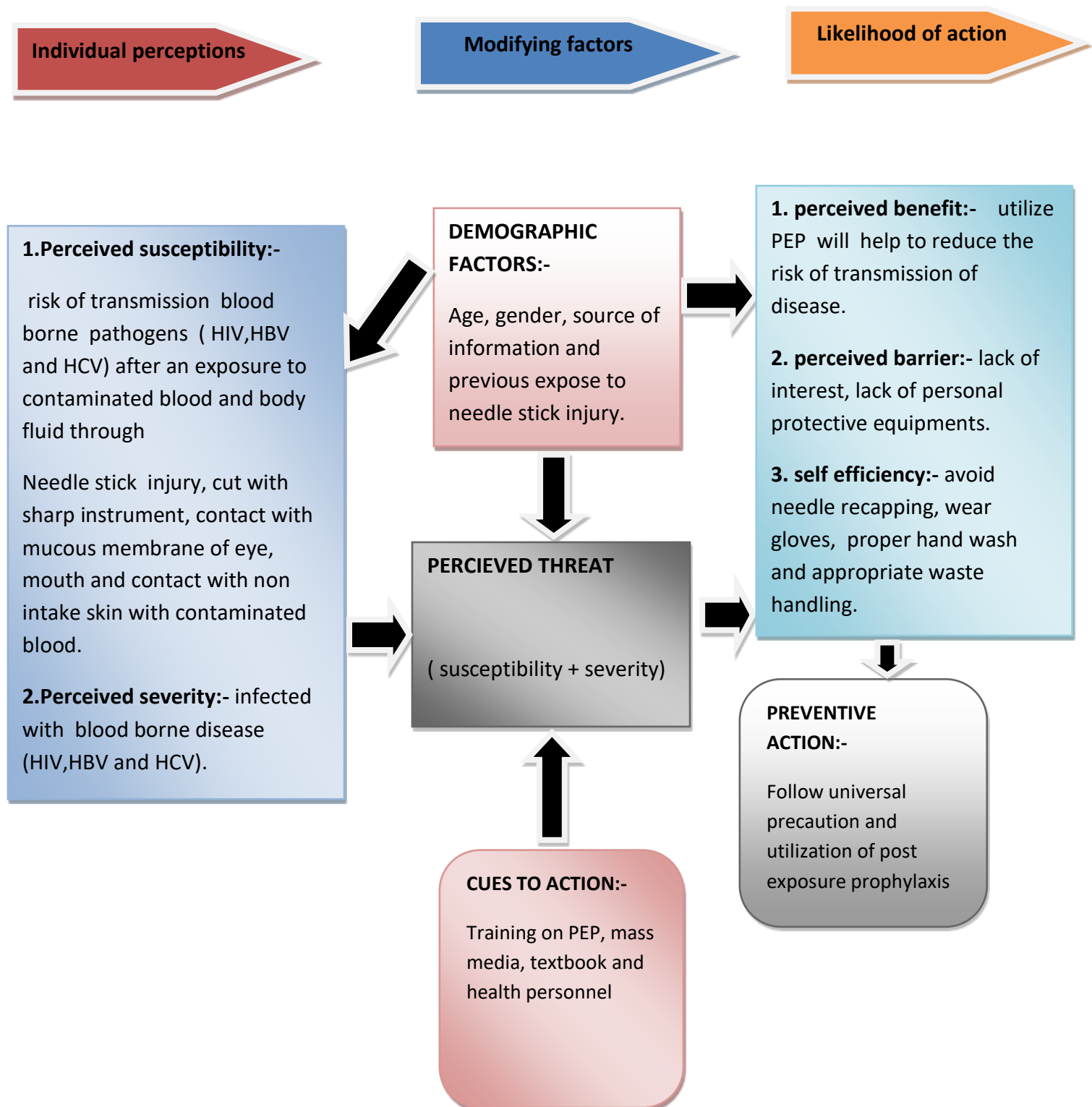
**2. PERCEIVED SEVERITY** - this refers to a person's feeling about seriousness of the condition or leaving it untreated and its consequences. In this study perceived severity is infected with blood borne disease (HIV, hepatitis B and hepatitis C).

**3. PERCEIVED BENEFITS** - This refers to a person's belief about the potential positive aspect of health action to reduce the threat of illness or disease. In this study utilization of PEP will help to reduce the risk of disease transmission.

**4. PERCEIVED BARRIERS** - this refers to person's feeling on the obstacles to performing a recommended health action. In this study perceived barriers is lack of interest, lack of personal protective equipment.

**5. CUES OF ACTION** - this is stimulus needed to trigger the decision-making process to accept a recommended health action. Cues of action is training program on PEP, mass media, health personnel, and textbook.

**6.SELF EFFICACY** - this refers to the level of a person's confidence in his/her ability to successfully perform a desired behavior. In this study self-efficiency is avoid needle recapping, wear gloves, proper hand wash and appropriate waste handling.



## CHAPTER 2

### REVIEW OF LITERATURE

A literature review is a body of text that aims to review the critical points of knowledge on a particular topic of research (ANA,2000).

A literature review is an evaluative report of information found in the literature related to selected area of study. The review describes, summarizes, evaluates and clarifies this literature. It gives a theoretical base for the research and help to determine the nature of research. (Queensland university, 1999)

According to cooper A literature review uses its database reports of primary or original scholarship and does not report new primary scholarship itself. The primary reports used in the literature may be verbal but majority of cases reports are written documents. The type of scholarship may be empirical, theoretical, critical or methodological in nature. Second a literature review seek to describe, summarize, evaluate clarify the content of primary report.

Review of literature was done from published articles, and reports. For the present study the researcher was reviewed and organized the related literature under the following heading.

- Literature related to knowledge about blood borne pathogens.
- Literature related to incidence of exposure to blood and body fluids.
- Literature relate to knowledge regarding post exposure prophylaxis.
- Literature related to effectiveness of educational programme on PEP.

#### **Literature related to knowledge about blood borne pathogens**

**Anunima Sharma et.al (2017)** A cross sectional study was conducted in a nursing college in north east India to determine the knowledge about blood born viruses and practice to prevent its transmission among nurses students involved in clinical practice. The sample size was 200 for the study. A pre-tested questionnaire regarding the knowledge and practice related to blood born infections was used. Majority of the students (62.5%) had knowledge about the three most serious blood borne infections though only 25% were aware that HIV is transmitted by infected blood and piercing instruments. This study also showed that the majority of the students (89%) knew that being a health care worker puts them at risk of acquiring HBV and HIV. This study concludes that the nursing students of Sikkim Manipal institute of medical science have a fair knowledge of the cause of blood born infections. Awareness and practice regarding use of personal protective equipment was also good. However, the nursing education program should prepare nurses for providing effective and efficient nursing care for patients and the use adequate protective measure to minimize risk of occupational hazards to themselves.

**Ahmad Arafa (2016)** a cross sectional study was conducted to assess knowledge and practice of blood borne pathogens and infection control measure among nurses in selected Beni-Suef hospitals Egypt using self-administered questionnaire. It was distributed to 400 nurses working in health insurance organization, Beni-Suef university, Nasser Centre and Beba hospitals with a response rate of 77.5%. The overall scores of knowledge, practice of respondents nurses were 7.71, 9.14 and 7.03 respectively. Assessment and practice shows that 93.5%, 80.3% and 65.8% of nurses were aware about HIV, HBV and HCV is BBP, respectively. However 14.8% of nurses reported a needle stick injury the last 6 months and only 53.5% of nurses were vaccinated against HBV. Health care facilities should focus on increasing nurses awareness to minimize the risk of needle stick injury and all nurses should be vaccinated against HBV.

### **Literature related to incidence of exposure to blood and body fluids**

**Vuk Marsuic et al (2017)** A cross study was conducted to determine knowledge about blood borne pathogens and the prevalence of needle stick injuries among medical students in Serbia. The students were invited to self-administer questionnaire of 26 closed questions prepared for this study. The sample size was 637 students. The response rate was 83%. The prevalence of needle stick and sharp objective injuries was 29.5%. Needle stick injury were the most common type of accidents, more frequent among students. The majority of accident occurred in patient room (53%) and emergency department (15%). 54% of participant reported an accident to the responsible person. Students without accidents had a significantly better perception of risk (3.79) out of the total participating student only 16.6% received all three doses of hepatitis B vaccination, while 16.2% were partially vaccinated. There is a need for additional theoretical and practical education of students on blood borne disease and awareness of the necessity of hepatitis B vaccination.

**Ansuli trivedi et.al (2013)** A quasi experimental study conducted at nursing college, NSCB medical college Jabalpur (M.P.) to assess existing knowledge of prevention and management of needle stick injury among nursing students, the sample size was 100, data was collected by pre formed questionnaire, the student were given series of lectures and interactive session to prevent and manage needle stick injury. Then post intervention assessment. It was observed that 78% respondents suffered needle stick injury was during recapping of needle. Other than needle, 86% respondents mentioned of getting struck by stylet of IV catheter, 14% subjects recalled more than 5 incidences of needle stick injury in past 15 days. Post intervention made a significant impact in knowledge of students for prevention and management of needle stick injury. The intervention motivated 5 more students for hepatitis B immunization. Sensitization of nursing students for prevention and management of needle stick injury is quintessential in preventing these occupational hazards and should be included in nursing training curriculum.

**M. Butsashvili et.al (2012)** A cross sectional survey was conducted to evaluate risk of occupational exposure to blood borne pathogens and determine the prevalence of HIV, Hepatitis B and hepatitis C among health care workers in Georgia. The sample included health care workers from seven medical

institutions in five cities in Georgia. Within each hospital study participants were selected by simple random sampling from the list of the staff in each hospital. A self-administered questionnaire was used to collect information. There were 1386 participating health care workers from number of departments including surgery (29%), internal medicine (19%) and intensive care (19%). risk events reported by the majority of health care workers including accidental needle stick injury (45%), cut with contaminated instruments (38%) and blood splash (46%). The highest proportion of needle stick injuries among physicians (22%) and nurses (39%) was related to recapping of used needles. educational programs regarding universal precautions is important for health care workers to reduction of blood borne pathogens transmission.

**Samir A Singru et.al (2008)** A cross sectional study was conducted to estimate the incidence of occupational exposure to blood and body fluids among health care workers in a teaching hospital in Mumbai, India. Random sample of residents, interns, nurses and technician was carried out in the preceding 12 months period. Sample size was 830 self-reported occurrence and the circumstances of the same were recorded by face to face interview by using a semi-structured questionnaire. The responses rate to the study was 89.76%. occupational exposure to blood and body fluids was reported by 32.75% of the respondents. The self-reported incidence was the highest among the nurses. Needle stick injury was the most common mode of such exposure (92.21% of total exposures) only 50% of the affected individual reported the occurrence to concerned hospital authorities. Less than a quarter of the exposed persons underwent post exposure prophylaxis against HIV. occupational exposure to blood and body fluids was a common occurrence in study sample. There was gross under-reporting of such incidents leading to a lack of proper PEP against HIV in 50% of those in whom the same appeared to be indicated.

### **Literature related to knowledge about post exposure prophylaxis**

**Kajal Shrivastava et.al (2018)** A descriptive cross- sectional study was designed to assess awareness regarding post exposure prophylaxis(PEP) against blood born infections among nurses (GNM, ANM) of Dr. D. Y. Patil medical college and hospital and research centre pimpri pune, the sample size was 90, according to convenience sampling, nurses were selected from all the ward of the hospital, pre-designed semi- structured questionnaire was given to the study group. 84% nurses were aware about blood born infections, around 75% of these nurses knew about the pre-exposure vaccinations against these diseases. Regarding attitude, majority of nurses felt that there should be a health care policy for preventing blood born infections at their workplace. Needle stick injuries among nurses seemed to be low as 73% of them said that they wear gloves while handling sharp instruments. It is quite evident from this study that there is fair knowledge among nurses about blood born infections and their transmission by sharp instruments but had poor awareness about the post exposure prophylaxis.

**Anjana A.P. et al (2018)** A descriptive design study was conducted among 134 B.Sc. nursing student using convenience sampling sampling technique to assessment of knowledge regarding post exposure prophylaxis following needle stick injury. the data were collected using semi structured knowledge questionnaire. the result revealed that out of 134 respondents 125 ( 93% ) had an average knowledge

regarding PEP following needle stick injury regarding students knowledge on different variables on PEP following needle stick injury they have a good knowledge on prevention, average knowledge regarding meaning and risk factor of needle stick injuries and the mean score in the area of management and complication of post exposure prophylaxis. Nursing students have an average knowledge regarding PEP following needle stick injury. there is a need for regular training and education to update the awareness and knowledge about PEP which serve as an effective strategy to prevent the spread of blood borne disease.

**K. Kiranmayi et.al (2018)** A descriptive design study was conducted in government college of nursing, Kurnool, Andra Pradesh, India to assess the knowledge of students regarding post exposure prophylaxis of HIV among 4<sup>th</sup> year B.Sc nursing students. Convenient sampling technique was used to choose the sample. Data were collected from 25 student studying 4<sup>th</sup> year BSc nursing by using structured questionnaire. the finding of the study reveal that 14.6% and 38.6% of the students have inadequate knowledge about HIV infection and post exposure prophylaxis respectively, where as 85.3% and 61.3% have adequate knowledge about HIV infection and post exposure prophylaxis, which clearly states that rare of students knowledge about PEP is low than the knowledge about HIV infection. As the finding of the study confirm the low knowledge about post exposure prophylaxis the study recommends plan for educational sessions about HIV and post exposure prophylaxis is important to increase the awareness among student nurses.

**Manu Thapa et.al (2018)** A descriptive cross-sectional study was conducted in Gandaki medical college pokhara, Nepal to find out the knowledge on post exposure prophylaxis of HIV among the nurses working in Gandaki medical college. probability stratified systematic random sampling technique was used for sampling and self-structured questionnaire was used for data collection with sample size of 90 nurses. The finding the study revealed that mean age of the respondents was 24.57% with standard deviation 3.43. out of 90 respondents majority (83.3%) of the respondents were PCL passed and 47.8% of the respondents had adequate knowledge regarding PEP for HIV. It can be concluded that the nurses need to improve their level of knowledge on PEP of HIV by participating to improve and update knowledge among the employees.

**Aswin Kumar et.al (2017)** A cross sectional study was carries out among final year GNM and B.sc nursing student of a nursing college in center Karnataka to assess the knowledge of nursing students about HIV/AIDS and post exposure prophylaxis (PEP) and association of knowledge level with the different course of nursing. Total of 108 nursing student took part into the study. Sample was selected by convince technique and data was collected by pre designed self-structure questionnaire. The B.sc students contributed 66.7% of the study subject. Mean HIV/AIDS knowledge score was 7.86+<sub>-</sub>2.25. subjects studying had better knowledge when compared to GNM subjects. Seventy-two (66.67%) students had heard about post exposed prophylaxis. majority unaware about time of initiation (94.6%) and duration of PEP (86.1%). Knowledge about HIV/AIDS and PEP are inadequate among nursing students. It is recommended to incorporate practice issue effectively in their training curriculum.



**Kennedy Diema Konlan et al (2017)** A descriptive cross-sectional study was conducted in the tamale metropolis of Ghana, western Africa to assess the level of knowledge and awareness of nurses regarding post exposure prophylaxis to hepatitis B from various categories working at the tamale metropolis of Ghana, western Africa. A sample size was 108 selected by simple random sampling technique. Data was collected by semi- structured questionnaire. 94.4% of the nurses considered themselves susceptible infection of Hepatitis B virus. About 23.4% Were able to mention all the key elements of the post exposure management with 12.1% having adequate knowledge on post exposure prophylactic treatment against hepatitis B virus. Only 48 (44.4%) nurses have received hepatitis B vaccination. 75% of those immunized had received 3 doses as required while the remaining had less than 3 doses. some 38.9% recap used needle before disposal and 30.2% do not decontaminate blood and body fluids before disposal. Nurses are aware of their risk of occupational exposure to hepatitis B but lack the requisite knowledge on post exposure Management as well as measure that reduce the exposure. Nurses should familiar with the principle of post exposure management as part of job orientation and on- going job training. There is a need for a national policy on occupational safety and health which should include HB vaccination of health care workers as requirement for appointment into health service.

**Che henry ngwa, elvis akwo ngoh et al ( 2016 )** A cross sectional study was conducted to assess the knowledge , attitude and practice of health care workers on post exposure prophylaxis to blood borne disease among health care workers in feko division , south west region of Cameroon .data was collected by administration of self-designed questionnaire to 216 health care workers . a high proportion of participants 125 (58%) had poor knowledge on post exposure prophylaxis and 131(60.6%) of participants proved to have a positive attitude towards post exposure prophylaxis. 50.9% (110/216) of all participants had at least one occupational exposure with a low uptake 19.1 (21/110) of post exposure prophylaxis recorded among participants who were exposed. Formal training for all care workers on post exposure prophylaxis to blood borne viruses is recommended.

**Mercy Okoh et.al (2015)** A descriptive cross section study was conducted among all the consenting dental surgeons at the university of benin teaching hospital, benin city, Nigeria to assessing the level of knowledge, attitude and practice of dental surgeons on HIV and HBV post exposure prophylaxis (PEP). The survey was carried out using self-administered, 25 items and structured questionnaire. A total of 40 (74.1%) male and 14 (25.9%) female responded in the study. The majority, 27 (68.5%) of the dental surgeons had inadequate knowledge about PEP. Majority of dental surgeons, 44 (81.5%) had a good attitude towards PEP for HIV/HBV. From the study participant, 52 (96.3%) agreed on the importance of PEP for HIV/HBV in the work place among all of the respondents ,25 (46.3) were exposed to HIV/HBV risky conditions. 16 of the 25 (64.0%) exposed dental surgeons, did not take PEP. this study shows that knowledge and practice of dental surgeons towards PEP for HIV/HBV is inadequate. a formal PEP training centre with proper guidelines is recommended for dental surgeons.

