

A Study to Assess the Effectiveness of Structured Teaching Programme on Knowledge and Expressed Practice Regarding Prevention of Nosocomial Infection Among the B.Sc. Nursing 1st Year Students of Jagannath Gupta Institute of Nursing Sciences, Kolkata

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ABSTRACT

The present study was conducted to evaluate the effectiveness of Structured Teaching Programme on knowledge and expressed practice regarding prevention of nosocomial infection among B.Sc. nursing 1st year students. The objectives of the study were to assess the prior knowledge & expressed practice regarding nosocomial infection, to assess effectiveness of structured teaching programme on knowledge and expressed practice regarding nosocomial infection, to associate the pretest knowledge & practice score with selected demographic variables & to determine the correlation between the knowledge and expressed practice score. Pre-experimental one-group pre-test post-test design was used for this study. The main study was carried out at Jagannath Gupta Institute of Nursing Sciences, Kolkata. The sample comprised of 50 students who met the inclusion criteria from the JINS were chosen by random sampling technique. Formal written permission was obtained from the authority to conduct the study. Pretest was conducted using a structured questionnaire & practice checklist. Self-Instructional Modules were given to the samples on that day. Post-test was conducted on 7th day after the pre-test by using the same tools. The data was analysed using descriptive and inferential statistics. Z test was used to find the effectiveness of STP and Chi square test was used to find the association of pre-test score with selected demographic variables & Karl Person correlation test was used to find correlation between knowledge and expressed practice score. The comparison was between post-test knowledge score with pretest knowledge score. The post-test mean score was 23.12 with SD 2.511 and the pretest mean score was 16.4 with SD 2.569. The post-test mean expressed practice score was found higher 69.26(92.34%) and SD of 4.009 when compared with pre-test mean knowledge score which was 60.66(80.88%) with SD of 4.752. The calculated "Z" value = 13.28 (knowledge) & 9.88 (expressed practice) was found to be statistically significant at ($p < 0.05$ level.) This clearly indicates that after the implementation of Structured Teaching Programme on knowledge and practice regarding Nosocomial Infection prevention among B.Sc. Nursing 1st year students was significantly increased. Thus, the Structured Teaching Programme was found to be effective in improving knowledge among nursing students. Correlation between the knowledge score and expressed practice of students regarding nosocomial infection and the result (r value= 0.201) suggests that there is a moderate positive correlation between the both.

CHAPTER -I

INTRODUCTION:

Nosocomial infections also referred to as healthcare-associated infections (HAI), are infection(s) acquired during the process of receiving health care that was not present during the time of admission. They may occur in different areas of healthcare delivery, such as in hospitals, long-term care facilities, and ambulatory settings, and may also appear after discharge. HAIs also include occupational infections that may affect staff. Infection occurs when pathogen(s) spread to a susceptible patient host. In modern healthcare, invasive procedures and surgery, indwelling medical devices, and prosthetic devices are associated with these infections. The etiology of HAI is based on the source or type of infection and the responsible pathogen, which may be bacterial, viral, or fungal. HAI is the most common adverse event in health

care that affects patient safety. They contribute to significant morbidity, mortality, and financial burden on patients, families, and healthcare systems. The emergence of multi-drug-resistant organisms is another complication seen with HAI. HAI affects 3.2% of all hospitalized patients in the United States, 6.5% in the European Union/European Economic Area, and worldwide prevalence is likely much higher. The burden of HAIs worldwide is unknown owing to the lack of surveillance systems for HAIs. However, there has been a great effort by infection prevention and control programs to develop surveillance systems and infection control methods, **Anna Sikora, Farah Zahra.(2023)**

According to extended prevalence of infection in ICU are study the proportion of infected patients within the ICU is often as high as 51%. Based on extensive studies in USA & Europe shows nosocomial infection incidence density ranged from 13.0 to 20.3 episodes per thousand patients' days. Healthcare-related infection have a considerable impact on the morbidity and mortality rates in the intra- and extra-hospital environment, resulting in an increase in the time spent and costs of hospitalization, and are thus recognized as a serious world public health problem.

Infection that was not present before the patient came to a hospital but were acquired by a patient while in the hospital." The word nosocomial comes from the Greek word nosocomial meaning hospital [Noso- disease, komeo= to take care of] Nosocomial infections are infection that results from treatment in a hospital or a health care service unit. Infections are considered nosocomial if they first appear 48 hours or more after hospital admission or within 30 days after discharge. Nosocomial infection results from delivery of health service in a health care facility. Nosocomial infections (Nis), also known as a hospital acquired infection, are defined as infections which are acquired after 48 hours of patient admission. Such infections are neither present nor incubating prior to a patient's admission to a given hospital. Nis represents a universally serious health problem and a major concern for the safety of both patients and the health care providers.

A wide variety of microorganisms are responsible for nosocomial infections including bacteria, virus fungi and mycoplasmas. They almost commonly affect the urinary tract, lower respiratory tract. Surgical wounds, skins and the blood stream. These infections affect patients in a variety of ways from increased discomfort and pain to severe chronic illness, permanent disability and in some cases may cause death. Infection can also lead to extended length of stay of stay of affected patient and increased diagnostic and treatment costs. Therefore, knowledge about nosocomial infections is important to improve infection control measures and to develop effective preventive and curative strategies which, in turn, will help us in decreasing incidence, morbidity and mortality.

BACKGROUND OF THE STUDY:

Nosocomial infections form one of the most challenging tasks to deal with in a hospital setting. The burden of hospital-acquired infections (HAI) significantly affects the patient's cost of medical treatment and seriously impacts the economy of a developing country like India. Haphazard antibiotic use for the treatment of these infections has led to the development of resistance among the microbes, and factors that complicate microbial eradication further worsen the scenario. A large percentage of the HAI are preventable by simply following up various protocols which when supported by judicious antibiotic use can declutter the severity of the problem. Organized infection control measures, trained hospital staff, and continuous surveillance of HAI in healthcare settings will help deal with nosocomial infections. Although the ability to deal with HAI in a patient might determine his survival after acquiring a nosocomial infection, prevention remains the best option at all times. Approximately, 2 million each year in United States is infected by HAIs which leads to 80,000-90,000 deaths. There are three main types of infection which account for 80% of all the HAIs in the Intensive Care Unit (ICU). These infections are urinary tract infection, bloodstream infection and pneumonia. There are multiple types of Nosocomial infections, the most common of them are: Urinary tract infections are that hospital acquired infections in which an indwelling urinary catheter (Foley Catheter) was in place for more than two calendar days when all elements of the UTI infection criterion were first present together, with day of device placement being on Day 1, and an indwelling By Ajmal Khan, MD Abdullah(2021). At first the ideas of Nosocomial infection arise in fourteenth century when in Europe the first hospital was inaugurated. Infections which occur after 48-72 hour are usually classified as Nosocomial infections. If any infection occurs less than 48 hours after hospitalization, there is the probability that the patient might have been in the incubation period of the infection. Nosocomial infections occur globally and affect the population both in developed and developing world. Globally, Nosocomial infections occur among 7%-12% of the hospitalized patients with more than 1.4 million people suffering from the infectious complications acquired in the hospital.

The risk for acquiring the infection raise from 7%-12% to 15%-20% for the patient who are present in Intensive Care Units (ICU). Prevalence survey regarding Nosocomial infections under the sponsorships of WHO in 55 hospitals of 14 countries representing 4 WHO Regions (Europe, Eastern Mediterranean, South-East Asia and Western Pacific) was carried out. According to this study, it was reported that the highest frequencies of Nosocomial infections were reported from hospitals which were located in Eastern. In India, nosocomial infections occur in 10-20% of admitted patients. ICUs continue to be the principal locations for healthcare-associated infections (HAIs), accounting for 25% of all hospital infections. *Staphylococcus aureus* is the most frequent cause in a clinical setting. **Jay Thakkar, Amardeep Shanoo (2023).**

Nosocomial infections are prevalent to a great extent in our health care system. Moreover, the prevalence of infective diseases is increasing in medical college students due to less immunity developing in them. Hostel stay; dietary habits further add to the chances of acquiring oral and gastrointestinal infections. Needles-tick injuries lead to the transmission of viral infestations and are a potentially serious threat to students. The undergraduate medical education is the formative phase and appropriate moment for acquiring the necessary knowledge and skills. There is lack of evidence regarding explicit infection control training in the curriculum of most medical undergraduate courses, which needs to be assessed.

Priyanka Agarwal , Nitesh Mohan 2020

The prevalence and impact of nosocomial infections, the importance of infection control measures, and the role of nurses in preventing and managing these infections. It could also discuss previous research on the topic and identify gaps in knowledge or areas for further investigation. Nosocomial infections challenge healthcare and cause prolonged recovery and death if untreated. Bacteria, fungi, and viruses can cause these infections. The study also aimed to highlight the importance of continuous education for registered nurses to improve their efficiency in preventing nosocomial infections. **A H M Solaiman Ali , Prof .Dr .Parvez Hassan 2023**

NEED OF THE STUDY:

Lt.o.Selvarajan, Anitha.A (July- December 2023) :

Patients receiving medical care are at risk of contracting nosocomial infections, which occur in both developed and poor nations worldwide. Developed nations have a 7% incidence rate while poor nations have a 10% incidence rate. In intensive care units, the hospitalized individuals are exposed to germs from the environment, healthcare staff, and other diseased patients. These infections should be prevented by limiting transmission. Hospital trash might include pathogens, and 20%-25% is dangerous.

The International Nosocomial Infection Control Consortium reports 9.06 HCAI infections per 1,000 intensive care unit (ICU) patient days in India, which is higher than other wealthy countries.

Hospitals in India have HCAI infection rates ranging from 4.4 to 83.09 percent. Total HAI prevalence in India was 3.76 percent. The surgical ICU (25%), medical ICU (20%), burns ward (20%), and pediatric ward (12.17%) were associated with HAI. Catheter-related infections caused over 100 cases at Rajiv Gandhi Government General Hospital (RGGGH) in 2018, and 43 cases as of March 2019. More than 50 ventilator-associated infections and dialysis unit cases were recorded from 2018 to March 2019, up from 32 in 2017. Influenza remains a prevalent RGGGH infection. The above reference and the researcher's clinical experience prompted this investigation. Students working in clinicals must understand nosocomial infections and their treatment. Students in B.Sc. Nursing already study nosocomial infections.

Thus, this study assesses student knowledge. Therefore, the researcher can choose to learn utilizing alternative Instructional approaches in the future. Incidence rate can be as high as 51%, as reported by EPIC II. After conducting thorough investigations, the incidence rate of healthcare-associated infections ranged from 13.0 to 20.3 incidents per thousand patients in the US and Europe. Bacteria, viruses, and fungi are nosocomial pathogens. WHO estimates 15% of hospitalized patients have these illnesses. Studies in India estimate 11%- 60% nosocomial infections in ICUs.

