ASSESS THE KNOWLEDGE AND PRACTICE REGARDING HOSPITAL ACQUIRED INFECTION (HAI) AMONG NOVICE NURSING STUDENTS"

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Project submitted to the

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Under the guidance of:

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DECLARATION BY THE CANDIDATE

I here declare that this dissertation titled "knowledge and practice regarding hospital acquired infection among novice nursing students" is a bonafide and genuine research work carried out by me under the guidance of Mr. Vasantha Malagi, Associate Professor Head of Department of Mental Health Nursing, Smt. Nagarathnamma School & College of Nursing, Bangalore.

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ABSTRACT

INTRODUCTION: Hospital acquired infection or nosocomial infection, or health care associated infection is one of the common problems and difficulties faced by hospital worldwide. Since novice nursing students are part of health care team, their clinical competency in infection control is vital. Novice nursing students during transition to practice have theory-practice gap which can lead to reduction of quality patient care, reduction of novice nurse's clinical performance and increase HAI.

OBJECTIVES: This study was conducted with the objective to assess knowledge and practice regarding hospital acquired infection among novice nursing students, to find relationship between knowledge and practice regarding hospital acquired infection among novice nursing students and to find association between knowledge and practice with selected socio- demographic variable.

METHOD: This study was descriptive study among 100 novice nursing students studying less than 1 year in selected tertiary care hospital. Self-structured knowledge questionnaire regarding hospital acquired infection and self-structured situational practice questionnaire were used to assess the knowledge and practice.

RESULT: The study result showed that majority of the subject 72 (72%) had moderately adequate knowledge, 26 (26%) of the subjects had inadequate knowledge and only 2 (2%) of the subjects had adequate knowledge regarding hospital acquired infection. With regards to practice, 52 (52%) of the subjects had poor practice, 42 (42%) of the subjects had fair practice and only 6 (6%) of them had good practice regarding

hospital acquired infection. The relationship between knowledge and practice was found to have moderate positive significant correlation ($r= 0.425$, $p < 0.000010$). Knowledge of the novice nursing students showed no association with socio-demographic variables. Whereas practice of the novice nursing students showed association with age ($p = 0.027$) and gender ($p = 0.012$) at 0.05 level of significance.

CONCLUSION: The study revealed that most of the novice nursing students have moderately adequate knowledge with relatively minimal practice rate. Lack of knowledge and practice of the novice nursing students may lead to increase rate of hospital acquired infections. The gaps in knowledge and practices regarding hospital acquired infection control measures indicates the need to establish policy and ensure constant availability of guidelines and the provision of training the Novice nursing students.

Key words: Hospital acquired infection (HAI), health care associated infection, novice nursing students.

LIST OF ABBREVIATION USED

HAI	Hospital Acquired infection
ICU	Intensive care unit
CAUTI	Catheter associated urinary tract infection
CLABSI	Central line associated blood stream infection
WHO	World Health Organization
CDC	Centre for Disease Control and Prevention
HCW	Health Care Workers
HCAI	Health Care Associated Infection

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INTRODUCTION

INTRODUCTION

"LEARNING THROUGH OUR ERRORS"

Hospital is an essential part of health care system development. The hospital experience often makes a central point in the lives of patient as they are entitled to safe care by the health care providers. Safety during patient hospitalization consist of one of the patients' rights and the priority of the health care profession. [(1)]

Patient safety is the freedom from accidental injury or harm caused by medical care, and it is a global issue affecting countries of all development (WHO 2008). It is undeniable that health care services can be potentially harmful and patient safety are compromised. When medical error take place due to lack of patient safety, they lead to increase length of stay, significant mortality, and additional expense. [(1)]

An average of 10% of hospital admissions involve an adverse incident in acute settings and around one third of these leads to disability or death, at least half of these adverse events are judge as preventable when standards of care are followed. Adverse events appearing in the hospital setting concern a lot of incidents like pressure sores, hospital acquired infections, falls, improper management of clinical situations and medication errors. Among all the adverse events, hospital acquired infections are the most frequent adverse event in the health care delivery worldwide and it is a major safety concern for both hospital care providers and the patients.

Hospital acquired infection is also known as "nosocomial infection" or "health care associated infection" or infection acquired in health care settings are the most frequent adverse event in health care delivery worldwide. Health care associated infections are those infection that the patients develop during receiving healthcare treatment for other condition, which are not incubating at the time of admission. Hospital acquired infections are significant cause of illness and death and they can have devastating emotional, financial, and medical consequences. Some of the most occurring preventable hospital acquired infections are catheter associated

urinary tract infection, central line associated blood stream infections, ventilator associated pneumonia and surgical site infections. [2]

According to Center for Disease Control and Prevention stated that catheter associated urinary tract infection occurs when germs enter the urinary tract through the urinary catheter and causes infection. Central line associated blood stream infection is an infection which is caused by the indwelling central venous catheter and results in thousands of deaths each year. Ventilator associated pneumonia is a lung infection that develops in a person who is on ventilator and infection may occur if germ enters through the tube into the patient lungs.[3] And surgical site infection is an infection that occurs after surgery in the part of the body where surgery took place.[4] Since hospital acquired infections have a direct impact on patient safety, contributing to unexpected patient deaths, placing patients and their families at increased risk of infection, and increasing the burden of health cost for hospitals and communities. Increasing awareness and practice of infection prevention and control becomes high priority for nurses in healthcare settings as nurses are the largest deliverer of health care worldwide.

For nurses, patient safety is not just part of what they do, nurses are committed through their code of ethics to provide "safe, competent and ethical care" (Canadian Nurses Association 2002). Nurses have major responsibility for infection prevention and control as a part of daily patient care activities. So, Competency in infection control is crucial component for implementing best practices for nurses to ensure patient safety and provide high quality care. [5]

Novice nursing students are those who are newly qualified nurse and new to practice. During transition to practice, the novice nursing students have theory-practice gap and limited skill sets which can lead to the reduction of quality patient care and reduction of novice nurse's performance quality. A solid knowledge of infection control is necessary to assist new registered nurses to work as competent beginner practitioners within health care settings, including reducing risk for hospital acquired infection and providing safer patient care by minimizing cross infection between patients. [6]

Therefore, it is important for the novice nursing students to integrate knowledge, skills, and behaviors to perform safely in health care setting following infection control standards.

NEED FOR THE STUDY

Patient safety is the absence of preventable harm to a patient during the process of health care and reduction of risk of unnecessary harm associated with health care to an acceptable minimum. Health care system structure is prone to human errors and is inevitable.

According to WHO, hospital acquired infection is defined as an infection occurring in a patient in a hospital or other health care facility in whom the infection was not present or incubating at the time of admission. Which includes infections acquired in hospital but appearing after discharge, and occupational infections among staff of the facility.[(2)]

According to WHO (2018), worldwide, it is estimated that 1 in 4 patients are harmed while receiving primary care. It is estimated that 421 million hospitalizations in the world annually and approximately 42.7 million adverse events occur during the stay. In low-middle income countries 134 million adverse events occurs contributing to 2.6 million deaths annually and resulting cost of lost productivity amount between 1.4-1.6 trillion each year.[(2)]

In March 2018, WHO released few facts on patient safety which is an alarm to the health care providers. It states that patient harm is the 14th leading cause of global disease burden, comparable to Tuberculosis and Malaria. One out of every 10 patients in high income countries is harmed in which 50% of them being preventable. While in low middle income countries rate of adverse events was around 8% in which 83% were preventable and 30% leads to death. One such preventable error frequently occurring worldwide is Hospital Acquired Infections.[(7)]

According to WHO, every 100 hospitalized patients at any given point of time, 7 in high income countries and 10 in low-middle income countries will acquire at least one health care associated infections.

Each year 3.2 million patient are infected with hospital acquired infection across Europe and 37000 of them die as a direct consequence.[2]

The prevalence rate of health care associated infection is 19.1% in low- and middle-income countries. The endemic burden of health care associated infection is significantly higher in low and middle income than in high income countries, particular to patients admitted in intensive care units and in neonates.

The proportion of patients with intensive care acquired infection range from 4.4% to 88.9% with a frequency of overall infections as high as 42.7 episodes per 1000 patients. Among neonates, health care associated infections are responsible for 75% of all causes of death in neonatal period in south east Asia.

A prospective cohort surveillance study was conducted, on device associated infection rate in 40 hospitals from 20 cities in India from 2004-2013. Data was collected from 236,700 intensive care unit patients for 970,713 bed days by using national health care safety network's criteria and definitions and international nosocomial infection control consortium methodology. Data was analyzed using INICC ISOS, EpiInfo and SPSS to calculate health care associated infection rates, device use, length of stay and mortality. The study results depicted that health care associated infection rates for adults were 5.1 central line associated bloodstream infections/ 1000 central line days, 9.4 cases of ventilator associated pneumonia/1000 ventilator days and 2.1 catheter associated urinary tract infection/1000 urinary catheter days. In neonatal intensive care unit, pooled rates were 36.2 central line associated bloodstream infections/ 1000 central line days and 1.9 ventilator associated pneumonia/1000 ventilator days. Length of stay in both adult and pediatric intensive care units was 9.5 for central line associated bloodstream infections, 9.1 for ventilator associated pneumonia and 10.0 for catheter associated urinary tract infection. Crude mortality rate was 16.3% for central line associated bloodstream infections, 22.7% for ventilator associated pneumonia and 6.6% for catheter associated urinary tract infection for adults. And pediatric mortality rate was 1.2%% for central line associated bloodstream infections, 8.3% for ventilator associated pneumonia. The study concluded that device associated health care associated infection rates are higher than rates estimated by national health care safety network.[8]

A cross-sectional retrospective study was conducted regarding epidemiology of hospital acquired infections in Ramaiah hospital, Karnataka from the month of January 2013 to December 2015. The data was collected from records of total in-patient of 79401 and data was categorized as per International Classification of Disease-10 coding. The data was analyzed using descriptive statistics based on International Classification of Disease-10 coding. The study depicts that urinary tract infection cases was 1318 (1.66%) more among females and 51.7% highest rate in general ward. Blood stream infection- 360 cases (0.45%) with 54% male patients, 79.7% medical related diagnosis and 66.9% cases from intensive care unit. Ventilator associated pneumonia- 148 cases (0.19%), 62.1% male patients, 94.8% medical related type of diagnosis. Surgical site infection 30 cases (0.04%), 65.5% male patients and 86.2% in general wards. The study also reveal that Maximum number of deaths was due to blood stream infection contributing to 27.22% as case fatality rate and 60.12% proportional mortality rate. The study recommended that management of hospital acquired infection requires multi-pronged approach.[9]

A descriptive study was conducted regarding knowledge, attitude, and practice of nurses about standard precaution for hospital acquired infection, in Iran, 2014. Simple random sampling was adopted, and 170 nurses enrolled for the study. A structured questionnaire was used to collect data regarding knowledge, attitude, and practice. Data was analyzed using descriptive and inferential statistics. The results showed that 43% of the nurses had poor knowledge, 42% had average practice and 37% had moderate positive attitude about hospital acquired infection. The study recommended to provide training sessions on the prevention and control of hospital acquired infection to increase awareness of health care personal and hold practical sessions for practicing these principles.[10]

A focused review of research literature on New graduate nurses' knowledge of patient safety and practice conducted in Australia, 2015. The reviews consist of 5-year time frame and 45 articles were included in the study. This view acknowledges that there is an existence of theory-practical gap for new graduate registered nurses and transition to practice is a key learning period setting new nurse on becoming

expert practitioner. Within the literature, there was little to no acknowledgement of patient safety knowledge of the newly registered nurse. The review recommended that exploring novice nursing students' knowledge of medical errors and patient safety during transition may influence towards safer and more positive patient outcomes.[6]

Studies have been conducted with regards to knowledge but relating studies to practice among novice nursing students were minimal. With these evidences of above statistics and studies, the student researcher felt the need to assess the knowledge and practice of hospital acquired infections among novice nursing students in tertiary care hospital.

OBJECTIVES

STATEMENT OF THE PROBLEM

A descriptive study to assess the knowledge and practice regarding hospital acquired infection among novice nursing students in selected nursing college, Bangalore.

OBJECTIVES OF THE STUDY

- To assess the knowledge regarding hospital acquired infection among novice nursing students.
- To assess the practice regarding hospital acquired infection among novice nursing students.
- To find out the relationship between knowledge and practice regarding hospital acquired infection among novice nursing students.
- To find the association between knowledge regarding hospital acquired infection and selected socio demographic variables.
- To find the association between practice regarding hospital acquired infection and selected socio demographic variables.

RESEARCH HYPOTHESES

H_1. There is a statistically significant relationship between knowledge and practice regarding hospital acquired infection among novice nursing students.

H_2. There is a statistically significant association between knowledge regarding hospital acquired infection and selected socio demographic variables.

H_3. There is a statistically significant association between practice regarding hospital acquired infection and selected socio demographic variables.

OPERATIONAL DEFINITIONS

- **Knowledge regarding hospital acquired infection:** In this study it refers to the novice nursing students' ability to recognize and appraise early signs and symptoms of hospital acquired infections associated with nursing care, assessed by a structured knowledge questionnaire.
- **Practice regarding prevention of hospital acquired infection**: In this study it refers to the novice nursing students' ability to make clinical decision that ensures safety and prevention of hospital acquired infections associated with nursing care, assessed by structured situational practice questionnaire.
- **Hospital acquired infection:** In this study it refers to infections acquired during hospital stay which are not present at the time of admission and it includes the following:
    a) Catheter associated urinary tract infections.
    b) Central line associated blood stream infections.
    c) Ventilator associated pneumonia.
- **Novice nursing students:** In this study it refers to nurses who have studying in diploma in general nursing and midwifery or basic Bachelor of Science in nursing, in Nursing colleges.

ASSUMPTION

- Hospital acquired infection is an indicator of quality health care.
- Lack of novice nursing students' knowledge and practice regarding hospital acquired infection can increase preventable harm to patients.

DELIMITATION

The study is delimited only to:

- Registered novice nursing students studying in tertiary care hospital for less than 1 year.

- Novice nursing students in selected nursing college Bangalore.
- 4 weeks of data collection.

CONCEPTUAL FRAMEWORK

A conceptual framework consists of group of concepts that are placed within a logical and sequential design to provide general explanation of the relationship between the concepts of the research study. The purpose is to make scientific findings meaningful and stable. Concepts is the mental images of phenomena and they are building blocks of the theory. Conceptual models are made up of abstract and general ideas and propositions that specify their relationship.

Miles and Huberman (1994) states that the conceptual framework is a written or visual presentation that explains either graphically, or in narrative form, the main things to be studied-the key factors, concepts or variables and the presumed relationship among them.

Polit and Hungler (1999) states that the conceptual framework is an interrelated concept or abstract that re assembled in some rational scheme by virtue of their relevance to the common theme. This is a device that helps to stimulate research and extension of knowledge by providing both directions and impetus.

The purpose of conceptual framework is to organize a concept that represents essential knowledge that might be used in many disciplines and it deals with the interrelated concepts that are accessible together in some rational schemes by virtue of their relevance to a common theme.

The present study aimed to assess the knowledge and practice regarding hospital acquired infection among novice nursing students.

The conceptual framework selected for the present study is based on the general system theory as postulated by Ludwig Von Bertalanffy (1998). This is regarded as a universal grand theory because of its unique relevancy and applicability (Johnson and Webber, 2005). It is one type of exchange theory. In general system

theory, systems are composed of both structural and functional components that interact within the boundary that filters the type and rate of exchange with the environment. Here all the living systems are open systems because there is an ongoing exchange of matter, energy, and information.

The following elements are common to the system:

The system is a unit that is greater than the sum of its parts and it has got various subsystems which has boundaries. Communication and feedback mechanism are essential for system to function in a system goal or end can be reached in various ways and any change in one-part causes change in the whole system. The basic elements of a system according to Ludwig Von Bertalanffy are:

"INPUT" which is matter, energy and information received from the environment and in this study, input is considered as various socio-demographic variables of novice nursing students which have influence on knowledge and practice regarding hospital acquired infection.

"THROUGHPUT" refers to matter, energy and information that is modified or transformed within the system. The process by which the system processes the input and releases an output. In this study throughput includes assessment of level of knowledge through structured knowledge questionnaire and quality of practice using situational practice questionnaire on hospital acquired infections.

"OUTPUT" refers to energy, matter and information that leave a system into the environment. In the present study the knowledge is assessed by means of adequate, moderately adequate knowledge and inadequate knowledge. Whereas practice is assessed by means of good practice, fair practice, and poor practice.

"FEEDBACK" refers to the information regarding responses used by the system (may be positive, negative, or neutral). In the present study it was not done.