**Amit.A.Rangari (2015)** A cross section study was conducted to examine and study the knowledge , practice of post exposure prophylaxis on occupational / accidental exposure among health care workers at a tertiary care hospital in western Uttar Pradesh. The study group included 240 health care workers volunteers who were divided into group as A- 60 doctors, B- 60 nursing staff, C- 60 attendant and technicians and D- 60 resident doctors. Data was collected by pre- designed, pre-tested, semi – structured questionnaire. 23(9.5%) volunteers had undergone training regarding post exposure prophylaxis. majority were unaware of PEP, thus had careless attitude. 56(23.33%) volunteers gave history of occupational/accidental exposure. in 0(0%) cases of accidental exposure source code and exposure code was initiated and a result neither any record of health care workers accidental exposure in hospital recorded and maintained. 2(3.5%) volunteers with accidental exposure took PEP on their own that too after 48 hours. Training directed towards proper knowledge and adherence to USP and PEP can bring about a positive change resulting in willingness of health care workers to provide care for patient with HIV infection and other blood borne pathogens.

**Rajesh Kumar Singh et.al (2015)** A cross-sectional study was conducted among health care workers in tertiary care hospital of Halwani, Nainital, Uttarakhand, India to assess the awareness and practice toward post exposure prophylaxis for HIV, which is an important strategy for prevention of HIV. sample size obtained was 218. These sample were selected by using simple random sampling technique. Data was collected using pre-designed, semi structured questionnaires from the participants by interviewing them. About one-third (65.5%) of participant have heard of PEP for HIV. Ninety – nine (45%) respondents knew when to initiate PEP for HIV. Approximately, one-fourth (23.2%) of the respondents knew the maximum acceptable delay to take PEP for HIV and about half of the participant (52.7%) had knowledge regarding the duration of PEP to prevent HIV. Among all health care workers, 47(21.4%) were ever exposed to blood or body fluid or needle stick injury and out of these only 7 (14.9) had taken PEP. Awareness as well as practice of PEP for HIV among health care workers is inadequate. A training and regular sensitization of all health care workers regarding PEP for HIV is recommended to improve their knowledge.

**Puja Sharma Dhital et al (2014)** A descriptive design study was conducted to find out of knowledge regarding PEP of HIV among nuses of BP koirala memorial cancer hospital. a total of 50 nurses were selected from 10 different wards as a sample for the study using probability simple random sampling technique. Five nurses were selected from each ward. Semi structured questionnaire was used for data collection. The study show that 48% of respondents had knowledge on the meaning of PEP, only 39.39% respondents were aware of the first aid management getting needle stick injury, 60% were aware of the best time to start PEP of HIV and 56% respondents had knowledge about the time schedule of HIV test after exposure. they had knowledge deficit in certain area. The respondents knowledge in the regard needs to be improved with time to time awareness program and periodic training, which helps to decrease the transmission of disease and reduce mortality and morbidity.



**Akshay D. Baheti, Milind S. Tullu et al ( 2005)** A cross sectional study was conducted at a tertiary health care hospital Mumbai to study and compare the awareness regarding transmission and post exposure prophylaxis for prevention of transmission of HIV , hepatitis B and hepatitis C virus amongst medical ( resident medical officers- RMOs and interns) and paramedical professionals ( nurses and technicians). Sample size was 655 (304 resident medical officers, 100 interns, 201 nurses and 50 technicians) and data was collected by a structured questionnaire. Knowledge about the fact that the exposed site must be immediately washed with soap and water was higher in RMOs and interns (73.03% and 83% respectively) as compared to nurses and technicians (40.8% and 58% respectively). Awareness about the basis and expended HIV PEP regimen was lower in RMOs (35.2% and 20%) than interns (62% and 24%). Knowledge about whom to contact for PEP was good among RMOs, interns and nurses (55.9%, 83% and 57.7%) but amongst technicians (20%). 18.1% of the RMOs, 24% of interns, 19.4% of nurses and 10% of technicians have prior occupational exposure. The study indicates the need of reinforce the knowledge of RMOs regarding various aspects of PEP and to undertake more training workshops for the same amongst nurses and technicians.

### **Literature related to effectiveness of educational programme on PEP.**

**DR. Ravindra Kshirsagar et.al (2017)** A cross sectional study was carried out among nursing and undergraduate dental students at N.K.P. salve institute of medical science and dental, nursing colleges, hingna road, Nagpur to assess effectiveness of training on awareness about PEP against HIV, HBV and HCV among dental and nursing students. 467 willing nursing and dental students were asked to answer to 22 pre validated, multiple choice questions before and after training. Overall results indicate improvement in percentage of correct answer after training in 20 out of 22 questions, as compared to before training. Improvement in 19 out of 20 questions was statistically significant. Possibility of exposure to blood borne pathogens and needle stick injuries is a lifelong professional hazard for all health care workers. Habit of adaptation universal precautions and awareness of post exposure prophylaxis guidelines, is likely to reduce chance of acquiring HIV/HBV/HCV infections during performance of professional duties.

**Sanjay Dixit (2009)** A pre experimental study was conducted to assess the impact of educational intervention programme on knowledge regarding HIV/ occupational exposure and post exposure prophylaxis among final year B.sc nursing students of medical college hospital, Indore. the sample size was 50 final year nursing students. A Pre-designed semi structured questionnaire was used to evaluate the level of knowledge before and after educational sessions. The knowledge regarding risk of transmission of HIV by needle stick injury and body fluids against which universal precautions were increased by 72% following the intervention sessions. 72% and 36% respondents correctly knew the duration within which to start PEP and the drugs available for PEP, post education sessions 98% and 96% students were aware of it. The difference being statistically significant ( $X^2 = 11.294$ ,  $p < 0.001$ ). and ( $X^2 = 37.748$ ,  $P < 0.001$ ) respectively. The mean pre-invention score was 8.32 and post intervention score was 14.40. paired t test was applied to the mean scores pre and post intervention and difference was found

to be statistical significant ( $t= 13.857$ ,  $p< 0.001$ ). incorporating the concerned issues in the academic curriculum to provide the students with adequate knowledge and information during their formative year is needed.

## CHAPTER 3

### METHODOLOGY

Research methodology provides a brief description of the method adopted by the investigator in the study. The methodology of research indicated the general pattern for organizing the procedure and for gathering valid and reliable data for investigation. It includes the research approach, design, setting, the population, sample size, sampling technique, development and description of tool, pilot study and procedure for data collection and plan analysis.

Research methodology is the systematic, theoretical analysis of methods applied to a field of study. It comprises the theoretical analysis of the body of methods and principles associated with a branch of knowledge. Typically it encompasses concepts such as paradigm, theoretical model, phases and quantitative and qualitative techniques. (Wikipedia)

This chapter deals with the research methodology adopted by the investigator to assess the effectiveness of health awareness program regarding knowledge on post exposure prophylaxis (PEP) to blood borne pathogens among GNM1st year students of selected school of nursing, Dehradun, Uttarakhand.

#### RESEARCH APPROCH

Research approaches are plan and the procedure for research that span the steps from broad assumptions to detailed methods of data collection, analysis and interpretation. selection of the research approach is a basic procedure for conduction of research enquiry.<sup>15</sup>

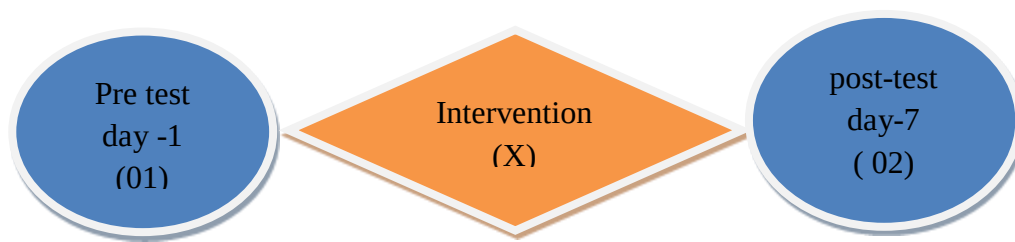
quantitative approach is considered as an appropriate one for the present study. The approach helps to explain the effect of the independent variable on the dependent variables.

#### RESEARCH DESIGN

The research design refers to the overall strategy that choose to integrate the different components of the study in coherent and logical way, thereby ensuring you will effectively address the research problem. It constitutes the blueprint for the collection, measurement and analysis of data.<sup>15</sup>

The research design selected for this study is pre-experimental (one group pre and post-test design)

## PRESENTATION OF RESEARCH DESIGN -



**01 (pre-test)** - assessing the existing knowledge of GNM1st year students regarding post exposure prophylaxis to blood borne pathogens by administering self-structured knowledge questionnaire.

**X (intervention)** - intervention (information booklet on post exposure prophylaxis to blood borne pathogens).

**02 (post-test)** - assessing post-test knowledge level of GNM1st year students regarding post exposure (PEP) to blood borne pathogens.

## RESEARCH VARIABLES

A variable is a phenomenon or characteristics or an attribute that change. Variables are measurable characteristics of a concept and consist of a logical group attribute.

### INDEPENDENT VARIABLE

it is a stimulus or activity that is manipulated or varied by the researcher to create the effect on the dependent variable.

In present study independent variable is health awareness programme on post exposure prophylaxis to blood borne pathogens and it will have significant effect on knowledge regarding post exposure prophylaxis to blood borne pathogen among GNM 1<sup>st</sup> year students.

### DEPENDENT VARIABLE

It is the outcome or response due to the effect of the independent variable, which researcher wants to predict or explain.

In the present study dependent variable are knowledge on post exposure prophylaxis to blood borne pathogens among GNM1st year students which will be affected by health awareness programme.

**EXTRENEOUS VARIABLE**

it contains socio- demographic variables of GNM 1<sup>st</sup> year students such as age, gender, source of information about post exposure prophylaxis and previous exposure to needle stick injury.

**RESEARCH SETTING**

setting is the physical location and condition in which data collection take place in a study.

(polit and beck 2009)

The study was conducted in selected school of nursing (Sai school of nursing and SGRR college of nursing) at Dehradun, Uttarakhand.

**POPULATION**

population is the aggregation of all units in which a researcher is interested. In other words, population is the set of people or entities to which the result of a research is to be generalized.<sup>15</sup>

The population selected for the present study were student nurses (GNM 1<sup>st</sup> year) from selected school of nursing, Dehradun, Uttarakhand.

**SAMPLING TECHNIQUE**

Sampling technique is the process of selecting a representative segment of the population under the study.

The sampling technique for the present study was selected by using non-probability purposive sampling.

**SAMPLE**

Sample may be defined as representative unit of a target population, which is to be worked upon by researchers during their study. In other words, sample consists of a subset which comprises the population selected by investigators or researchers to participate in their research project.

The sample of present study comprises GNM1st year students of selected school of nursing, Dehradun, Uttarakhand.

**SAMPLE SIZE**

The sample size is the number of subjects that are examined in the study. In this study sample size were 60 GNM 1<sup>st</sup> year students of selected school of nursing at Dehradun.

**SAMPLE CRITERIA****Inclusive criteria**

- student nurses, available at time of data collection.
- Student nurses, willing to participate.

### Exclusive criteria

- Student nurses who attended education programme / training on post exposure prophylaxis.

## DEVELOPMENT AND DESCRIPTION OF TOOL

A research instrument is a device used to measure the concept of interest in research project that a researcher uses to collect data. In this study a structured knowledge questionnaire is prepared to assess knowledge of GNM 1<sup>st</sup> year students regarding post exposure prophylaxis to blood borne pathogens.

Based on the extensive review of literature, discussion with the experts, investigators and with professional experience of the investigator structured knowledge questionnaire were prepared.

Based on the objectives of the study tool was divided in to 2 sections: -

**section1:** - Scio-Demographic variables

**section 2:** - Structured knowledge questionnaire

### SECTION 1 – Scio-Demographic variables

The first section deals with socio-demographic variables of student nurses such as age, gender, source of information about PEP and previous exposure to needle stick injury.

### SECTION 2- Structured knowledge questionnaire

Structured knowledge questionnaire consists of 36 questions to assess the knowledge on post exposure prophylaxis to blood borne pathogens among GNM1st year students. This section further divided into the following parts -

- **part I-** Introduction of blood borne pathogens and post exposure prophylaxis.
- **part II** – First aid.
- **part III-** Risk assessment and counseling
- **part IV-** Relevant laboratory test
- **part V** – PEP against blood borne pathogens
- **part VI-** Follow up and support

The structured questionnaire is of the multiple choices consist of 4 option for each question. Each correct answer carries 1 mark and for wrong answer 0 mark is given. Total score is 36. Based on score gained by the GNM 1<sup>st</sup> year students, the knowledge of respondents was grouped into following categories.

**SCORE INTERPRETATION.**

| Sr. No. | KNOWLEDGE LEVEL | QUESTIONS |
|---------|-----------------|-----------|
| 1.      | Poor            | 1-12      |
| 2.      | Average         | 13-24     |
| 3.      | Good            | 25-36     |

**CONTENT VALIDATION OF TOOL: -**

Validity refers to the degree to which an instrument measure what it supposes to measuring.

Content validity of the tool was established on the basis of the opinion of five experts. Five experts from the field of medical surgical nursing personnel.

Based on the suggestions of the experts the necessary modification were made in the tool, there after the final tool was prepared.

**ETHICAL CONSIDERATION: -**

Permission was taken from ethical committee and principal of state college of nursing, Dehradun to conduct the research study. permission taken from the principal of Sai school of nursing and principal of SGRR college of nursing, Dehradun. Written consent taken from each study subject. Confidentiality of the subjects was maintained while carrying out the study.

**RELIABILITY OF TOOL: -**

Reliability is the degree of consistency and accuracy with which an instrument measure the attribute for which it is designed to measure.

Reliability of the tool was tested by test-retest method using karl pearson's correlation coefficient formula, the findings show that the value was  $r = 0.87$  that indicate tool was reliable.

**PILOT STUDY: -**

Pilot study is a trial study carried out before a research design finalized to assist in defining the research question or to test the feasibility, reliability and validity of the proposed study design.

The pilot study was conducted on 8 samples of GNM 1<sup>st</sup> year students of selected school of nursing, Dehradun. Purposive sampling technique was used. The purpose of the study was explained to participant. Self-structured questionnaire was used for data collection Followed by distribution of information booklet was given to them.

Pilot study finding revealed that tool was reliable and it was feasible for the main data collection procedure.

#### **DATA COLLECTION PROCEDURE: -**

Data collection is the procedure of acquiring subjects and collecting information needed for the study.

- Prior to data collection formal permission was obtained from authorities of Sai school of nursing and SGRR college of nursing, Dehradun.
- Explained about purpose of data collection and nature of study to the participants and assured for the confidentiality of their responses. A written informed consent was obtained from each participant of the study.
- On the day one Pre-test conducted to each of the 60 samples to assess knowledge regarding post exposure prophylaxis to blood borne pathogens by using structured questionnaire within 40 minutes.
- The same day information booklet was given to all participants.
- On the 7<sup>th</sup> day post test was conducted using same structured questionnaire within 40 minutes.

#### **PLAN FOR DATA ANALYSIS: -**

The plan of data analysis includes both descriptive and inferential statistics. The analysis was planned to make on the basis of formulated objectives and hypothesis of the study. Following descriptive and inferential statistics were planned to use:

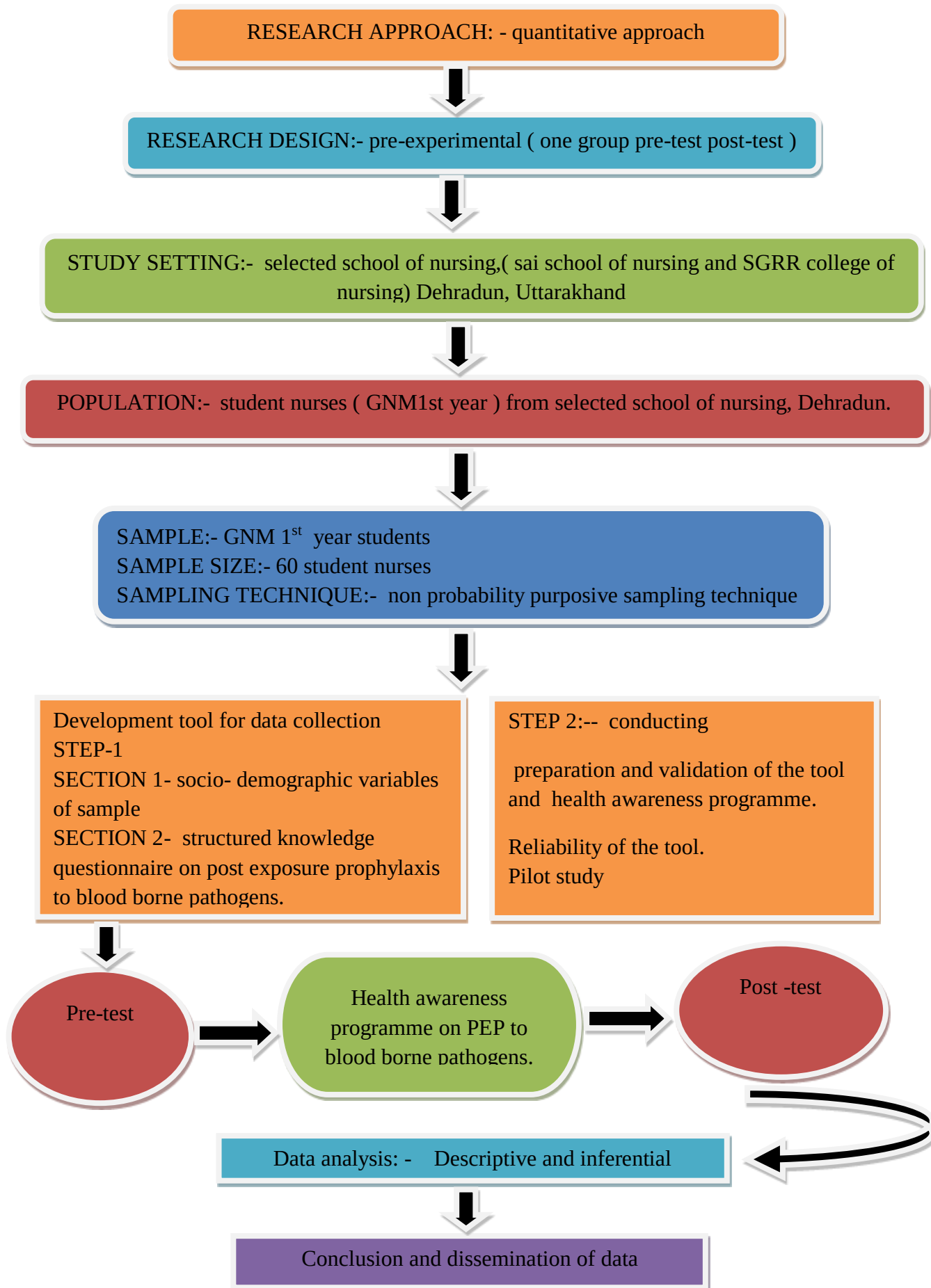
##### **1. DESCRIPTIVE STATISTICS: -**

- To analyze the demographic data descriptive statistics i.e. frequency and percentage distribution were used.
- Mean, standard deviation and mean score percentage was compute to describe the knowledge regarding post exposure prophylaxis to blood borne pathogens.