PROBLEM STATEMENT:

A Study to assess the effectiveness of Structured teaching program on knowledge & expressed practice regarding prevention of nosocomial infection among B.Sc. 1st year students of JINS

OBJECTIVES:

1. To assess the pre-test knowledge and expressed practice of B.Sc. Nursing 1st year students regarding prevention of nosocomial infection.
2. To assess the effectiveness of structured teaching program on knowledge & expressed practice regarding prevention of nosocomial infection among the B.Sc. Nursing 1st year students
3. To find out the association of pre-test knowledge and expressed practice with their selected demographic variables
4. To determine the correlation between level of knowledge of B.Sc. nursing student with their actual expressed practice related to prevention of nosocomial infection.

OPERATIONAL DEFINITIONS:

Assess: It refers to a systematic evaluation of understanding the condition from multiple perspectives which is evaluated using pre-test & post-test knowledge & practice questionnaire

Effectiveness: It is the extent to which the STP is successful in instilling knowledge and changing the practice of the B.Sc. (N) 1st year students regarding prevention of nosocomial infection.

Structured teaching program: Systematically planned and organized educational intervention designed to improve knowledge or skills of students.

Knowledge: knowledge refers to structured body of information, facts, and understanding of the participants regarding prevention of nosocomial infection which will be elicited through structured questionnaire method.

Practice: Practice refers to the repeated application or performance of a specific activity, method, or behaviour, especially as a part of a professional duty in regards to prevention of nosocomial infection.

Prevention: - Act of keeping something from happening or the action of stopping something from happening. In this study it refers to the activities expected from the B.Sc. Nursing students to protect the patients from nosocomial infection.

Nosocomial infection: Nosocomial infections also referred to as healthcare-associated infections (HAI), are infection(s) acquired during the process of receiving health care that was not present during the time of admission.

ASSUMPTIONS:

- BSC Nursing 1st years student will have limited knowledge about nosocomial infection
- Data provided by the students will be true data

HYPOTHESIS:

All hypotheses will be tested at 0.05 level of significance.

H1: The mean post-test knowledge & expressed practice score of B.Sc. nursing 1st yr student will be significantly higher than mean pre-test knowledge score.

H2: There will be significant association between pre-test knowledge & expressed practice score of the B.Sc. nursing 1st yr students on nosocomial infection with their selected demographic variables.

H3 : There will be significant positive correlation between knowledge of B.Sc. nursing 1st yr students and their actual practice of prevention of nosocomial infection.

DELIMITATIONS:

1. The study is limited to B.Sc. Nursing 1st year students only.

The study is conducted in a selected nursing college/hospital only.

Findings cannot be generalized to all nursing colleges.

2. The study focuses only on knowledge regarding nosocomial (hospital-acquired) infections.

Other related topics such as prevention practices, attitudes, or clinical skills are not included.

3. The sample size is restricted to the students available during the period of data collection.

Absentees or students on leave are not included.

4. Data collection is limited to self-reported questionnaires.

No observation, interview, or practical assessment is used.

5. The study duration is short, so long-term changes in knowledge or follow-up assessments are not measured.

6. The study includes only theoretical knowledge, not practical exposure from clinical postings because 1st-year students have limited clinical experience.

CONCEPTUAL FRAMEWORK:

Theory is a systematic, abstract explanation of some aspects of reality. In a theory, the concepts are knitted together into a coherent system to explain the concepts. The researchers use deductive reasoning to develop specific predictions from the general theory that can be tested empirically. The selection, arrangement and classification of the concepts are done in conceptual framework.

The conceptual framework selected for the study is based on Kenny's Open System Model. The main concept of open system model are input, throughput, output and feedback. The study is undertaken to determine the effect Structured Teaching Programme on the knowledge & expressed practice level. Pretest was conducted to assess the level of knowledge among nursing students.

INPUT:

Input can be matter, knowledge and information from the environment. In this present study the environment refers to hospitals and refers to the collection of demographic variables from the samples such as age, sex, educational qualification, place of posting of the nursing students' years of clinical experience about exposure of hospitals and pre-test.

THROUGHPUT:

The matter, knowledge and information are continuously processed throughout the system which is also called complex transformation known as throughput process is used for input. In this present study the throughput refers to Structured Teaching Programme on nosocomial infection for knowledge improvement among samples who read the Self-Instructional Module.

OUTPUT:

After processing the input and throughput, the system returns to the output matter, knowledge and information in an altered state. In the present study significant changes in the level of knowledge of the sample as output.

FEEDBACK:

Feedback gives information about environment response to the system. Output is utilised by the system in adjustment, correction and accommodation to the interaction with the environment. In the present study, effectiveness of Structured Teaching Programme is considered in calculating mean percentage and testing hypothesis.

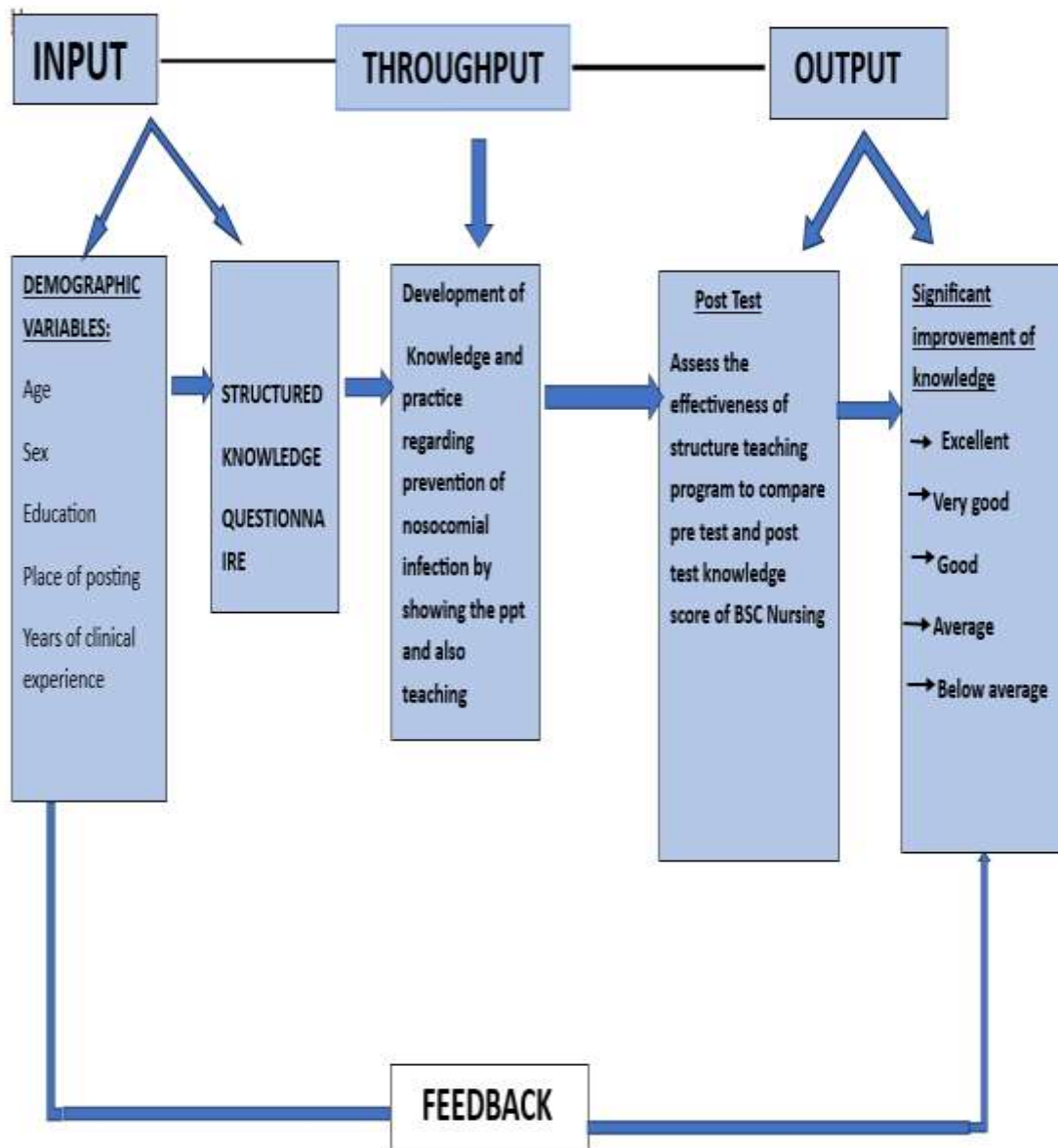


Fig1: Conceptual framework of the study based on J.W.Kenney's open system model.

Summary

This chapter deals with introduction, background of the study, need of the study, problem statement, objectives of the study, assumption, conceptual framework, operational definition and delimitation of the study.

Organization of report

Chapter I: This chapter deals with introduction, background of the study, need of the study, problem statement, objectives of the study, assumption, conceptual framework, operational definition and delimitation of the study.

Chapter II: This chapter presents a review of literature on research and non-research articles related to the study.

Chapter III: This chapter explains the research methodology adopted for the study which includes a research approach, research design, variables under study, setting, sample and sampling technique, development and description of tools, plan of data analysis.

Chapter IV: The chapter contains a detailed analysis of data and interpretation of findings.

Chapter V: This chapter describes the summary of major findings, discussion, conclusion, implications and limitations of the study along with further recommendation.

The report has been completed with selected references and appendices

CHAPTER – II

REVIEW OF LITERATURE

Review of literature is a key step in research process. It refers to an extensive, systematic examination of publications relevant to a research project. It involves the identification, selection, critical analysis and reporting of existing

Information on the topic of interest. Review of literature is a broad, comprehensive, in depth, systematic and critical review of scholarly publication, unpublished scholarly print materials, audio visual materials and personal communications.

A literature review discusses published information in a particular subject area, and sometimes information in a particular subject area within a certain time period. So, the review has been organized under the following headings.

Section-1. Literature related to “**Nosocomial infection**”.

Section-2. Literature related to “**knowledge and practice of nursing students regarding Nosocomial infection**”.

Section-3. Literature related to “**STP as an effective teaching method**”.

Section-1. Literature related to “Nosocomial infection”.