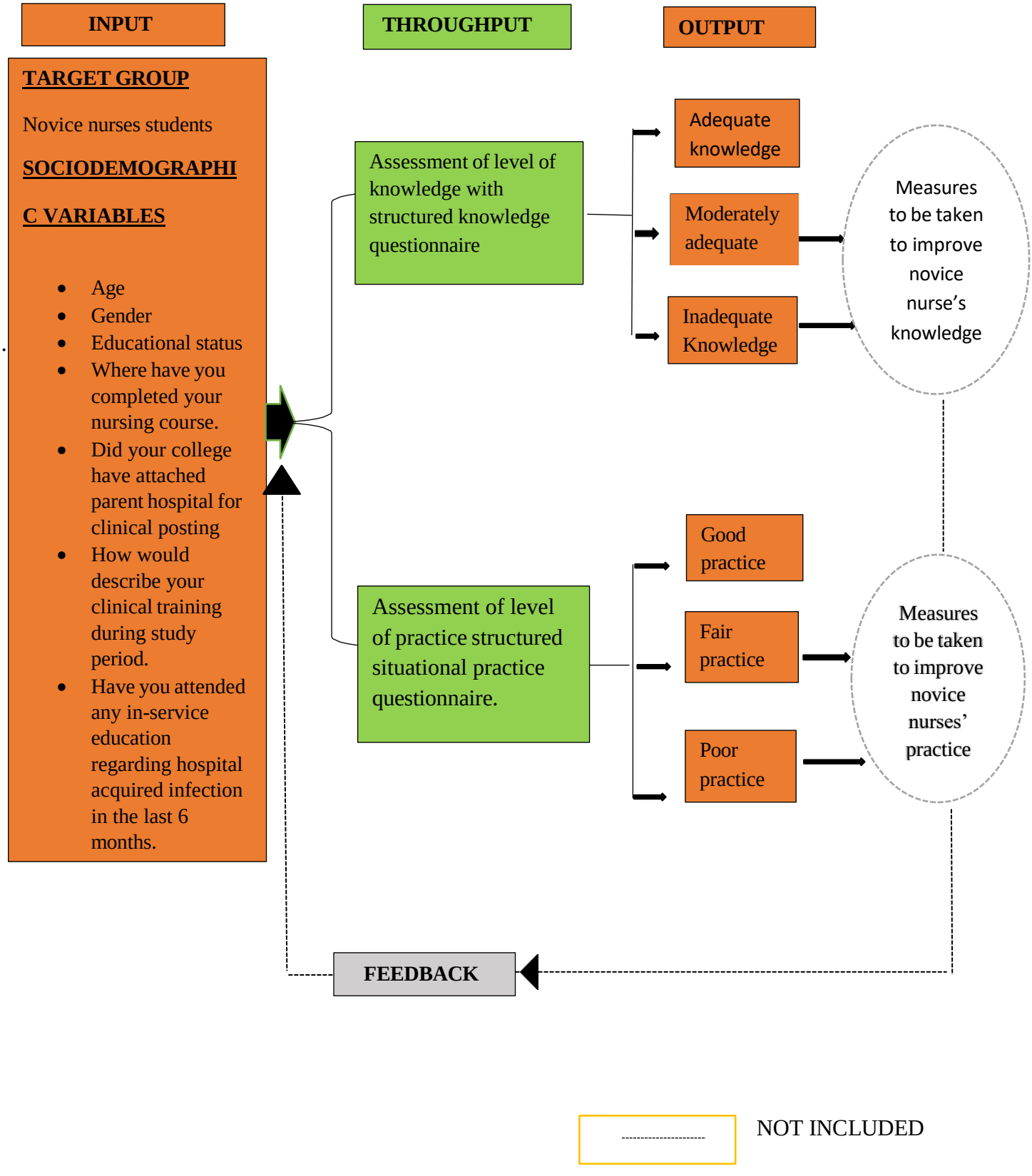


FIGURE 1: CONCEPTUAL FRAMEWORK BASED ON LUDWIG VON BERTALANFFFY'S GENERAL SYSTEM'S MODEL (1998).

REVIEW OF LITERATURE

REVIEW OF LITERATURE

STUDIES RELATED TO HOSPITAL ACQUIRED INFECTION

A cross- sectional study was conducted regarding knowledge about hospital acquired infection among nurses in Maharashtra, 2013. A convenient sampling method was used, and 100 nurses were selected for the study. A structured questionnaire regarding hospital acquired infection was used to collect the data. The study was analyzed using descriptive and inferential statistics. The study results showed that 65% (65) of nurses had correct knowledge regarding hospital acquired infection but 37%(37) nurses had inadequate knowledge regarding appearance time of hospital acquired infection and 38%(38) nurses did not know about the barrier nursing plays a role in preventing hospital acquired infection. The study concluded that the study is limited as practice questionnaire components could not be added. The study recommended that there is an imperative need for health education to improve knowledge of the nurses as the nurses' knowledge regarding hospital acquired infection was inadequate.[(11)]

A descriptive study was conducted to assess knowledge of infection control practices among intensive care nurses in Ludhiana, India, in the year 2013. Convenient sampling technique was adopted, and 100 ICU nurses were selected for the study. Self-structured questionnaire was used to collect the data. Descriptive and inferential statistics were used to analyze the data. The result of the study shows that overall awareness was good in 37% (37) of the nurses, average in 40% (40) and below average in 18% (18). Only 5% (5) of the nurses had excellent knowledge. It also stated that the more experienced nurses had good knowledge of infection control practices, whereas nurses with less experience had average knowledge. 60% (60) of nurses with >8 years of experience had good knowledge of infection control practices, and 40% (40) had average overall knowledge. Junior nurses with <5 years of experience had variable levels of knowledge of infection control practices and only 6% (6) had excellent knowledge, 30.5% (30) had good knowledge, 41.5% (41) had average knowledge, and 22% (22) had below-average knowledge. The study recommended that nurses have good knowledge but needed regular educational program and in-house training.[(12)]

A descriptive cross-sectional study was conducted to assess the awareness and practice among nursing staff in Gujarat, 2015. Convenient sampling technique was used, and 83 staff nurses enrolled for the study. Self-structured questionnaire and face to face interview was done to collect data from the subjects. Descriptive and inferential statistics were used for analysis. The study result showed that 80 (93.02%) participants had heard about HAIs and more than half 60.4% of the participants acknowledged that urinary and respiratory tract infections were the two most common HAIs. 52 (60.4%) of the participants acknowledged that direct skin to skin contact and improper handling of bio medical waste were the two most common modes of transmission of HAIs. 47 (56.6%) practiced hand washing before and after surgical procedures. 30 (36.1%) participants had good knowledge regarding HAIs. The study Concluded that level of awareness and practice regarding HAIs among nursing staff was average and recommended that there is a need to develop a system of continuous education to increase nurses' awareness and hence adopt appropriate health behaviors and increase adherence to precautions. [13]

A descriptive study was conducted to assess the knowledge and practice of nurses on infection control measures in pediatric unit, Pondicherry, 2013. Convenient sampling technique was adopted, and 60 nurses were selected for the study. Self-structure knowledge questionnaire and observational checklist for practice were used and data was collected. Descriptive and inferential statistics were used to analyze the data. The result of the study showed that only 23.3% (14) had adequate knowledge and majority of them 78% (46) had inadequate knowledge. Whereas 57% (34) of the subjects had adequate practice and 43% (26) had inadequate practice. The study also showed that there was weak negative significant correlation between knowledge and practice among nurses on infection control measures. The study also showed that there was significant association between knowledge and in-service education (p=0.06). The study recommended that teaching on infection control measures will improve nurse's knowledge.[14]

A descriptive cross-sectional study was conducted among nurses to assess knowledge, attitude, and practice of staff nurses on hospital acquired infection in Dhaka, 2017. Purposive sampling technique was used,

and 234 nurses were selected for the study. Self- structured questionnaire containing different set of questions regarding knowledge, attitude and practice on hospital acquired infection were used to collect data. Descriptive and inferential statistics were used to analyze the data. The study result showed that 95% (222) of the participants considered that prevention of HAIs was a valuable part of their role. About 65% (152) of the staff nurses had received formal training regarding hand hygiene and 100 % (234) of participants felt that they would be less likely to transmit infection to the patients if they performed hand-hygiene. Regarding practice, only 6% (14) performed hand hygiene before patients contact and 27% 63) of the staff nurses reported that they often forgot to perform hand hygiene. The finding of the study revealed a good knowledge of infection prevention among most participants with relatively minimal level of practice. The study recommended that there is a need of developing regular training program and monitoring on performance feedback regarding hand hygiene. [15]

STUDIES RELATED TO CATHETER ASSOCIATED URINARY TRACT INFECTION

A cross-sectional, correlational study was conducted to assess nurses' knowledge and practice towards prevention of catheter associated urinary tract infections in Saudi Arabia from November 2017 to January 2018. A convenience sampling technique was adopted to select 137 nurses. Self-structured knowledge and practice questionnaire was used to collect the data. Descriptive statistic and chi-square test were used for analysis. The study depicted that 62.77% (86) had average level of knowledge and 62.77% (86) of nurses had low level of knowledge and only 1% (1) had high level of knowledge. Only 16.1% (22) of nurses had a good level of practices and 83.94% (115) of them had poor practice. The study recommended that further studies are needed to investigate the barriers affecting nurses' knowledge, attitude and practice regarding catheter associated urinary tract infection prevention.[16]

A descriptive study was conducted to assess knowledge and attitude of doctors and nurses regarding indication for catheterization and prevention of catheter associated urinary tract infection in India, 2015. Convenient sampling technique was used, and 54 doctors and 105 nurses were selected for the study. Self-structured knowledge and attitude questionnaire was used to collect data. Descriptive and inferential statistics

were used for analysis. The study result showed that the mean years of experience of the respondents in the health care setup was 6.8 years. Only 57% (90) of the respondents could identify all the measures for prevention of CAUTI. Overall, the knowledge of doctors was significantly better than nurses in identifying the indications for catheterization ($P < 0.05$). The knowledge regarding the indication for catheterization though suboptimal was significantly better amongst the doctors as compared to nurses. The study concluded that the knowledge regarding indication and preventive measures was suboptimal in study group. The study recommended that education induced intervention would be the most appropriate effort toward reducing the incidence of CAUTI.[17]

A descriptive study was conducted to assess evaluation of nurses practice on indwelling catheter in Iraq, 2018. Nonprobability purposive sampling technique was used, and 60 nurses were selected who perform catheterization. Self-structured indwelling catheter checklist that consist of 21 questions of catheter insertion was used for data collection. Descriptive and inferential statistics were used for analysis. The study result showed that 56.7% (34) of the subject had poor practice and only 43.3% (26) had good practice. The study showed that there was significant association between practice and socio demographic variable - economic status (p=0.010). The study recommended conducting and developing catheterization research that may contribute in reducing infectious problems of patient who need temporary or permanent for urinary catheter. Involving the nursing staff in educational courses to motivate their knowledge and practices about urinary catheterization.[18]

A descriptive study was conducted to assess infection control in the use of urethral catheters: knowledge and practices of nurses in Philippines, 2013. Purposive sampling technique was used, and 30 nurses were enrolled for the study. Self-structured questionnaires were used to collect data. Descriptive and inferential statistics were used to analyze the data. The study result showed that 30% (9) of nurses had average knowledge and 70% (21) had low knowledge. Only 33.6% (10) of the nurses had good practice and majority of the nurse 66.7% (20) had poor practice. The study also revealed that there was a very high correlation between knowledge and practice (r= 0.862). The study recommended that continuous education and training is needed to decrease and prevent CAUTI.[19]

A descriptive study was conducted to measure the nurses' knowledge and attitudes of urinary catheter care. Purposive sampling technique was used, and 64 nurses were selected for the study. The data collection was done by using a modified version of the Knowledge and Attitudes of Urinary Catheter Care (KA-UCC). Descriptive and inferential statistics were used to analyze the data. The study revealed that all the respondents reported being trained on catheter insertion, (100%) but (85%) of them reported they were trained more than 2 years previously. (76%) of the nurses reported being trained on catheter care but less than half were trained in the past year. The number of catheters placed in the last month was low, (80%) of respondents reported placing 0-1 catheters in the last month. One-third (41%) of nurses reported changing gloves between peri-care and catheter care half of the time or less. A total of (28%) of respondents agreed that patients get better care when they have urinary catheters placed. The study recommended that continuous education and training is needed to increase nurse's knowledge and attitude.[20]

STUDIES RELATED TO CENTRAL LINE ASSOCIATED BLOOD STREAM INFECTION

A descriptive study was conducted to assess the knowledge of staff nurses regarding central line associated blood stream infection with a view to develop information-booklet on prevention of central line associated blood stream infection in Delhi, 2016. Convenient sampling technique was used to select 50 staff nurses. Self-Structured knowledge questionnaire was used to collect the data. Descriptive statistics was used to analyze the scores of knowledge. The study results showed that majority 48 (96%) had inadequate knowledge and only 2 (4%) had adequate knowledge. The study recommended that there is need in improvement of knowledge regarding risk factors and prevention strategies through in-service education, informational booklet and continuing nursing education.[21]

A pre-experimental study was conducted to assess the effectiveness of education program regarding central venous care bundle in terms of knowledge and practice of nursing personnel in Delhi, 2018. Enumeration sampling technique was used, and 35 staff nurses were selected for the study. A Structured knowledge questionnaire was prepared to assess the knowledge and an Observation Checklist was prepared to assess the practice of the Nursing Personnel regarding CVC Care Bundle. Descriptive and inferential statistics

were used to analyze the data. The study revealed that there was a significant difference in the Mean Pre-test (19.57±3.43) and Post-test (24.94±4.78) knowledge scores (p= <0.001) as well as Pre-test (39.17±2.86) and Post-test (47.11±1.87) Practice scores (p= <0.001) of Nursing Personnel regarding CVC Care Bundle. The study revealed significant increased scores for both Knowledge and Practice after the Education Program. The study recommended that there is a need to provide education regarding CVC Care Bundle after regular intervals.[22]

A descriptive cross-sectional study was conducted to assess the Knowledge, attitudes, and practice on the prevention of central line-associated bloodstream infections among nurses in oncological care in Italy, 2016. Purposive sampling technique was used, and 334 staff nurses were selected for the study. Data was collected by using self- structured questionnaire based on CDC guidelines. Univariate analysis was performed with a t-test or chi-square test. The study result revealed that majority of nurses, with frequencies ranging from 70.7% (236) to 90.1% (300), answered questions correctly about to flush the lumen with saline after administration of medication or fluid, to use sterile gauze or transparent semipermeable dressing to cover the catheter site, to not use topical antibiotic ointment on insertion site, and to replace IV administration sets every 72 hours. Only 64.4% (215) acknowledged that the routinely use of anticoagulants solutions does not prevent CLABSIs and 70% (233) that hydrogen peroxide is not recommended to disinfect the catheter insertion site. Attitudes mean score for the whole sample was respectively of 9.1±1.5 and 9.7±1. Regarding to practice, hygiene before dressing (84.6%), hands hygiene with antiseptic soap (81.7%), hands washing for more than 1 minute (58%), use of gloves during dressing replacement (93.8%), povidone iodine for dressing insertion sites (87.8%), and let the antiseptic dry (33.3%). The study also revealed that nurses with a graduate degree were 2.1 times more likely to have an appropriate behavior than those with a lower education (95% CI 1.17–3.79). The study concluded by stating that there is a need for educational intervention and should implement to address gasps regarding knowledge and practice.[23]

A descriptive survey study was conducted to assess the nurses' Knowledge and Practice Related to Caring of Central Venous Line, in Saudi Arabia, 2018. Convenient sampling technique was used, and 33 nurses were selected for the study. The tool used for data collection was a structured questionnaire to assess

the knowledge of nurses, an observation checklist for nurses related to central venous line care technique.