##### **2. INFERENCE STATISTICS: -**

- Paired t-test was done to know the significant difference between pre-test and post-test knowledge scores and to test effectiveness of health awareness programme on post exposure prophylaxis to blood borne pathogens.
- Chi-square test was computed to find out the association between pre-test knowledge score with selected demographic variables.





## CHAPTER- 4

### DATA ANALYSIS AND INTERPRETATION

Analysis is the process of organizing and synthesizing the data so as to answer research questions and test hypothesis. Analysis and interpretation of data includes compilation, editing, coding, classification and presentation of data.<sup>15</sup>

This chapter deals with the analysis and interpretation of data collected from 60 students of GNM 1<sup>st</sup> year to assess the effectiveness of health awareness programme on knowledge regarding post exposure prophylaxis to blood borne pathogens and determine the association between pre test knowledge score with selected demographic variables. The data was computed for analysis. Entire data transferred to master data sheet, tabulated and analyzed. Manual, MS Excel and statistical package for the social science (SPSS) were used to analyze the data. The data was analyzed according to the stated objectives and hypothesis of study by using descriptive and inferential statistics.

#### Objectives of the study

- To assess the pre-test and post- test knowledge level of student nurses regarding post exposure prophylaxis to blood borne pathogens.
- To compare the pre-test post- test knowledge scores of student nurses regarding post exposure prophylaxis to blood borne pathogens.
- To determine the effectiveness of health awareness programme regarding knowledge on post exposure prophylaxis to blood borne pathogens among student nurses.
- find out association between pre-test knowledge score regarding post exposure prophylaxis to blood borne pathogens with their selected demographic variables.

#### Hypothesis

**H1:** - There is significant difference between the pre and post-test knowledge score of student nurses regarding post exposure prophylaxis to blood borne pathogens.

**H2:** - There is significant association between the pre-test knowledge score with selected demographic variables.

## PRESENTATION OF DATA:

**The data collected was organized and presented under following sections:**

### **Section I:**

Description of the Socio demographic variables of the subjects.

### **Section II: Finding related to knowledge score**

**Part - 1:** Findings related to knowledge regarding post exposure prophylaxis to blood borne pathogens before administration of health awareness programme

**Part - 2:** Findings related to knowledge regarding post exposure prophylaxis to blood borne pathogens after administration of health awareness programme

**Part - 3:** Findings related to level of pre-test and post test knowledge regarding post exposure prophylaxis to blood borne pathogens among student nurses

### **Section III:**

Findings related to compare the pre test and post test level of knowledge regarding post exposure prophylaxis to blood borne pathogens among student nurses.

### **Section IV:**

Findings shows the effectiveness of health awareness programme regarding knowledge on post exposure prophylaxis to blood borne pathogens among student nurses.

### **Section V:**

Deals with association between pre test knowledge score regarding post exposure prophylaxis to blood borne pathogens with selected demographic variables among student nurses.

## **Section I:**

### **Description of the Socio demographic variables of the subjects.**

It deals with demographic data which consists of 04 items to collect the sample characteristics, which comprises Age, Gender, Source of information about post exposure prophylaxis and Previous exposure to needle stick injury.

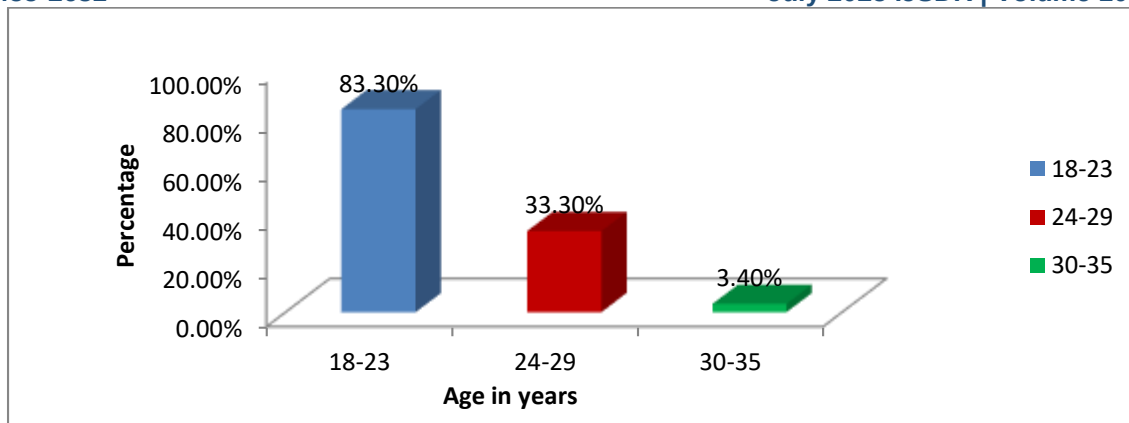
**Table1-Distribution of respondents according to demographic variables****N= 60**

| <b>S. N.</b> | <b>Demographic variable</b>                                  | <b>Frequency</b> | <b>Percentage%</b> |
|--------------|--------------------------------------------------------------|------------------|--------------------|
| <b>1.</b>    | <b>Age in Year</b>                                           |                  |                    |
|              | • 18 – 23                                                    | 50               | 83.30%             |
|              | • 24-29                                                      | 08               | 33.30%             |
|              | • 30-35                                                      | 02               | 3.40%              |
| <b>2.</b>    | <b>Gender</b>                                                |                  |                    |
|              | • Female                                                     | 10               | 16.7%              |
|              | • Male                                                       | 50               | 83.3%              |
| <b>3.</b>    | <b>Source of information about post exposure prophylaxis</b> |                  |                    |
|              | • Textbook                                                   | 11               | 18.3%              |
|              | • Peer group                                                 | 04               | 6.7%               |
|              | • Mass media                                                 | 07               | 11.7%              |
|              | • Clinical instructor                                        | 15               | 25%                |
|              | • None of these                                              | 23               | 38.3%              |
| <b>4.</b>    | <b>Previous exposure to needle stick injury</b>              |                  |                    |
|              | • Yes                                                        | 16               | 26.7%              |
|              | • No                                                         | 44               | 73.3%              |

**Table- 1 shows that**

### **1. According to Age**

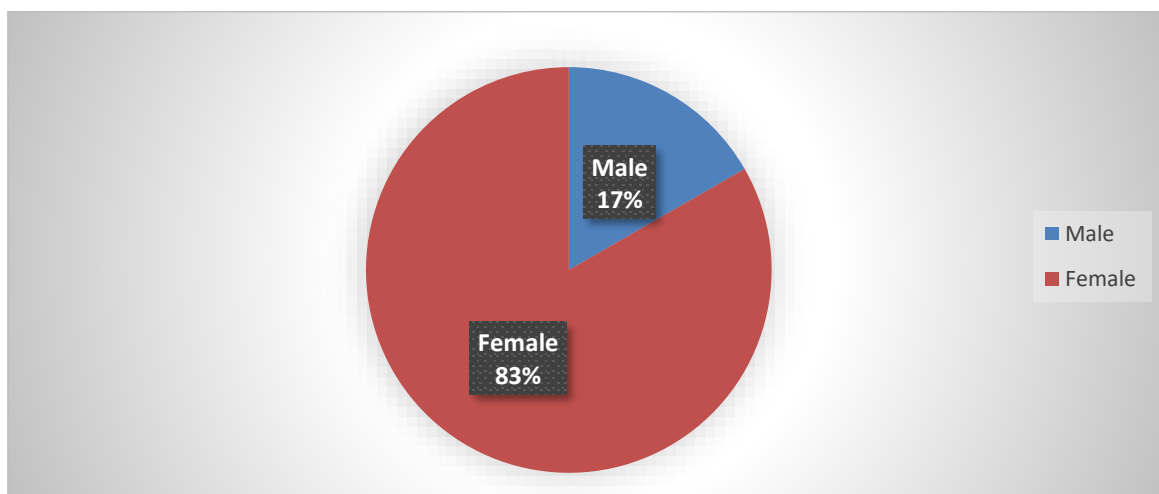
the distribution of respondent according to age. The data revealed that 50(83.30%) students were in the age group of 18-23 years followed by 08 (33.30%) were in the age group of 24-29 years and 02(3.40%) were in the age group of 30-35 years.



**Figure - 1: Distribution of respondents by age**

## 2. According to Gender

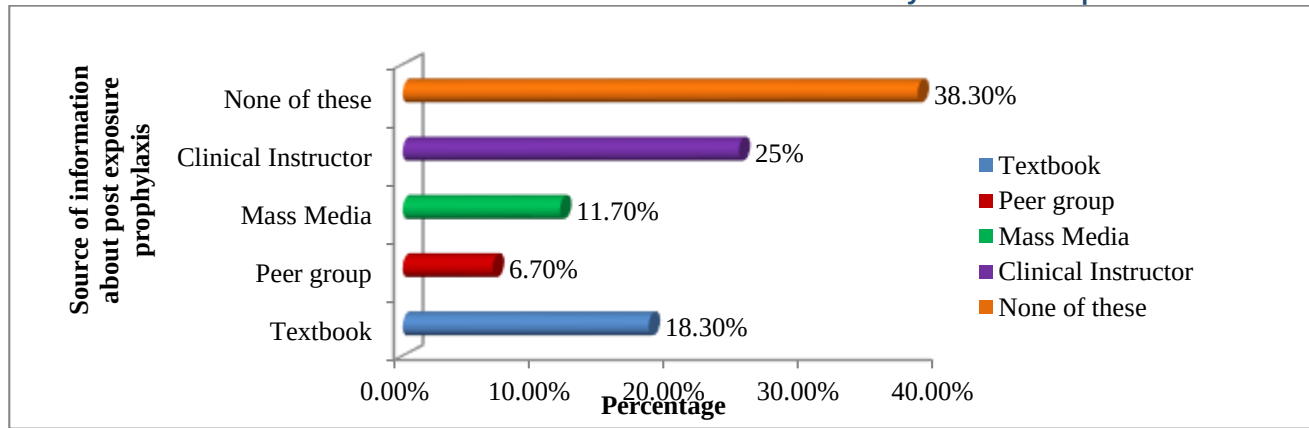
shows the distribution of respondent according to gender. The data revealed that 50(83.3%) students were female and 10 (16.7%) were male.



**Figure - 2: Distribution of respondents by gender**

## 3. According to Source of information about post exposure prophylaxis

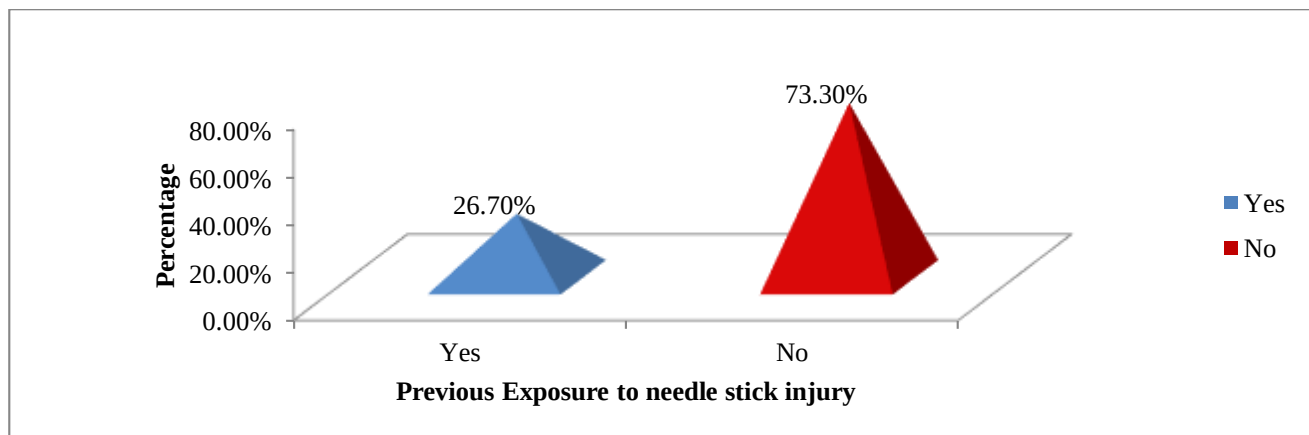
shows the distribution of respondent according to source of information about post exposure prophylaxis. The data revealed that 23 (38.3%) students had not received any information from any source, 15 (25%) had received information from clinical instructor, 11(18.3%) had information from textbook, 07(11.7%) had from mass media and 04(6.7%) had information from peer group.



**Figure - 3: Distribution of respondents by Source of information about post exposure prophylaxis**

#### 4. According to Previous exposure to needle stick injury

shows the distribution of respondent according to previous exposure to needle stick injury. The data revealed that 44(73.3%) student had no previous exposure to needle stick injury and 16(26.7%) had previous exposure to needle stick injury.



**Figure 4: Distribution of respondent according to previous exposure to needle stick injury**

### Section II: Finding related to knowledge score

**Part - 1: Findings related to knowledge regarding post exposure prophylaxis to blood borne pathogens among student nurses before administration of Health Awareness Programme.**

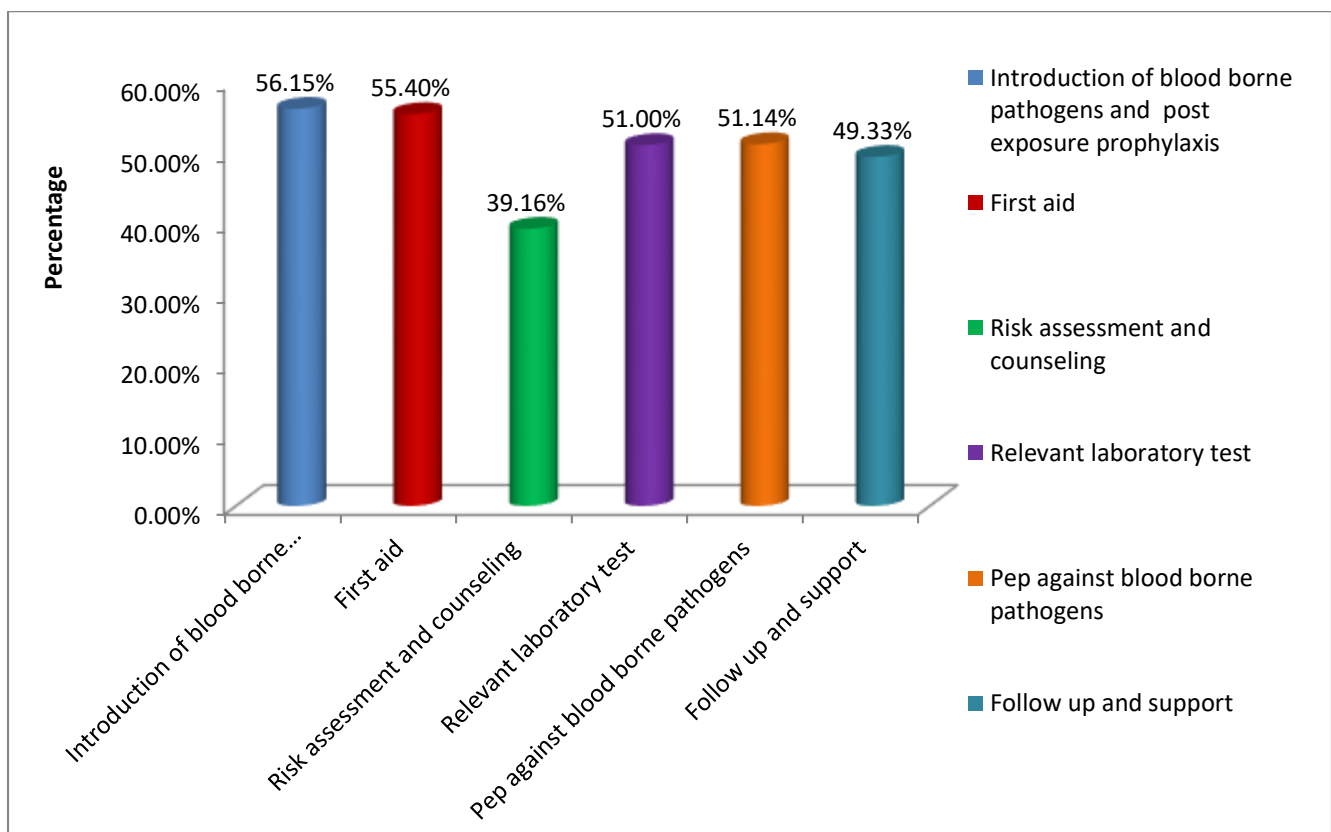
**Table 2: Finding relation to pre-test knowledge score**

(N=60)

| Part | Area wise                                                           | No of items | Mean | Mean % | SD    |
|------|---------------------------------------------------------------------|-------------|------|--------|-------|
| 1.   | Introduction of blood borne pathogens and post exposure prophylaxis | 13          | 7.30 | 56.15% | 1.934 |
| 2.   | First aid                                                           | 05          | 2.77 | 55.40% | 1.031 |
| 3.   | Risk assessment and counseling                                      | 06          | 2.35 | 39.16% | 1.313 |
| 4.   | Relevant laboratory test                                            | 02          | 1.02 | 51.00% | 0.792 |

|              |                                   |           |              |               |              |
|--------------|-----------------------------------|-----------|--------------|---------------|--------------|
| 5.           | Pep against blood borne pathogens | 07        | 3.58         | 51.14%        | 1.239        |
| 6.           | Follow up and support             | 03        | 1.48         | 49.33%        | 0.892        |
| <b>Total</b> |                                   | <b>36</b> | <b>18.52</b> | <b>51.44%</b> | <b>4.459</b> |

Table 2 depicts the pre-test knowledge score of the student nurses, the maximum mean percentage obtained in the aspect of Introduction of blood borne pathogens and post exposure prophylaxis(56.15%), followed by First aid(55.40%), Pep against blood borne pathogens (51.14%), Relevant laboratory test (51.00%)Follow up and support (49.33%) and Risk assessment and counseling (39.16%). Therefore, overall knowledge mean scores of respondents were found to be 18.52, mean percentage 51.44% with standard deviation 4.459.