❖ Nosocomial infections or healthcare associated infections occur in patients under medical care. These infections occur worldwide both in developed and developing countries. Nosocomial infections accounts for 7% in developed and 10% in developing countries. As these infections occur during hospital stay and economic burden. Frequently prevalent infections include central line-associated bloodstream infections, catheter-associated urinary tract infections, surgical site infections and ventilator-associated pneumonia. Nosocomial pathogens include bacteria, viruses and fungal parasites. According to WHO estimates, approximately 15% of all hospitalized patients suffer from these infections. During hospitalization, patient is exposed to pathogens through different sources environment, healthcare staff, and other infected patients. Hospital waste serves as potential source of pathogens and about 20%–25% of hospital waste is termed as hazardous. Nosocomial infections can be controlled by practicing infection control programs. Efforts are required by all stakeholders to prevent and control nosocomial infections. **Hassan Ahmed khan, FatimakanwalBaig.(2017)**

❖ **LT.O. SELVARAJAN, Anitha.A.(2023)** conducted a study to assess the knowledge of first-year B.Sc. nursing students at Madurai Medical College's College of Nursing on nosocomial diseases. The study used a descriptive non-experimental design. The sample included 35 first-year B.Sc. nursing students selected using non-probability purposive sampling. Results showed that 68.57% of participants had strong knowledge of nosocomial infections, 22.86% had average knowledge, and 8.57% had below average knowledge. The study concluded that the majority of first-year B.Sc. nursing students had a good level of knowledge about nosocomial infections

❖ The prevalence of hospital-acquired infections in Kosovo is notably higher than that observed in other European nations, with estimates ranging from 20% to 35%. This elevated prevalence can be attributed to various factors, including

a lack of financial resources allocated to healthcare, an inadequate number of trained personnel specializing in infection control, and insufficient staffing levels within hospital units. These findings highlight the urgent need for effective preventive interventions targeting infections in Intensive Care Units (ICUs). Implementing comprehensive infection control strategies is essential not only for reducing the incidence of these infections but also for improving patient safety and outcomes. Addressing the root causes of these issues will be crucial in advancing the quality of healthcare in Kosovo and ensuring better protection for patients against nosocomial infections (**Spahija et al., 2015**)

❖ **Robert Weinstein et al.** in their comparative study on nosocomial infections at present and in the past, showed that there had been a reduction in number of cases of nosocomial infections, however the numbers of death were still high. According to them poor hygiene standards in most health centers have contributed to this. Cases of medical practitioners overlooking basic hygienic measures such as a proper hand washing when attending to patients was one of the common causes. They observed some medical services like injections were not administered in a proper manner. This is due to unqualified medical expertise especially in small health care centers which lead to infections.

❖ **Jessica Lietz et al.** in their research on nosocomial infections with emphasis on the causes and preventive measures for the infections observed that, there were higher rates of infections in public hospitals as compared to private health centres. They showed lack of adequate public education on the infections was a key factor in the spread of infections. For instance, one may visit a patient suffering from an air borne disease and contact the disease without knowing. Similarly, patients may share personal items such as towels, not knowing that they are subjecting themselves to harmful infections. They thought enlightening the public in general on the dangers of these infections and the basic control measures like maintaining a high personal hygiene can go a greater mile in trying to control these infections.

❖ **Section-2. Literature related to “knowledge and practice of nursing students regarding Nosocomial infection”.**

❖ A study to assess the knowledge regarding nosocomial infections among 4th year B. Sc. Nursing students at SCPM college of nursing. In this study, the sample consists of 50 B. Sc. Nursing students selected using non - probability convenient sampling technique. A structured socio demographic data, and Questionnaire is used to assess the knowledge regarding nosocomial infection. The maximum 21 (42%) samples were having Moderate Knowledge, 19 (38%) samples were having Adequate Knowledge, 10 (20%) samples were having Inadequate Knowledge level on nosocomial infections. There is no significant association between knowledge level and the selected socio demographic variables.

By Muhasin, Dr. S. N. Nanjunde Gowda (2021).

❖ Nosocomial infection is also known as Hospital acquired infection and Hospital care associated infection. It is derived from the Greek word “Nosocomial” which means “Hospital”. Infections are considered as nosocomial if they appear first 48 hours or more after hospital admission or within 30 days after discharge. The study was conducted to assess the knowledge and practice of nursing students regarding control of nosocomial infection. The data was collected from the nursing students by using structured knowledge questionnaire and self-reported practice checklist. The data collected from 85 samples in Himalayan College of Nursing. Descriptive study design was used and data was analysed by using descriptive and inferential statistics. Distribution of the samples on demographic characteristics revealed that 74.11% of the samples were in the age group of 22 to 24 years **Ms. Jyoti Kala1, Ms. Kalsang Choedon et al**

❖ A study was conducted to assess the knowledge, attitude and practices among the different health care workers on nosocomial infections. A total of 150 health care workers i.e. 50 doctors, 50 nurses and 50 ward aids were included and interventions in the form of an education module designed to suit the need of each of these categories. The study showed an increase in the number of subjects in each category scoring good after the intervention; however, this declined with the progress of the time. The study proved that there is a need to develop a system of continuous education for all categories of staff in order to reduce the incidence of hospital acquired infections. **By Girish D,V Damalli, Prabhu J(2015)**

❖ **Maitanmi Julius olatade and anise ifeoluwa (2021).** A descriptive study to assess the knowledge and preventive practices of nosocomial infections among health worker in ogun state' a, a total number of 271 health workers are included in study, data were collected using multistage sampling technique, data were collected using self- structured questionnaire tool findings revealed that 94.1% of the respondents had high knowledge about nosocomial infection 95.9% had high knowledge on preventive practices against nosocomial infection, the study concluded that the health

workers in the selected tertiary hospitals had good knowledge about HAI and practice through the practice was affected by some factors.

❖ **Pinar etiz (2022).** A descriptive study to assessment of knowledge about nosocomial. infection among cukurova university vocational school of health services students', A total number of students is 565, data were collected using self-administered questionnaire tool, the study showed that 565 students mean age 17.57 years majority of the students 20 years old (69.7%), were female (57.7%) were attended occupational training.

Section-3. Literature related to “STP as an effective teaching method”.

❖ **Ashok kumarsharma (2018)** conducted a pre-experimental study to assess the effectiveness of structured teaching programs on knowledge regarding nosocomial infections among staff nurses in selected hospital at Jaipur, Rajasthan. 80 staff nurses sample selected for this study. The study revealed that mean of post-test of nosocomial infections was pre-test are 12.91 ± 1.700 , post-test are 22.04 ± 2.015 as per the table the mean deference of pre vs post-test is (9.125) and the t- ratio to be significantly as the obtained value (30.953) is higher than the tabulated value (2.00) required for the t-ratio to significant at 0.05 level of confidence. According to study which indicate that mean and SD of pre vs post-test on practice staff nurses regarding nosocomial infection with their selected demographic variables that is pretest are 9.50 ± 1.293 , post-test is 14.41 ± 1.328 as per table value the mean deference of pre vs post-test (4.913) and t-ratio was statically obtained value (23.706) higher than table value (2.00).

❖ **Afzal Sayed Munna , Md Abul Kalam (2021)** Teaching and learning process can be defined as a transformation process of knowledge from teachers to students. It is referred as the combination of various elements within the process where an educator identifies and establish the learning objectives and develop teaching resources and implement the teaching and learning strategy. On the other hand, learning is a cardinal factor that a teacher must consider while teaching students. The paper evaluated various academic journals, pedagogy, and inclusive practices to assess the teaching effectiveness within the higher education setting. The objective of the research is to assess the teaching effectiveness in a higher education setting. The research findings suggest that providing positive and adequate formative and developmental feedback, introduction of role-play has a profound positive impact on the students' confidence and self-esteem. The research findings will enable the educators to help create and implement an inclusive teaching and learning environment to improve the learner's expectation and academic performance.

❖ **Agaral M and Thomas P (2003)** conducted studies on the level of knowledge and practice of prevention of hospital acquired infections among trained nurses in surgical wards. As well as the factors that hinders those practices. The findings revealed that 98% of the nurses have heard about nosocomial infections while 2% have not. About 78% of the respondents practice prevention of hospital acquired infections while 22% do not. About 94% of the respondents expressed that they have hindrances to the practice of prevention of nosocomial infections. The hindrances include poor working environment among 26%, poor knowledge about prevention of nosocomial infection was 10%, and lack of water for hand washing and other material resources 58%. This study reveals that majority of the trained nurses in surgical wards have knowledge about the prevention of nosocomial infections but not all of them are practicing it due to lack of equipment and poor working environment.

❖ **Saini R, Kaur N (2009)** conducted a descriptive study to assess the knowledge and practice of staff nurses regarding the prevention of nosocomial infections. Forty staff nurses were selected from the areas of medical ward, surgical ward, labour room, and emergency ward of Guru Nanak Mission Hospital, Punjab, in January 2002. The major findings of the study were that mean knowledge score regarding prevention of hospital acquired infections (HAI) was significantly high among nurses; mean practice score regarding prevention of HAI was average (18.22). A low positive correlation ($r=0.46$) was found between knowledge and practice of staff nurses towards prevention of HAI.

❖ **Suchitra JB and Lakshmi Devi N (2006)** conducted studies to assess the impact of education on knowledge, attitudes and practices among various categories of health care workers on nosocomial infections. A total of 150 health care workers, doctors ($n=50$), nurses ($n=50$) and ward aides ($n=50$) were included. The result of this study concluded that education has a positive impact on retention of knowledge, attitudes and practices in all the categories of staff and there is a need to develop a system of continuous education for all categories of staff in order to reduce the nosocomial infections.

CHAPTER – III

RESEARCH METHODOLOGY

The research methodology is a way of systematically solving a research problem. It is a science of studying how research is done scientifically. The methodology of research indicates the general pattern of organizing the procedure for gathering valid and reliable data for the purpose of investigation.

The methodology of this study includes the choice of the research approaches and research design. The design of the study describes about the setting of the study population, sampling and sampling techniques, the data collection procedures, content validity and reliability of tool, pilot study and method of analysis based on the statement and objectives of the study.

Research Approach

Research approach refers to the approach or the methodology that has been adopted to conduct the research. It basically involves the selection of research questions and the selection of appropriate research method such as primary research, secondary research etc. In the present study a Quantitative approach was used to evaluate the effectiveness of progressive muscle relaxation technique.

Research design

The term research design refers to the investigators overall plan for obtaining answer to the research questions or for testing the research hypothesis. Research design spells out the strategies that the researcher adopts to develop information that is accurate and interpretable.

The research design is because facilitates the smooth sailing the various research operations, thereby making research as efficient as possible yielding maximal information with minimal expenditure of effort, time and money. The research design selected for this study is pre-experimental one group pre-test post-test design.