Descriptive statistics was used to analyze the data. The study revealed that highest percent of knowledge on good level was (100%) for nurses have years of experience (10+) years, while the lowest percent on good level was (25.0%) 8 for nurses have years of experience (1-4) years. The study also stated that there were no significant statistical differences in nurse's practices before, during, after, and removal of central venous line in relation to years of experience. And study revealed that there was a significant statistical difference in nurses' knowledge and years of experience (P< 0.001*). The study recommended that the nurses should be given in-service education, continuing education programs, more practical training program to increase the practice level.[24]

A quasi- experimental research study was conducted to assess the effectiveness of Bundle of Care for Improving Nurses' Performance Related to Central Line Associated Blood Stream Infection, in Egypt, 2018. A convenience sampling technique was used, and 70 nurses were selected for the study. Data collection was done using self-structured knowledge questionnaire and observational check list regarding central line insertion, care, and maintenance of central line. Descriptive and inferential statistics were used to analyze the data. The study result showed there was a significant difference in the Mean Pre-test (11.25±13.53) and Post-test (23±13.77) knowledge scores (p= <0.001) as well as Pre-test (17.5±3.03) and Post-test (26.13±7.012) Practice scores (p= <0.001). The study also revealed that there was significant association between knowledge and years of studying experience (p= 0.001). The study recommended the Importance of upgrading nurses' knowledge and practice about CLABSI prevention through workshops, seminars, conferences, group discussion, up to date scientific journals, books, and posters.[25]

STUDIES RELATED TO VENTILATOR ASOCIATED PNEUMONIA

A descriptive study was conducted to assess the knowledge and practice of intensive care nurses on prevention of ventilator associated pneumonia in Jammu and Kashmir in the year 2016. Purposive sampling technique was adopted and 50 nurses studying in intensive care units were selected for the study. Self-structured questionnaire and checklist was used to collect the data regarding knowledge and practice of ventilator associated pneumonia. The data was analyzed using descriptive statistics. The results of the study depicted that 44% (22) of nurses had average knowledge, 32% (16) had good knowledge, 16% (8) of the nurse had below average knowledge and only 8% (4) had excellent knowledge. 64% (32) of the nurses had unsatisfactory practice and only 36% (18) had satisfactory level of practice regarding prevention of ventilator associated pneumonia. The study recommended that in-service education and training programs should be conducted for nurses to improve nurses' knowledge and practice and decrease infections among patients.[26]

A descriptive study was conducted to assess the knowledge of staff nurses regarding ventilator associated pneumonia among patients admitted in intensive care units, Jalandhar, 2018. Convenient sampling technique was used, and 50 staff nurses were selected for the study. A self-structured multiple-choice questionnaire was used to assess the knowledge of staff nurses regarding VAP. Descriptive and inferential statistics was used to analyze the data. Results showed that no one have excellent knowledge regarding ventilator associated pneumonia, only 6% (3) has good knowledge, 28% (14) has average knowledge and 66% (33) has below average knowledge among staff nurses regarding ventilator associated pneumonia. The study also revealed that there were significant association between knowledge and socio demographic variables such as age, gender, experience, in-service education except for professional education and studying area. The study concluded that staff nurses need knowledge regarding VAP and recommended continuous education and training.[27]

A descriptive cross-sectional study was conducted to assess the knowledge of evidence-based guideline in ventilator associated pneumonia prevention in Iran, 2015. Convenient sampling technique was used, and 171 nurses participated in the study. Data was collected by using knowledge questionnaire which was designed

by LeBeau et al and later used and validated by Blot et al. descriptive and inferential statistics were used to analyze the data. The study result showed that Mean knowledge score for the nine items was 4.63 ± 1.708 (51.4% correct answers). The most correct answer was about the type of airway moisturizer endotracheal intubation (70.8%), open versus closed suctioning system (72.5%) and patient positioning (87.1). The study showed that there was no significant association between knowledge and socio demographic data. The study concluded stating that lack of knowledge can be potential barrier for evidence-based practice and recommended continuous monitoring and education.[28]

A descriptive cross-sectional study was conducted to assess the nurse's knowledge regarding prevention of ventilator associated pneumonia in Peshawar, 2018. Convenient sampling technique was used to select 100 critical care nurses for the study. Data was collected by adopting questionnaire developed by LeBeau et al and the tool consist of 15 questions about prevention of VAP. Descriptive and inferential statistics were used to analyze the data. The study result revealed that only 5% (5) nurses have excellent knowledge and 80% (80) have average knowledge. The mean score in knowledge regarding VAP prevention was 8.1+1.8 and there was no significant association between knowledge and socio-demographic variables. The study recommended that several educational program must be arranged to increase nurse's knowledge and decrease VAP among patients.[29]

A descriptive study was conducted to assess the intensive care nurse's compliance to ventilator associated pneumonia prevention practices, Mumbai, 2018. Non-probability convenient sampling technique was used to select 150 ICU nurses for the study. Self- structured observational checklist on practice followed by nurses on VAP prevention. Descriptive and inferential statistics was used to analyze the data. The study result revealed that most of the nurses complied to hand hygiene (7.81± 1.600), adhere to positioning of patient (0.98± 0.728), and naso-gastric feeding practices (0.98± 0.728). Whereas the nurses lack compliance to other aspects such as endotracheal suction care, oral care, peptic ulcer disease prophylaxis, DVT prophylaxis, sedation vacation and weaning practice. Overall practice score of nurses regarding VAP prevention was (13.2± 8.173). the study also revealed that there was significant association between practice of nurse with age (p=

0.004), gender (0.001), experience (0.001), ICU training (0.001) and type of ICU (p=0.005). The study revealed that there is need for nurses to improve the compliance to VAP prevention and the study recommended that the hospital should conduct periodic re-enforcement, in- service education programs clinical practice for VAP prevention and other evidenced based protocols.[30]

An exploratory survey research was conducted to assess the nurse's knowledge, compliance of staff nurses regarding ventilator care bundle in Pune, 2018. Convenient sampling technique was used, and 60 ICU staff nurses were selected for the study. Self- structured knowledge questionnaire and observational checklist were used to collect the data. The collected data was analyzed using descriptive and inferential statistics. The study showed that more than half 56.7% (34) of the staff nurses had excellent knowledge regarding ventilator care bundle and 43.3% (26) of them had good knowledge regarding ventilator care bundle. With regards to compliance 71.7% (43) of the staff nurses had good compliance regarding ventilator care bundle, 18.3% (11) of them had satisfactory compliance and 10% (6) of them had excellent compliance regarding ventilator care bundle. The study also revealed that more the knowledge, better is the compliance, as the p-value is less than 0.05. The study recommended continuous education for better patient outcomes.[31]

A quasi experimental study was conducted to assess ventilator associated complication: to evaluate the effectiveness of planned teaching program for intensive care unit staff nurses in Uttar Pradesh, 2016. Non-probability Purposive sampling technique was used to select 50 ICU nurses for the study. Data was collected by using self-structured questionnaire which consist of 50 items. Level of knowledge was assessed before the workshop and 50-60-minutes teaching session was conducted. Descriptive and inferential statistics were used to analyze the data. The study revealed that pre-test score, 53.40% (27) nurses had average knowledge regarding ventilator associated complications and post-test result was 77.20% (38.6) of total score was obtained for ventilator associated complication. The also stated that there were no statistically significant association between knowledge and socio-demographic data. The study recommended that regular training program can be effective to increase the knowledge of staff nurses.[32]

STUDIES RELATED TO NOVICE NURSING STUDENTS

A study to assess the effectiveness of education program on novice nurse's knowledge on infection control was conducted by Sun ye Jong et al, Korea (2016). Convenient sampling techniques was used, and 157 novice nursing students were selected for the study. The education program was developed by 4 expert group and the program consisted of 12 lectures and 2 practices in total. The data was analyzed using descriptive and inferential statistics. The post-program knowledge score increased to 77.99 compared to 45.91 prior to participating in the program ($P < .001$). The scores for overall satisfaction, knowledge acquirement, and usefulness infield practice were 9.05, 8.97, and 9.01, respectively. The overall satisfaction was higher for the practice component (9.37) than the lectures (9.00). There were significant differences in surveillance knowledge according to age ($F=3.94$, $P=.021$), hospital career ($F=3.71$, $P=.027$), hospital type ($F=5.36$, $P=.006$), and hospital size ($F=6.19$, $P=.003$); and there were significant differences in hand hygiene knowledge according to age ($F=4.14$, $P=.018$) and hospital type ($F=4.84$, $P=.009$). However, there was no difference in overall satisfaction with the program. The study recommended professional training course. [33]

A focused review of research literature on New graduate nurses' knowledge of patient safety and practice conducted in Australia, 2015. The reviews consist of 5-year time frame and 45 articles were included in the study. This view acknowledges that there is an existence of theory-practical gap for new graduate registered nurses and transition to practice is a key learning period setting new nurse on becoming expert practitioner. Within the literature, there was little to no acknowledgement of patient safety knowledge of the newly registered nurse. The review recommended that exploring novice nursing students' knowledge of medical errors and patient safety during transition may influence towards safer and more positive patient outcomes. [6]

METHODOLOGY

METHODOLOGY

This chapter deals with the methodology followed in the study and is discussed under the following headings. Research approach , Research design , variables, setting, population, sample, sample size, sampling technique, inclusion and exclusion criteria for selection of samples, development and description of tools, scoring key, content validity, reliability, pilot study, procedure for data collection and plan for data analysis.

RESEARCH APPROACH:

Quantitative research approach

RESEARCH DESIGN:

The selection of the design depends upon the purpose of the study, research approach and variable to be studied. The research design selected for the study was descriptive survey research design.

VARIABLES

- **Study variable:** Knowledge and practice regarding hospital acquired infection.
- **Attribute variable:** Age, gender, educational status, in-service education on hospital acquired infection, nursing course in private or government sector, college with parent hospital and clinical exposure during student period.

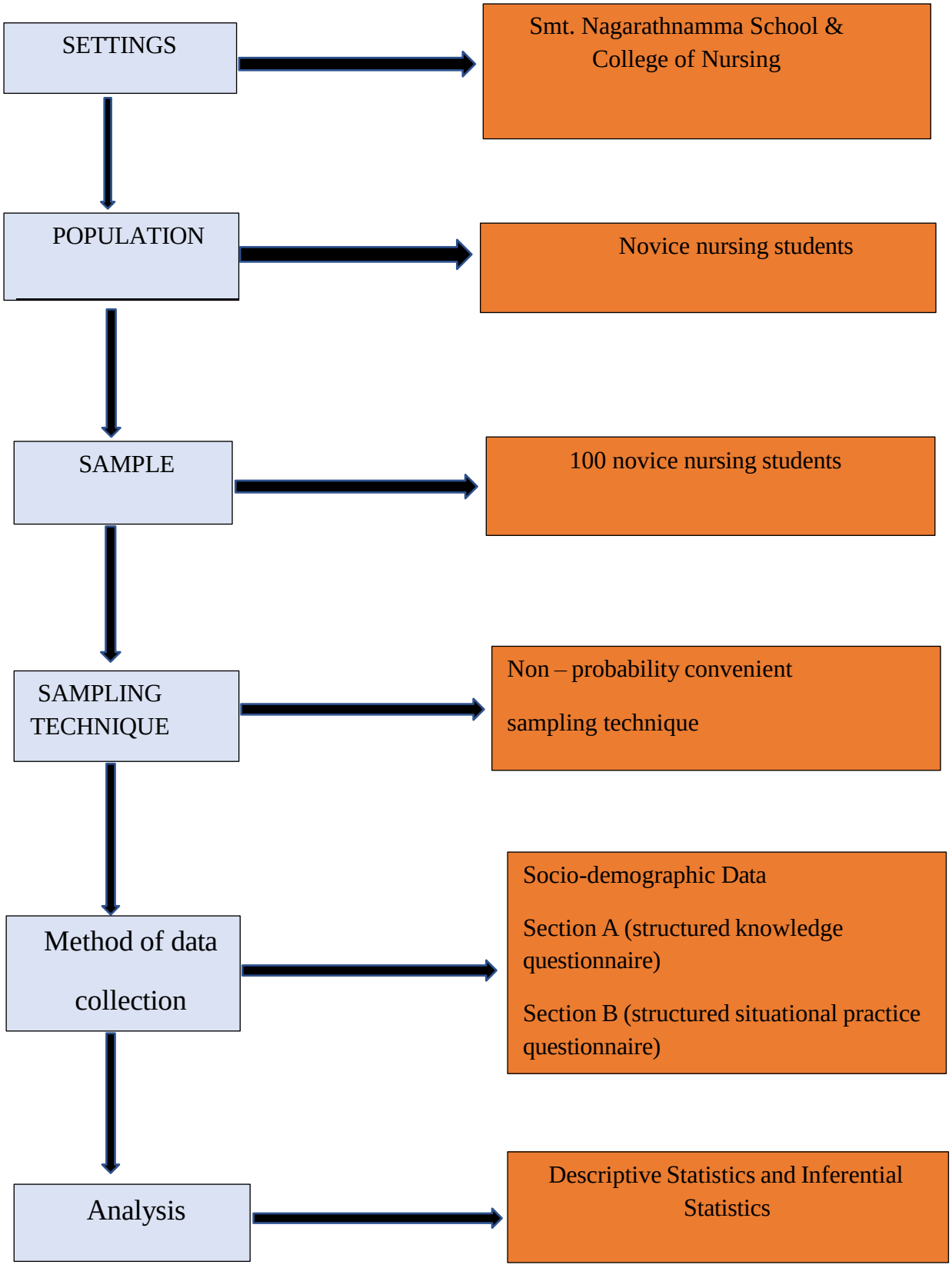


FIGURE 2: Schematic representation of research methodology

SETTING OF THE STUDY

Setting is the physical location and condition in which data collection takes place in a study. The study was conducted in Smt. Nagarathnamma School & College of Nursing, Bangalore. The criteria for selecting this setting were geographical proximity, feasibility of conducting the study, availability of the subjects and familiarity of the investigators with the settings.

POPULATION

The population chosen for the study was novice nursing students studying in Smt. Nagarathnamma School & College of Nursing, Bangalore. 100 novice nursing students from Smt. Nagarathnamma School & College of Nursing, were selected for the study.

SAMPLE AND SAMPLING TECHNIQUE

Polit and Hungler (1999) states the sample consists of a subset of population selected to participate in the research study.

Sampling is an inevitable part of research methodology. It allows a researcher to select the population subset, so that the study can be done on the selected sample and then the results of the study can be generalized to chosen population.

The novice nursing students studying less than 1 year, who fulfil inclusion and exclusion criteria were selected for the study.

SAMPLING TECHNIQUE

Nonprobability convenient sampling technique was used to select the required 100 novice nursing students studying in Smt. Nagarathnamma School & College of Nursing, Bangalore.

SAMPLE SIZE ESTIMATION

The sample size was estimated using the formula:

$$N = Z^2 \times P\,(1-P) \div d^2$$

N = required sample size

Z= confidence interval at 95% (CI 95% = 1.96)

p = Estimated prevalence from previous study

d= margin of error at 5 % (0.05)

A similar study was conducted on assessment of knowledge regarding ventilator associated pneumonia among nurses, the reported prevalence of knowledge among nurses was 6%.[27]

So estimated sample (p) = 6%

- Estimated sample size obtained using above values was 86
- Therefore, with attrition rate of 10% the estimated sample size is 96. However, it is decided to round off to 100 samples for current study.

SAMPLING CRITERIA

The sample was selected with the following predetermined criteria.

INCLUSION CRITERIA

Novice nursing students:

- studying less than 1 year in a nursing college.
- who are willing to participate.

EXCLUSION CRITERIA

Novice nursing students**:**

- not registered.
- not available during time of data collection.

DEVELOPMENT AND DESCRIPTION OF TOOL

The tool consisted of three parts.

Socio demographic section: It includes Age, gender, educational status, nursing course in private or government sector, college with attached hospital, clinical training during study period and in-service education on hospital acquired infection in the last 6 months.

Section A: knowledge questionnaire regarding hospital acquired infection.

Structured knowledge questionnaire was developed by an extensive review of literature, discussion with the experts and with the investigator's personal and professional experience. It consists of 30 items on various aspects of hospital acquired infection that is Catheter associated urinary tract infection, ventilator associated pneumonia and central line associated blood stream infection. Each multiple-choice question has 4 options out of which only 1 option is the correct answer and the other 3 are wrong answer.

Scoring of items:

Right response = 1

Wrong response = 0

Interpretation

The maximum score is 30 for knowledge assessment. To interpret the level of knowledge, the score is distributed as follows.

Category	Percentage	Marks
Adequate	≥75%	30- 25
Moderately adequate	51- 75 %	16 - 23
Inadequate	≤50 %	0-15

Section B: Structured situational practice questionnaire regarding hospital acquired infection.

Structured situational practice questionnaire was developed by an extensive review of literature, discussion with the experts and with the investigator's personal and professional experience. It consists of 20 items on various aspects of hospital acquired infection that is Catheter associated urinary tract infection, ventilator associated pneumonia and central line associated blood stream infection. Each multiple-choice question has 4 options out of which only 1 option is the correct answer and the other 3 are wrong answer.

Scoring of items:

Right response = 1

Wrong response = 0

Interpretation

The maximum score is 20 for practice assessment. To interpret the level of practice, the score is distributed as follows.

Category	Percentage	Marks
Good	≥75%	≥15
Fair	51- 75 %	11- 15
Poor	≤50 %	≤10

RELIABILITY

The reliability of structured knowledge and structured situational practice tool was assessed by split half test. The reliability of the tool was ά= 0.71 and 0.73, respectively.

Ethical clearance

Ethical clearance was obtained from Smt. Nagarathnamma School & College of Nursing, Ethics Committee.

DATA COLLECTION PROCEDURE

- The data collection for main study was carried out from 22/06/2024 to 10/07/2024.
- Formal permission was obtained from the Principal of Smt. Nagarathnamma School & College of Nursing, Bangalore.
- The list of novice nursing students who met the criteria for this research study was obtained priorly from the Nursing in charge of the respective Hospital.
- A total of 100 subjects who met the selection criteria were selected using non probability convenient sampling technique.
- The subjects were assembled in their classroom

- Student researcher introduced herself, explained the purpose of the study to each subject and obtained an informed consent from each subject participant.
- Tool (questionnaire) was distributed to each subject and informed to read and follow the instructions carefully. Subjects were requested to respond for Socio-demographic data, Section–A (Structured knowledge questionnaire regarding Hospital acquired infection) and Section - B (Structured situational practice Questionnaire).
- Time taken to complete the questionnaire by each subject was around 20-30 minutes.
- Doubts were clarified pertaining the tool. There was no issue during the data collection. All the subjects returned the questionnaire within the given time frame.