**Figure 5: Finding relation to pre-test knowledge score.**



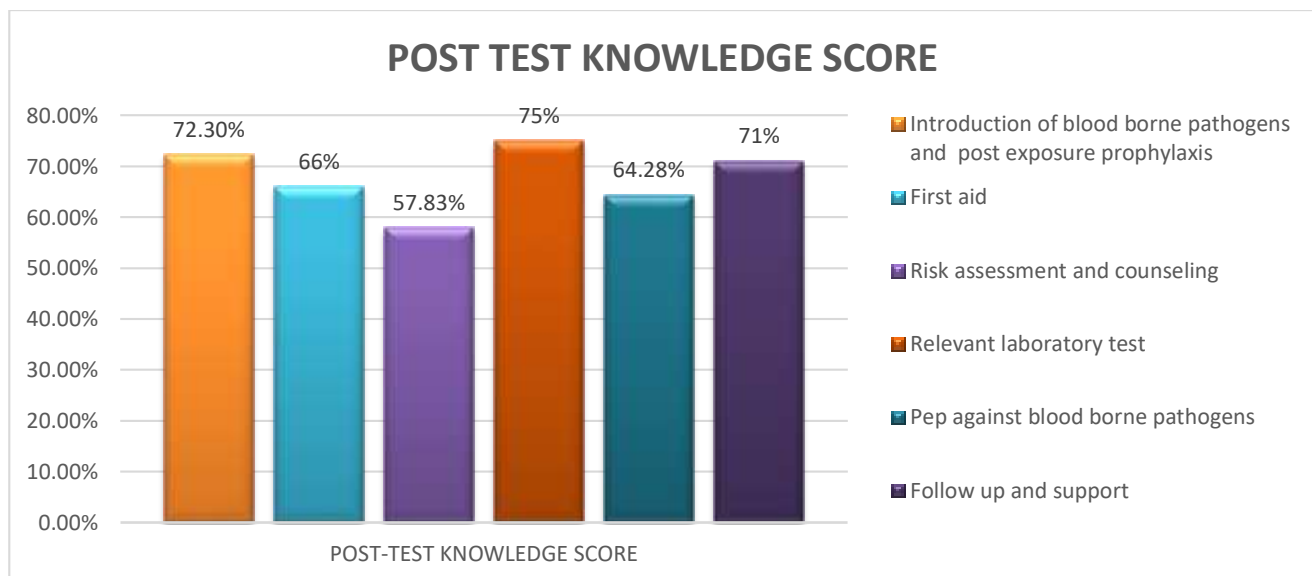
## Part - 2: Findings related to knowledge regarding post exposure prophylaxis to blood borne pathogens among student nurses after administration of Health Awareness Programme

**Table 3: Finding relation to post-test knowledge score**

(N=60)

| Part         | Area wise                                                           | No of items | Mean         | Mean %       | SD           |
|--------------|---------------------------------------------------------------------|-------------|--------------|--------------|--------------|
| 1.           | Introduction of blood borne pathogens and post exposure prophylaxis | 13          | 9.40         | 72.30%       | 1.897        |
| 2.           | First aid                                                           | 05          | 3.30         | 66.00%       | 1.013        |
| 3.           | Risk assessment and counseling                                      | 06          | 3.47         | 57.83%       | 1.282        |
| 4.           | Relevant laboratory test                                            | 02          | 1.50         | 75.00%       | 0.651        |
| 5.           | Pep against blood borne pathogens                                   | 07          | 4.50         | 64.28%       | 1.228        |
| 6.           | Follow up and support                                               | 03          | 2.13         | 71.00        | 0.812        |
| <b>Total</b> |                                                                     | <b>36</b>   | <b>24.30</b> | <b>67.5%</b> | <b>4.830</b> |

Table 3 depicts the post-test knowledge score of the student nurses, the maximum mean percentage obtained in the aspect of Relevant laboratory test (75%), followed by Introduction of blood borne pathogens and post exposure prophylaxis (72.30%), Follow up and support (71%), First aid (66%), Pep against blood borne pathogens (64.28%) and Risk assessment and counseling (57.83%). Therefore, overall knowledge mean scores of respondents were found to be 24.30, mean percentage 67.5% with standard deviation 4.830.



**Figure 6: Finding relation to post-test knowledge score.**

**Part - 3: Findings related to level of pre-test and post test knowledge regarding post exposure prophylaxis to blood borne pathogens among student nurses.**

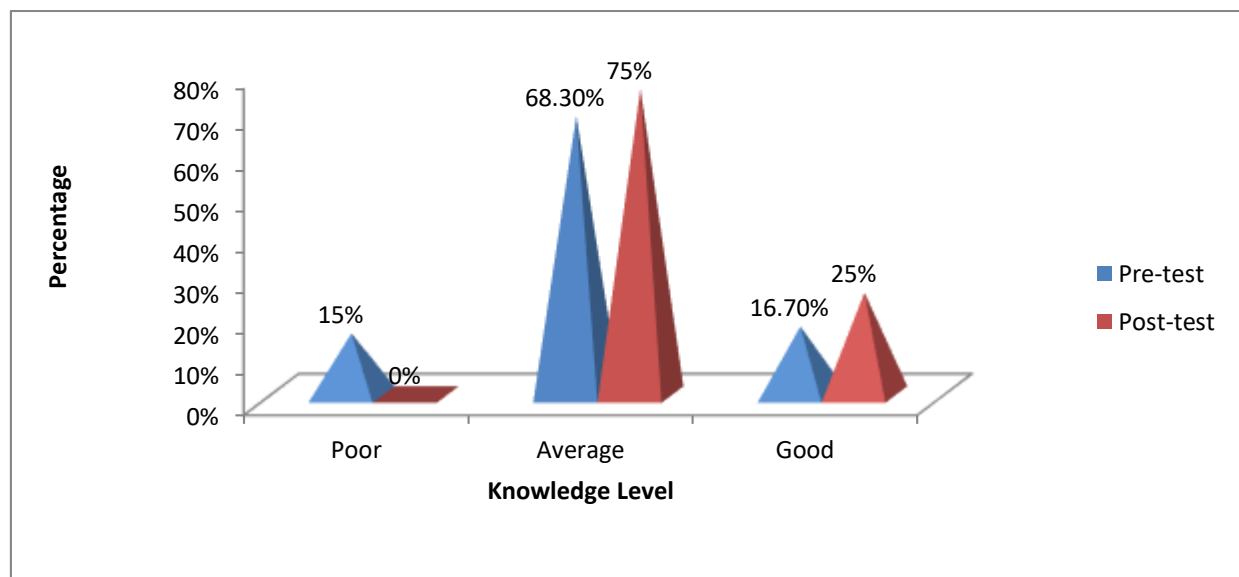
**Table 4: Finding related to Knowledge level**

(N=60)

| S. N.        | Knowledge Level | Score | Pre-test  |             | Post-test |            |
|--------------|-----------------|-------|-----------|-------------|-----------|------------|
|              |                 |       | F         | %           | F         | %          |
| 1.           | Poor            | 0-12  | 09        | 15%         | 00        | 00%        |
| 2.           | Average         | 13-24 | 41        | 68.3%       | 45        | 75%        |
| 3.           | Good            | 25-36 | 10        | 16.7%       | 15        | 25%        |
| <b>Total</b> |                 |       | <b>60</b> | <b>100%</b> | <b>60</b> | <b>100</b> |

Table 4 depicts that majority 41(68.3%) of the student nurses had average knowledge, 10 (16.7%) had good knowledge and only 09(15%) percent of them had poor knowledge towards post exposure prophylaxis to blood borne pathogens in pre-test knowledge.

Majority 45 (75%) of the student nurses had average knowledge, 15 (25%) had good knowledge and none had poor knowledge towards post exposure prophylaxis to blood borne pathogens in post-test knowledge.



**Figure7: Finding related to Knowledge level**

### Section III:

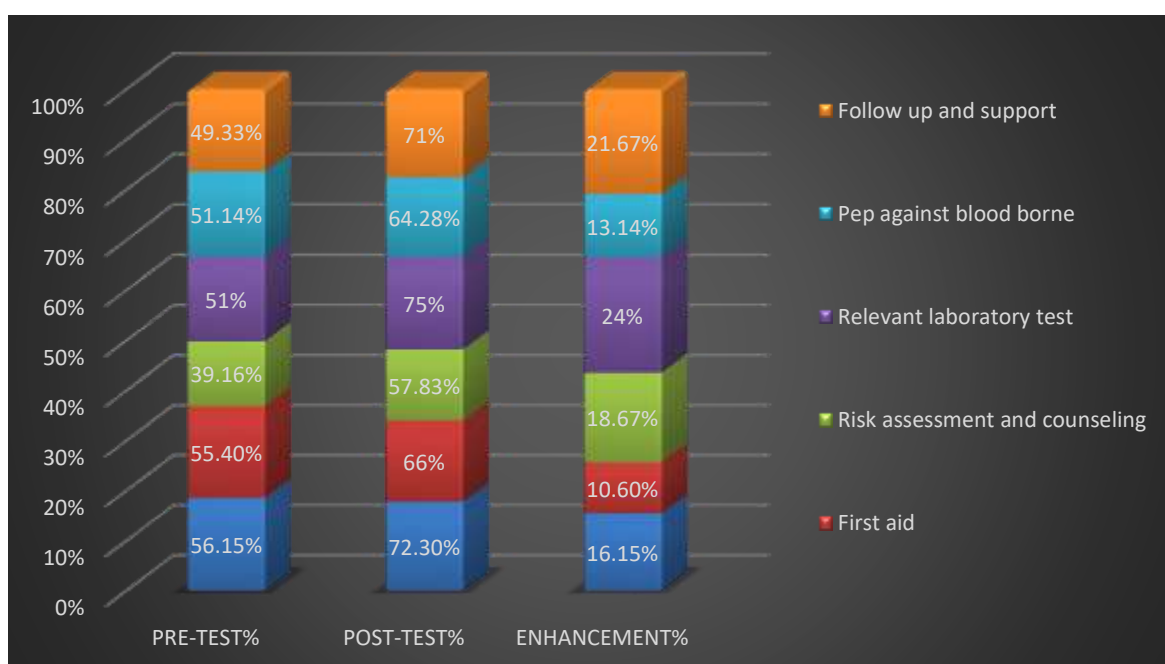
Findings related to compare the pre test and post test level of knowledge regarding post exposure prophylaxis to blood borne pathogens among student nurses.

**Table 5: Comparison of overall knowledge score**

(N=60)

| Area of Knowledge                                                   | Pre-test     |               | Post test    |              | Mean % Enhancement |
|---------------------------------------------------------------------|--------------|---------------|--------------|--------------|--------------------|
|                                                                     | Mean score   | Mean %        | Mean score   | Mean %       |                    |
| Introduction of blood borne pathogens and post exposure prophylaxis | 7.30         | 56.15%        | 9.40         | 72.30%       | 16.15%             |
| First aid                                                           | 2.77         | 55.40%        | 3.30         | 66.00%       | 10.6%              |
| Risk assessment and                                                 | 2.35         | 39.16%        | 3.47         | 57.83%       | 18.67%             |
| Relevant laboratory test                                            | 1.02         | 51.00%        | 1.50         | 75.00%       | 24%                |
| Pep against blood borne                                             | 3.58         | 51.14%        | 4.50         | 64.28%       | 13.14%             |
| Follow up and support                                               | 1.48         | 49.33%        | 2.13         | 71.00%       | 21.67%             |
| <b>Over all</b>                                                     | <b>18.52</b> | <b>51.44%</b> | <b>24.30</b> | <b>67.5%</b> | <b>16.06%</b>      |

Table 5 shows the comparison between pre-test and post-test knowledge score of student nurses regarding post exposure prophylaxis to blood borne pathogens. It was observed that 24% of enhancement in Relevant laboratory test followed by 21.67% of enhancement in Follow up and support, 18.67% in Risk assessment and counseling, 16.15% in Introduction of blood borne pathogens and post exposure prophylaxis, 13.14% in Pep against blood borne and 10.6% in First aid. The overall enhancement was 16.06%, Hence, the research hypothesis  $H_1$  is accepted and null hypothesis is rejected.



**Figure 8: Comparison of overall knowledge score**

### Section IV:

Findings shows the effectiveness of health awareness programme on knowledge of post exposure prophylaxis to blood borne pathogens among student nurses

**Table 6: Effectiveness of health awareness programme on knowledge of student nurses regarding post exposure prophylaxis to blood borne pathogens among student nurses**

**N=60**

| Component                                                           | Group            | Mean         | Mean difference | Standard deviation | 't' value |
|---------------------------------------------------------------------|------------------|--------------|-----------------|--------------------|-----------|
| Introduction of blood borne pathogens and post exposure prophylaxis | Pre-test         | 7.30         | 2.1             | 1.934              | 15.450    |
|                                                                     | Post-test        | 9.40         |                 | 1.897              |           |
| First aid                                                           | Pre-test         | 2.77         | 0.53            | 1.031              | 6.114     |
|                                                                     | Post-test        | 3.30         |                 | 1.013              |           |
| Risk assessment and counseling                                      | Pre-test         | 2.35         | 1.12            | 1.313              | 10.481    |
|                                                                     | Post-test        | 3.47         |                 | 1.282              |           |
| Relevant laboratory test                                            | Pre-test         | 1.02         | 0.48            | 0.792              | 5.998     |
|                                                                     | Post-test        | 1.50         |                 | 0.651              |           |
| Pep against blood borne                                             | Pre-test         | 3.58         | 0.92            | 1.239              | 9.555     |
|                                                                     | Post-test        | 4.50         |                 | 1.228              |           |
| Follow up and support                                               | Pre-test         | 1.48         | 0.65            | 0.892              | 6.667     |
|                                                                     | Post-test        | 2.13         |                 | 0.812              |           |
| <b>Overall</b>                                                      | <b>Pre-test</b>  | <b>18.52</b> | 5.78            | <b>4.459</b>       | 43.636    |
|                                                                     | <b>Post-test</b> | <b>24.30</b> |                 | <b>4.830</b>       |           |

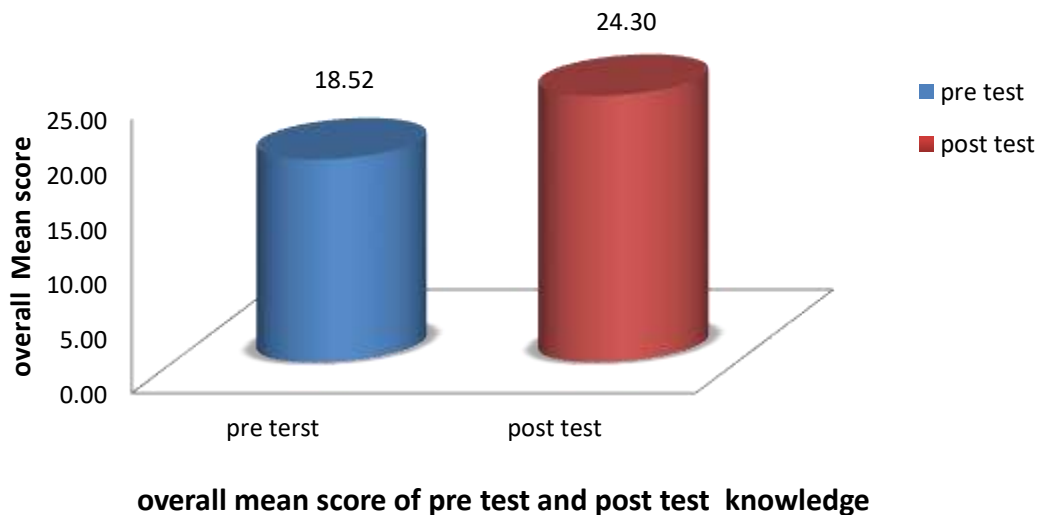
\*- Significant at 0.05 level

Table 6 represents the aspect wise knowledge mean of student nurses regarding post exposure prophylaxis to blood borne pathogens. The results showed the enhancement of knowledge was highest in the aspect of Introduction of blood borne pathogens and post exposure prophylaxis 2.1 and lowest in relevant laboratory test 0.48 with an overall enhancement of 5.78.