The schematic representation of the design is as follows,

01--X--02

0102

E-02-01

O1 Pretest knowledge & expressed practice level in sample

X= Structured Teaching Program

02-Post test knowledge & expressed practice level in sample

E=Effectiveness of Structured Teaching Programme

THE STUDY DESIGN AS FOLLOWS

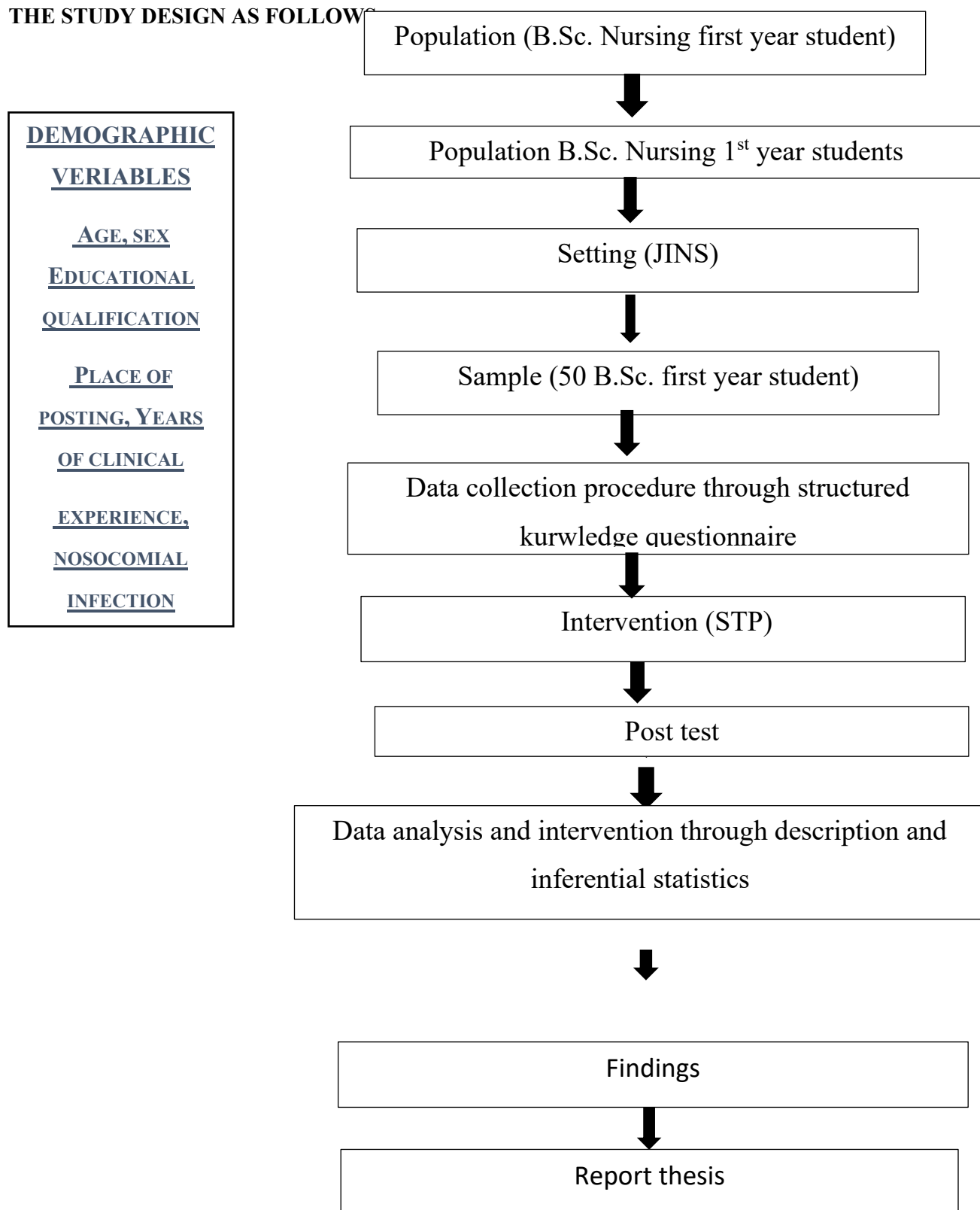


Fig 2: schematic representation of the research design

VARIABLES :

Variable is defined as an attribute of person or objects that varies, that takes any different values,

Three types of variables are identified in this study.

1. Independent variable
2. Dependent variable
3. Demographic variable

Independent variable

The variable that is believed to cause or influence the dependent variable is an A independent variable.

In the present study the independent variable refers to Structured Teaching Programme on nosocomial infection.

Dependent variable

Dependent variable is the outcome variable, the variable that is hypothesized to depend on or caused by another variable,

In this study dependent variable refers to the knowledge & expressed practice regarding nosocomial infection.

Demographic variable

Any uncontrolled variable that greatly influences the result of the study is a demographic variable,

In this study demographic variables were age, sex, educational qualification, place of posting of the students' years of clinical experience and nosocomial infection exposure.

SETTING OF THE STUDY:

The setting is the place or type of surroundings where something is positioned or where an event takes place. The setting is where the population or the portion of that is being studied, is located and where the study is carried out. The setting of the research study was Jagannath Gupta Institute of Nursing Sciences & Hospital, Kolkata.

POPULATION:

The term population refers to the aggregate or totality of all the objects, subjects or members that confirm to a set of specifications.

In the study the population comprised of all B.Sc. nursing 1st yr students in Kolkata.

SAMPLE:

Sample refers to the subset of a population selected to participate in a research study.

In the present study, the samples were B.Sc. nursing 1st student at Jagannath Gupta Institute of Nursing Sciences & Hospital, Kolkata.

SAMPLE SIZE:

The sample size for the present study is 50 B.Sc. Nursing first year student Jagannath Gupta Institute of Nursing Sciences, Kolkata.

SAMPLING TECHNIQUE:

Probability sampling involves deliberate selection of particular units of the population for constituting a sample.

In the present study 50 B.Sc. Nursing first year student nurses were selected as samples using random sampling technique.

SAMPLING CRITERIA:**INCLUSION CRITERIA-**

B.Sc. Nursing first year student who are -

- Study in JAGANNATH GUPTA INSTITUTE OF NURSING COLLEGE.
- Willing to participate in the study.
- available at the time of study.

EXCLUSION CRITERIA

B.Sc. Nursing first year who are not:

- available during the period of data collection.
- willing to participate in the study.

SELECTION AND DEVELOPMENT OF TOOL

Tools are the instruments used by the researchers to collect data. The tool was prepared on the basis of the objectives of the study.

The following steps were adopted prior to the development of the tool:

1. Review of literature
2. Consultation with experts of nursing and infection control doctors

Preparation of first draft of structured knowledge questionnaire

The draft of the structured knowledge questionnaire was prepared on the basis of the study objectives, extensive review of literature and discussion with the guide.

The developed structured knowledge questionnaire was given to four experts to establish content validity and was asked to give their opinion and suggestions about the content of structured knowledge questionnaire.

Development of a Multiple-Choice Questions

Multiple Choice Questions for validation of the tool was prepared, comprising knowledge questionnaire with Agree. Disagree and remarks columns for the valuers to place a (V) mark depending on the appropriateness and relevance of each item.

Content validity

Content validity refers to the degree to which an instrument measures what it is supposed to measure. Content validity of the structured knowledge questionnaire was established by submitting it along with the objectives to four experts in the field of nursing and infection control department. They were requested to give their opinion on accuracy, relevance and appropriateness of the items in the tool. After getting the corrections and suggestions from the experts, the tool was modified and validated with the help of the guide.

Description of the final tool**Tool I: Demographic data**

Structured knowledge questionnaire was used to collect the demographic data. It consists of identification data such as age in years, gender, educational qualification, place of posting of the nursing students, years of clinical experience.

Tool II: Structured knowledge questionnaire to assess the knowledge of nursing students

The maximum score was 30. The items were developed as to cover the various areas of nosocomial infection prevention

Tool III: Structured practice checklist to assess expressed practice of nursing students.

The maximum score was 75. The items were developed as to cover the various areas of practice related to nosocomial

infection prevention.

Development of structured teaching programmed

A structured teaching programme was developed for the BSC first year student. It was prepared based on pre-test knowledge score, review of literature and discussion with the guide and other experts. The steps involved in the development of structured education are:

1. Analysis of pre-test knowledge & expressed practice score of B.Sc. Nursing first year student.
2. Review of literature and discussion with guide
3. Preparation of final draft of structured teaching programme

Process of data collection

The researchers obtained permission from the Principal, JINS and Class coordinator of B.Sc. Nursing 1st yr prior to data collection. The researchers had assured the confidentiality to the BSC first year student regarding their responses and consent was obtained from them. The pre-test, post test and structured teaching programme was given to 50 Bsc nursing student JIMSH. The data collection period extended from The time taken for each member was 15 minutes. After 7 days of pre-test, the post-test was conducted for the student nurse using the same structured knowledge questionnaire to assess the effectiveness of structured teaching programmed. The average time taken for the post-test was 15 minutes. The data collection was terminated by thanking the student nurse for their participation and co-operation. The collected data was compiled for the data analysis.

Summary

This chapter describes about the research approach, design, setting of the study, population, sampling and sampling It preparation and the steps the preparation of the tool and structured education. This chapter also dealt with pre-testing, data collection procedure.

CHAPTER- IV

ANALYSIS AND INTERPRETATION OF DATA

A research project cannot be considered complete until its results are effectively communicated to its users and consumers. The analysis and interpretation of the data is the most important and challenging phase of the research process. Interpreting research finding requires the investigator to be creative. Analysis of data is a process by which qualitative information is reduced, summarized, organized, evaluated, interpreted and communicated in a meaningful way.

This chapter deals with the analysis and interpretation of data collection to assess the effectiveness of structured teaching programme on knowledge and expressed practice regarding prevention of nosocomial infection among the B. Sc. Nursing 1st year student of JINS. The analysis and interpretation of data of this study is carried out by using descriptive and inferential statistics based on the objective of the study.

Objectives of the study

1. To assess the pre-test knowledge and expressed practice of B.Sc. Nursing 1st year students regarding prevention of nosocomial infection
2. To assess the effectiveness of structured teaching program on knowledge and expressed practice regarding prevention of nosocomial infection among the B.Sc. Nursing 1st year students
3. To find out the association of pre-test knowledge and expressed practice with their selected demographic variable

Organization of findings

The collected information was organized and presented in four parts:

PART I: Description of the demographic variables of the B.Sc. nursing 1st year students.

PART II: Analysis of pre-test and post-test knowledge & expressed practice score of B.Sc. nursing 1st yr students regarding prevention of nosocomial infection.

PART III: Evaluation of effectiveness of the structured teaching program on knowledge and expressed practice of B.Sc. 1st yr student regarding prevention of nosocomial infection.

PART IV: Association of the pretest knowledge score with the selected demographic variables.