STATISTICAL ANALYSIS

Data obtained from the subjects were organized and analyzed according to the objectives of the study using both descriptive and inferential statistics.

Descriptive statistics:

- Frequency and percentage distribution were used to analyze socio-demographic data.

Inferential statistics:

- Karl-Pearson correlation coefficient was used to determine the relationship between knowledge and practice of novice nursing students.
- Chi-square was used to find the association between knowledge and practice regarding hospital acquired infection and selected socio-demographic variables.

RESULTS

RESULTS

This chapter deals with analysis and interpretation of data collected. The data collected were analyzed according to plan for data analysis, which includes both descriptive and inferential statistics. The findings have been organized and presented as following section:

PRESENTATION OF DATA

Statistical analysis for the study was done using IBM SPSS version 20. Results obtained are discussed in the following areas.

- **Section A:** Frequency and percentage distribution of socio-demographic variables.
- **Section B:** Frequency and percentage of knowledge regarding hospital acquired infection among novice nursing students.
- **Section C**: Frequency and percentage of practice regarding hospital acquired infection among novice nursing students.
- **Section D:** Correlation between knowledge and practice regarding hospital acquired infection.
- **Section E:** Association between knowledge regarding hospital acquired infection and sociodemographic variables.
- **Section F:** Association between practice regarding hospital acquired infection and sociodemographic variables.

SECTION A:

Frequency and percentage distribution of Socio demographic variables of subjects

TABLE 1.1: Frequency and percentage distribution of subjects with regards to socio demographic variables (age, gender, and educational status)

n=100

SL No.	**Socio demographic variables**	**Frequency (f)**	**Percentage (%)**
1	**Age in completed years**		
	18 years	17	17
	19 years	83	**83**
2	**Gender**		
	Male	27	27
	Female	73	**73**
3	**Education Status**		
	Diploma Nursing	22	22
	B.Sc. Nursing	78	**78**

The above table depicts that majority of the subjects, 83% belongs to the age groups of 23 - 25 years and 17% of the subject belongs to 20 - 22 years. With regards to gender, 73% subjects were female whereas 27% were male. Majority of subjects, 78% had completed B.sc Nursing course whereas 22% subjects had completed Diploma Nursing.

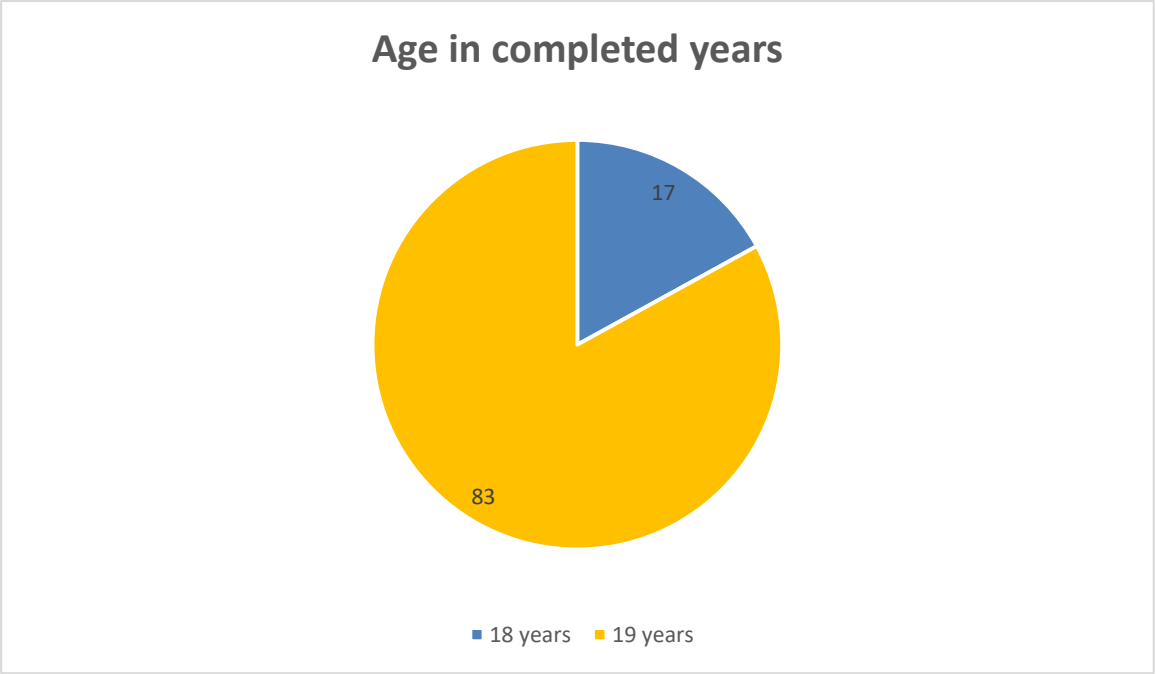


Figure 3: Percentage distribution of subjects with regards to age in years

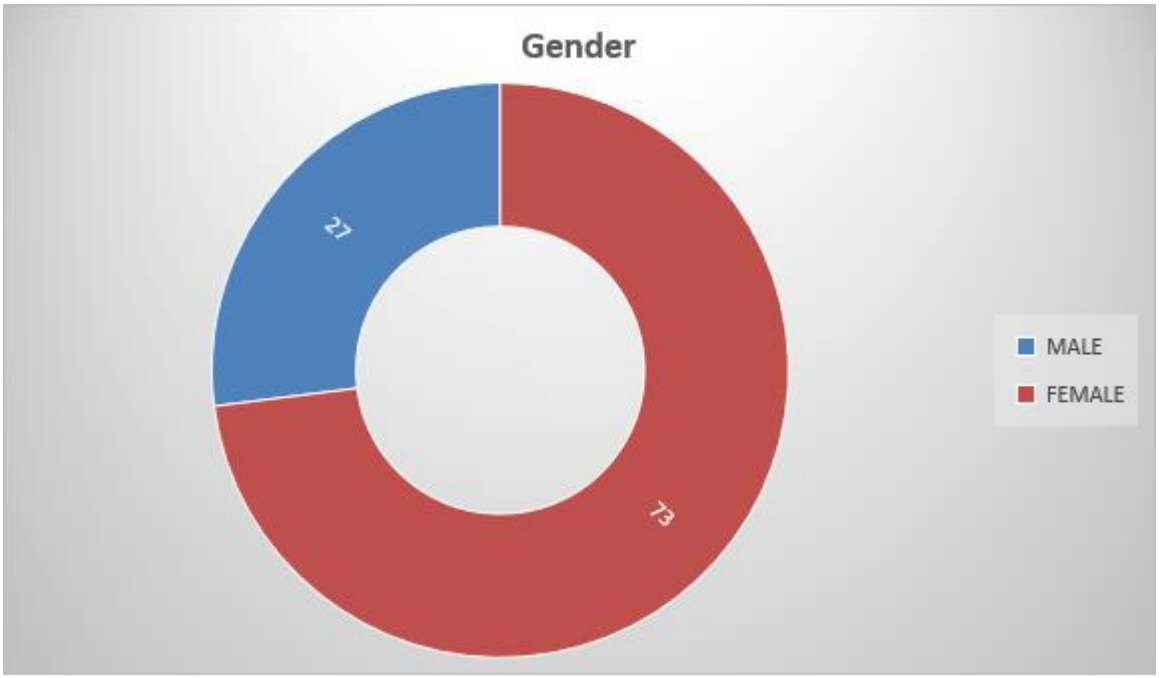


Figure 4: Percentage distribution of subjects with regards to Gender

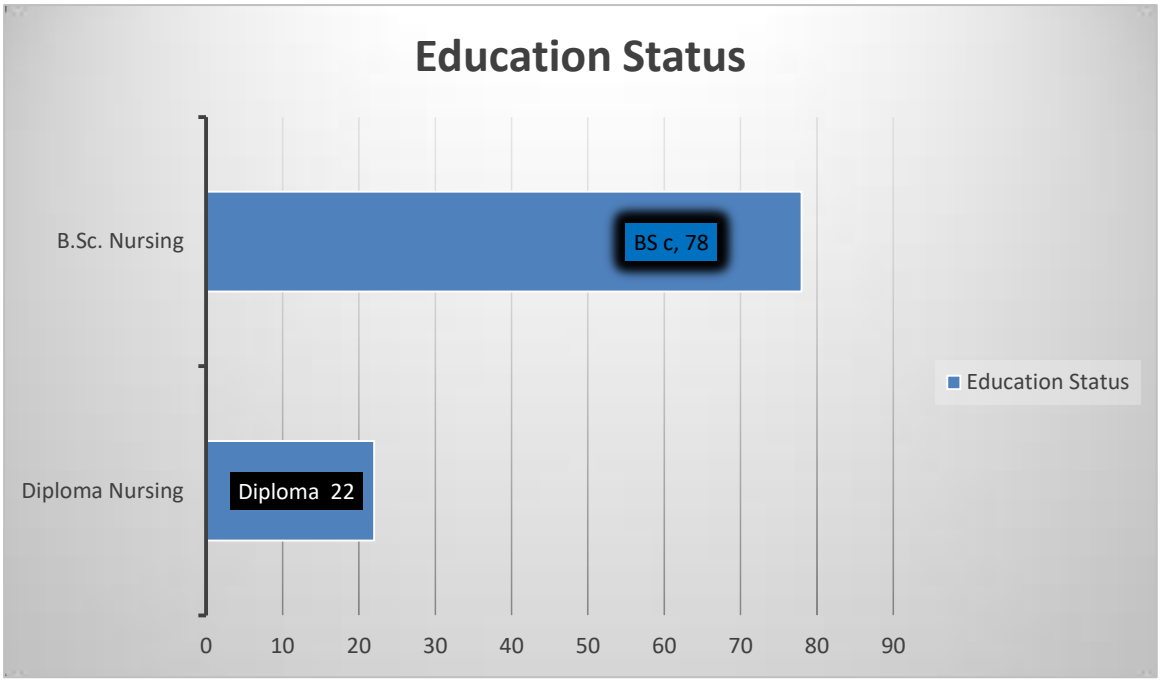


Figure 5: Percentage distribution of subjects with regards to Education Status

TABLE 1.3: Frequency and percentage distribution of subjects with regards to socio-demographic variables (clinical training experience and in-service education).

n=100

SL. NO	Socio demographic variables	Frequency (f)	Percentage (%)
6	**How would you describe your clinical training during study period?**		
	Excellent	18	18
	Good	65	**65**
	Fair	16	16
	Poor	1	1
7	**Have you attended any education regarding hospital acquired infection in the last 6 months?**		
	Yes	42	42
	No	58	**58**

The above table depicts that 65% of subjects described their clinical training during study period as good, 18% of subjects described as excellent, 16% of subjects described as fair and 1% of subjects described as poor. With regards to in-service education in the past 6 months, 58% of subjects did not attend in-service education and only 40% had attended in-service education regarding hospital acquired infection.

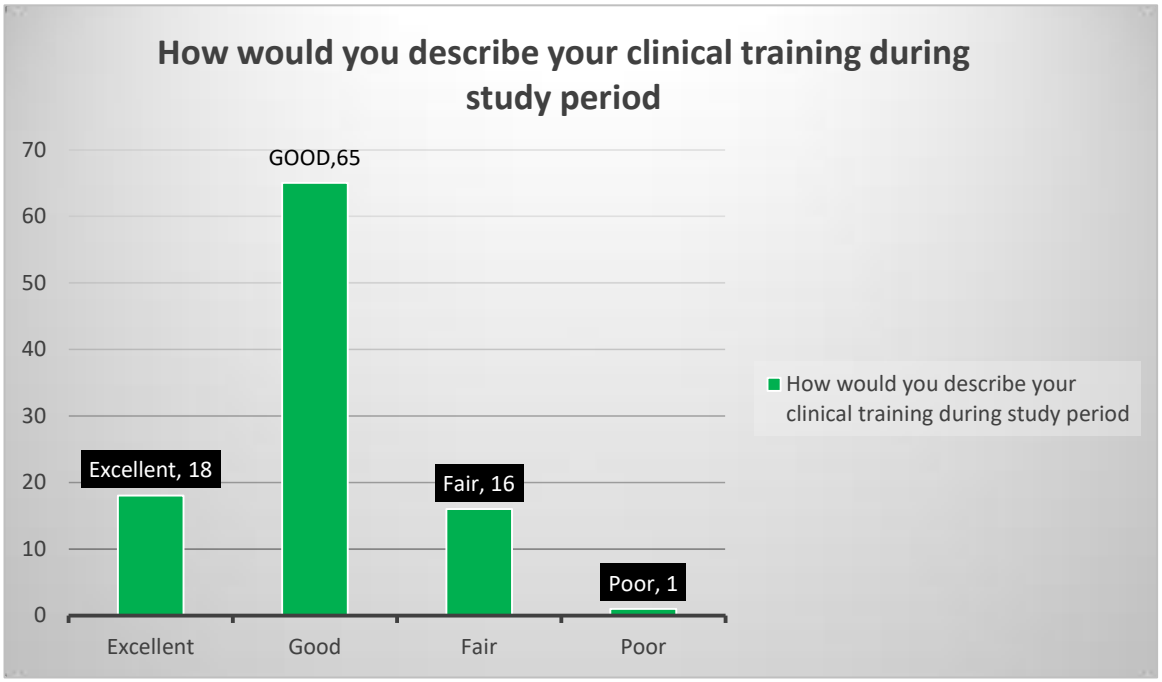


Figure 6: Percentage distribution of subjects with regards to clinical training during study period

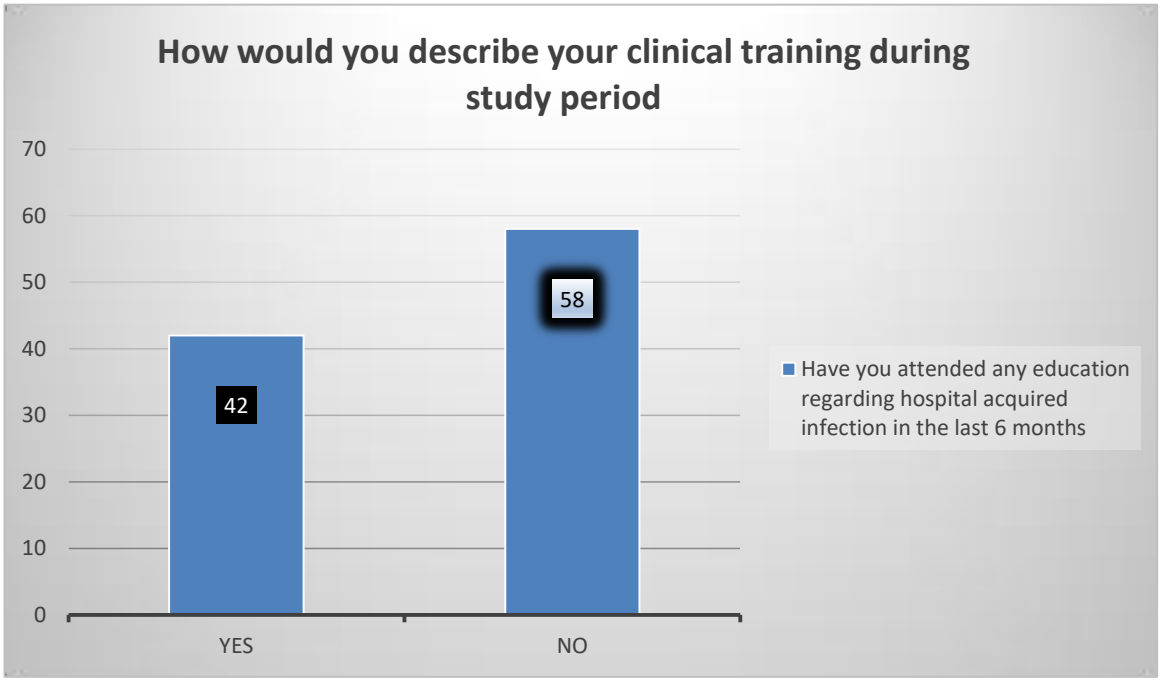


Figure 7: Percentage distribution of subjects with regards Have you attended any education regarding hospital acquired infection in the last 6 months

SECTION B

TABLE 2.0: Frequency and percentage distribution of knowledge regarding hospital acquired infection.

n=100

Level of Knowledge	Frequency (f)	Percentage (%)
Adequate Knowledge	2	2
Moderately adequate Knowledge	72	72
Inadequate Knowledge	26	26

The above table depicts that majority of the subject 72% had moderately adequate knowledge, 26% of the subjects had inadequate knowledge and only 2% of the subjects had adequate knowledge regarding hospital acquired infection.