The aspect wise 't' test value was observed and showed a significant in all the aspect of knowledge area.

The combined 't' test value was significant i.e 43.636 at  $P < 0.05$  level. Which indicate health awareness

programme was effective in improving knowledge of student nurses regarding post exposure prophylaxis to blood borne pathogens.



**Figure 8: Representing the effectiveness of health awareness programme regarding on PEP to blood borne pathogens.**

### Section V:

Deals with association between selected demographic variables with pre-test knowledge of post exposure prophylaxis to blood borne pathogens among student nurses.

**Table 7: Association between selected demographic variables with pre test knowledge level (N=60)**

| Variable    | Poor | Average | Good | Chi-square value<br>Df | P value | Inference |
|-------------|------|---------|------|------------------------|---------|-----------|
| Age in year |      |         |      |                        |         |           |
| 18-23       | 07   | 36      | 07   | 4.920<br>Df=4          | 0.296   | NS        |
| 24-29       | 01   | 04      | 03   |                        |         |           |
| 30-35       | 01   | 01      | 00   |                        |         |           |
| Total       | 09   | 41      | 10   |                        |         |           |
| Gender      |      |         |      |                        |         |           |
| Male        | 01   | 06      | 03   | 1.602                  | 0.449   | NS        |
| Female      | 08   | 35      | 07   | Df=2                   |         |           |

| Variable                                                     | Poor      | Average   | Good      | Chi-square value<br>Df | P value | Inference |
|--------------------------------------------------------------|-----------|-----------|-----------|------------------------|---------|-----------|
| <b>Total</b>                                                 | <b>09</b> | <b>41</b> | <b>10</b> |                        |         |           |
| <b>Source of information about post exposure prophylaxis</b> |           |           |           |                        |         |           |
| Textbook                                                     | 03        | 07        | 01        | 5.357<br>Df=8          | 0.719   | NS        |
| Peer group                                                   | 01        | 03        | 00        |                        |         |           |
| Mass media                                                   | 00        | 05        | 02        |                        |         |           |
| Clinical instructor                                          | 03        | 09        | 03        |                        |         |           |
| None of these                                                | 02        | 17        | 04        |                        |         |           |
| <b>Total</b>                                                 | <b>09</b> | <b>41</b> | <b>10</b> |                        |         |           |
| <b>Previous exposure to needle stick injury</b>              |           |           |           |                        |         |           |
| Yes                                                          | 02        | 12        | 02        | 0.460<br>Df=2          | 0.794   | NS        |
| No                                                           | 07        | 29        | 08        |                        |         |           |
| <b>Total</b>                                                 | <b>09</b> | <b>41</b> | <b>10</b> |                        |         |           |

\*Significant at 0.05 level.

S = Significant, NS = Not – Significant

The obtained chi – square value for Age ( $\chi^2 = 4.920$ ,  $p > 0.05$ ), Gender ( $\chi^2 = 1.602$ ,  $p > 0.05$ ), source of information about post exposure prophylaxis ( $\chi^2 = 0.719$ ,  $p > 0.05$ ) and previous exposure to needle stick injury ( $\chi^2 = 0.460$ ,  $p > 0.05$ ). The obtained p value for these variables is less than 0.05, which indicates that there is no significant association between Knowledge of student nurses regarding post exposure prophylaxis to blood borne pathogens with selected socio-demographic variables. Hence, the research hypothesis H<sub>2</sub> is rejected and null hypothesis is accepted.

## CHAPTER –5

### DISCUSSION

This chapter deal with the brief discussion of the major finding of the study after analyzing the data along with the conclusion drawn and reviews that in relation to finding from the result of previous study.

The present study was conducted to assess the effectiveness of health awareness programme regarding knowledge on post exposure prophylaxis to blood borne pathogens among student nurses of selected school of nursing, Dehradun, Uttarakhand. In respect to fulfill the objective of the study, pre-experimental (one group pre-test post-test) designed was adopted. There were total 60 subjects that fufill the inclusive criteria and exclusive criteria were selected through purposive non probability sampling technique. Data was collected by using structured questionnaire. Analysis was done using descriptive and inferential statistics.

#### **The objectives of the study**

- To assess the pre-test and post- test knowledge level of student nurses regarding post exposure prophylaxis to blood borne pathogens.
- To compare the pre-test post- test knowledge scores of student nurses regarding post exposure prophylaxis to blood borne pathogens.
- To determine the effectiveness of health awareness programme regarding knowledge on post exposure prophylaxis to blood borne pathogens among student nurses.
- To find out association between pre-test knowledge score regarding post exposure prophylaxis to blood borne pathogens with their selected demographic variables of students nurses.

#### **Hypothesis**

**H1** - There is significant difference between the pre and post-test knowledge score of student nurses regarding post exposure prophylaxis to blood borne pathogens.

**H2** - There is significant association between the pre-test knowledge score regarding post exposure to blood borne pathogens with their selected demographic variables of student nurses.

## MAJOR FINDING OF THE STUDY

### Finding related to demographic variables

The study finding shows that the distribution of respondent according to age. 50 (83.30%) students were in the age group of 18-23 years followed by 08 (33.30%) were in the age group of 24-29 years and 02(3.40%) were in the age group of 30-35 years.

the distribution of respondent according to gender. 50(83.3%) students were female and 10 (16.7%) were male.

the distribution of respondent according to source of information about post exposure prophylaxis. 23 (38.3%) students had not received any information from any source, 15 (25%) had received information from clinical instructor, 11(18.3%) had information from textbook, 07(11.7%) had from mass media and 04(6.7%) had information from peer group.

the distribution of respondent according to previous exposure to needle stick injury. 44(73.3%) student had no previous exposure to needle stick injury and 16(26.7%) had previous exposure to needle stick injury.

The discussion is done on the basis of objectives of the study

### **The first objective of the study was to assess the pre-test and post- test knowledge level of student nurses regarding post exposure prophylaxis to blood borne pathogens.**

In this study majority 41(68.3%) of the student nurses had average knowledge, 10 (16.7%) had good knowledge and only 09(15%) percent of them had poor knowledge towards post exposure prophylaxis to blood borne pathogens in pre-test knowledge. Whereas the knowledge level of student nurses in post test shows Majority45 (75%) of the student nurses had average knowledge, 15 (25%) had good knowledge and none had poor knowledge towards post exposure prophylaxis to blood borne pathogens.

### **The second objective of the study was to compare the pre-test post- test knowledge scores of student nurses regarding post exposure prophylaxis to blood borne pathogens.**

The pre- test knowledge mean scores of respondents were found to be 18.52, mean percentage 51.44% with standard deviation 4.459 while in post test knowledge mean score was 24.30, mean percentage 67.5% with standard deviation 4.830.

the study shows that the knowledge of GNM 1<sup>st</sup> year students regarding post exposure prophylaxis to blood borne pathogens was improved after administered health awareness programme as overall mean percentage enhancement was 16.06%

### **The third objective of the study was to determine the effectiveness of health awareness programme regarding knowledge on post exposure prophylaxis to blood borne pathogens among student nurses.**

the present study showed mean post test knowledge score 24.30 was significantly higher than pre test knowledge score 18.52. The statistical paired 't' test value for overall knowledge score was found to be



43.636 which is greater than tabulated 't' value at the level of significant 0.05. Hence, the research hypothesis  $H_1$  is accepted and null hypothesis is rejected. Which indicate that there was a significant difference between pre-test and post-test knowledge score of student nurses regarding post exposure prophylaxis to blood borne pathogens. Thus health awareness programme was effective in improving knowledge of student nurses regarding post exposure prophylaxis to blood borne pathogens.

The present study was supported by Selvarani P et.al 2018 A pre experimental one group pre-test post test study conducted to evaluate the effectiveness of video assisted teaching programme on knowledge regarding post exposure exposure prophylaxis of blood borne pathogens among paramedical students. 60 participants were selected by using non probability convenient sampling technique . the mean post test knowledge score 24 was significantly higher than the pre-test knowledge score 3.9. the obtained 'Z' value was 44.6 and p value is 0.001, the finding show that video assisted teaching programme is effective.

**To find out association between pre-test knowledge score regarding post exposure prophylaxis to blood borne pathogens with their selected demographic variables of student nurses.**

The obtained chi – square value for Age , Gender, source of information about post exposure prophylaxis and previous exposure to needle stick injury is less than 0.05 level of significance , which indicates that there is no significant association between Knowledge of student nurses regarding post exposure prophylaxis to blood borne pathogens with their selected socio-demographic variables. Hence, the research hypothesis  $H_2$  is rejected and null hypothesis is accepted.

A present study supposed by Anjana A.P.et al 2018 A descriptive study was conducted to determine the knowledge regarding post exposure prophylaxis (PEP) following needle stick injury among B.Sc. nursing students. Sample were selected by using convenience sampling technique. Data was collected by semi structured knowledge questionnaire. the data revealed that there is no significant association between level of knowledge regarding PEP following needle stick injury with selected demographic variables at 0.05 level of significant.

## CHAPTER -6

### SUMMARY, CONCLUSION, IMPLICATION, LIMITATION AND RECOMMENDATION

The chapter deal with summary of the study, conclusion and its implication in nursing and health care services followed by limitation. This chapter ends with recommendation for the future research in the same field.

#### SUMMARY

##### statement of the problem

A study to assess the effectiveness of health awareness programme regarding knowledge on post exposure prophylaxis to blood borne pathogens among student nurses of selected school of nursing, Dehradun, Uttarakhand.

##### The objectives of the study

- To assess the pre-test and post- test knowledge level of student nurses regarding post exposure prophylaxis to blood borne pathogens.
- To compare the pre-test post- test knowledge scores of student nurses regarding post exposure prophylaxis to blood borne pathogens.
- To determine the effectiveness of health awareness programme regarding knowledge on post exposure prophylaxis to blood borne pathogens among student nurses.
- To find out association between pre-test knowledge score regarding post exposure prophylaxis to blood borne pathogens with their selected demographic variables of students nurses.

##### Hypothesis

**H1** - There is significant difference between the pre and post-test knowledge score of student nurses regarding post exposure prophylaxis to blood borne pathogens.

**H2** - There is significant association between the pre-test knowledge score regarding post exposure to blood borne pathogens with their selected demographic variables of student nurses.

## Conceptual framework

The conceptual framework of the present study was based on health belief model it was initially developed in the 1950 by social scientists Hochbaum, Kegals and others at the U.S. public health service. later the model was extended in 1974 by Rosenstoch, Becker and kirsch to explaining health related behavior.

## Methodology

The study was adopted quantitative pre experimental (one group pre-test post test) research design for the study to assess the effectiveness of health awareness programme regarding knowledge on post exposure prophylaxis to blood borne pathogens among student nurses of selected school of nursing, Dehradun. A total of 60 subject were selected through purposive non probability sampling technique. The setting of the study was selected school of nursing, Dehradun, Uttarakhand. Socio- demographic variables included in this study were age, gender, source of information about post exposure prophylaxis and previous exposure to needle stick injury.

The study tool consisted of two section.

### **section1-** Socio-demographic variables

### **section 2-** Structured knowledge questionnaire

development of the tool involved steps such review of literature, consultations of experts of the same field, organization of the available material and construction of the tool was given to the expert for the validation. After the validation suggested modification were done.

pre-testing of self-structured questionnaire was done. Reliability of this tool done by using test retest method and it was found reliable this ( $r=0.87$ ) this indicated that the tool was reliable. The pilot study was conducted to assess the feasibility and practicability of the study it was found feasible

the main study was conducted from August 2020 in selected school of nursing at Dehradun. 60 GNM 1<sup>st</sup> year students were selected as study sample by purposive sampling technique. Questionnaire method was used to collect the data with the socio-demographic variables, knowledge related to post exposure prophylaxis to blood borne pathogens on the same day information booklet on PEP to blood borne pathogens were distributed among students nurses. The time taken to complete the data collection procedure was 14 days. After the completion of data collection, the analysis was done on the basis of objectives of the study by using the descriptive and inferential statistics. A master data sheet was prepared with the responses given by student nurses. Hypothesis was tested at the  $> 0.05$  level of significant.

**Result**

Finding of the study revealed that-

The result showed the enhancement of knowledge was highest in the aspect of enhancement of knowledge was highest in the aspect of Introduction of blood borne pathogens and post exposure prophylaxis<sup>2.1</sup> and lowest in relevant laboratory test<sup>0.48</sup> with an overall enhancement of 5.78. The combined 't' test value was significant i.e 43.636 at  $P < 0.05$  level. Which indicate health awareness programme was effective in improving knowledge of student nurses regarding post exposure prophylaxis to blood borne pathogens. Hence the research hypothesis  $H_1$  is accepted and null hypothesis is rejected.

There is no significant association between the pre-test knowledge score regarding post exposure to blood borne pathogens with their selected demographic variables of student nurses. Hence the research hypothesis is rejected and null hypothesis is accepted.

**CONCLUSION**

This study was conducted to evaluate the effectiveness of health awareness programme regarding knowledge on post exposure prophylaxis to blood borne pathogens among student nurses of selected school of nursing Dehradun. there were statistically significant improvement in student knowledge level after administration of health awareness programme . This knowledge will help to student nurses to understand post exposure prophylaxis to blood borne pathogens and will enable to take measure to prevent from transmission of blood borne pathogens after accidental exposure. well-designed lecture, seminar and education program need to be conducted to imparting knowledge regarding post exposure prophylaxis to blood borne pathogens for students nurses. So that they can practice preventive approach.

**NURSING IMPLICATION**

the finding of the study have implications in various area of nursing profession i.e.nursing education, nursing administration and nursing research. This present study has made implications which are of vital concern for the professional nurse practitioners, nursing officers, nursing students, nursing administrators and nursing researcher.

**Nursing education**

- As a nurse educator there are opportunities for nursing professional to educate the students regarding post exposure prophylaxis to blood borne pathogens.
- The study can be extended for educating health workers so that blood borne pathogens can be prevented from transmission after accidental exposure.
- This study would provide guidelines to the student nurses for introducing health education programme regarding post exposure prophylaxis to blood borne pathogens in their curriculum.

- The nursing student can educate to other students about post exposure prophylaxis to blood borne pathogens.

### **Nursing practice**

- It helps the health care professionals to gain knowledge regarding post exposure prophylaxis to blood borne pathogens.
- Nursing professionals can conduct in service educational program on post exposure prophylaxis to other health care workers to prevent transmission of blood borne pathogens.
- Nursing professionals can take immediate action towards post exposure prophylaxis after accidental exposure.
- Nursing professionals can motivate to other health care workers regarding post exposure prophylaxis to prevent transmission of blood borne pathogens.

### **Nursing administration**

- Nursing administrator has to play a vital role in creating awareness among student nurses regarding post exposure prophylaxis to blood borne pathogens. The administrators have the responsibility to provide nurses with continuing education opportunity.
- The finding of the study will help the nurse administrator to organize workshop, seminar, panel discussion, short term course and health education program on post exposure prophylaxis to blood borne pathogens for student nurses. This will enable to update knowledge, acquire skill and demonstrate high quality care.

### **Nursing research**

- The finding of the study motivates the nurse researcher to conduct many studies related to prevention of needle stick injury, incidence of blood and body fluids exposure, universal precaution, infection control practice, risk and management of blood borne pathogens.
- The researcher in nursing field initiate evidence-based nursing practice.

### **LIMITATION**

- The study was limited to GNM 1<sup>st</sup> year students of selected school of nursing, Dehradun, Uttarakhand.
- the sample of study was limited to 60 GNM 1<sup>st</sup> year students.
- The study did not assess practice of student nurses regarding post exposure prophylaxis to blood borne pathogens.

- Small number of subjects limits generalizations of the study finding.

## RECOMMENDATION

On the basis of finding of the study it is recommended that

- Similar study can be conducted for a large sample to generalize the finding.
- A Similar study can be done among health care workers to assess knowledge regarding post exposure prophylaxis to blood borne pathogens.
- The experimental study can be under taken with control group.
- A comprehensive study can be done to evaluated the knowledge of post exposure prophylaxis to blood borne pathogens among student nurses.
- Training programme may be conducted to all health care personnel.
- A study can be carried out to evaluate the effectiveness of structured teaching programme, self-instructional module, video assisted teaching programme on post exposure prophylaxis to blood borne pathogens.
- Each hospital should develop standard regarding prevention of accidental exposure and post exposure prophylaxis.

## REFERENCES

1. Shevkani M, Kavina B, Kumar P, Purohit H, Nihalani U, Shah A. An overview of post exposure prophylaxis for HIV in health care personals: Gujarat scenario. *Indian J Sex Transm Dis AIDS*. 2011;32(1):9-13.
2. <http://www.bccdc.ca/health-info/disease-types/bloodborne-diseases>
3. <http://www.upsacs.in/pdf/GUIDELINES/PEP.pdf>
4. <http://www.cdc.gov/hai/pdfs/bbp/exp-to-blood.pdf>
5. Beekmann SE, Henderson DK. Prevention of human immunodeficiency virus and AIDS: postexposure prophylaxis (including health care workers). *Infect Dis Clin North Am*. 2014;28(4):601-613.
6. Varghese GM, Abraham OC, Mathai D. Post-exposure prophylaxis for blood borne viral infections in healthcare workers. *Postgrad Med J*. 2003 Jun;79(932):324-8.