PART V: Determining Correlation of knowledge score with expressed practice score

PART I : DESCRIPTION OF THE DEMOGRAPHIC VARIABLES OF THE B.SC. NURSING 1ST YEAR STUDENTS

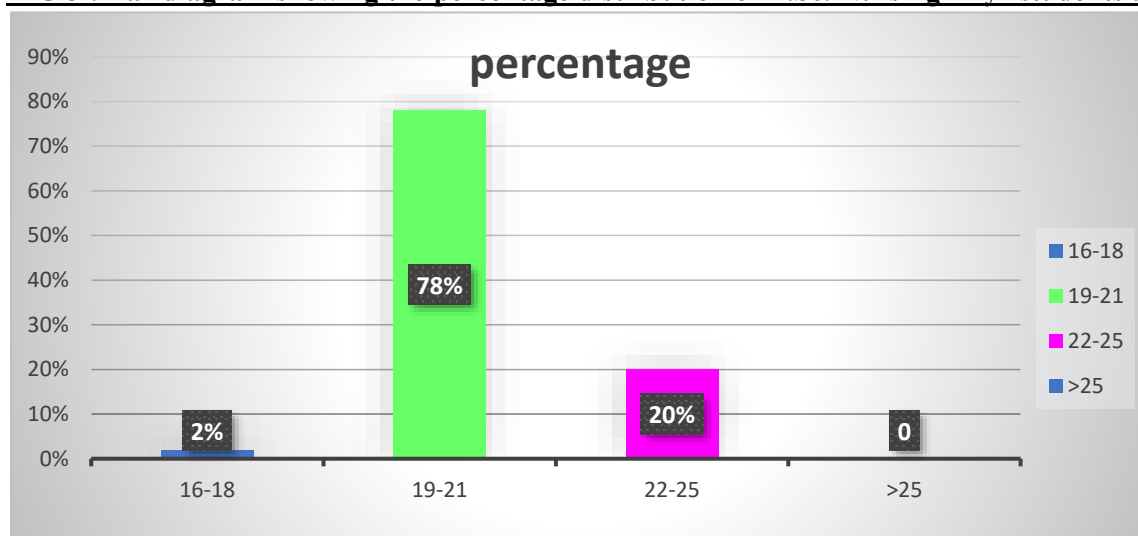
Table 1: Frequency and percentage distribution of demographic variables of B.Sc. nursing 1st yr student

SI NO.	VARIABLES	FREQUENCY	PERCENTAGE
1.	<i>Age</i>		
	a.16-18	1	2%
	b.19-21	39	78%
	c.22-25	10	20%
	d.>25	0	0
2.	<i>Previous education</i>		
	a. HS	36	72%
	b. Graduate	8	16%
	anything related healthcare	4	8%
	d. Others	2	4%
3.	<i>Duration of clinical exposure</i>		
	a.<6 months	32	64%
	b.6 months-1yr	14	28%
	c.>1yr	4	8%
4.	<i>Ever heard of "Standard precaution"</i>		
	a.yes	50	100%
	b. don't know	0	0
5.	<i>Sources of information</i>		
	a. Family/relative	15	30%
	b.Teacher/Hospital staff	35	70%
6.	<i>Having any standard precaution policy in institution</i>		
	a.yes	38	76%
	c.no	12	24%

Table 1 shows that highest 78% (39) students belong to the age group 19-21years. Most of the students' i.e. 72% (36) previous educational status is HS while only 8% (4) students had healthcare related education before joining Nursing. 64% (32) students had less than 6 months of clinical exposure when 8% (4) students had more than 1-year clinical exposure. All the students i.e. 100% reported to have heard of the term 'Standard Precaution', 70% (35) of them have heard of it from the healthcare staffs and the rest of them heard about it from family or relatives. 76% (38) students were aware of the standard precaution policy in their parent hospital while the rest were unaware of it.

AGE

FIG 3 : Bar diagram showing the percentage distribution of B.Sc. Nursing 1st yr students according to their age in years



The bar diagram illustrates the percentage distribution of B.Sc. nursing 1st year students across different age. Only(2%) of students are in the 16-18 age group. The largest proportion (78%), falls within the 19-21 age range. (20%) of the students are aged 22-25.(0%) of students are older than 25 years

EDUCATIONAL STATUS

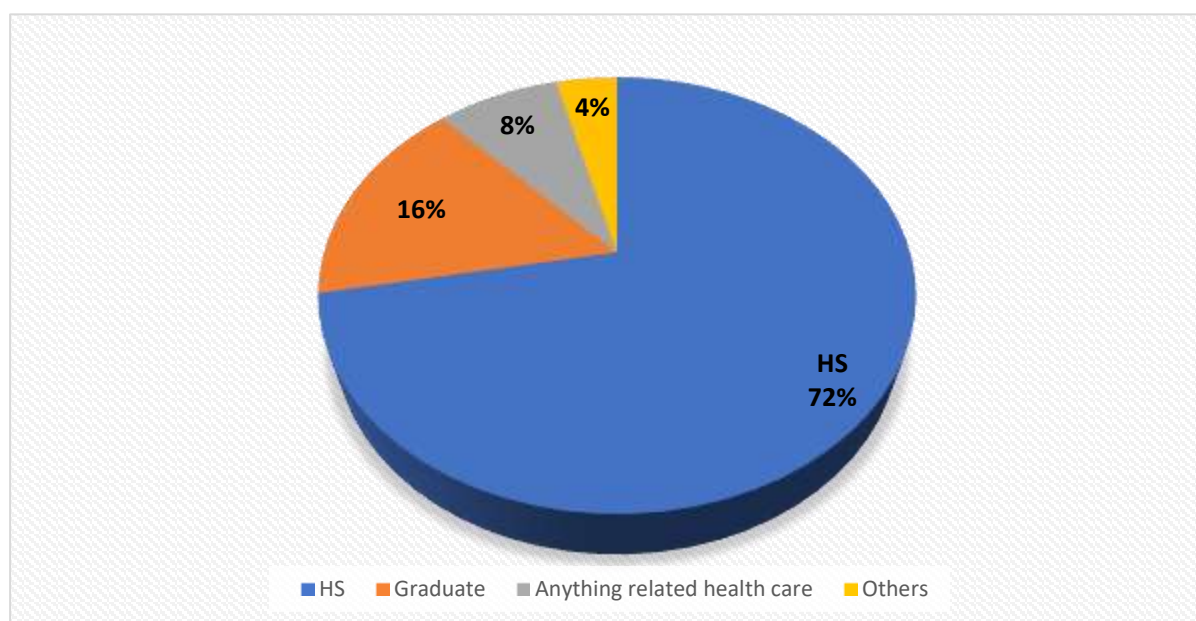


FIG 4 : Pie diagram showing the percentage distribution of B.Sc. Nursing 1st yr students according to their educational status

The pie chart depicts that highest 72% of students had passed high school education. 16% of students were graduates while only 8% of students had passed health care related education.

DURATION OF CLINICAL EXPOSURE

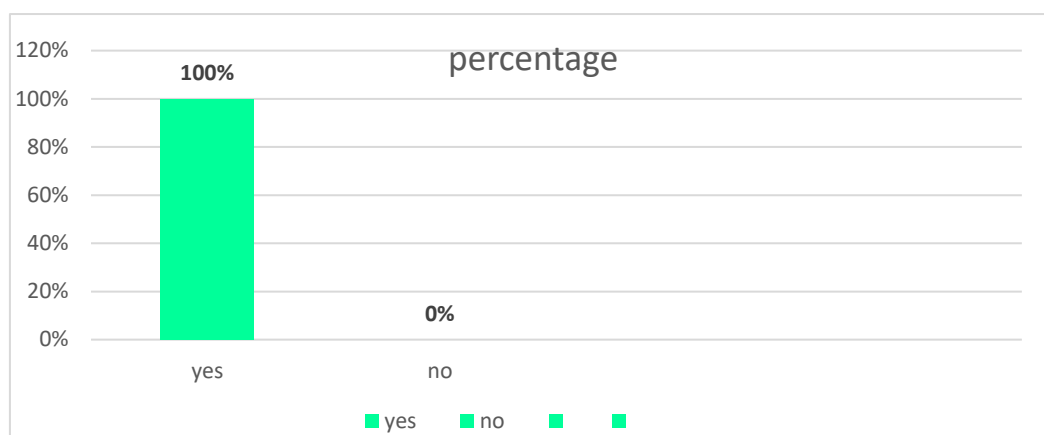


FIG 5: Percentage distribution of B.Sc. Nursing 1st yr students according to their clinical exposure

The bar graph displays data on the "DURATION OF CLINICAL EXPOSURE" among a study population. <6 months: Approximately 63% of the participants. 6 months - 1 year: Approximately 28% of the participants. >1 year: Approximately 8% of the participants.

EVER HEARD OF "STANDARD PRECAUTIONS POLICY"

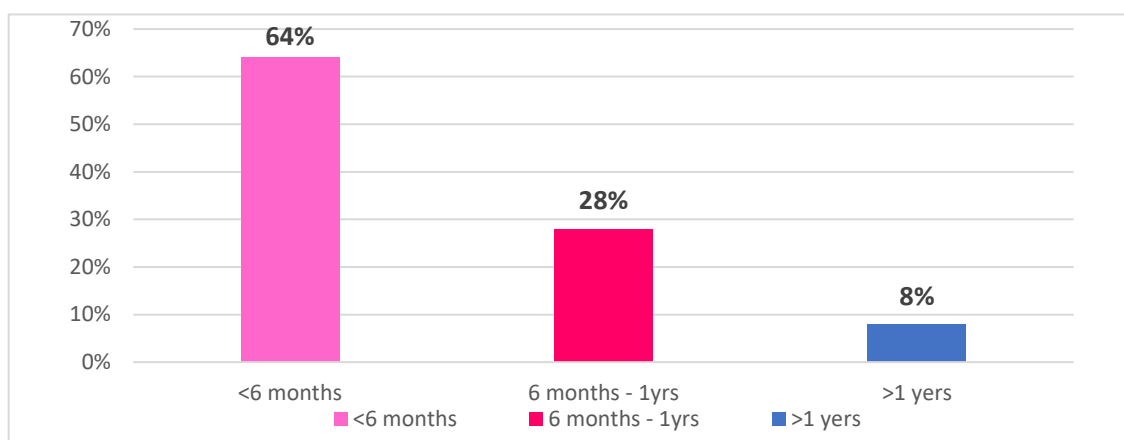


FIG 6 : Percentage distribution B.Sc. Nursing 1st yr students according to their standard precaution

The image displays a bar diagram illustrating the percentage distribution of B.Sc. Nursing 1st-year students' awareness of the "Standard Precautions Policy" according to their clinical exposure. The diagram shows that 100% of students responded "yes" to having heard of the policy. The "no" response category shows 0%. The chart title in Chinese characters translates to "Chart Title". The data is presented as a percentage distribute.

SOURCES OF INFORMATION

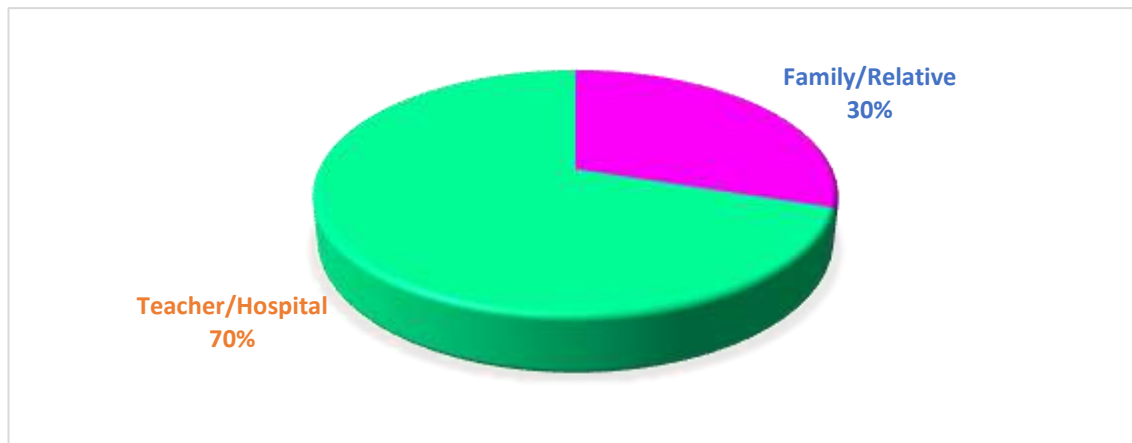


FIG 7: Percentage distribution of B.Sc. Nursing 1st yr students according to their sources information

The image displays that the primary source of information is Teacher/Hospital i.e. 70% & the rest is from is Family/Relative i.e. 30%. The data is presented as Figure 6. The chart illustrates that educational and professional sources are significantly more utilized than personal ones for this specific information.