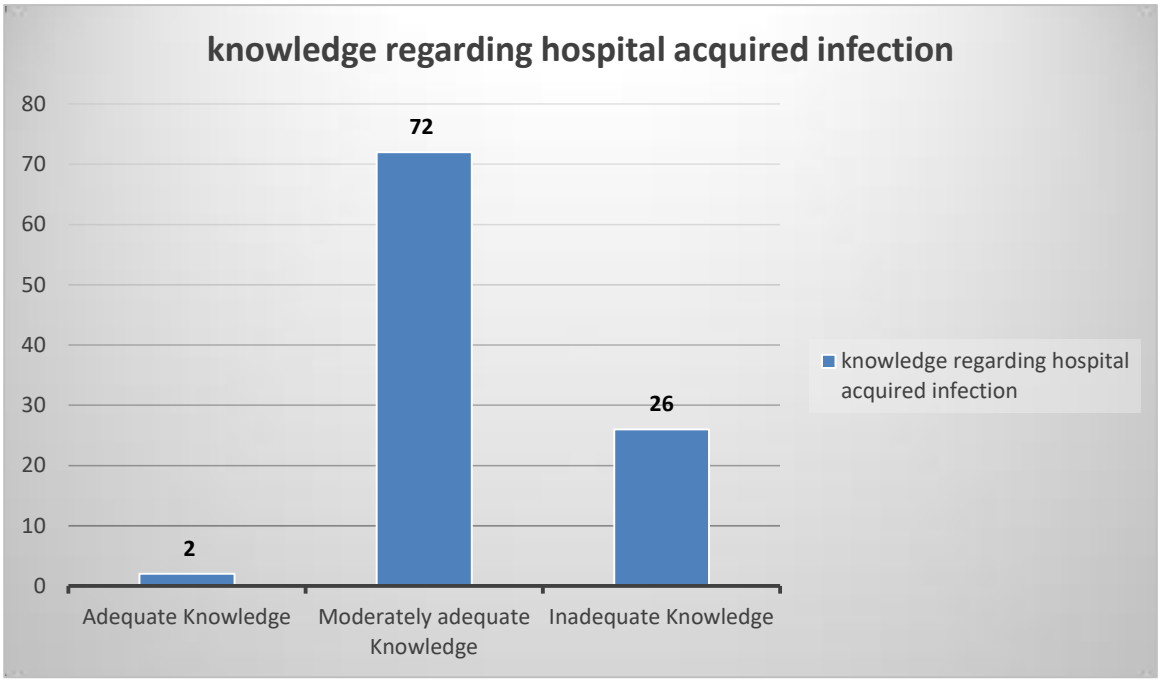
SECTION C

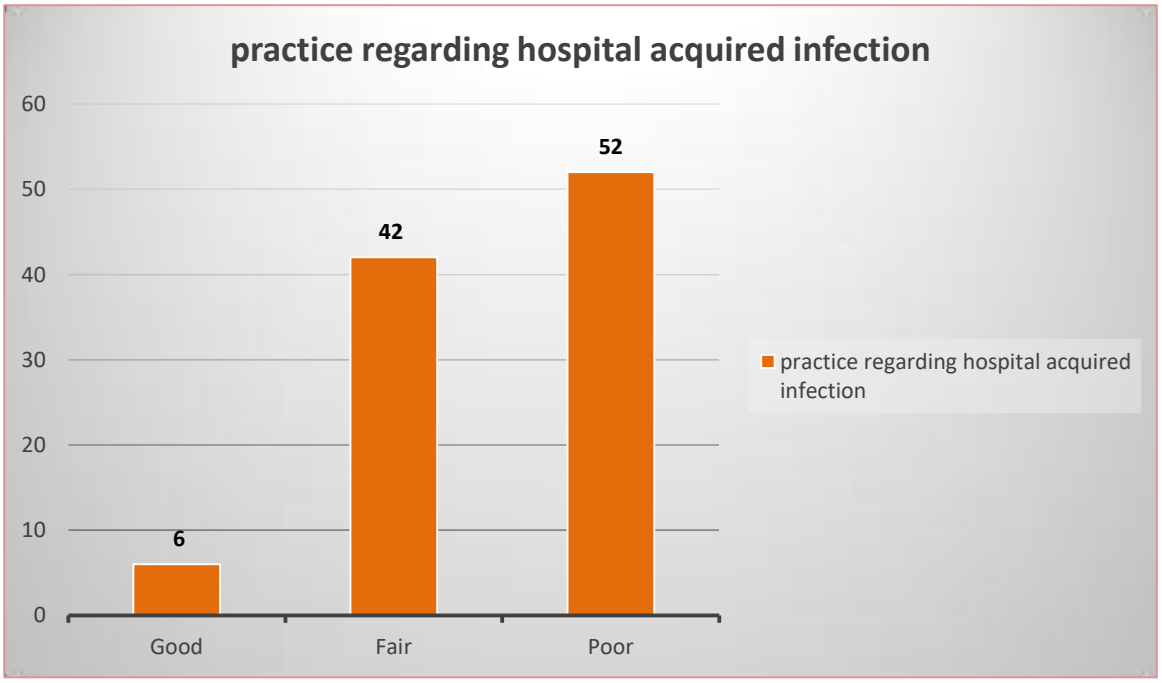
TABLE 3: Frequency and percentage distribution of practice regarding hospital acquired infection.

n=100

Practice	Frequency (f)	Percentage (%)
Good	6	6
Fair	42	42
Poor	52	52

The above table depicts that half of the subjects, 52% had poor practice, 42% of the subjects had fair practice and only 6% of the subjects had good practice regarding hospital acquired infection.


knowledge regarding hospital acquired infection
80
70
60
50
40
30
20
10
0
72
26
2
Adequate Knowledge
Moderately adequate Knowledge
Inadequate Knowledge
knowledge regarding hospital acquired infection


practice regarding hospital acquired infection
60
50
40
30
20
10
0
52
42
6
Good
Fair
Poor
practice regarding hospital acquired infection

SECTION D

TABLE 4.0: Correlation between knowledge and practice regarding hospital acquired infection.

n=100

Variable	Correlation (r)	p value
Knowledge	0.425**	0.000010
Practice		

S* = significant at p ≤0.05

The above table depicts that there is a moderate degree of positive correlation (r = 0.425, p = 0.000010) between knowledge and practice regarding hospital acquired infection among novice nursing students.

SECTION E

TABLE NO. 5.1 Association between knowledge regarding hospital acquired infection and sociodemographic data (age, gender, and educational status)

n=100

SL. NO.	Socio-demographic variables	Knowledge regarding hospital acquired infection			Chi-square χ^2	p value (≤0.05)
		Adequate	Moderately adequate	Inadequate		
1	**Age in completed years**					
	18 years	1	9	7	4.391 df=2	0.111 NS
	19 years	1	63	19		
2	**Gender**					
	Male	0	19	8	0.941 df= 2	0.625 NS
	Female	2	53	18		
3	**Educational status**					
	Diploma Nursing	0	14	8	2.003 df= 2	0.367 NS
	B.sc Nursing	2	58	18		

NS= Not significant at P ≤0.05, df = degree of freedom

The above table depicts that there was no significant association between knowledge regarding hospital acquired infection and age, gender, and educational status.

TABLE NO. 5.2 Association between knowledge regarding hospital acquired infection and sociodemographic data (type of institution, attached parent hospital, clinical training experience, and in-service education).

n=100

SL. No.	Socio- demographic variables	Knowledge regarding hospital acquired infection			Chi-square χ^2	p value (≤0.05)
		Adequate	Moderately adequate	Inadequate		
4	**Where have you studying your nursing course?**					
	Private college	2	62	25	2.220	0.330
	Government college	0	10	1	df= 2	NS
5	**Did your college have attached parent hospital for clinical posting?**					
	Yes	1	53	14	3.733	0.155
	No	1	19	12	df=2	NS
6	**How would you describe your clinical training during study period?**					
	Excellent	0	13	5	7.534	0.274
	Good	2	50	13	df=6	NS
	Fair	0	9	7		
	Poor	0	0	1		
7	**Have you attended any education regarding hospital acquired infection in the last 6 months?**					
	Yes	2	29	11	2.851	0.240
	No	0	43	15	df= 2	NS

NS= Not significant at P ≤0.05, df = degree of freedom

The above table depicts that there was no significant association between knowledge regarding hospital acquired infection and type of institution, attached parent hospital, clinical training experience, and in-service education.

SECTION F

TABLE NO. 6.1 Association between practice regarding hospital acquired infection and sociodemographic data (age and gender).

n=100

SL. NO.	Socio-demographic variables	Practice regarding hospital acquired infection			Chi-square χ^2	p value (≤0.05)
		Good	Fair	Poor		
1	**Age in completed years**					
	18 years	3	5	9	7.224	**0.027**
	19 years	3	47	33	df=2	**S***
2	**Gender**					
	Male	3	19	5	8.866	**0.012**
	Female	3	33	37	df=2	**S***

S*= Significant, NS= Not significant at p ≤0.05df = degree of freedom

The above table depicts that there was a significant association between practice regarding hospital acquired infection and age (p = 0.027) and gender (p = 0.012).

TABLE NO. 6.2 Association between practice regarding hospital acquired infection and sociodemographic data (educational status, type of institution, attached parent hospital, clinical training experience, and in-service education). n=100

SL. No.	Socio-demographic variables	Practice regarding hospital acquired infection			Chi-square χ^2	p value (≤0.05)
		Good	Fair	Poor		
3	**Educational status**					
	Diploma Nursing	0	11	11	2.144 df= 2	0.342 NS
	B.sc Nursing	6	41	31		
4	**Where have you studying your nursing course?**					
	Private college	6	49	34	4.973 df= 2	0.83 NS
	Government college	0	3	8		
5	**Did your college have attached parent hospital for clinical posting?**					
	Yes	5	32	31	2.297 df=2	0.317 NS
	No	1	20	11		
6	**How would you describe your clinical training during study period?**					
	Excellent	2	9	7	3.254 df=6	0.776 NS
	Good	4	34	27		
	Fair	0	9	7		
	Poor	0	0	1		
7	**Have you attended any education regarding hospital acquired infection in the last 6 months?**					
	Yes	4	24	14	3.162 df= 2	0.206 NS
	No	2	28	28		

NS= Not significant at P ≤0.05, df = degree of freedom**.**

The above table depicts that there was no significant association between knowledge regarding hospital acquired infection and type of institution, attached parent hospital, clinical training experience, and in-service education.

DISCUSSION

DISCUSSION

This chapter discusses the major findings of the study with reference to the objectives and hypothesis stated and reviews them in relation to findings from the results of other studies. Findings of the study have been discussed in term of objectives, theoretical bases, and hypothesis. In this section, major findings of the current study have been discussed concerning the results obtained by the researcher.

The findings have been organized and discussed according to the objectives:

- To assess the knowledge regarding hospital acquired infection among novice nursing students.
- To assess the practice regarding hospital acquired infection among novice nursing students.
- To find out the relationship between knowledge and practice regarding hospital acquired infection among novice nursing students.
- To find the association between knowledge regarding hospital acquired infection and selected socio demographic variables.
- To find the association between practice regarding hospital acquired infection and selected socio demographic variables.

RESEARCH HYPOTHESES:

- **H_1**. There is a statistically significant relationship between knowledge and practice regarding hospital acquired infection among novice nursing students.
- **H_2**. There is a statistically significant association between knowledge regarding hospital acquired infection and selected socio demographic variables.
- **H_3**. There is a statistically significant association between practice regarding hospital acquired infection and selected socio demographic variables.

OBJECTIVE -1

- To assess the knowledge regarding hospital acquired infection among novice nursing students.

The present study findings revealed that majority of the subjects, 72 (72%) had moderately adequate knowledge, 26 (26%) of the subjects had inadequate knowledge and only 2 (2%) of the subjects had adequate knowledge regarding hospital acquired infection. The present study is supported by the study conducted by Sodhi Kanwalpreet et al in Ludhiana, India, 2013 on knowledge of infection control practices among intensive care nurses in tertiary care hospital and the result showed that (17%) 17 nurses had good knowledge, (60%) 60 nurses had average knowledge, (18%)18 nurses had below average knowledge and only (5%) 5 nurses had excellent knowledge.[(12)]

A similar study was conducted by Alrubaiee Gamil et al in Yemen, 2017 on knowledge and practice of nurses regarding nosocomial infection control measures in private hospitals and the result of the study showed that (87%) nurses had a fair level of knowledge and only(4%) nurses had good level of knowledge.[(34)]

OBJECTIVE -II

- To assess the practice regarding hospital acquired infection among novice nursing students.

The present study result showed that majority of the subject, 52 (52%) had poor practice, 42 (42%) of the subjects had fair practice and only 6 (6%) of the subjects had good practice regarding hospital acquired infection. In contradiction, the present study result is inconsistent with the result reported by Alrubaiee Gamil et al in Yemen (2017) on knowledge and practice of nurses regarding nosocomial infection control measures in private hospitals and the result of the study showed that only 3% of them had poor practices, whereas 71% nurses had fair practices and 26% of them had good practices.[(34)]

Similar study was conducted by Sarani Hamed et al in Iran (2015) on knowledge, attitude and practice of nurses about standard precaution for hospital acquired infection and the result showed that only (20%) of the nurses had poor practice, (61%) of them had fair practice and only (19%) of them had good practice.[10]

OBJECTIVE -III

- To find out the relationship between knowledge and practice regarding hospital acquired infection among novice nursing students.

The present study showed that there was moderate degree of positive correlation ($r = 0.425$, $p < 0.000010$) between knowledge and practice regarding hospital acquired infection among novice nursing students.

The study result was contradicted by a study conducted by Garba lliyasu et al on knowledge and practice of infection control among health care workers in Nigeria (2015) and the result showed that there was a weak negative correlation between overall knowledge score and overall practice score ($r = -0.004$, $P < 0.001$).[35]

The result of the study is not consistent with the results of a Study conducted by Balonchi Abbas et al in Iran (2015) on knowledge, attitude and practice of nurses about standard precaution for hospital acquired infection and the result showed that there is no statistically significant correlation between knowledge and practice ($r= 00.8$, $p = 0.3$).[10]

OBJECTIVE -IV

- To find the association between knowledge regarding hospital acquired infection and selected socio demographic variables.

The findings of the study showed that there is no statistical association between knowledge regarding hospital acquired infection and socio demographic variables such as age, gender, educational status, type of institution, attached parent hospital, clinical training during study period and in-service education.

The present study was supported by a study conducted by Purushottam A Giri et al regarding knowledge about hospital acquired infection among nurses in Maharashtra (2013) and the result showed that there was no

statistical association between knowledge and socio demographic variables such as clinical training and in-service education.[11]

Whereas the present study result is contradicted by a Study conducted by Masinaeinezhad Nosratollah et al (2015) on knowledge, attitude, and practice of nurses about hospital acquired infection and the result showed that there was statistical association between knowledge and socio- demographic variables - gender ($p = 0.02$).[10]

The present study result was contradicted by a study conducted by Abdullah Gruda et al on The Knowledge, Attitudes and Practices of Nurses Toward Management of Hospital acquired Infections (2016). The study result showed that there is a statistical association between knowledge and socio demographic variables- education (OR = 0.22, 95% Cl 0.10-0.48, $p < 0.05$).[36]

The result was also contradicted by a study conducted by Sophia G in Madurai on Knowledge on Hospital Acquired Infections among Nurses in Madurai and the result showed that there was significant association between knowledge and socio demographic variable - gender ($p<0.03$). whereas the study showed that there was no association with age, educational status, clinical training, in- service education.[37]

Another study conducted by Mohammed baqer on assessment of nurse's knowledge about nosocomial infection in hospital, Baghdad (2015) contradicts with the present study result and the study showed that there was statistical association between knowledge and education level ($p=0.04$).[38]

OBJECTIVE -V

- To find the association between practice regarding hospital acquired infection and selected socio demographic variables.

The findings of the study revealed that there is significant association between practice regarding hospital acquired infection and selected socio demographic variable - age ($p = 0.027$) and gender ($p = 0.012$). Hence

the hypothesis (**H_3**), is accepted, whereas for other variables like educational status, type of institution, attached parent hospital, clinical training during study period, in-service education, were found to have no association with practice.

The present result is supported by a study conducted Majidipour Parastoo et al on assessment of knowledge and performance of nurses regarding standards of nosocomial infection control, in Iran (2018) and the result showed that there was significant association between performance and gender (p= 0.014). A similar study conducted by Imad Fashafsheh et al on assessment of knowledge and practice of staff nurse towards infection control measures, Palestine (2014-2015) and the study result showed that there was significant association between practice and gender (p = 0.004) whereas there was no significant association with other socio demographic variables such as age and training course.[39]

Whereas the result of the present study is contradicted by the study conducted by Abdullah Gruda et al on the Knowledge, Attitudes and Practices of Nurses Toward Management of Hospital acquired Infections (2016) and the study result showed that there was no statistical association between practice and socio demographic variables like age, gender, clinical training and education.[36]

CONCLUSION

CONCLUSION

This chapter deals with the conclusion, implication, recommendation, and limitations drawn for the study to assess the knowledge and practice regarding hospital acquired infection among novice nursing students. The finding of the study showed that novice nursing students studying less than 1 year have inadequate knowledge and poor practice regarding hospital acquired infection.