7. <http://www.cdc.gov/nhsn/pdfs/hps-manual/exposure3-hps-exposure-options.pdf>
8. <https://aaos.org/globalassets/about/bylaws-library/information-statements/1018-preventing-the-transmission-of-bloodborne-pathogens.pdf>
9. <https://www.who.int/bulletin/volumes/95/12/17-19735/en/>
10. Kumar A, Ratnaprabha GK. Awareness about HIV and post exposure prophylaxis among students of a nursing college from central Karnataka: a cross sectional study. *Int J Community Med Public Health* 2019;6:303-7.
11. Sharma K, Adhikari S. Nurses' knowledge on post exposure prophylaxis for hepatitis b virus infection in tertiary care hospital. *Journal of Chitwan Medical College*. 2019; 9(28):72-78.
12. Sharma SK, *Nursing Research And Statistics*, published by Reed Elsevier Pvt, Ltd, New Delhi, second edition, 2014,p.124
13. <https://sphweb.bumc.bu.edu/otlt/mphmodules/sb/behavioralchanhetheories/behavioralchangetheories2.html>
14. <https://courses.lumenlearning.com/sunybuffeloenvironmentalhealth/chapter/components-of-the-model/>
15. Sharma A,. knowledge among nursing students of blood borne viruses and practice to prevent transmission.sljid2017.vol.7(2):100-105
16. Arafa AE, Mohamed AA, Anwar MM. Nurses' knowledge and practice of blood-borne pathogens and infection control measures in selected Beni-Suef Hospitals Egypt. *J Egypt Public Health Assoc*. 2016 Sep;91(3):120-126.
17. Marusic V, Markovic-Denic L, Djuric O, Protic D, Dubljanin-Raspopovic E. Knowledge about Blood-borne Pathogens and the Prevalence of Needle Stick Injuries among Medical Students in Serbia. *Zdr Varst*. 2017 May 26;56(3):179-184.
18. Trivedi A, Kasar PK, Tiwari R, Verma P, Sharma A. An Educational Interventional Programme for Prevention and Management of Needle Stick Injuries among Nursing Students at a Tertiary Care Hospital, Jabalpur, Madhya Pradesh. *Natl J Community Med* 2013; 4(1): 132-6.
19. Butsashvili M, Kamkamidze G, Kajaia M, Morse DL, Triner W, Dehovitz J, McNutt LA. Occupational exposure to body fluids among health care workers in Georgia. *Occup Med (Lond)*. 2012 Dec;62(8):620-6.
20. Singru SA, Banerjee A. Occupational exposure to blood and body fluids among health care workers in a teaching hospital in mumbai, India. *Indian J Community Med*. 2008;33(1):26-30.

21. Kajal Srivastava , Vaishali Kumar , Parul Sharma , J.S.Bhawalkar, Shaily Vyas. Is the awareness regarding post exposure prophylaxis of blood borne infections among nurses in a tertiary health care setting still poor?:Necessity and Challenge. *Nat J Res Community Med* 2018;7(3):212-15.
22. Anjana A. P., Joseph, G., and A.Valsan, R., “Assessment of Knowledge Regarding Post Exposure Prophylaxis Following Needle Stick Injury among B. Sc. Nursing Students”, *Indian Journal of Public Health Research & Development* 2018 :9(4):6-10
23. kiranmayi K, A study to assess the knowledge about post exposure prophylaxis of HIV infection among IV year B.Sc nursing students studying in government college of nursing, Kurnool, Andhra Pradesh ,India. *IJAR* 2018;4(12):30-34
24. Thapa, M., & Gurung, B., Knowledge on Post Exposure Prophylaxis of HIV among Nurses in a Hospital of Pokhara. *Janapriya Journal of Interdisciplinary Studies* 2018; 7(1): 57-66.
25. Kumar A, Ratnaprabha GK. Awareness about HIV and post exposure prophylaxis among students of a nursing college from central Karnataka: a cross sectional study. *Int J Community Med Public Health* 2019;6(1):303-7.
26. Konlan, K.D., Aarah-Bapuah, M., Kombat, J.M. *et al.* The level of nurses' knowledge on occupational post exposure to hepatitis B infection in the Tamale metropolis, Ghana. *BMC Health Serv Res* (2017) 17: 254 .
27. Ngwa CH, Ngoh EA, Cumber SN. Assessment of the knowledge, attitude and practice of health care workers in Fako Division on post exposure prophylaxis to blood borne viruses: a hospital based cross-sectional study. *Pan Afr Med J.* 2018 Oct 12;31:108.
28. Mercy Okoh & Birch Dauda Saheeb, Assessment of knowledge, attitude and practice of post-exposure prophylaxis against blood-borne viral infection among dental surgeons in a teaching hospital, *Southern African Journal of Infectious Diseases*, 2017; 32(1): 17-22.
29. Rangari A, A. cross sectional study regarding knowledge, attitude and practice of post exposure prophylaxis on occupational/accidental exposure among health care workers/providers at a tertiary care hospital in western uttar Pradesh of India. *Int .J.Curr .Microbiol.APP.sci* 2015;4(12):445-453.
30. Singh RK, Kumar M, Rawat C.M.S, Rawat V. Awareness and practice of post-exposure prophylaxis (PEP) of HIV among health-care workers in tertiary care hospital of Haldwani, Nainital, Uttarakhand, India. *Int J Med Sci Public Health* 2015;4:977-981.
31. Dhital PS, Sharma S, Poudel P, Dhital PR. Knowledge regarding postexposure prophylaxis of HIV among nurses. *Nursing: Research and Reviews.* 2017;7:45-50



32. Baheti, Akshay & Tullu, Milind & Lahiri, Keya. (2010). Awareness of Health Care Workers Regarding Prophylaxis for Prevention of Transmission of Blood-Borne Viral Infections in Occupational Exposures. *Al Ameen Journal of Medical Sciences*.2010;3(1):79-83.
33. Dr. kshirsagar R, Dr. pandev, effect of training on awareness about PEP against HIV, HBV and HCV among dental and nursing students.*jmscr*.2020;8(1): 755-762.
34. Dixit S, Khatri AK, Taneja G, Saroshe S, Baghel SS, Jaiswal S, Soni S, Sengar SS. Impact of Educational Intervention Measures on Knowledge regarding HIV/ Occupational Exposure and Post Exposure Prophylaxis among Final Year Nursing Students of a Tertiary Care Hospital in Central India. *Online J Health Allied Scs*. 2009;8(4):6

## ANNEXURE-I



स्टेट कॉलेज ऑफ नर्सिंग, 107 चन्दर नगर, देहरादून।  
STATE COLLEGE OF NURSING, 107  
Ph-01352522933 E-Mail: [scn@scn.ac.in](mailto:scn@scn.ac.in)

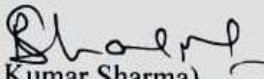
ANNEXURE IETHICAL CLEARANCE CERTIFICATE

State College of Nursing  
107 Chander Nagar Dehradun  
To whomso ever it may concern

This is to certify that research project entitled “A study to assess the effectiveness of health awareness programme regarding knowledge on post exposure prophylaxis (PEP) to blood borne pathogens among student nurses of selected school of Nursing, Dehradun, Uttarakhand” is going to be started in this institute by Suricha. This project was placed before the institutional Ethical Committee and has been approved as there is no objection for holding this research project work.

Place : Dehradun

Dated : Oct 2020

  
(Ram Kumar Sharma)  
Principal

**ANNEXURE-II****TOOL VALIDATION CERTIFICATE**

I have certify that I have validated the tool of Mrs. Suricha M.sc Nursing 2<sup>nd</sup> year. Student of state college of nursing who is undertaking the following study.

Topic “A study to assess the effectiveness of health awareness programme regarding knowledge on post exposure prophylaxis (PEP) to blood borne pathogens among student nurses of selected school of nursing, Dehradun, Uttarakhand.”

Place

Date

Signature of the expert:

Designation and address:

**ANNEXURE-III****Letter seeking expert's opinion for tool validation**

To

-----

-----

Respected Madam/Sir

**Subject: Request for expert opinion and suggestions to establish content validity of the research tool.**

I Suricha , student of M.Sc. Nursing final year, have selected a topic for my research project which is to be submitted to State College of Nursing in fulfillment of the requirement for Master of Science in Nursing .the statement of my study is “A study to assess the effectiveness of health awareness programme regarding knowledge on post exposure prophylaxis ( PEP) to blood borne pathogens among student nurses of selected school of nursing, Dehradun, Uttarakhand.”

Here I have enclosed

1. Problem statement and objectives of the study, assumption, hypothesis, operational definitions, delimitation, research methodology, inclusion, exclusion criteria.
2. Tool 1- demographic variables of sample
3. Tool 2- self structured knowledge questionnaire
4. Criteria checklist
5. Content validation certificate

I request you to go through the items and give your valuable suggestions and opinions to develop the content validity of the tool. Kindly suggest modifications, additions and deletions, if any, in the remark column.

Thanking you

Place:

Yours sincerely

Suricha

M.sc nursing final year

**ANNEXURE-IV****CERTIFICATE OF VALIDATION**

This is to certify that the tools constructed by Mrs. Suricha, Msc. Nursing 2 nd year student of state college of nursing, Dehradun, Uttarakhand to be used for her research study titled-

A study to assess the effectiveness of health awareness programme regarding knowledge on post exposure prophylaxis (PEP) to blood borne pathogens among student nurses of selected school of nursing, Dehradun, Uttarakhand., have been validated by me.

The tool is-

- 1.Valid for the study
- 2.Valid but modification
- 3.Not valid for study

Signature:

Name:

Designation:

Date:

Place:

CRITERIA CHECK LIST FOR VALIDATION OF THE TOOL

Respected sir / madam

Kindly review the items in the socio-demographic data and self-structured knowledge questionnaire for assessing the effectiveness of health awareness programme regarding knowledge on post exposure prophylaxis (PEP) to blood borne pathogens among student nurses of selected school of nursing, Dehradun, Uttarakhand.

If you agree with the criteria, please place a (✓) mark in the agree column, otherwise place a (✓) mark in the disagree column. Kindly give comments in the remarks column and further suggestions (if any).

Section 1: Socio demographic data

| Question no. | Agree | Disagree | Remarks |
|--------------|-------|----------|---------|
| 1.           |       |          |         |
| 2.           |       |          |         |
| 3.           |       |          |         |
| 4.           |       |          |         |

**Section 2:- Self structured knowledge questionnaire on post exposure prophylaxis( PEP) to blood borne pathogens.**

| Question no. | Agree | Disagree | Remarks |
|--------------|-------|----------|---------|
| 1.           |       |          |         |
| 2.           |       |          |         |
| 3.           |       |          |         |
| 4.           |       |          |         |
| 5.           |       |          |         |
| 6.           |       |          |         |
| 7.           |       |          |         |
| 8.           |       |          |         |
| 9.           |       |          |         |
| 10.          |       |          |         |
| 11.          |       |          |         |
| 12.          |       |          |         |
| 13.          |       |          |         |
| 14.          |       |          |         |
| 15.          |       |          |         |
| 16.          |       |          |         |
| 17.          |       |          |         |
| 18.          |       |          |         |
| 19.          |       |          |         |
| 20.          |       |          |         |
| 21.          |       |          |         |
| 22.          |       |          |         |
| 23.          |       |          |         |
| 24.          |       |          |         |
| 25.          |       |          |         |
| 26.          |       |          |         |
| 27.          |       |          |         |

| Question no. | Agree | Disagree | Remarks |
|--------------|-------|----------|---------|
| 28.          |       |          |         |
| 29.          |       |          |         |
| 30.          |       |          |         |
| 31.          |       |          |         |
| 32.          |       |          |         |
| 33.          |       |          |         |
| 34.          |       |          |         |
| 35.          |       |          |         |
| 36           |       |          |         |

SUGGESTIONS.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....

Signature of the expert

Name.....





स्टेट कॉलेज ऑफ नर्सिंग, 107 चन्दर नगर, देहरादून।

SCON/2010/Edn/28/1324

Dated : 13 August 2020

To,  
The Principal  
SGRR College of Nursing  
Patel Nagar, Dehradun, Uttarakhand

**Subject: Permission to conduct Pilot study & Data Collection on "A study to assess the effectiveness of Health Awareness Programme regarding knowledge on post exposure prophylaxis (PEP) to Blood borne Pathogens among GNM 1<sup>st</sup> year students of selected School of Nursing Dehradun, Uttarakhand"**

Madam/Sir,

This is for your kind information that Ms Suricha of M.sc. Nursing 2<sup>nd</sup> year student of this college is hereby directed to conduct the research study for the topic on "A study to assess the effectiveness of Health Awareness Programme regarding knowledge on post exposure prophylaxis (PEP) to Blood borne Pathogens among GNM 1<sup>st</sup> year students of selected School of Nursing Dehradun"

Therefore, you are requested to kindly accord permission to her for conducting of aforesaid study on the subject so that she will be able to complete her research/thesis in prescribed time.

In view of the above you are once again requested to help the student for completing her research/ Thesis at the earliest.

Thanking you.

Yours Sincerely,

(Ram Kumar Sharma)  
Principal

## ANNEXURE VI



स्टेट कॉलेज ऑफ नर्सिंग, 107 चन्द्र नगर, देहरादून।  
 STATE COLLEGE OF NURSING, 107 CHANDR NAGAR, DEHRADUN.  
 DEHRADUN, UTTARAKHAND - 248007

SCON/2010/Edn/28/ 1325

Dated : 13 August 2020

To,  
 The Principal  
 Sai School of Nursing  
 Rajpur Road, Dehradun, Uttarakhand

**Subject: Permission to conduct a study to assess the effectiveness of Health Awareness Programme regarding knowledge on post exposure prophylaxis (PEP) to Blood borne Pathogens among GNM 1<sup>st</sup> Year Students of Selected School of Nursing Dehradun, Uttarakhand.**

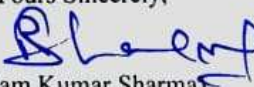
Madam/Sir,

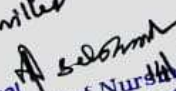
This is for your kind information that Ms. Suricha of Msc.Nursing 2<sup>nd</sup> year student of this college is hereby directed to conduct the research study for the topic "a study to assess the effectiveness of Health Awareness Programme regarding knowledge on post exposure prophylaxis (PEP) to Blood borne Pathogens among GNM 1<sup>st</sup> Year Students of Selected School of Nursing Dehradun, Uttarakhand." Therefore, you are requested to kindly accord permission to her for conducting of aforesaid study on the subject so that she will be able to complete her research/thesis in prescribed time.

In view of the above you are once again requested to help the student for completing her research/ Thesis at the earliest.

Thanking you.

Yours Sincerely,

  
 (Ram Kumar Sharma)  
 Principal

Permitted  
  
 Principal  
 Sai School of Nursing  
 26/26-A, Rajpur Road, Dehradun

**ANNEXURE VII****CONSENT LETTER FROM PARTICIPANT**

Dear respondents

I Suricha student of M.Sc. nursing final year of state college of nursing as a part of fulfillment of the course. I am conducting a research study on the topic.

Topic:

**“A study to assess the effectiveness of health awareness programme regarding knowledge on post exposure prophylaxis (PEP) to blood borne pathogens among students nurses, Dehradun, Uttarakhand”.**

As part of the study, I would like you to answer a questionnaire. I assure you that the information obtained from you will be kept strictly confidential and will be used for the study purpose only.

I accept your whole-hearted co-operation and will be grateful to you for the same.

Yours sincerely

Suricha

M.Sc. Nursing Final Year

**ANNEXURE VIII****LIST OF EXPERTS OF TOOL VALIDATION**

1. Mrs. Asha Gangola

Principal

Govt. college of nursing

Almora, Uttarakhand

2. Dr. C. Vasantha Kalyani

Associate professor

College of nursing

AIIMS, Rishikesh

Uttarakhand

3. Dr. Mrs. Aprana Pandey

Professor

Sahara college of nursing

Lucknow, Uttar Pradesh

4. Mrs. Shaiji M.J.

Assistant professor

Dron college of nursing

Rudrapur, Uttarakhand

**ANNEXURE IX****TOOL FOR DATA COLLECTION****SECTION -1****SOCIODEMOGRAPHIC DATA**

**PLEASE READ THE GIVEN INSTRUCTION CAREFULLY:**

**INSTRUCTION:** This questionnaire related to demographic variables of participants. Respondent are requested to provide information about them and not write their names. Read each question carefully and put tick mark (✓) against the correct answer. You are free to choose any option. All the questions are compulsory. The provider information will be kept confidential and used for research purpose only.

1. Age -

- a. 18-23 ( )
- b. 24-29 ( )
- c. 30-35 ( )

2. Gender -

- a. Male ( )
- b. Female ( )

3. Source of information about post exposure prophylaxis –

- a. Textbook ( )
- b. Peer group ( )
- c. Mass media ( )
- d. Clinical instructor ( )
- e. None of these ( )

4. Previous exposure to needle stick injury -

- a. Yes ( )
- b. No ( )

## SECTION 2

## KNOWLEDGE QUESTIONNAIRE

This section include information regarding the knowledge of selected aspects Post exposure prophylaxis (PEP) to blood borne pathogens. This section is divided into the following parts which contain questions related to:-

**PART I :-** Introduction of blood borne pathogens and post exposure prophylaxis.

**PART II :-** First aid.

**PART III:-** Risk assessment and counseling

**PART IV:-** Relevant laboratory test

**PART V:-** PEP against blood borne pathogens.

**PART VI:-** Follow up and support

**INSTRUCTIONS:-** please read the questions carefully and put tick mark ( ☒ ) against the correct answer. All questions are compulsory. The provider information will be kept confidential and used for research purpose.