STANDARD PRECAUTION POLICY

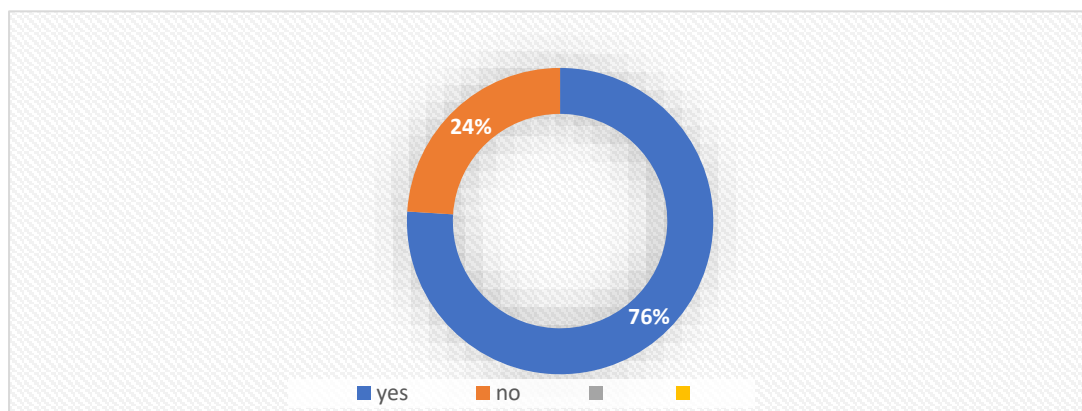


FIG 8 : Percentage distribution of B.Sc. Nursing 1st yr according to their standard precaution

The image displays a pie chart illustrating the percentage distribution of B.Sc. Nursing 1st-year students according to their sources of information. 76% of students indicated "yes" regarding their sources of information. 24% of students indicated "no" regarding their sources of information. The chart is labelled as "FIG 7".

PART II : Analysis of pre -test and post test knowledge scores of B.Sc. Nursing 1st yr student regarding nosocomial infection

In order to find out the level of the knowledge score of the B.Sc. Nursing 1st-year regarding nosocomial infection, a five-point scale was used in the study. The categorization of the knowledge levels were as follows; scores between 0-6 shows below average knowledge level, scores between 7-12 shows average knowledge level. scores between 13-18 shows good knowledge level, scores between 19-24 shows very good knowledge level, scores between 25-30 shows knowledge level was excellent.

TABLE 2: Assessment of pre test and post test knowledge level of BSc nursing 1st yr regarding nosocomial infection.

N=50

Level of knowledge	Score level	Frequency		Percentage (%)	
		Pre test	Post test	Pre test	Post test
Below average	0-6	0	0	0	0
Average	7-12	3	0	6	0
Good	13-18	36	1	72	2
Very good	19-24	11	33	22	66
excellent	25-30	0	16	0	32
Total	30	50	50	100	100

Assessment of the level of pre-test knowledge score among B.Sc. Nursing 1st-year students depicts that majority 36(72%) of respondents had good knowledge scores, 11(22%) had very good knowledge score, 3(6%) had average knowledge score. The finding of the study has revealed that there is an urgent need to educate the B.Sc. Nursing 1st-year regarding nosocomial infection.

Assessment of the level of post-test knowledge score of the B.Sc. Nursing 1st-year students after the administration of structured teaching program has revealed that majority of respondents 33(66%) had very good knowledge score and 16(32%) had excellent knowledge score, 1(2%) had good knowledge score. It has shown that structured teaching program was very effective in improving knowledge level of B.Sc. Nursing 1st-year regarding nosocomial infection.

TABLE 3: Assessment of pretest and post-test expressed practices level of B.Sc. nursing 1st yr students regarding nosocomial infection.

N=50

Level of Practices	Score level	Frequency		Percentage (%)	
		Pre test	Post test	Pre test	Post test
Below average	1-15	0	0	0	0
Average	16-30	4	0	8	0
Good	31-45	30	4	60	8
Very good	46-60	12	31	24	62
excellent	61-75	4	15	8	30
total	75	50	50	100	100

Assessment of the level of pre-test expressed practice score among B.Sc. nursing 1st yr depicts that majority 30(60%) of respondents had good expressed practice scores, 12(24%) had very good expressed practice score, 4(8%) had average expressed practice score. The finding of the study has revealed that there is an urgent need to educate the BSc nursing 1st yr regarding nosocomial infection.

Assessment of the level of post-test expressed practice score of the BSc nursing 1st yr after the administration of structured teaching program has revealed that majority of respondents 31(62%) had very good expressed practices score and 15(30%) had excellent practice score score, 4(8%) had good practice score. It has shown that structured teaching program was very effective in improving expressed practice level of BSc nursing 1st yr regarding nosocomial infection.

Part III: Evaluation of effectiveness of the structured teaching program on B.Sc. Nursing students knowledge and expressed practices regarding prevention of nosocomial infection

Table 4 : Pre test and post-test knowledge score regarding nosocomial infection.

N=50

AREA	MAXIMAM SCORE	RESPONDENT KNOWLEDGE			PAIRED “Z” TEST
		MEAN	MEAN%	SD	
PRE TEST(x)	30	16.4	54.7%	2.569	Z=13.28
POST TEST(y)	30	23.12	77.1%	2.511	
Effectiveness(y-x)		6.72	22.4	0.058	

The calculated 'z' value 13.28>2.0(the tabulated 'z' value at p value of 0.05 level of significance).

Table 4 shows that the post-test mean knowledge score was found higher **23.12(77.1%)** and SD of **2.5111**when compared with pre-test mean knowledge score which was **16.4(54.7%)** with SD of **2.569**. The mean effectiveness score was **6.72(22.4%)** with SD of **0.058**. The results of the study depicts that the structured teaching programme was very effective in improving the knowledge of the BSc Nursing 1st yr students regarding prevention of nosocomial infection.

Table 5: Pre test and post test expressed practice score regarding nosocomial infection.

N=50

AREA	MAXIMAM SCORE	RESPONDENT KNOWLEDGE			PAIRED “Z” TEST
		MEAN	MEAN%	SD	
PRE TEST(x)	75	60.66	80.88%	4.752	Z=9.88
POST TEST(y)	75	69.26	92.34%	4.009	
Effectiveness(y-x)		8.6	11.46	0.743	

The calculated 'z' value 9.88>2.0(the tabulated 'z' value at p value of 0.05 level of significance).

Table 5 shows that the post-test mean expressed practice score was found higher **69.26(92.34%)** and SD of **4.009**when compared with pre-test mean knowledge score which was **60.66(80.88%)** with SD of **4.752**. The mean effectiveness score was **8.6(11.46%)** with SD of **0.743**. The results of the study depicts that the structured teaching programme was very effective in improving the practice of the BSc Nursing 1st yr students regarding prevention of nosocomial infection.

Part IV: ASSOCIATION OF THE PRE-TEST KNOWLEDGE SCORES WITH THE SELECTED DEMOGRATIC VARIABLES

TABLE-6: Association of the pretest knowledge score with selected demographic variables

N=50

Sl no	VARIABLES	>M	<M	Exact sig	Result
1	AGE IN YEARS			1.3888	NS
	A)16-18	1	0		
	B)19-21	34	5		
	C)22-25	5	5		
	D)>25	0	0		
2	PREVIOUS EDUCATION			0.265	NS

	A) hs	21	15		
	B) graduate	4	4		
	C) anything related health care	4	0		
	d) others	0	2		
3	DURATION OF CLINICAL EXPOSURE			0.0273	NS
	A)< 6 MONTHS	17	15		
	B) 6month -1yr	7	5		
	C) >1 yr	3	3		
4	SOURCES OF INFORMATION			0.310	NS
	a)family/relative	9	6		
	b)teachers/hospital staff	18	17		
5	Having Any Standard Precaution Policy In Institution			1.0198	NS
	A)yes	19	19		
	b)no	8	4		

{df -1, p - <0.05, table value – 3.84}

The study found no statistically significant association (NS) between pre-test knowledge scores and any of the listed demographic variables, as the exact significance values were all greater than the critical p-value of 0.05.

Part V: ASSOCIATION OF THE PRE-TEST PRACTICES SCORES WITH THE SELECTED DEMOGRAPHIC VARIABLES

TABLE-7 Association of the pretest expressed practices score with selected demographic variables N=50

Sl no	VARIABLES	>M	<M	Exact sig	Result
1	AGE IN YEARS			0.36764	NS
	A)16-18	1	0		
	B)19-21	32	7		
	C)22-25	2	8		
	D)>25	0	0		
2	PREVIOUS EDUCATION			0.73368	NS
	A) hs	7	16		
	B) graduate	8	7		
	C) anything related health care	4	6		
	d) others	0	2		
3	DURATION OF CLINICAL EXPOSURE			0.25997	NS
	A)< 6 MONTHS	8	13		
	B) 6month -1yr	7	13		
	C) >1 yr	4	5		
4	SOURCES OF INFORMATION			0.0363	NS
	a)family/relative	9	14		
	b)teachers/hospital staff	10	17		
5	Having Any Standard Precaution Policy In Institution			0.9650	NS
	A)yes	10	23		
	b)no	9	8		

{df -1, p - <0.05, table value – 3.84}

The table 6 & 7 uses an exact significance test to determine if variables like age, previous education, clinical exposure duration, information sources, and institutional policies are associated with knowledge levels. It reveals that there is no significant association between pre-test knowledge score & expressed practice score of students regarding nosocomial infection with any of the demographic variables as the calculated value is less than the table value.

Statistical Significance: The "Exact sig" (significance) values for all variables were above the typical threshold for significance (e.g., 0.05).

Outcome: All associations were found to be 'NS' (Not Significant).

PART V: DETERMINING CORRELATION OF KNOWLEDGE SCORE WITH EXPRESSED PRACTICE SCORE

Table 8: Correlation of knowledge score of B.Sc. Nursing 1st yr students with their actual expressed practice score

Variables	Correlation coefficient (r value)	p-value	Interpretation
Knowledge vs Expressed practice	(-0.201)	0.05	Negative correlation

Table 8 shows the correlation between the knowledge score and expressed practice of students regarding nosocomial infection and the result {r value= (-0.201)} suggests that there is a negative correlation between the both. Hence increase in knowledge does not cause any increase in practice.