NURSING IMPLICATIONS

Nursing Practice

- Steps should be taken for execution of educational and induction programs for novice nursing students to overcome the shortcomings.
- Periodical assessment of novice nurse's knowledge and practice level should be done for better patient outcome.
- Unit based teaching on various aspects of hospital acquired infection should be undertaken for novice nursing students.

Nursing Education

- Nursing students should be taught about hospital acquired infection during clinical posting to fill the gap between theory and actual practice.
- Nurse educator and staff nurses can periodically organize training programs for the students to identify hospital acquired infection and strategies to prevent such infections.

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Nursing Administration

- Nurse administrator can develop program for hospital acquired infection control and hold training for novice nursing students through educational intervention during pre-service or in-service period.
- Nurse administrator can create an organizational atmosphere in which adherence to recommended practices is considered an integral part of providing quality care.
- Nurse administrator can organize in-service education program, which is innovative, educational, and motivational and tailored to nursing professionals.

Nursing Research

- The nurse researcher should conduct seminars to communicate the research finding to the nursing professionals.
- The nurse researcher should encourage others to conduct the same study among novice nursing students studying only in critical care unit.
- The nurse researcher can contribute to evidence-based practice.

RECOMMENDATIONS

Based on the findings of the study, the following recommendations have been made,

- The study can be replicated in a different setting with large diverse population for better generalization.
- Comparative study can be carried out among novice nursing students studying in critical care units and general care units.
- An experimental study can be conducted to assess the effectiveness of simulation program on knowledge and skills regarding hospital acquired among novice nursing students.

LIMITATIONS

- Authenticity of the information regarding socio-demographic variables is based on the response of the subjects.
- Limited sample size.
- Practice level was not supervised directly and relied solely on subjective assessment questionnaire.

The present study findings indicated that the novice nursing students had moderately adequate knowledge with relatively minimal practice rate. It clearly signifies that there is a gap in knowledge and practice regarding hospital acquired infection control measures among the novice nursing students. Periodical assessment and training sessions is needed to increase novice nurse's knowledge and practice.

SUMMARY

SUMMARY

This chapter provides the summary about the present study. The main aim of the study was to find knowledge and practice regarding hospital acquired infection and association with socio demographic variables.

STATEMENT OF THE PROBLEM

"A descriptive study to assess the knowledge and practice regarding hospital acquired infection among novice nursing students studying in nursing college, Bangalore."

OBJECTIVES

- To assess the knowledge regarding hospital acquired infection among novice nursing students.
- To assess the practice regarding hospital acquired infection among novice nursing students.
- To find out the relationship between knowledge and practice regarding hospital acquired infection among novice nursing students.
- To find the association between knowledge regarding hospital acquired infection and selected socio demographic variables.
- To find the association between practice regarding hospital acquired infection and selected socio demographic variables.

HYPOTHESIS

H_1. There is a statistically significant relationship between knowledge and practice regarding hospital acquired infection among novice nursing students.

H_2. There is a statistically significant association between knowledge regarding hospital acquired infection and selected socio demographic variables.

H_3. There is a statistically significant association between practice regarding hospital acquired infection and selected socio demographic variables.

OPERATIONAL DEFINITIONS

- **Knowledge on hospital acquired infection:** In this study it refers to the novice nursing students' ability to recognize and appraise early signs and symptoms of hospital acquired infections associated with nursing care, assessed by a structured knowledge questionnaire.
- **Practice regarding prevention of hospital acquired infection**: In this study it refers to the novice nursing students' ability to make clinical decision that ensures safety and prevention of hospital acquired infections associated with nursing care, assessed by structured situational practice questionnaire.
- **Hospital acquired infection:** In this study it refers to infections acquired during hospital stay which are not present at the time of admission and it includes the following:
    a) Catheter associated urinary tract infections.
    b) Central line associated blood stream infections.
    c) Ventilator associated pneumonia.
- **Novice nursing students:** In this study it refers to nurses who have completed diploma in general nursing and midwifery and basic Bachelor of Science in nursing, registered and studying less than 1 year in selected nursing college.

ASSUMPTIONS

The student researchers assume that,

- Hospital acquired infection is an indicator of quality health care.
- Lack of novice nursing students' knowledge and practice regarding hospital acquired infection can increase preventable harm to patient.

Simple descriptive survey research design was used to assess the knowledge and practice regarding hospital acquired infection among the novice nursing students. The population of the study consists of 100 novice nursing students of Smt. Nagarathnamma School & College of Nursing, Prakriya Multispeciality hospital, and Narayana heart hospital, Bangalore. Convenient sampling technique was used to select the samples.

Structured knowledge questionnaire and structured situational practice questionnaire was used to assess the knowledge and practice regarding hospital acquired infection. Approximately 20-30 minutes was taken for data collection from each subject

The content validity of the tool was done by 12 experts of which 1 were doctors, and 11 were nursing faculty. As per suggestion given the experts, the modification and changes were made in the final tool.
The reliability of self-structured knowledge and self-structured situational practice tool was assessed by split half test. The reliability of the tool was ά= 0.71 and 0.73, respectively.

Pilot study was conducted among 10 novice nursing students who had less than 1 year of experience. The main study was conducted among 100 novice nursing students, the obtained data was analyzed in term of objectives and hypothesis, using descriptive and inferential statistics.

FINDINGS OF THE STUDY

The statistical analysis showed that 72% of the subjects had moderately adequate knowledge, 26% of the subjects had inadequate knowledge and only 2% of the subjects had adequate knowledge regarding hospital acquired infection. With regards to practice, 52% of the subjects had poor practice, 42% of the subjects had fair practice and only 6% of the subjects had good practice regarding hospital acquired infection.

Karl- Pearson correlation co-efficient test was used to find the Correlation between knowledge and practice regarding hospital acquired infection. The study result showed that there was moderate degree of

positive correlation ($r = 0.425$, $p < 0.000010$) between knowledge and practice regarding hospital acquired infection among novice nursing students.

Chi- square test was used to find the association between the knowledge and practice and selected socio-demographic variables. Study result showed that there was no significant association between level of knowledge and socio demographic variables. However, with regards to practice, there was significant association between level of practice and sociodemographic variables - age and gender.

REFERENCE

1. World Health Organization (WHO). Consultative meeting planning for the global patient safety challenge: medication safety, 19-20 April 2016, WHO Headquarters Geneva, Switzerland: meeting report. 2016;(April):3–37. Available from: https://apps.who.int/iris/handle/10665/254990

2. World Health Organization. WHO | Patient safety [Internet]. Who. 2019. Available from: https://www.who.int/patientsafety/en/

3. CDC. Ventilator-associated Pneumonia (VAP) | HAI | CDC [Internet]. 2010. Available from: https://www.cdc.gov/hai/vap/vap.html

4. Centers for Disease Control and Prevention. Frequently Asked Questions About Surgical Site Infections [Internet]. Healthcare-associated Infections. 2010. Available from: https://www.cdc.gov/HAI/ssi/faq_ssi.html

5. Canadian Nurses Association, University of Toronto Faculty of Nursing. Nurses and Patient Safety : A Discussion Paper. 2004;(January):25. Available from: https://www.cna-aiic.ca/~/media/cna/files/en/patient_safety_discussion_paper_e.pdf?la=en

6. Murray M, Sundin D, Cope V. New graduate nurses' understanding and attitudes about patient safety upon transition to practice. J Clin Nurs [Internet]. 2019;28(13–14):2543–52. Available from: https://www.researchgate.net/publication/331348869_New_graduate_nurses'_understanding_and_attitudes_about_patient_safety_upon_transition_to_practice

7. WHOa 2019. WHO | 10 facts on patient safety [Internet]. Who. 2019. Available from: https://www.who.int/features/factfiles/patient_safety/en/

8. Mehta Y, Jaggi N, Rosenthal VD, Kavathekar M, Sakle A, Munshi N, et al. Device-Associated Infection Rates in 20 Cities of India, Data Summary for 2004-2013: Findings of the International Nosocomial Infection Control Consortium. Infect Control Hosp Epidemiol [Internet]. 2016;37(2):172–81. Available from: https://www.researchgate.net/publication/284730129%0ADevice-Associated

9. Narendranath V, Nandakumar BS, Sarala KS. Epidemiology of hospital-acquired infections in a tertiary care teaching hospital in India: a cross-sectional study of 79401 inpatients. Int J Community Med Public Heal [Internet]. 2017;4(2):335. Available from: https://www.ijcmph.com/index.php/ijcmph/article/view/411

10. Sarani H, Balouchi A, Masinaeinezhad N, Ebrahimitabas E. Knowledge, Attitude and Practice of Nurses about Standard Precautions for Hospital-Acquired Infection in Teaching Hospitals Affiliated to Zabol University of Medical Sciences (2014). Glob J Health Sci [Internet]. 2015;8(3):193–8. Available from: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4804055/pdf/GJHS-8-193.pdf

11. Giri P, Kamble M, Kasat V, Phalke D. Knowledge about hospital-acquired infections amongst nursing staff of tertiary care teaching hospital in rural western Maharashtra, India. Int J Med Sci Public Heal [Internet]. 2016;5(5):839. Available from: https://www.researchgate.net/publication/283622360%0AKnowledge

12. Sodhi K, Shrivastava A, Arya M, Kumar M. Knowledge of infection control practices among intensive care nurses in a tertiary care hospital. J Infect Public Health [Internet]. 2013;6(4):269–75. Available from: http://dx.doi.org/10.1016/j.jiph.2013.02.004

13. Sheth A, Jani D, Rangoonwala M, Kadri A. Assessing the awareness and practice of Hospital Acquired Infections (HAIs) among nursing staff of Civil Hospital, Rajkot, Gujarat, India. Int J Res Med Sci [Internet]. 2015;3(8):1844–50. Available from: https://www.msjonline.org/index.php/ijrms/article/view/1617

14. Vigy Elizebth Cherian1* RR. Study to Assess The Knowledge and Practice among Nurse on Infection Control Measures in Pediatric Unit at Pondicherry Institute of Medical Science, Puducherry. Study to Assess Knowl Pract among Nurse Infect Control Meas Pediatr Unit Pondicherry Inst Med Sci Puducherry [Internet]. 2018;6(3):215–9. Available from: http://www.indianjournals.com/ijor.aspx?target=ijor:ijanm&volume=6&issue=3&article=009

15. Kabir AA, Akhter F, Sharmin M, Akhter K, Begum MB, Saha AK, et al. Knowledge, Attitude and Practice of Staff nurses on Hospital Acquired Infections in tertiary care Hospital of Dhaka city. North Int Med Coll J [Internet]. 2018;10(1):347–50. Available from: https://www.researchgate.net/publication/330348102_Knowledge_Attitude_and_Practice_of_Staff_nurses_on_Hospital_Acquired_Infections_in_tertiary_care_Hospital_of_Dhaka_city

16. Algarni, .S.S., Sofar, S.M., & Wazqar DY. Nurses' knowledge and practices toward prevention of catheter-associated urinary tract infection at King Abdulaziz University Hospital. J Heal Med Nurs [Internet]. 2019;4(1):50–73. Available from: https://www.researchgate.net/publication/330934082_Nurses'_knowledge_and_practices_toward_prevention_of_catheter-associated_urinary_tract_infection_at_King_Abdulaziz_University_Hospital

17. Manisha Jain, Vinita Dogra, Bibhabati Mishra, Archana Thakur and PSL. Knowledge and attitude of doctors and nurses regarding indication for catheterization and prevention of catheter-associated urinary tract infection in a tertiary care hospital. Indian J Crit Care Med [Internet]. 2015;19(2):76–81. Available from: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4339908/

18. Al-hussein IQK, Sc M. EVALUATION OF NURSES PRACTICE REGARDING INDWELLING CATHETER IN A L - NAJAF HOSPITALS . Glob Sci Journals [Internet]. 2019;7(August):1119. Available from: https://www.researchgate.net/publication/336013425_EVALUATION_OF_NURSES_PRACTICE_REGARDING_INDWELLING_CATHETER_IN_AL-NAJAF_HOSPITALS%0D

19. Opina MLF, Oducado RMF. Infection Control in the Use of Urethral Catheters: Knowledge and Practices of Nurses in a Private Hospital in Iloilo City. Asia Pacific J Educ Arts Sci [Internet]. 2014;1(5):93–100. Available from: http://apjeas.apjmr.com/wp-content/uploads/2014/11/APJEAS-2014-1-089b.pdf

20. Braidee Adams Katreena Merrill. Nurses' Knowledge and Attitudes of Urinary Catheter Care. J Undergrad Res. 2016; http://jur.byu.edu/?p=19930

21. John NS to A the K of SN regarding CLABSI(C) with a V to DI-AS to A the K of SN regarding CLABSI. A Study to Assess the Knowledge of Staff Nurses regarding Central Line Associated Blood Stream Infection (CLABSI) with a View to Develop Information- A Study to Assess the Knowledge of Staff Nurses regarding Central Line Associated Blood Stream Infectio. ADR Journals [Internet]. 2017;(January 2016):17–20. Available from: https://www.researchgate.net/publication/320100348%0AA

22. a S, Verma M, Saluja V. Effectiveness of Education Program Regarding Central Venous Catheter (Cvc) Care Bundle in Terms of Knowledge and Practice of Nursing Personnel. Int J Adv Res [Internet]. 2019;7(10):1026–33. Available from: http://dx.doi.org/10.21474/IJAR01/9918

23. Esposito MR, Guillari A, Angelillo IF. Knowledge, attitudes, and practice on the prevention of central line-associated bloodstream infections among nurses in oncological care: A cross-sectional study in an area of southern Italy. PLoS One [Internet]. 2017;12(6):1–11. Available from: https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0180473

24. Elsadeqkhadrawi SM. Assessment of nurses ' Knowledge and Practice Related to Caring of Central Venous Line at Aldamam hospital Shadia Mohamed ElsadeqKhadrawi. J Nurs Heal Sci [Internet]. 2019;8(1):52–7. Available from: https://www.semanticscholar.org/paper/Assessment-of-nurses'-Knowledge-and-Practice-of-at-ElsadeqKhadrawi/07359f24259338b0276b35147e69a70804a7dbfe

25. Abbady AG, Gaballah S, Abotakia AK, Sherif WI. Bundle of Care for Improving Nurses' Performance Related to Central Line Associated Blood Stream Infection. Am J Nurs [Internet]. 2019;7(4):465–70. Available from: https://www.researchgate.net/publication/334263527%0ABundle

26. Kapoor J. A descriptive study to assess the knowledge and practice of intensive care nurses on prevention of ventilator-associated pneumonia (VAP) among patients admitted in critical care units of Government Medical College Hospitals , Jammu (J & K). Natl J Multidiscip Res Dev [Internet]. 2017;2(3):358–60. Available from: http://www.nationaljournals.com/download/214/2-3-168-408.pdf.

27. Sharma MA. A Descriptive Study to assess the knowledge of staff nurses regarding ventilator associated pneumonia (VAP) among patient admitted in intensive care unit at selected nursing college, Jalandhar (Punjab). J Nurs Heal Sci [Internet]. 2019;8(2):56–9. Available from: www.iosrjournals.org

28. Yeganeh M, Yekta H, Farmanbar R, Khalili M, Khaleghdoost T, Atrkar Roushan Z. Knowledge of evidence-based guidelines in ventilator-associated pneumonia prevention. J Evid Based Med [Internet]. 2019;12(1):16–21. Available from: https://pubmed.ncbi.nlm.nih.gov/26845460

29. Aurang Zeb*, Muhammad Hasnain, Ijaz Ahmad SK and AA shah. Nurses' Knowledge Regarding Prevention of Ventilator Associated Pneumonia. Lupine Online J Nurs Heal care [Internet]. 2018;1(5):123–7. Available from: https://lupinepublishers.com/nursing-journal/fulltext/nurses-knowledge-regarding-prevention-of-ventilator-associated-pneumonia.ID.000129.php

30. Fernandes Savia1., Banerjee, Aloke2 and Dasila P. INTENSIVE CARE NURSE'S COMPLIANCE TO VENTILATOR ASSOCIATED PNEUMONIA PREVENTION PRACTICES Fernandes. Int J Recent Sci Res [Internet]. 2018;9(3):23083–6. Available from: http://www.recentscientific.com

31. Dumbre DU. A study to assess the knowledge and compliance of critical care nurses regarding ventilator care bundle in prevention of ventilator associated pneumonia. Medico-Legal Updat [Internet]. 2019;19(1):176–8. Available from: https://www.researchgate.net/publication/331402274_A_Study_to_Assess_the_Knowledge_and_Compliance_of_Critical_Care_Nurses_Regarding_Ventilator_Care_Bundle_in_Prevention_of_Ventilator_Associated_Pneumonia

32. Maurya S, Mishra SB, Azim A, Baronia AK, Gurjar M. Ventilator-associated complications: A study to evaluate the effectiveness of a planned teaching program for intensive care unit staff nurses—an Indian experience. Am J Infect Control [Internet]. 2016;44(11):1422–3. Available from: http://dx.doi.org/10.1016/j.ajic.2016.03.008

33. Jeong SY, Lee J-Y, Kim SR, Shin M-J, Lee SE, Kim OS. Development and Implementation of an Education Program for Novice Infection Control Nurses. Korean J Nosocom Infect Control. 2016;21(1):18.