**PART 1:- INTRODUCTION OF BLOOD BORNE PATHOGENS AND POST EXPOSURE PROPHYLAXIS.**

1. What do you mean by Blood borne pathogens:-
  - a. Germs that are present in the environment ( ☐ )
  - b. Bacteria that are part of the normal skin flora. ( ☐ )
  - c. Micro-organism that are present in human blood and can cause diseases in humans. ( ☐ )
  - d. Bacteria that are present in everywhere in the body can cause severe sickness.
2. What are most common Blood borne pathogens among the following -
  - a. HIV, hepatitis B and C ( ☐ )
  - b. Haemophilus influenzae, polio and herpes ( ☐ )
  - c. Human papilloma, Ebola and corona ( ☐ )
  - d. Varicella zoster, megavirus and adenovirus ( ☐ )

3. What is the most common way to exposed of blood borne pathogens in clinical setting:-
- a. Contaminated food and water. ( )
  - b. Direct contact with infected person. ( )
  - c. Urine and faeces. ( )
  - d. Percutaneous injury, contact with mucous membrane and non –intact skin. ( )
4. What is Percutaneous exposure -
- a. Contact with the mucous membrane of eye and mouth ( )
  - b. Needle stick injury and cut with sharp instrument ( )
  - c. Contact with non intact skin ( )
  - d. Contact with intact skin ( )
5. Which body fluids are considered as potentially infectious:-
- a. Pleural, peritoneal and pericardial fluid ( )
  - b. Semen, vaginal secretion and cerebrospinal fluid ( )
  - c. Tear, sweat saliva, urine and faeces ( )
  - d. a and b ( )
6. Which body fluid are not considered as potentially infectious unless they contain blood:-
- a. Nasal secretions, saliva, urine and faeces ( )
  - b. Aminiotic, peritoneal and pleural fluid ( )
  - c. Synovial, pericardial and vaginal secretion. ( )
  - d. Cerebrospinal fluid, semen and blood. ( )
7. What is needle stick injury -
- a. Injury from the broken vials and ampules ( )
  - b. Injury while using grasping instrument ( )
  - c. Injury while using hypodermic needle and other needle equipment ( )
  - d. Injury while using rotary instrument ( )
8. What are risk of acquiring HIV, hepatitis C and hepatitis B infection by needle stick injury -
- a. 0.03%, 1.4% and 20% ( )
  - b. 0.3%, 1.8% and 30% ( )
  - c. 3% , 2% and 40% ( )
  - d. 30%, 2. 4% and 50% ( )

9. What is Post exposure prophylaxis :-
- a. Preventive medical treatment started after an exposure ( )
  - b. Preventive method started before an exposure ( )
  - c. Medical treatment for previously infected person ( )
  - d. Personal information about patient ( )
10. What ideal steps should be taken in PEP after an accidental exposure to infected blood and body fluids:-
- a. First aid and risk assessment ( )
  - b. Counseling and relevant laboratory test of source and exposed person. ( )
  - c. Short course of PEP and follow up and support ( )
  - d. All of the above ( )
11. When is Post exposure prophylaxis needed –
- a. When the patient is at high risk for HIV/HBV ( )
  - b. When the patient is known to be HIV/HBV positive ( )
  - c. When the HIV/HBV status of the source person is unknown ( )
  - d. when person exposed with needle stick injury in the workplace ( )
12. After how long will PEP not be effective –
- a. 12 hours ( )
  - b. 24hours ( )
  - c. 48 hours ( )
  - d. 72hours ( )
13. What is percentages of the effectiveness of PEP-
- a. 20-30% ( )
  - b. 30-50% ( )
  - c. 60-70% ( )
  - d. More than 80% ( )

## PART 2 :- FIRST AID

14. What immediate measure should be taken after needle stick injury-
- a. Wash the site with soap and running water ( )
  - b. Clean the site with alcohol/betadine ( )
  - c. Squeeze the wound site and wash with water ( )
  - d. No measure taken ( )



15. What immediate action should be taken when blood and body fluids contact with mucous membrane of the eye :-
- a. use soap and disinfectant on the eye. ( )
  - b. Irrigate exposed eye immediately with water or normal saline. ( )
  - c. Rub the eye ( )
  - d. Inform to ward incharge ( )
16. What actions should be avoided after an accidental exposure with infected blood and body fluids.
- a. Use antiseptics ( )
  - b. Put the prick finger in the mouth and rub the eye. ( )
  - c. Squeeze the wound to bleed it. ( )
  - d. All of the above. ( )
17. At what time you should report after accidental exposure to infected blood and body fluids:-
- a. Within 1-2 hours ( )
  - b. 24-48 hours ( )
  - c. 48-72 hours ( )
  - d. Within 72 hours ( )
18. Who should you report after an accidental exposure -
- a. Ward incharge ( )
  - b. Clinical nursing students group ( )
  - c. Emergency Medical officer / infection control officer ( )
  - d. Staff nurse ( )

### **PART 3:- RISK ASSESSMENT AND COUNSELING.**

19. On what basis would you evaluated exposed person for risk assessment.:-
- a. Type of exposure and status of source patient ( )
  - b. Body weight and height of patient ( )
  - c. Haemoglobin less than 10 gm per dl ( )
  - d. Patient with coagulation disorder ( )

20. A superficial wound with small bore needles is example :-

- a. Mild exposure ( )
- b. Moderate exposure ( )
- c. Severe exposure ( )
- d. None of the above ( )

21. Which following is an example of Moderate exposure :-

- a. Mucous membrane and non- intact skin with small volume ( )
- b. Percutaneous superficial exposure with solid needle ( )
- c. A deep wound with large bore needle > 18 G contaminated with blood ( )
- d. Subcutaneous injection following small bore needle ( )

22. What is example of severe exposure :-

- a. Mucous membrane of eye contaminated with small volume of blood and body fluid ( )
- b. Cut or needle stick injury penetrating gloves ( )
- c. A deep wound with contaminated large bore needle ( )
- d. None of these ( )

23. who are eligible for PEP :-

- a. Person Exposed with contaminated fluid and occur within the past 72 hours.( )
- b. Exposed person not know to be infected with HIV, HBV previously. ( )
- c. Source person is infected or the status is unknown. ( )
- d. All of the above ( )

24. Why is counseling required to exposed person :-

- a. To Reduce anxiety and psychological support ( )
- b. To increased self esteem ( )
- c. To Minimize the risk of transmission ( )
- d. To Improved decision- making ( )

#### **PART 4:- RELEVANT LABORATORY TEST.**

25. What Baseline test should be done of unknown source person -

- a. HIV antibody ( )
- b. Hepatitis B antigen ( )
- c. Hepatitis C antibody ( )
- d. All of the above ( )

26. What are baseline test recommended to exposed person:-

- a. Complete blood count, platelets and liver function test ( )
- b. Serological test for HIV, HBV and HCV and urea , creatinine ( )
- c. Blood Culture test ( )
- d . a and b ( )

#### **PART 5:- PEP AGAINST BLOOD BORNE PATHOGENS.**

27. Which measure is used in PEP against HIV -

- a. Dots therapy ( )
- b. Hepatitis B vaccine / immunoglobulin ( )
- c. Antiretroviral therapy ( )
- d. antifungal ( )

28. How does PEP work -

- a. Engulfing the virus ( )
- b. Stop the virus from multiplication ( )
- c. Releasing toxins against the virus ( )
- d. Creating unfavorable environment to the virus ( )

29. which type of drug regimen is used in PEP-

- a. Basic regimen – 2 drug combination ( )
- b. Extended regimen - 3 drug combination ( )
- c. A and b both ( )
- d. None of the above ( )

30. What is the recommended duration of PEP for HIV.

- a. For 28 days ( )
- b. For 40 days ( )
- c. For 6 months ( )
- d. For life time ( )

31. what is the recommendation for PEP against hepatitis B virus:-

- a. ART therapy ( )
- b. HBV vaccine and hepatitis B immunoglobulin. ( )
- c. Antibiotics ( )
- d. Anthelmintic ( )

32. What should be advised to a health care worker who is vaccinated against hepatitis B and get needle stick injury from a hepatitis B positive patient.
- a. Find the anti HBs antibody titre of the positive patient. ( )
  - b. Find the anti HBs antibody titre of the health care worker. ( )
  - c. Advice for Post exposure prophylaxis ( )
  - d. a and b both ( )
33. what should be advised to health care worker who is not vaccinated against hepatitis B and get needle stick injury from hepatitis B positive patient.
- a. hepatitis B immunoglobulin vaccine ( )
  - b. hepatitis B vaccine and complete course of 3 doses ( )
  - c. a and b both ( )
  - d. find the anti HBs antibody titre of the health care worker ( )

#### **PART6:- FOLLOW UP AND SUPPORT**

34. What is Time schedule of HIV testing after an exposure -
- a. 6 weeks , 3 months and 6 months ( )
  - b. 3months 5 months and 8 months ( )
  - c. 1 month, 3months and 6 months ( )
  - d. 4 months , 8months and 12 months ( )
35. What is the recommended time for hepatitis B test after completion of vaccine series:-
- a. 1-2 months ( )
  - b. 2-3 months ( )
  - c. 3-4 months ( )
  - d. 4-5 months ( )
36. What advice should be given to exposed person: -
- a. Special leave from work ( )
  - b. To avoid blood and tissue donation, pregnancy and breastfeeding. ( )
  - c. Follow the recommended test schedule. ( )
  - d. All of the above ( )

**SCORE: - KNOWLEDGE LEVEL****1-12 - Poor****13-24 - Average****25-36 - Good****ANNEXURE X****ANSWER SHEET**

| <b>PART I</b><br><b>( Q. 1-13 )</b> |            | <b>PART II</b><br><b>(Q.14-18)</b> |            | <b>PART III</b><br><b>(Q.19-24 )</b> |            | <b>PART IV</b><br><b>(Q. 25, 26)</b> |            | <b>PART V</b><br><b>( Q.27-35 )</b> |            | <b>PART VI</b><br><b>( Q.36-38)</b> |            |
|-------------------------------------|------------|------------------------------------|------------|--------------------------------------|------------|--------------------------------------|------------|-------------------------------------|------------|-------------------------------------|------------|
| <b>Q.</b>                           | <b>ANS</b> | <b>Q.</b>                          | <b>ANS</b> | <b>Q.</b>                            | <b>ANS</b> | <b>Q.</b>                            | <b>ANS</b> | <b>Q.</b>                           | <b>ANS</b> | <b>Q.</b>                           | <b>ANS</b> |
| 1.                                  | c          | 14.                                | a          | 19.                                  | a          | 25.                                  | d          | 27.                                 | c          | 34.                                 | a          |
| 2.                                  | a          | 15.                                | b          | 20.                                  | a          | 26.                                  | d          | 28.                                 | b          | 35.                                 | a          |
| 3.                                  | d          | 16.                                | d          | 21.                                  | b          |                                      |            | 29.                                 | c          | 36.                                 | d          |
| 4.                                  | b          | 17.                                | a          | 22.                                  | c          |                                      |            | 30.                                 | a          |                                     |            |
| 5.                                  | d          | 18.                                | c          | 23.                                  | d          |                                      |            | 31.                                 | b          |                                     |            |
| 6.                                  | a          |                                    |            | 24.                                  | a          |                                      |            | 32.                                 | b          |                                     |            |
| 7.                                  | c          |                                    |            |                                      |            |                                      |            | 33.                                 | c          |                                     |            |
| 8.                                  | b          |                                    |            |                                      |            |                                      |            |                                     |            |                                     |            |
| 9.                                  | a          |                                    |            |                                      |            |                                      |            |                                     |            |                                     |            |
| 10.                                 | d          |                                    |            |                                      |            |                                      |            |                                     |            |                                     |            |
| 11.                                 | c          |                                    |            |                                      |            |                                      |            |                                     |            |                                     |            |
| 12.                                 | d          |                                    |            |                                      |            |                                      |            |                                     |            |                                     |            |
| 13.                                 | d          |                                    |            |                                      |            |                                      |            |                                     |            |                                     |            |

**ANNEXURE XI****FORMULA USED**

$$\text{Mean (X)} = \frac{\sum X}{N}$$

$$\text{Mean \%} = \frac{\text{Mean} \times 100}{\text{Maximum Score}}$$

$$\text{chi-square} = \sum \frac{(O - E)^2}{E}$$

$$\text{Test- retest method } r = \frac{N\sum XY - (\sum X)(\sum Y)}{\sqrt{N\sum X^2 - (\sum X)^2} \sqrt{\sum (YY - \bar{Y}^2)}}$$

$$\text{Standard Deviation} = \sqrt{\frac{\sum D^2}{N}}$$

$$df = n-1$$

## ANNEXURE-XII

### INFORMATION BOOKLET

## ANNEXURE-XIII

| MASTER DATA SHEET FOR DEMOGRAPHIC VARIABLES |     |        |                       |                                          |
|---------------------------------------------|-----|--------|-----------------------|------------------------------------------|
| SAMPLE                                      | AGE | GENDER | SOURCE OF INFORMATION | PREVIOUS EXPOSURE TO NEEDLE STICK INJURY |
| 1                                           | A   | B      | D                     | A                                        |
| 2                                           | A   | B      | E                     | B                                        |
| 3                                           | A   | B      | E                     | B                                        |
| 4                                           | A   | B      | C                     | A                                        |
| 5                                           | A   | B      | B                     | B                                        |
| 6                                           | B   | B      | C                     | B                                        |
| 7                                           | A   | B      | D                     | A                                        |
| 8                                           | A   | A      | E                     | B                                        |
| 9                                           | A   | B      | C                     | B                                        |
| 10                                          | A   | B      | E                     | B                                        |
| 11                                          | B   | B      | D                     | A                                        |
| 12                                          | A   | B      | E                     | A                                        |
| 13                                          | A   | B      | D                     | A                                        |
| 14                                          | A   | B      | E                     | A                                        |
| 15                                          | A   | B      | E                     | A                                        |
| 16                                          | A   | B      | A                     | A                                        |
| 17                                          | A   | B      | D                     | B                                        |
| 18                                          | B   | B      | D                     | A                                        |
| 19                                          | B   | B      | B                     | A                                        |
| 20                                          | A   | B      | D                     | B                                        |
| 21                                          | A   | B      | A                     | A                                        |
| 22                                          | B   | B      | C                     | B                                        |
| 23                                          | A   | A      | D                     | B                                        |
| 24                                          | A   | B      | A                     | B                                        |
| 25                                          | C   | B      | A                     | B                                        |
| 26                                          | A   | B      | A                     | A                                        |
| 27                                          | A   | B      | C                     | B                                        |
| 28                                          | A   | A      | B                     | B                                        |
| 29                                          | A   | B      | A                     | B                                        |
| 30                                          | A   | A      | E                     | B                                        |
| 31                                          | A   | B      | E                     | A                                        |
| 32                                          | A   | B      | E                     | A                                        |
| 33                                          | A   | B      | D                     | B                                        |
| 34                                          | A   | A      | A                     | B                                        |
| 35                                          | A   | B      | E                     | B                                        |
| 36                                          | A   | B      | D                     | B                                        |
| 37                                          | A   | B      | C                     | B                                        |
| 38                                          | B   | B      | D                     | B                                        |
| 39                                          | A   | B      | A                     | B                                        |
| 40                                          | A   | B      | E                     | B                                        |
| 41                                          | A   | B      | D                     | B                                        |
| 42                                          | A   | B      | E                     | B                                        |
| 43                                          | A   | B      | A                     | B                                        |
| 44                                          | A   | A      | E                     | B                                        |
| 45                                          | B   | B      | E                     | B                                        |
| 46                                          | A   | B      | D                     | B                                        |
| 47                                          | A   | A      | A                     | B                                        |
| 48                                          | A   | A      | E                     | B                                        |
| 49                                          | A   | A      | E                     | B                                        |
| 50                                          | A   | A      | E                     | B                                        |
| 51                                          | A   | B      | B                     | B                                        |
| 52                                          | A   | B      | A                     | B                                        |
| 53                                          | A   | B      | E                     | B                                        |
| 54                                          | B   | B      | C                     | B                                        |
| 55                                          | C   | B      | E                     | A                                        |
| 56                                          | A   | B      | D                     | B                                        |
| 57                                          | A   | B      | E                     | B                                        |
| 58                                          | A   | B      | D                     | B                                        |
| 59                                          | A   | B      | E                     | B                                        |
| 60                                          | A   | B      | E                     | B                                        |