SUMMARY

This chapter has dealt with the analysis and interpretation of the study. The data gathered was summarized in the master sheet and both descriptive and inferential statistics were used for analysis. Sample characteristics were analysed by using percentage, Paired z test was used to analyse the effectiveness of structured teaching program on knowledge and expressed practice regarding prevention of nosocomial infection. The study findings have shown that there was a significant increase in the post test knowledge & practice scores compared to pre-test scores. Then Chi-square test was used to analyse the association of pre-test knowledge scores with selected demographic variables. Karl Pearson's correlation co-efficient test was used to test the correlation between the knowledge and expressed practice score of students and the result showed a moderate positive correlation.

CHAPTER -V

DISCUSSION

This chapter presents the major findings of the study and discuss them in relation to the findings of other research studies. The study intended to assess the effectiveness of structured teaching program on knowledge and practice regarding nosocomial infection prevention among BSc nursing 1ST year students.

Data was collected from 50 nursing students selected by random sampling technique before administering structured teaching program data were collected using structured questionnaires. Then nursing students were asked to complete same questionnaire one week after the intervention. The collected data was tabulated, analysed and interpreted by using descriptive and inferential statistics. The findings of the study have been discussed with reference to the objectives and hypotheses stated.

The data findings have been organized and finalized according to the plan for data analysis and are presented under the following sections.

PART I: Description of the demographic variables of the BSc nursing 1st year students.

PART II: Analysis of pre-test and post-test knowledge scores and expressed practices score of BSc nursing 1st year students regarding prevention of nosocomial infection.

PART III: Analysis of effectiveness of structured teaching program on knowledge and expressed practice regarding prevention of nosocomial infection.

PART IV: Association of the pretest knowledge scores and practices score with the selected demographic variables.

PART V: Determining the correlation between the knowledge and expressed practice score of students

PART I: Description of the demographic variables of BSc Nursing 1st year students

The percentage distribution of subjects shows that highest 78% (39) students belong to the age group 19-21 years. Most of the students' i.e. 72% (36) educational status is HS while only 8% (4) students had healthcare related education before joining Nursing. 64% (32) students had less than 6 months of clinical exposure while 8% (4) students had more than 1 year clinical exposure. All the students i.e. 100% reported to have heard of the term 'Standard Precaution', 70% (35) of them have heard of it from the healthcare staffs and the rest of them heard about it from family or relatives. 76% (38) students were aware of the standard precaution policy in their parent hospital while the rest were unaware of it.

PART II: Analysis of pre-test and post-test knowledge scores regarding prevention of nosocomial infection among B.Sc Nursing 1st year students

Assessment of the level of pre-test knowledge score among B.Sc. Nursing 1st-year depicts that majority 36 (72%) of respondents had good knowledge scores, 11 (22%) had very good knowledge score, 3 (6%) had average knowledge score. The finding of the study has revealed that there is an urgent need to educate the B.Sc. Nursing 1st-year regarding nosocomial infection.

Assessment of the level of post-test knowledge score of the B.Sc. Nursing 1st-year after the administration of structured teaching program has revealed that majority of respondents 33 (66%) had very good knowledge score and 16 (32%) had excellent knowledge score, 1 (2%) had good knowledge score. It has shown that structured teaching program was very effective in improving knowledge level of B.Sc. Nursing 1st-year regarding nosocomial infection.

PART III: Assess the effectiveness of the structured Teaching programme on knowledge and expressed practice regarding prevention of nosocomial infection among B.Sc nursing 1st year students

The knowledge scores of B.Sc. Nursing 1st-year student regarding prevention of nosocomial infection has revealed that, post-test mean knowledge score was found higher 23.12 (77.1%) and SD of 2.5111 when compared with pre-test mean knowledge score which was 16.4 (54.7%) with SD of 2.569. The mean effectiveness score was 6.72 (22.4%) with SD of 0.058. The results of the study depicts that the structured teaching programme was very effective in improving the knowledge of the B.Sc. Nursing 1st-year students regarding prevention of nosocomial infection.

The practice score of BSc nursing 1st yr student regarding prevention of nosocomial infection has revealed that post-test mean practice score was found higher 69.26 (92.34%) and SD of 4.009 when compared with pre-test mean practice score which was 60.66 (80.88%) with SD of 4.752. The mean effectiveness score was 8.6 (11.6%) with SD of 0.743. The results of the study depicts that the structured teaching programme was very effective in improving the practice of the BSC nursing 1st yr students regarding prevention of nosocomial infection.

PART IV: Testing of hypothesis

a) Testing of hypothesis, H1

The hypothesis was tested using paired 'z' test. The 'z' value was calculated and compared with table value to analysed the difference in knowledge of BSc nursing 1st year students regarding prevention of nosocomial infection. The result revealed that the mean post-test knowledge score (77.1%) was higher than the mean pre-test knowledge score (54.7%), with the mean difference of (22.4%). The calculated 'z' value 13.28 was greater than the table value 2 at 0.05 level of significance and the post-test mean practice score was found higher 69.26(92.34%) and SD of 4.009 when compared with pre-test mean practice score which was 60.66(80.88%) with SD of 4.752. The mean effectiveness score was 8.6(11.6%) with SD of 0.743. Therefore, research hypothesis was accepted indicating that the gain in knowledge & practice was not by chance but after the implementation of structured teaching program. From the above findings it was concluded that the Structured Teaching programme is and effective teaching strategy to improve the knowledge scores of BSc nursing 1st year students regarding prevention of nosocomial infection.

b) Testing of hypothesis, H2

The Chi-square test was carried out to analyse the significant association between the pre-test knowledge & expressed practice scores with selected demographic variables. The study findings have shown that, there is no significant association of pre-test knowledge & expressed practice score with any of the selected demographic variables like age in years, educational status, duration of clinical exposure, sources of information, having any standard precaution policy in institution. Hence the hypothesis is rejected.

c) Testing of hypothesis, H3

Karl Pearson's correlation coefficient test was used to analyze the correlation between the knowledge score and expressed practice of students regarding nosocomial infection and the result {**r value= (0.201)**} suggests that there is a negative correlation between the both which states that with increase in knowledge have no effect on the practice, hence the hypothesis 3 is rejected.

SUMMARY

This chapter has discussed the significant findings of the study. This study has shown that the structured Teaching program was effective in increasing the knowledge and practice of B.Sc. nursing 1st year students, their demographic variables had no significant effect on the knowledge level regarding prevention of nosocomial infection and a moderate positive correlation exists between the knowledge and practice score.

CONCLUSION:

The main aim of the study was to assess the effectiveness of structured teaching program on knowledge and practice regarding prevention of nosocomial infection. The following conclusion was drawn based on the findings of the study:

Mean percentage of knowledge score in the pre-test was 54.7% with mean and SD of 2.569, which has increased after administration of structured teaching program among BSc nursing 1st year students with mean percentage of knowledge score in the post-test by 77.1% with mean and SD of 2.511. The structured teaching program tested in the study was found to be effective ($z=13.28$, $p<0.05$) in improving the effectiveness structured teaching program on knowledge and practice regarding prevention of nosocomial infection among BSc nursing 1st year students.

Association of demographic variables with pre-test score was computed using chi square test.

Analysis has shown that there is no association between pre-test knowledge score with selected demographic variables.

Correlation is determined by using Karl Pearson's correlation which showed moderate negative correlation between both.

Thus, the finding indicates that the knowledge of the BSc nursing 1st year students is increased knowledge regarding prevention of nosocomial infection through structured teaching program.

Nursing Implication:

The findings of the study have several implications in the field of nursing practice, nursing education, nursing administration and nursing research.

Nursing practice:

The healthcare professionals play a vital role in providing educational information, port and follow-up. The study has shown moderate deficiency in the knowledge and practice of B.Sc. nursing 1st year students regarding prevention of nosocomial infection. It highlights the need to increase knowledge of nursing students. The nursing students should be educated in their study and work environment.

Nursing education:

The B.Sc. nursing 1st year students should be encouraged to participate in courses regarding prevention of nosocomial infection. There should be teaching and ongoing feedback on their performance. The structured teaching program can act as a good teaching module and more emphasis should be given on updating the education.

Nursing administration:

As the number of hospitals are increasing day by day, there is a need to improve the knowledge level of BSc nursing 1st year students regarding prevention of nosocomial infection to reduce morbidity and mortality rate. The findings of the study have shown that there is a need of improvement in knowledge and practice regarding nosocomial infection.

Nursing research:

One of the aims of nursing research is to expand and broaden the scope of nursing. There is a need for evaluation of intervention programmes that include a holistic perspective of educational information. The use of the research findings should become part of the quality assurance evaluation to enhance the knowledge and practice of nursing students.

Limitations:

The limitations of the present study were:

1. The study was confined to a small sample selected by convenience sampling techniques which restricts generalize ability.
2. The study has no control group to allow testing for increase in knowledge.
3. No attempt was made to do the follow-up to measure the retention of knowledge of Bsc nursing students.

Suggestion:

1. Structure teaching programme should be established.
2. It helps the nursing students to update necessary knowledge about prevention of nosocomial infection.
3. The clinical instructors, infection control nurse, nursing supervisors of hospital and staff nurses should meet together to update the knowledge and skills and to discuss the possibilities of improvement in prevention of nosocomial infection.

RECOMMENDATION:

Keeping in view the findings of the present study, the following recommendations are made for further study:

1. A similar study can be conducted on a larger scale to draw definite conclusions and made a generalization.
2. A descriptive study can be undertaken with no control group.
3. A follow-up of the structured teaching can be carried out to find out the effectiveness in terms of retention of knowledge.

SUMMARY:

This chapter has deal with the conclusion drawn based on the findings of the study and implication for nursing practice, nursing education, nursing administration and nursing research, limitations, suggestions and recommendations of the study

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ANNEXURE

STRUCTURE QUESTIONNAIRE FOR ASSESSING THE KNOWLEDGE OF BSC NURSING STUDENTS REGARDING PREVENTION OF NOSOCOMIAL INFECTION

INSTRUCTION TO PARTICIPANTS

The interviewer informs the interviewee that the tool contains some information regarding prevention of nosocomial infection

SECTION -I : Consists of demographic data of Bsc nursing student

SECTION -2: Consists of data related to nosocomial infection

SECTION -A

DEMOGRAPHIC DATA

1. Age

- a. 16-18
- b. 19-21
- c. 22-24
- d. > 25

2. Educational status

- a. HS
- b. Graduation
- c. Anything related healthcare
- d. Others

3. Duration clinical exposure

- a. < 6 months
- b. 6 months – 1 yr

4. Did you ever hear of word ‘Standard precaution’

- a. Yes
- b. don't know

5. What is your source of information

- a. Family /Relative
- b. Teacher/Hospital staff
- c. Others

6. Do you have any standard precaution policy in your institution.

- a. Yes
- b. Don't know
- c. No.