34. Alrubaiee G, Baharom A, Shahar HK, Daud SM, Basaleem HO. Knowledge and practices of nurses regarding nosocomial infection control measures in private hospitals in Sana'a City, Yemen. Saf Heal [Internet]. 2017;3(1):1–6. Available from: https://safetyinhealth.biomedcentral.com/articles/10.1186/s40886-017-0067-4

35. Garba Iliyasu, Farouq Muhammad Dayyab,1 Zaiyad Garba Habib,1 Abdulwasiu Bolaji Tiamiyu,1 Salisu Abubakar,2 Mohammad Sani Mijinyawa and AGH. Knowledge and practices of infection control among healthcare workers in a Tertiary Referral Center in North-Western Nigeria. Ann Afr Med [Internet]. 2016;15(1):34–40.

36. Gruda A, Sopjani I. The Knowledge, Attitudes and Practices of Nurses Toward Management of Hospital-acquired Infections in the University Clinical Center of Kosovo. Mater Socio Medica [Internet]. 2017;29(2):84. Available from: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5544441/

37. Sophia G. Knowledge on Hospital Acquired Infections among Nursing Students. J Med Surg Nurs Pract Res [Internet]. 2019;1(1):1–11. Available from: http://matjournals.in/index.php/JMSNPR/article/view/2978

38. Mohammed Baqer Abbas Al-Jubouri. Assessment of Nurses Knowledge about Nosocomial Infection at Hospitals in Baghdad City. kufa J Nurs Sci [Internet]. 2013;4. Available from: https://www.researchgate.net/publication/318851235_Assessment_of_Nurses'_Knowledge_about_Nosocomial_Infection_at_Hospitals_in_Baghdad_City

39. Majidipour P, Aryan A, Janatolmakan M, Khatony A. Knowledge and performance of nursing students of Kermanshah-Iran regarding the standards of nosocomial infections control: A cross-sectional study. BMC Res Notes [Internet]. 2019;12(1):3–7. Available from: https://doi.org/10.1186/s13104-019-4533-4

ANNEXURE

ANNEXURE-1
Letter seeking permission for Main study

Smt. NAGARATHNAMMA COLLEGE OF NURSING

(Affiliated to RGUHS, Bengaluru, Approved by Govt. of Karnataka, Recognised by KSNC, Bengaluru & INC, New Delhi and NAAC Accredited)

To,

22nd July 2024

The principal
Smt. Nagarathnamma College of Nursing
Soladevanahalli, Bangalore, Karnataka.

Permitted
Sd/-

Subject : Request to grant permission to conduct research study in your esteemed institution.

Respected ma'am,

We are the students of 4th year B.Sc Nursing. As a part of our curriculum to complete research project work, we have selected the topic "ASSESS THE KNOWLEDGE AND PRACTICE REGARDING HOSPITAL ACQUIRED INFECTIONS AMONG NOVICE NURSES." We would like to perform the research study in Smt. Nagarathnamma College Of Nursing. A structured questionnaire will be given to participants to determine the level of knowledge regarding hospital acquired infections among Novice Nurses.
We request you to grant us the permission to conduct the study.

Thanking you,

Yours faithfully,

Mr. Elbin Johny
Mr. Steevo Joy
Mr. Vishwas Reddy

Acharya Dr. Sarvepalli Radhakrishnan Road, Acharya P.O., Bengaluru 560 107, Karnataka, India • www.acharya.ac.in
Ph: +91 80 225 555 55 • E-mail: principalanr@acharya.ac.in | admissions@acharya.ac.in

ANNEXURE- 2

CONSENT FORM APPLICATION FOR PARTICIPATION IN THE STUDY

Dear participants,

I, Mr. S. Vishwas Reddy, along with my team Mr. Steevo Joy and Mr. Elbin Johny. IV year B.Sc. Nursing students of Smt. Nagarathnamma School and College of Nursing, conducting a research project on "A descriptive study to assess knowledge and practice regarding hospital acquired infections among novice nurses at selected nursing college, Bengaluru. I request you to participate in the study by giving the appropriate answer to the questions asked. The information obtained will be kept confidential and anonymity will be maintained throughout and after the study.

If you have questions about the conducted study, any problems or queries, you can email me at contact vishwasreddy@gmail.com

Mr. S. Vishwas Reddy
IV-year B.Sc. Nursing

CONSENT OF THE PARTICIPANT

I have read the above information and being aware of the purpose of the study. I express my co-operation and willingness to participant in the study.

Thumb impression / Signature of the participant:

Date:

ANNEXURE 3

TOOL FOR DATA COLLECTION INSTRUCTIONS:

The tool comprises of socio-demographic profile, '**A**' of knowledge questionnaire and '**B**' of situational practice questionnaire regarding hospital acquired infections. Please read each of the items carefully and give an appropriate response. All the information given by you shall be kept confidential and used only for the purpose of research study.

Code No

SOCIO-DEMOGRAPHIC DATA

1. Age (in years) ————————
2. Gender
   a) Male
   b) Female
3. Educational status
   a) Diploma in Nursing
   b) BSc. Nursing
4. Where have you completed your nursing course?
   a) Private Nursing college/school
   b) Government Nursing college/school
5. Did your college have attached parent hospital for clinical posting?
   a) Yes
   b) No
6. How would you describe your clinical training during study period?
   a) Excellent
   b) Good
   c) Fair
   d) Poor
7. Have you attended any in-service education regarding hospital acquired infections in the last 6 months?
   a) Yes
   b) No

SECTION A
STRUCTURED KNOWLEDGE QUESTIONNAIRE REGARDING HOSPITAL ACQUIRED INFECTIONS

1. Hospital acquired infections is also known as _____

   A) Nosocomial infection
   B) Protozoal infection
   C) Environmental infection
   D) Fungal infection

2. Hospital acquired infections develops after of admission.
   a) 12 hours
   b) 24 hours
   c) 36 hours
   d) 48 hours

3. Which of the following units has a higher risk of developing infection and requires higher attention?
   a) Surgical ward, ICU, OPD,OT
   b) ICU, Labor room, surgical ward, OPD
   c) Medical ward, Surgical ward, OPD, Labor room
   d) OT, Labour room, ICU, Oncological ward

4. Which hospitalized patient is most at risk for developing hospital acquired infections?
   a) A 60-year-old patient who smokes 2 packs of cigarettes daily
   b) A 40-year-old patient who has white blood cell count of 6000/mm^3
   c) A 60-year-old patient who has compromised immune system
   d) A 5-year-old patient who has a seizure disorder

5. All the following factors predisposes patient to hospital acquired infections, **EXCEPT**?
   a) Patient host factor (age, malnutrition, immune status)
   b) Exposure to invasive medical devices.
   c) Sufficient standard precaution
   d) Hospital environment

6. The consequence of hospital acquired infections is

a)Early discharge

b) Financial burden

c) Decrease use of antibiotics

d) Increase patient satisfaction.

7. The most common causative organism for catheter associated urinary tract infection is

a) Pseudomonas

b) Escherichia coli

c) Candida albicans

d) Enterococci

8. The most common cause for catheter associated urinary tract infection is

a) Prolonged catheterisation

b) Fungal colonisation

c) Intermittent catheterisation

d) Meatus contamination

9. Catheter associated urinary tract infection is more common among

a) Men and women

b) Women and Children

c) Children and Men

d) Women and Elderly

10. The triad of symptoms associated with urinary tract infection are

a) Fever, urgency for voiding and lower limb pain

b)Fever, increased urination and nausea

c)Fever, suprapubic pain and burning micturition

d)Fever, abdominal pain and nausea

11. The most common cause for ascending urinary tract infection is

a) Drainage port contamination

b) Reflux of contaminated urine from bag

c)Fecal incontinence

d)Obstructed urine flow

12. The tip of central venous catheter lies into
    a) Right ventricle
    b) Cavo-atrial junction
    c) Inferior vena cava
    d) Right atrium

13. The most common organism responsible for Central line associated bloodstream infection is
    a) Staphylococcus aureus
    b) Escherichia coli
    c) Pseudomonas species
    d) Candida albicans

14.All of the following are signs of Central line associated bloodstream infection, EXCEPT?
    a) Fever
    b) Swelling and discharges
    c) Redness
    d) Vomiting

15.Risk of catheter-related septicemia is high when a catheter is inserted through the following vein
    a) Jugular vein
    b) Subclavian vein
    c) Basilic vein
    d) Femoral vein

16.The Most preferred dressing used for central venous catheter insertion site
    a) Tight gauze dressing
    b) Semi-permeable dressing
    c) Transparent semipermeable dressing
    d) Micro pore dressing

17.The most accepted policy of changing the dressing at CVC is

a) Once a week and whenever it gets soiled
b) Twice a week and whenever it gets soiled
c) Thrice a week and whenever it gets soiled
d) Daily once and whenever it gets soiled

18.The most appropriate confirmation test for central line-associated bloodstream infection is

a) Peripheral vein blood culture
b) Peripheral vein and central line blood culture
c) Central line blood culture
d) Central line catheter tip culture

19.The most recommended solution and frequency of flushing Central venous catheter is

a) 3-5 ml Hepsaline every 6 hours
b) 3-5 ml heparin every 8 hours
c) 3-5 ml sterile water every 10 hours
d) 3-5 ml normal saline every 12 hours

20.Prior to insertion of central venous catheter, the skin has to be prepped up with

a) Povidone iodine
b) 2% chlorhexidine
c) 0.5% alcohol
d) Silver sulfadiazine

21.Ventilator associated pneumonia occurs within

a) 48 hours after endotracheal intubation
b) 24 hours after endotracheal intubation
c) 72 hours after endotracheal intubation
d) 36 hours after endotracheal intubation

22.A Pathogen that **doesn't** cause ventilator-associated pneumonia is

a) Staphylococcus aureus
b) Pseudomonas aeruginosa

c) Acinetobacter baumannii
d) Candida albicans

23. The primary route for ventilator-associated pneumonia is

a) Oropharynx
b) Nasopharynx
c) piglottis
d) Larynx

24.The following are signs of ventilator-associated pneumonia, **EXCEPT**

a) Fever $\geq 100^{o}$F
b) Increase leukocyte count
c) Accessory muscle usage
d) Purulent secretions

25. Components of ventilator-associated pneumonia care bundle includes all of the following, EXCEPT

a) 30^{o} to 40^{o} head end elevation
b) Regular oral care and suctioning
c) Practicing good hand hygiene
d) Limit movement when patient is on ventilator

26.Recommended endotracheal tube to prevent ventilator associated pneumonia is

a) Standard endotracheal tube
b) Endotracheal tube with subglottic suction port
c) Carlen's double lumen endotracheal tube
d) Uncuffed endotracheal tubE

27.Recommended suction system for a ventilated patient is

a) Open suction system
b) Closed suction system
c) Partially open suction system
d) Partiallyclosed suction system

28.Frequency of changing suction system is

a) Every day and whenever soiled
b) Every alternate day and whenever soiled
c) Whenever soiled
d) Once a week and whenever soiled

29.Most recommended oral care solution for ventilated patient is

a) Normal saline
b) Plain water
c) Chlorhexidine
d) Povidone iodine

30. The most recommended agent used for reducing gastroesophageal reflux and stress relate gastrointestinal bleed is

a)Sucralfate

b)H_2 receptor blockers

c)Proton pump inhibitors

d)Combination of Sucralfate and H_2 receptor blocker

SECTION B

STRUCTURED PRACTICE QUESTIONNAIRE REGARDING HOSPITAL ACQUIRED INFECTIONS

1. A nurse studying in the emergency department is aware that the Centers for Disease Control - Standard Precautions are the most effective way to prevent infection in the hospital. In which of the following cases would the nurse apply the Standard Precautions?

a) Only patients with diagnosed infections
b)Only blood and body fluids with visible blood

c)All body fluids including sweat.

d)All patients receiving care in hospitals.

2. A nurse studying in a multidisciplinary intensive care unit is aware that all the clients being admitted are at risk for health care associated infection. Which of the following action should a nurse perform to prevent infection in ICU?

a) Perform screening of new patients for infection.
b) Develop policies to start antibiotic therapy.
c) Ensure alcohol-based hand rubs are readily available.
d) Use personal protective equipment.

3. A nurse is using personal protective equipment when bathing a patient diagnosed with clostridium difficile infection. Which nursing action is the right sequence to don personal protective equipment?

a) Mask, goggles, gloves, gown, cap.
b) Goggles, mask, gloves, gown, cap.
c) Gown, gloves, cap, mask, goggles.
d) Gown, Cap, mask, goggles, gloves.

4. A nurse had just finished assisting a normal vaginal delivery for an HIV positive mother in which the nurse had use PPE. After assisting the delivery which is the right way to remove the soiled PPE?

a) Gown, goggles, mask, gloves and wash hands.
b) Gloves, wash hands, remove gown, mask and goggles.
c) Gloves, goggles, gown, mask, cap and wash hands.
d) Goggles, mask, gloves, gown and wash hands.

5. A nurse studying in surgical general ward is aware that alcohol-based hand rub reduces cross infection. Which of the following is the right way to use alcohol-based hand rub?

a) Apply the hand rub and wave hands to dry for 20 seconds.
b) Apply hand rub and rub hands for at least 30 seconds, covering all areas.
c) Apply hand rubs and rub palms together for 10 seconds.
d) Apply hand rub to the fingers and palms for 20 seconds.

6. A 70-year-old male is admitted with benign prostate hypertrophy. The physician had advised to insert Foley's catheter. Which of the following technique will you undertake during insertion of the catheter?

a) Clean technique with clean equipment.
b) Aseptic technique with sterile equipment.
c) Clean technique with sterile equipment.
d) Aseptic technique with clean equipment.

7. A nurse caring for a 60-year-old client with continuous bladder irrigation understands that overfilled drainage bag is high risk for catheter associated urinary tract infection. Which of the following action will you undertake?

a) Empty the bag when $2/3^{th}$ full and place bag below the level of the bladder.
b) Empty the bag when $1/3^{th}$ full and place bag above the level of the bladder.
c) Empty the bag when $2/3^{th}$ full and place bag at the level of the bladder.
d) Empty the bag when it is filled up to the brim and place the bag below the level of the bladder.

8. A 42-year-old client with neurogenic bladder has an indwelling silicon catheter. On assessment the nurse visibly noticed encrustation in the meatus. What action will you take to prevent catheter associated urinary tract infection?

a) Clean meatus with tap water once in 12 hours
b) Clean meatus with betadine once in 24 hours
c) Clean meatus with chlorhexidine once in 48 hours.
d) Clean meatus with soap and water once in 24 hours.

9. A 32-year-old client with pelvic fracture is on indwelling catheter for 10 days. The nurse anticipates that the client has a potential risk for ascending colonisation up to urethra. Which of the following actions are most appropriate to prevent catheter associated urinary tract infection?

a) Maintain catheter patency and tubes free of kinks.
b) Clean and dry peri- urethral area using antiseptic solution.
c) Clean and dry peri- urethral area, patency of catheter and tubes free of kinks.
d) Clean peri- urethral area using plain water and tubes free of kinks.

10. A client with bladder outlet obstruction who had indwelling catheter developed fever >100^{o}F on the 4th day of catheter insertion. The physician advised the nurse in charge to send urine for culture and sensitivity test. Which of the following is the right way to collect sample, keeping in mind the risk of infection?

a) Disinfect port using clean technique and aspirate urine.
b) Disinfect port using aseptic technique and collect urine.
c) Disinfect drain outlet using clean technique and collect urine from drainage bag
d) Disinfect drain outlet using aseptic technique and collect urine from drainage bag.

11. A nurse takes care of a 42-year-old male patient who had been diagnosed with Acute kidney injury and had undergone hemodialysis through triple lumen Central venous catheter. Which of the following precautions will you take to prevent extra luminal contamination of central line?

a) Clean catheter hubs and ports with antiseptic agents.
b) Use personal protective equipment during aseptic site care.
c) Hand hygiene practices before manipulating the indwelling catheter.
d) Flush catheter every 12th hours.

12. A nurse is changing the dressing for a patient who has central venous catheter. During the dressing process, the nurse accidentally drops the sterile dressing on the floor. Which of the flowing action should the nurse perform next?

a) Withhold the dressing change.
b) Reuse the gauze to conserve resources.
c) Open a new sterile dressing pack.
d) Reuse if there is no visible dirt.