MASTER DATA SHEET FOR POST EXPOSURE PROPHYLAXIS TO BLOOD BORNE  
PATHOGENS (PRE-TEST)

| Sample | Q1 | Q2 | Q3 | Q4 | Q5 | Q6 | Q7 | Q8 | Q9 | Q10 | Q11 | Q12 | Q13 | Q14 | Q15 | Q16 | Q17 | Q18 | Q19 | Q20 | Q21 | Q22 | Q23 | Q24 | Q25 | Q26 | Q27 | Q28 | Q29 | Q30 | Q31 | Q32 | Q33 | Q34 | Q35 | Q36 | Total |    |    |
|--------|----|----|----|----|----|----|----|----|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-------|----|----|
| 1      | 1  | 0  | 0  | 1  | 0  | 0  | 0  | 0  | 0  | 0   | 1   | 0   | 0   | 0   | 1   | 0   | 0   | 0   | 0   | 0   | 1   | 0   | 0   | 0   | 0   | 0   | 1   | 0   | 1   | 0   | 1   | 0   | 0   | 1   | 1   | 0   | 10    |    |    |
| 2      | 1  | 1  | 1  | 1  | 1  | 0  | 0  | 0  | 0  | 0   | 1   | 0   | 0   | 1   | 1   | 1   | 1   | 1   | 0   | 0   | 0   | 0   | 1   | 1   | 1   | 0   | 1   | 0   | 1   | 1   | 0   | 1   | 0   | 0   | 1   | 0   | 1     | 18 |    |
| 3      | 1  | 1  | 1  | 1  | 1  | 0  | 0  | 0  | 0  | 0   | 1   | 0   | 0   | 1   | 1   | 1   | 1   | 1   | 0   | 0   | 0   | 0   | 1   | 1   | 1   | 1   | 0   | 1   | 1   | 0   | 1   | 0   | 0   | 0   | 1   | 1   | 1     | 19 |    |
| 4      | 1  | 1  | 0  | 1  | 1  | 1  | 1  | 0  | 0  | 1   | 1   | 1   | 1   | 0   | 0   | 0   | 1   | 0   | 1   | 0   | 0   | 0   | 1   | 0   | 0   | 0   | 0   | 1   | 0   | 0   | 0   | 0   | 1   | 0   | 1   | 1   | 1     | 17 |    |
| 5      | 0  | 1  | 1  | 0  | 1  | 1  | 1  | 0  | 0  | 1   | 0   | 0   | 0   | 0   | 1   | 1   | 1   | 0   | 0   | 0   | 0   | 1   | 0   | 0   | 0   | 0   | 0   | 1   | 0   | 1   | 0   | 0   | 0   | 0   | 0   | 0   | 0     | 12 |    |
| 6      | 1  | 1  | 0  | 1  | 0  | 1  | 1  | 0  | 1  | 0   | 0   | 1   | 1   | 1   | 1   | 1   | 1   | 0   | 1   | 0   | 0   | 1   | 1   | 1   | 1   | 0   | 1   | 1   | 1   | 1   | 1   | 1   | 0   | 1   | 1   | 1   | 1     | 26 |    |
| 7      | 1  | 1  | 0  | 0  | 0  | 1  | 1  | 0  | 0  | 0   | 1   | 1   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 1   | 0   | 0   | 0   | 1   | 1   | 1   | 0   | 1   | 1   | 0   | 1   | 1   | 0   | 0   | 0   | 1   | 0     | 1  | 15 |
| 8      | 0  | 1  | 0  | 0  | 1  | 0  | 0  | 0  | 0  | 0   | 0   | 0   | 0   | 1   | 1   | 0   | 0   | 0   | 0   | 1   | 0   | 1   | 1   | 0   | 0   | 0   | 0   | 1   | 0   | 1   | 1   | 0   | 0   | 1   | 0   | 1   | 0     | 12 |    |
| 9      | 1  | 1  | 0  | 1  | 0  | 1  | 0  | 0  | 0  | 1   | 1   | 1   | 0   | 1   | 0   | 0   | 0   | 1   | 0   | 1   | 0   | 0   | 0   | 1   | 1   | 1   | 0   | 1   | 0   | 1   | 1   | 0   | 0   | 0   | 0   | 0   | 0     | 16 |    |
| 10     | 0  | 1  | 1  | 1  | 1  | 1  | 0  | 1  | 1  | 1   | 0   | 1   | 0   | 1   | 0   | 0   | 1   | 0   | 1   | 0   | 0   | 0   | 0   | 1   | 1   | 1   | 0   | 0   | 1   | 0   | 1   | 0   | 0   | 1   | 0   | 1   | 1     | 19 |    |
| 11     | 1  | 1  | 0  | 0  | 1  | 0  | 1  | 0  | 0  | 1   | 0   | 0   | 0   | 0   | 1   | 1   | 1   | 0   | 0   | 0   | 0   | 0   | 1   | 0   | 1   | 1   | 0   | 0   | 1   | 0   | 1   | 0   | 0   | 0   | 1   | 1   | 1     | 15 |    |
| 12     | 1  | 1  | 0  | 1  | 0  | 0  | 1  | 0  | 1  | 0   | 1   | 1   | 0   | 1   | 1   | 0   | 1   | 0   | 0   | 0   | 0   | 0   | 0   | 1   | 0   | 1   | 0   | 1   | 0   | 1   | 1   | 0   | 0   | 0   | 0   | 1   | 1     | 16 |    |
| 13     | 1  | 1  | 0  | 1  | 0  | 0  | 1  | 1  | 0  | 0   | 0   | 0   | 0   | 0   | 1   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 1   | 0   | 0   | 0   | 1   | 1   | 0   | 0   | 0   | 1   | 1   | 1   | 0     | 12 |    |
| 14     | 0  | 1  | 0  | 1  | 1  | 0  | 0  | 1  | 0  | 1   | 0   | 1   | 1   | 0   | 1   | 0   | 1   | 1   | 0   | 0   | 0   | 0   | 0   | 0   | 1   | 1   | 1   | 0   | 1   | 1   | 1   | 1   | 0   | 1   | 0   | 1   | 0     | 19 |    |
| 15     | 0  | 1  | 0  | 1  | 1  | 0  | 0  | 1  | 0  | 1   | 0   | 1   | 1   | 0   | 1   | 0   | 1   | 1   | 0   | 0   | 0   | 0   | 0   | 0   | 1   | 0   | 1   | 0   | 1   | 0   | 1   | 1   | 0   | 1   | 0   | 1   | 0     | 17 |    |
| 16     | 1  | 1  | 0  | 1  | 1  | 1  | 1  | 1  | 0  | 1   | 0   | 0   | 0   | 0   | 0   | 1   | 1   | 1   | 1   | 0   | 0   | 0   | 0   | 0   | 0   | 1   | 1   | 0   | 0   | 1   | 0   | 1   | 0   | 1   | 1   | 0   | 1     | 18 |    |
| 17     | 1  | 1  | 0  | 0  | 1  | 1  | 0  | 1  | 0  | 1   | 0   | 0   | 0   | 1   | 1   | 1   | 1   | 1   | 1   | 0   | 0   | 1   | 1   | 1   | 1   | 1   | 0   | 1   | 1   | 1   | 1   | 0   | 1   | 0   | 1   | 1   | 24    |    |    |
| 18     | 1  | 1  | 1  | 1  | 1  | 1  | 0  | 0  | 0  | 1   | 1   | 1   | 1   | 1   | 1   | 0   | 1   | 1   | 1   | 0   | 0   | 0   | 1   | 1   | 1   | 1   | 0   | 1   | 1   | 1   | 0   | 1   | 0   | 1   | 1   | 1   | 1     | 26 |    |
| 19     | 1  | 1  | 1  | 1  | 0  | 0  | 1  | 1  | 1  | 0   | 0   | 0   | 1   | 1   | 1   | 0   | 0   | 1   | 1   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 1   | 1   | 0   | 1   | 1   | 0   | 1   | 0   | 1   | 1     | 19 |    |
| 20     | 1  | 0  | 1  | 0  | 1  | 0  | 0  | 0  | 1  | 1   | 0   | 1   | 1   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 1   | 0   | 1   | 1   | 0   | 0   | 1   | 0   | 0   | 0   | 1   | 0   | 0   | 0     | 12 |    |
| 21     | 1  | 1  | 0  | 1  | 1  | 0  | 1  | 1  | 0  | 1   | 0   | 1   | 1   | 0   | 1   | 0   | 1   | 1   | 0   | 0   | 0   | 0   | 1   | 1   | 1   | 1   | 0   | 1   | 1   | 0   | 1   | 0   | 0   | 0   | 0   | 1   | 20    |    |    |
| 22     | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 0  | 1  | 1   | 0   | 1   | 1   | 1   | 1   | 0   | 0   | 1   | 1   | 0   | 0   | 1   | 0   | 1   | 0   | 1   | 1   | 0   | 1   | 0   | 1   | 1   | 1   | 1   | 0   | 1   | 25    |    |    |
| 23     | 1  | 1  | 0  | 0  | 0  | 0  | 1  | 0  | 1  | 0   | 0   | 1   | 1   | 1   | 1   | 0   | 0   | 1   | 1   | 0   | 0   | 0   | 0   | 0   | 1   | 0   | 1   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 1   | 1   | 1     | 15 |    |
| 24     | 1  | 1  | 1  | 0  | 1  | 0  | 1  | 0  | 1  | 1   | 0   | 0   | 0   | 1   | 0   | 0   | 0   | 1   | 1   | 1   | 0   | 0   | 0   | 0   | 0   | 1   | 1   | 1   | 0   | 1   | 0   | 0   | 0   | 1   | 0   | 0   | 1     | 17 |    |
| 25     | 1  | 0  | 0  | 0  | 1  | 0  | 0  | 0  | 0  | 0   | 1   | 0   | 0   | 1   | 1   | 0   | 0   | 1   | 0   | 1   | 0   | 0   | 1   | 1   | 0   | 0   | 1   | 0   | 0   | 1   | 0   | 0   | 0   | 0   | 0   | 0   | 1     | 12 |    |
| 26     | 1  | 1  | 0  | 0  | 0  | 1  | 1  | 0  | 1  | 1   | 0   | 1   | 1   | 1   | 1   | 0   | 1   | 1   | 0   | 0   | 1   | 0   | 1   | 0   | 1   | 1   | 0   | 1   | 1   | 1   | 1   | 1   | 0   | 0   | 1   | 0   | 0     | 21 |    |
| 27     | 1  | 1  | 0  | 0  | 0  | 1  | 0  | 1  | 0  | 0   | 0   | 1   | 1   | 1   | 0   | 0   | 1   | 0   | 1   | 0   | 0   | 0   | 0   | 0   | 1   | 0   | 1   | 1   | 1   | 0   | 1   | 0   | 0   | 0   | 1   | 1   | 1     | 17 |    |
| 28     | 1  | 1  | 0  | 1  | 0  | 1  | 1  | 1  | 0  | 0   | 0   | 1   | 1   | 1   | 0   | 0   | 1   | 1   | 0   | 0   | 1   | 0   | 0   | 0   | 1   | 0   | 0   | 1   | 1   | 0   | 1   | 0   | 0   | 1   | 1   | 1   | 1     | 19 |    |
| 29     | 1  | 1  | 0  | 1  | 0  | 1  | 1  | 1  | 1  | 0   | 0   | 1   | 1   | 0   | 1   | 0   | 1   | 1   | 1   | 1   | 1   | 1   | 0   | 1   | 0   | 1   | 0   | 1   | 0   | 1   | 0   | 0   | 0   | 1   | 0   | 1   | 22    |    |    |
| 30     | 1  | 1  | 1  | 0  | 0  | 1  | 1  | 1  | 1  | 1   | 0   | 1   | 1   | 1   | 1   | 0   | 0   | 1   | 1   | 0   | 0   | 1   | 1   | 1   | 1   | 1   | 1   | 1   | 1   | 1   | 1   | 1   | 1   | 0   | 1   | 1   | 1     | 28 |    |
| 31     | 1  | 1  | 1  | 1  | 0  | 1  | 1  | 1  | 1  | 0   | 0   | 1   | 1   | 1   | 1   | 0   | 0   | 1   | 1   | 0   | 0   | 0   | 1   | 1   | 1   | 1   | 1   | 0   | 1   | 0   | 1   | 1   | 0   | 0   | 1   | 0   | 23    |    |    |
| 32     | 0  | 1  | 0  | 1  | 1  | 1  | 1  | 1  | 1  | 1   | 1   | 1   | 1   | 1   | 0   | 0   | 1   | 1   | 1   | 1   | 0   | 0   | 1   | 0   | 1   | 1   | 1   | 1   | 1   | 1   | 0   | 1   | 0   | 0   | 1   | 1   | 26    |    |    |
| 33     | 1  | 1  | 1  | 0  | 0  | 1  | 1  | 0  | 1  | 0   | 0   | 0   | 1   | 1   | 1   | 0   | 0   | 1   | 1   | 0   | 1   | 1   | 0   | 0   | 1   | 0   | 0   | 1   | 0   | 0   | 1   | 1   | 0   | 1   | 0   | 1   | 0     | 19 |    |
| 34     | 1  | 1  | 0  | 1  | 1  | 1  | 0  | 1  | 1  | 1   | 0   | 1   | 1   | 1   | 1   | 0   | 0   | 1   | 0   | 0   | 0   | 0   | 0   | 1   | 0   | 1   | 1   | 0   | 1   | 0   | 1   | 0   | 1   | 0   | 0   | 1   | 1     | 22 |    |
| 35     | 1  | 1  | 0  | 1  | 1  | 0  | 1  | 0  | 1  | 1   | 0   | 0   | 1   | 0   | 1   | 0   | 0   | 1   | 1   | 1   | 0   | 0   | 1   | 0   | 0   | 1   | 0   | 0   | 1   | 1   | 0   | 0   | 1   | 0   | 0   | 1   | 0     | 18 |    |
| 36     | 1  | 1  | 0  | 1  | 0  | 1  | 1  | 0  | 1  | 0   | 1   | 1   | 1   | 1   | 0   | 1   | 0   | 1   | 1   | 1   | 1   | 1   | 1   | 0   | 1   | 1   | 1   | 1   | 1   | 0   | 1   | 1   | 1   | 0   | 1   | 1   | 27    |    |    |
| 37     | 1  | 1  | 0  | 0  | 1  | 1  | 0  | 0  | 1  | 0   | 0   | 1   | 1   | 1   | 1   | 0   | 0   | 1   | 1   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 1   | 0   | 1   | 1   | 1   | 0   | 0   | 1   | 0   | 0   | 16    |    |    |
| 38     | 1  | 1  | 0  | 1  | 0  | 1  | 0  | 1  | 1  | 0   | 0   | 0   | 1   | 1   | 1   | 0   | 1   | 0   | 1   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 1   | 1   | 0   | 0   | 1   | 1   | 0   | 1   | 0   | 1     | 18 |    |
| 39     | 0  | 1  | 0  | 0  | 0  | 1  | 1  | 0  | 1  | 0   | 0   | 1   | 1   | 0   | 0   | 1   | 0   | 1   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 1   | 1   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 1   | 1     | 12 |    |
| 40     | 1  | 1  | 0  | 0  | 0  | 1  | 1  | 1  | 0  | 1   | 0   | 0   | 1   | 0   | 0   | 1   | 1   | 0   | 1   | 0   | 0   | 0   | 1   | 1   | 1   | 0   | 1   | 0   | 1   | 0   | 1   | 0   | 1   | 0   | 1   | 1   | 1     | 19 |    |
| 41     | 1  | 1  | 0  | 1  | 0  | 1  | 1  | 0  | 1  | 0   | 0   | 1   | 1   | 1   | 1   | 0   | 1   | 1   | 1   | 1   | 1   | 1   | 1   | 1   | 1   | 1   | 0   | 0   | 1   | 1   | 1   | 1   | 0   | 1   | 0   | 1   | 25    |    |    |
| 42     | 1  | 1  | 0  | 0  | 0  | 1  | 1  | 0  | 1  | 1   | 0   | 0   | 1   | 1   | 0   | 0   | 1   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 1   | 1   | 1   | 0   | 1   | 0   | 1   | 1   | 0   | 1   | 0   | 1   | 0     | 17 |    |
| 43     | 0  | 0  | 0  | 0  | 0  | 1  | 0  | 0  | 1  | 0   | 1   | 0   | 0   | 0   | 1   | 0   | 0   | 0   | 1   | 0   | 1   | 0   | 1   | 0   | 1   | 0   | 0   | 0   | 1   | 0   | 1   | 0   | 0   | 0   | 0   | 1   | 1     | 11 |    |
| 44     | 0  | 1  | 1  | 1  | 0  | 1  | 0  | 1  | 0  | 0   | 1   | 0   | 0   | 1   | 0   | 1   | 0   | 1   | 0   | 0   | 1   | 0   | 0   | 0   | 1   | 1   | 0   | 0   | 1   | 1   | 1   | 0   | 1   | 0   | 0   | 1   | 1     | 19 |    |
| 45     | 1  | 0  | 1  | 0  | 0  | 0  | 1  | 0  | 0  | 1   | 0   | 1   | 1   | 0   | 1   | 0   | 1   | 1   | 0   | 0   | 1   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 1   | 0   | 0   | 0   | 0   | 1   | 0   | 0   | 0     | 12 |    |
| 46     | 1  | 1  | 0  | 1  | 1  | 1  | 0  | 0  | 1  | 1   | 0   | 0   | 1   | 0   | 1   | 0   | 1   | 1   | 0   | 0   | 1   | 1   | 0   | 0   | 0   | 0   | 0   | 0   | 1   | 1   | 1   | 0   | 0   | 1   | 1   | 0   | 0     | 18 |    |
| 47     | 1  | 1  | 0  | 1  | 1  | 1  | 1  | 0  | 1  | 0   | 0   | 1   | 1   | 1   | 1   | 0   | 1   | 0   | 1   | 0   | 1   | 1   | 0   | 1   | 0   | 1   | 0   | 1   | 1   | 1   | 1   | 1   | 0   | 1   | 1   | 1   | 1     | 25 |    |
| 48     | 1  | 1  | 0  | 1  | 0  | 1  | 1  | 0  | 1  | 0   | 0   | 1   | 1   | 0   | 1   | 0   | 1   | 1   | 0   | 1   | 0   | 0   | 0   | 0   | 1   | 0   | 0   | 1   | 1   | 0   | 0   | 1   | 0   | 0   | 1   | 0   | 1     | 17 |    |
| 49     | 0  | 1  | 0  | 1  | 1  | 1  | 1  | 0  | 1  | 1   | 0   | 1   | 1   | 0   | 1   | 0   | 1   | 1   | 1   | 1   | 1   | 0   | 1   | 1   | 0   | 0   | 0   | 1   | 1   | 0   | 1   | 0   | 0   | 0   | 0   | 0   | 0     | 20 |    |
| 50     | 1  | 1  | 1  | 1  | 0  | 0  | 1  | 1  | 0  | 1   | 0   | 1   | 1   | 1   | 1   | 0   | 1   | 1   | 1   | 1   | 1   | 0   | 0   | 1   | 1   | 1   | 1   | 1   | 0   | 1   | 1   | 1   | 0   | 1   | 1   | 0   |       |    |    |



## PATHOGENS (POST TEST)

[illegible]