SECTION- II (KNOWLEDGE QUESTIONNAIRE ON NOSOCOMIAL INFECTION)

- 1. **What is nosocomial infection?**
- 2. Infection presents at birth

3. Infection acquired in hospital
 - a. Infection from contaminated food
 - b. Infection inherited genetically
2. **The most common site of nosocomial infections is:**
 - a. Surgical wounds
 - b. Respiratory tract
 - c. Urinary tract
 - d. Gastrointestinal tract
3. **Which of the following organisms is a common cause of hospital-acquired pneumonia?**
 - a. Streptococcus pyogenes
 - b. Klebsiella pneumonia
 - c. Mycobacterium tuberculosis
 - d. Escherichia coli
4. **Which one of the following is best method to prevent nosocomial infection ?**
 - a. Vaccination
 - b. Isolation of patients
 - c. Hand hygiene
 - d. Antibiotic prophylaxis
5. **Catheter-associated urinary tract infection (CAUTI) is most likely caused by:**
 - a. Streptococcus pneumonia
 - b. Escherichia coli
 - c. Neisseria gonorrhoeae
 - d. Clostridium difficile
6. **The term “healthcare-associated infections” includes:**
 - a. Community-acquired infections
 - b. Infections occurring within 24 hours of admission
 - c. Infections acquired during healthcare delivery
 - d. All infections .
7. **What is the typical time frame for an infection to be considered nosocomial?**
 - a. within 12 hours of admission
 - b. After 48 hours of hospitalization
 - c. 1 Week after discharge
 - d. At any point during hospitalization

8. The role of infection control nurses includes :

- a. Surveillance of infections
- b. Educating staff on hygiene
- c. Prescribing antibiotics
- d. Monitoring outbreaks

9. Which of the following measures is least effective in preventing nosocomial infections?

- a. Hand hygiene
- b. Appropriate antibiotic use
- c. Regular staff training
- d. Overuse of antibiotics

10. Which is the gold standard for hand hygiene in hospitals?

- a. Antibacterial soap
- b. Plain water
- c. Alcohol based hand rub
- d. Chlorhexidine bath

11. Most common mode of transmission of nosocomial pathogens is:

- a. Air based
- b. Water based
- c. Hands of healthcare workers
- d. Contaminated instruments

12. Which one is not a risk factor of the nosocomial infection?

- a. Immunosuppression
- b. Long hospital stays
- c. Healthy immune system
- d. Invasive procedures

13. Which of the following is NOT a part of standard precautions?

- a. Hand hygiene
- B. Use of gloves
- c. Use of surgical mask for all visitors
- d. Face shield

14. Surgical site infection are best prevented by

- a. Antibiotics after surgery
- b. Delayed wound closure
- C. Prescribing antibiotics
- d. Monitoring outbreaks

15. A type of hospital acquired infection with high mortality and drug resistance is -

- a. Norovirus infection
- b. Acinetobacter baumannii infection
- c. HPV
- d. Candida albicans

16. Which of the following is a common route of infection

- a. Direct contact

- b. Radiant heat
- c. Chemical exposure
- d. Physical impact

17. Airborne precautions are necessary for which type of infection?

- a. Tuberculosis
- b. Hepatitis B
- c. Influenza
- d. Norovirus

18. In infection control the term ‘disinfection’ means

- a. The complete destruction of all microorganism
- b. The reduction of microorganisms to a safe level
- c. The process of preventing infections
- d. The removal of dirt of microorganisms to a same level

19. The most appropriate action after removing gloves is to

- a. Disinfect the gloves before reuse
- b. Perform hand hygiene
- c. Place gloves in a regular trash bin
- d. Touch surfaces freely

20. The primary goal of infection control in healthcare setting is to

- a. Increase patient comfort
- b. Improve patient nutrition
- c. Prevent the spread of infection
- d. Enhance communication between staff

21. Personal protective equipment (PPE) includes all of the following except

- a. Gloves
- b. Hand sanitizer
- c. Face shield
- d. Gown

22. Hand hygiene should be performed

- a. Before and after patient contact
- b. Only after patient contact
- c. Only before patient contact
- d. Only when hands are visibly soiled

23. In the event of a needle stick injury, the nurse should

- a. Report the injury immediately
- b. Ignore it if there is no visible blood
- c. Clean the needle with alcohol
- d. Continue working without further action

24. The most effective way to clean a surface contaminated with blood is to

- a. Use a disinfectant with an appropriate contact time
- b. Wipe with a damp cloth
- c. Rinse with water
- d. Use a standard cleaning method according to hospital policy

25. Which of the following is an example of a droplet precaution?

- a. Place the patient in a private room with negative pressure
- b. Using a surgical mask when within 3 feet of the patient
- c. Wearing a gown and gloves
- d. Using a respirator

26. which type of hand hygiene is preferred when the hands are visibly dirty?

- a. alcohol based handrub
- b. antibacterial wipes
- c. soap and water
- d. hand lotion

27. what is the recommended duration for handwashing with soap and water to effectively remove pathogens.

- a. 5 seconds
- b. 10 seconds
- c. 20 seconds
- d. 30 seconds

28. The purpose of using a gown during patient care is to:

- a) Protect the patient from infection
- b) Protect the healthcare worker from contamination
- c) Enhance comfort for the patient
- d) Prevent the spread of disease in the environment

29. The term “fomite” refers to:

- a) An inanimate object that can transmit pathogens
- b) A living organism that transmits disease
- c) A type of [protective clothing](#)
- d) A cleaning agent

30. The use of a negative pressure room is essential for which type of precaution?

- a) Contact precautions
- b) Droplet precautions
- c) Airborne precautions
- d) Standard precautions

ANSWER KEY :

Q NO.	Answer
1.	B
2.	C
3.	B
4.	C
5.	B
6.	C
7.	B
8.	C
9.	D
10.	C
11.	C
12.	C
13.	C
14.	C
15.	B
16.	A
17.	A
18.	B
19.	B
20.	C
21.	B
22.	A
23.	A
24.	A
25.	B
26.	C

27.	C
28.	B
29.	A
30.	C

ITEMS	STRONGLY AGREE (5)	AGREE (4)	NO OPINION (3)	DISAGREE (2)	STRONGLY DISAGREE (1)		
1. Hand-washing can only protect the health workers from getting infected.							
2. Hand sanitizers may not be effective against all type of germs or contaminants							
3. Using mask can protect against air born pathogen.							
4. Hand washing is an essential practice for maintaining good health and hygiene.							
5. Standard precautions should be the minimum level of precautions used when providing care for all patients.							
6. Hand washing is the first priority in preventing infections when providing care for a patients.							

7. We should maintain 3 ft distance from others while coughing.					
8. It is necessary to wear N95 mask while providing care to TB patient.					
9. Needle should be discarded in puncture proof containers.					
10.It is necessary to wear PPE in any invasive procedures.					
11. Use PPE when risk of body fluid exposure.					
12. Wash your hands for at least 20 sec for effectively remove germs and microorganisms					
13.Only after touching patient surrounding hand washing is needed					
14. Before touching patient hand washing is must be needed to prevent infection					
15. Urine bag should be emptied every day even if there is very little collection.					
Total score:					

LIST OF EXPERTS:

1. Dr. Abhranil Goshwam

Assistant Professor of Microbiology

2. Madam Anita Pradhan

DNS of JIMSH

3.Madam Mousumi Sur

Professor of JINS

4.Madam Towar Shilshi

Associate Professor of JINS

5.Brother Satyajit Sar

IPCN of JIMSH

Pre Test

Q N O	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	28	29	30	TOTA L	
C O D E N O -																																
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Post Test

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37	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1	0	1	1	1	0	0	0	1	1	1	1	0	1	1	1	24
38	1	0	1	1	1	1	1	1	1	1	1	1	1	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	26
39	1	1	1	1	1	1	1	1	1	1	1	1	0	0	1	1	1	1	0	1	1	1	1	1	0	1	1	1	1	1	27
40	1	1	1	1	1	1	0	1	0	1	1	1	1	1	0	1	0	1	1	1	1	1	1	1	0	1	1	1	1	1	25
41	1	1	1	1	0	0	0	0	1	1	1	1	1	0	1	1	0	1	1	1	1	1	1	1	1	1	0	1	1	0	22
42	1	1	0	1	1	1	0	1	1	1	1	0	1	0	1	0	1	0	0	1	1	0	1	1	1	1	1	1	1	1	23
43	1	1	1	1	0	1	0	1	1	1	0	1	1	1	1	1	0	0	1	1	1	1	1	0	1	1	0	1	0	0	24
44	0	1	1	1	1	1	1	1	1	0	1	1	1	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	24
45	1	1	1	1	1	1	1	0	1	1	1	1	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	26
46	1	1	1	1	1	1	1	0	1	1	1	0	1	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	25
47	1	1	1	1	1	1	0	0	0	0	1	1	0	1	1	0	1	1	1	1	0	1	1	1	1	0	1	1	1	1	23
48	0	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1	27

49	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	28
50	1	1	1	0	1	1	0	1	1	0	1	1	0	1	1	1	0	0	0	0	1	1	1	1	1	1	1	1	1	1	22

DEMOGRAPHY DATA

CODE NO.	AGE	Previous Education	Duration of clinical exposure	Ever heard of "Standard Precaution"	Source of information	Having any Standard precaution policy in institution
1	B	A	A	C	B	B
2	B	A	B	A	B	A
3	B	A	C	A	B	A
4	B	A	A	A	B	A
5	B	A	B	A	B	A
6	B	A	A	A	B	A
7	B	B	A	C	B	B
8	B	A	C	A	B	A
9	B	A	A	A	B	A
10	B	A	A	A	B	A
11	C	A	A	A	B	A
12	B	A	B	A	B	A
13	C	A	A	A	B	A
14	B	A	A	C	B	A
15	B	A	A	A	B	A
16	B	A	A	A	A	B
17	B	A	B	A	B	A
18	B	A	B	A	B	C
19	B	A	A	A	B	A
20	B	A	B	C	B	A
21	B	A	A	A	B	A
22	B	A	A	A	B	A
23	B	A	B	B	C	B
24	B	A	A	A	B	A
25	B	A	B	A	C	A
26	B	A	C	C	B	A
27	B	A	A	A	B	B
28	B	A	A	A	B	A

29	B	A	A	A	B	A
30	B	A	A	A	B	A
31	B	A	B	A	B	B
32	B	A	A	A	B	A
33	B	A	B	C	B	A
34	B	A	B	A	B	A
35	B	A	A	A	B	A
36	B	A	A	A	B	A
37	A	A	A	B	B	A
38	B	A	C	A	B	A
39	B	A	A	A	B	A
40	B	A	B	A	B	C
41	B	A	A	A	C	B
42	B	A	A	B	B	B
43	B	A	B	A	B	A
44	B	A	A	A	B	A
45	B	A	A	A	B	A
46	B	A	B	A	B	C
47	B	A	A	A	B	A
48	C	A	A	A	B	A
49	B	A	A	A	B	A
50	B	A	A	A	B	B