13. A nurse attending a 72-year-old client with central venous catheter line for 7 days, notice that the dressing is visibly soiled with purulent discharges. The nurse immediately assessed the risk of central line-associated bloodstream infection and found that the dressing needs to be changed. Which of the following action will the nurse follow during the procedure?

a) Clean the site with 2% chlorhexidine and 1 inch around the insertion site.
b) Clean site with 2% chlorhexidine along with 2 inch around the insertion site.
c) Clean site with 2% chlorhexidine along with 5 inch around the insertion site.
d) Clean site with 2% chlorhexidine along with 4 inch around the insertion site.

14. A 56-year-old client has a continuous noradrenaline infusion through subclavian central venous catheter and the administration tubing have never been changed since 10 days. the nurse understands the risk for infection through tubing contamination. How frequently should the nurse change the administration set?

a) Every 1-3 days
b) Every 4-7 days
c) Every 8-10days
d) Every 10-15 days.

15. A 26-year-old client diagnosed with lung cancer had a triple lumen central venous catheter inserted into his subclavian vein. The physician advised the nurse to initiate chemotherapy through the central line. To prevent infection, what will be your first action before initiating the therapy?

a) Confirm port functioning and initiate therapy.
b) Hand hygiene with alcohol rub for 30 seconds and initiate therapy.
c) The site must be cleansed with alcohol and initiate therapy.
d) Disinfect the hub with chlorhexidine for at least 30 seconds and confirm port functioning.

16. A 36-year-old female patient with anaphylactic reaction to sea foods was intubated in emergency department and the nurse understand the risk of ventilator associated pneumonia. Which position would be most appropriate to prevent ventilator associated pneumonia?

a) Semi-Fowler's position.
b) Supine position.
c) Lateral position.
d) Prone position.

17. A 25-year-old patient with multiple fracture is on ventilator since 3 days and has marked improvement with GCS score of 11/15. The attending nurse understands that early extubation reduces the risk of ventilator associated pneumonia. Which of the following action will you perform to assess the readiness for early extubation?

a) Sedation interruption, spontaneous breathing trials, increase positive end expiratory pressure
b) Sedation interruption, spontaneous breathing trials, decrease positive end expiratory pressure and FiO_2.
c) Sedation interruption, spontaneous breathing trials, increase positive end expiratory pressure

and FiO_2.

d) Sedation interruptions decrease positive end expiratory pressure & increase FiO_2.

18. The nurse is attending to a 65-year-old client with traumatic brain injury who has been on ventilator support since 4 days. The nurse observed that the client had temperature of 100^oF along with thick tenacious secretions. What would be your action considering the situation?

a) Suction whenever secretions are present.
b) Suction once a day and when secretions are present.
c) Suction twice a day and when secretions are present.
d) Suction once a shift and when secretions are present.

19. A client who has been on ventilator support for the past 72 hours, presents with persistent oral secretion and the nurse understands that oral care reduces Ventilator associated pneumonia. Which of the following actions will you undertake?

a) Oral care with normal saline every 1-4 hours.
b) Oral care with plain water every 1-4 hours.
c) Oral care with betadine every 1-4 hours.
d) Oral care with chlorhexidine every 1-4 hours.

20. A critical care nurse who is providing care for an intubated client identifies the risk for micro-aspiration of subglottic secretions and gastric contents which in turn increase incidence of ventilator associated pneumonia. Which of the following measures is most appropriate to prevent aspiration?

a) Head end elevation with endotracheal cuff pressure of 5-9 cm H_2O.
b) Head end elevation with endotracheal cuff pressure of 10- 15 cm H_2O.
c) Head end elevation with endotracheal cuff pressure of 20-30 cm H_2O.
d) Head end elevation with endotracheal cuff pressure of above 30 c

ANNEXURE - 12

MASTER CODING SHEET

Age	Gender	Educational status	college	attached hospital	Clinical training	Inservice education	K1	K2	K3	K4	K5	K6	K7	K8	K9	K10	K11	K12	K13	K14	K15	K16	K17	K18	K19	K20	K21	K22
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MASTER CODING SHEET

K23	K24	K25	K26	K27	K28	K29	K30	Ktotal	P1	P2	P3	P4	P5	P6	P7	P8	P9	P10	P11	P12	P13	P14	P15	P16	P17	P18	P19	P20	Ptotal
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MASTER CODING SHEET

Age	Gender	Educational status	college	attached hospital	Clinical training	Inservice education	K1	K2	K3	K4	K5	K6	K7	K8	K9	K10	K11	K12	K13	K14	K15	K16	K17	K18	K19	K20	K21	K22
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MASTER CODING SHEET

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1	0	0	1	1	1	0	1	19	0	0	0	1	1	1	1	1	0	1	0	1	1	1	0	1	0	1	0	1	12
1	1	0	1	0	0	1	0	20	1	0	1	0	1	1	1	1	0	1	0	1	0	0	1	1	1	1	0	0	12
1	1	1	1	0	1	1	1	22	1	1	1	0	1	1	1	1	1	1	0	1	0	0	1	1	0	0	1	0	13
1	1	1	1	1	0	1	1	23	1	0	1	0	0	1	1	1	1	0	0	1	0	0	1	1	0	1	1	0	11
1	0	0	0	1	0	0	0	15	1	1	0	1	0	1	1	1	0	0	0	1	0	0	1	1	0	0	0	0	9
0	0	1	0	0	0	0	0	14	1	0	1	1	0	1	0	0	1	0	0	1	0	1	1	1	0	0	0	1	10
1	0	1	1	0	0	1	1	14	1	0	1	0	1	1	0	1	0	0	1	1	0	0	1	1	1	1	0	0	11
1	0	1	1	1	0	1	1	22	1	0	1	1	1	1	1	0	1	1	0	1	0	0	1	1	0	0	0	0	11
1	1	1	0	1	1	1	1	21	1	0	1	1	0	0	1	1	0	0	0	1	0	0	0	1	1	1	1	1	11
1	0	1	0	1	1	1	0	22	1	1	0	1	0	0	1	1	0	1	0	1	0	1	0	1	0	1	1	0	11
1	0	1	0	1	1	1	0	20	1	0	1	1	0	1	0	1	0	0	1	1	0	1	0	1	1	1	1	1	13
1	0	1	0	1	1	0	0	17	1	1	0	1	0	1	0	1	0	0	1	1	0	1	0	1	0	0	1	0	10
1	1	0	0	1	1	1	0	17	1	0	1	1	1	1	1	0	0	0	1	1	0	1	0	1	0	1	1	1	13
1	1	1	0	1	1	1	0	16	0	0	1	1	0	0	0	1	1	0	1	1	0	1	0	1	0	0	1	0	9
1	0	0	0	0	0	1	0	16	1	0	1	0	0	1	1	1	1	1	0	1	0	0	1	1	0	1	1	0	12
1	1	1	0	1	1	1	1	20	1	0	1	1	0	1	1	1	0	0	0	1	0	1	0	1	0	1	1	0	11
0	1	1	1	0	1	0	1	22	1	1	0	1	1	0	1	0	1	0	1	0	1	0	0	0	1	0	1	1	11
0	1	1	0	1	1	1	1	21	0	1	1	1	1	1	0	1	0	0	0	1	0	0	1	1	1	1	1	1	13

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Age	Gender	Educational status	college	attached hospital	Clinical training	Inservice education	K1	K2	K3	K4	K5	K6	K7	K8	K9	K10	K11	K12	K13	K14	K15	K16	K17	K18	K19	K20	K21	K22
2	2	2	1	2	2	2	1	0	1	1	1	0	0	0	1	1	0	1	1	1	1	1	0	1	1	1	0	0
2	2	1	2	1	2	2	1	1	0	0	1	1	1	1	1	0	1	0	1	1	0	1	1	0	1	1	0	0
2	2	2	1	2	2	1	1	1	1	0	0	1	1	1	0	0	1	1	1	1	0	1	0	1	1	1	1	1
2	2	2	1	1	2	2	1	0	1	1	0	1	1	1	0	1	1	0	1	1	1	0	1	0	1	1	1	1
2	1	2	1	2	3	1	0	1	1	1	1	1	1	1	0	1	1	0	0	1	1	0	0	0	1	1	1	0
2	1	1	1	2	2	2	1	0	1	0	1	0	1	1	0	0	0	0	1	1	1	1	0	0	1	1	1	1
2	2	1	1	2	2	2	1	0	0	1	1	1	1	0	1	0	1	1	0	1	1	1	0	1	1	0	0	1
2	1	2	1	1	2	2	1	1	1	0	1	1	1	0	1	1	0	1	1	0	1	0	1	0	1	1	1	1
2	1	2	1	1	2	2	1	1	1	0	1	1	1	1	0	1	0	1	0	1	1	0	1	0	0	1	1	1
1	2	2	1	2	3	2	1	0	0	1	0	1	0	0	1	1	0	0	0	1	0	1	0	1	0	1	0	0
1	2	2	1	1	3	2	1	0	0	1	1	0	0	1	1	1	1	1	1	1	0	1	0	0	0	1	0	0
2	2	2	1	1	2	1	1	0	0	0	1	0	0	1	1	1	1	0	1	1	1	0	0	1	0	1	1	0
2	2	2	1	1	2	2	1	0	0	1	0	0	1	0	1	0	0	0	1	1	0	1	0	0	0	0	0	1
2	2	1	1	1	3	1	1	1	0	0	0	0	1	0	1	0	0	0	0	1	1	1	0	0	1	1	1	0
2	2	2	1	1	3	2	1	1	0	0	0	1	1	0	1	1	0	0	0	1	0	0	0	0	0	1	1	0
2	2	2	1	2	4	1	1	0	0	0	0	1	1	1	1	0	0	0	0	0	1	1	0	0	1	1	0	1
2	2	2	1	2	3	2	1	0	1	1	1	0	0	0	1	1	1	1	0	1	1	1	0	0	0	1	0	0
1	2	1	2	1	3	2	1	1	1	1	1	0	1	1	1	1	1	0	1	1	1	1	0	1	0	1	1	0
2	2	2	1	1	2	2	0	0	1	0	0	1	1	0	1	1	1	0	1	0	0	1	0	0	0	0	0	0
2	2	2	1	2	2	2	1	1	0	0	1	1	0	1	1	0	1	0	1	0	1	1	0	1	1	0	1	0

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K23	K24	K25	K26	K27	K28	K29	K30	**Ktotal**	P1	P2	P3	P4	P5	P6	P7	P8	P9	P10	P11	P12	P13	P14	P15	P16	P17	P18	P19	P20	**Ptotal**
1	1	1	0	1	1	1	1	**21**	1	1	0	1	1	1	1	1	0	0	1	1	1	1	0	1	0	1	1	0	**14**
1	1	1	0	1	1	1	1	**21**	1	0	1	1	0	1	1	1	0	0	0	1	0	0	0	1	1	0	1	0	**10**
0	1	0	0	1	1	1	1	**21**	0	1	0	1	1	1	1	1	0	1	0	1	1	1	0	1	1	1	1	0	**14**
0	1	1	0	1	1	1	0	**21**	0	1	0	0	1	0	1	1	1	1	0	1	1	0	1	1	0	0	1	0	**11**
1	1	1	0	1	1	1	1	**21**	1	0	1	1	0	0	1	1	1	0	1	1	0	1	0	1	1	1	1	1	**14**
0	1	1	0	1	1	0	1	**18**	1	1	1	1	0	1	1	0	0	0	0	1	1	0	0	1	0	1	1	0	**11**
1	0	1	0	1	1	1	1	**20**	1	0	1	1	1	1	1	1	0	0	1	1	0	1	0	1	0	0	1	0	**12**
0	0	1	0	1	1	1	1	**21**	1	0	1	1	0	1	0	1	0	0	0	1	1	1	0	1	0	1	1	0	**11**
1	1	0	0	1	1	1	1	**21**	1	1	1	1	0	1	1	0	0	0	0	1	0	0	0	1	0	1	1	1	**11**
1	0	0	0	1	1	1	0	**13**	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1	1	1	0	**6**
1	1	0	0	1	0	0	0	**15**	0	0	0	0	1	0	1	1	0	1	0	0	0	1	0	1	0	0	0	0	**6**
1	1	1	0	1	0	0	0	**16**	1	1	1	0	0	0	0	0	1	1	0	0	1	1	1	0	0	0	0	0	**8**
0	1	0	0	0	1	1	0	**11**	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1	0	**4**
0	1	1	0	0	0	0	0	**12**	0	0	1	1	1	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	**5**
0	0	0	0	0	0	1	0	**10**	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	1	1	0	0	0	**4**
0	0	0	0	1	0	0	0	**11**	0	1	1	1	0	0	0	0	0	0	0	0	0	0	1	1	1	0	1	0	**7**
0	1	1	0	0	0	0	0	**14**	1	0	0	0	1	0	1	0	0	0	0	1	1	0	0	1	1	0	1	0	**8**
1	0	1	0	1	1	0	0	**21**	1	0	0	1	0	0	0	0	1	0	0	0	0	0	1	1	1	0	1	0	**7**
0	1	1	1	0	0	0	1	**12**	1	0	0	1	0	1	0	1	1	0	1	0	0	1	1	0	0	0	1	0	**9**
1	0	0	0	1	1	0	0	**16**	0	0	1	1	0	0	1	0	0	1	0	1	1	0	0	1	0	0	1	0	**8**

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Age	Gender	Educational status	college	attached hospital	Clinical training	Inservice education	K1	K2	K3	K4	K5	K6	K7	K8	K9	K10	K11	K12	K13	K14	K15	K16	K17	K18	K19	K20	K21	K22
2	2	2	2	1	2	2	1	1	0	1	0	1	1	0	1	1	0	0	1	1	1	0	1	0	0	0	0	2
2	1	2	1	2	2	1	1	1	0	0	0	0	0	1	1	1	1	0	1	1	0	1	1	0	0	1	0	1
1	2	1	1	2	2	2	1	1	0	0	0	0	1	1	1	0	1	0	1	0	1	0	1	1	1	1	1	2
2	2	2	2	1	1	1	1	1	1	1	0	1	0	1	1	1	0	1	1	1	0	0	1	1	0	0	0	2
2	1	2	1	2	1	2	1	0	1	1	0	1	1	1	1	0	1	0	1	1	1	1	0	1	1	0	0	1
2	2	2	1	1	2	2	1	0	0	1	0	1	1	0	1	0	0	1	1	1	1	1	1	0	1	0	0	2
2	1	2	2	1	2	2	1	0	1	0	1	1	0	1	1	0	1	1	0	1	1	0	0	1	0	1	1	1
2	2	2	1	1	2	1	1	0	0	1	0	1	0	1	1	1	0	1	0	1	1	1	0	0	1	0	1	2
2	1	2	1	1	2	2	1	0	0	0	1	1	0	1	0	1	0	0	0	1	1	0	0	1	1	0	0	1
2	2	2	1	1	2	1	1	1	0	1	1	1	1	0	1	1	0	1	1	1	1	0	1	0	1	0	1	2
2	2	2	2	1	2	1	1	1	1	1	1	0	1	0	1	0	0	1	0	1	0	0	0	1	1	0	1	2
2	2	2	1	1	2	2	1	0	1	1	0	0	0	1	1	0	1	0	1	0	1	0	0	1	1	0	0	2
2	1	2	1	1	1	2	1	1	0	0	1	0	0	1	0	0	1	1	1	1	0	1	0	1	1	1	1	1
2	2	2	1	1	2	1	1	1	0	0	1	1	0	0	1	1	0	0	1	1	1	0	1	1	0	0	1	2
1	1	1	1	2	2	2	1	1	1	0	0	1	1	1	0	0	1	0	1	1	1	0	1	0	0	1	1	1
2	2	2	1	1	2	2	1	0	0	1	1	1	1	1	0	1	0	0	1	1	0	0	1	0	1	0	0	2
1	1	2	1	1	3	1	1	0	1	1	1	1	1	1	1	1	0	1	1	1	1	1	0	0	0	0	1	1
2	2	2	1	1	2	2	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	1	1	2
1	2	2	1	1	2	1	1	1	1	1	0	1	1	1	1	1	1	0	1	1	0	0	1	0	1	0	1	2
2	2	1	2	1	2	2	1	1	0	0	0	1	0	1	1	0	1	0	1	1	1	0	0	1	0	0	0	2

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K23	K24	K25	K26	K27	K28	K29	K30	Ktotal	P1	P2	P3	P4	P5	P6	P7	P8	P9	P10	P11	P12	P13	P14	P15	P16	P17	P18	P19	P20	Ptotal
0	1	0	0	0	1	1	1	1	16	0	1	0	1	0	0	1	1	0	0	0	1	1	1	0	1	1	0	1	0
0	1	0	0	0	1	0	1	1	15	1	0	1	1	0	1	0	0	0	1	0	1	0	1	0	1	0	1	1	1
0	1	0	0	0	1	1	1	1	18	1	1	1	0	0	1	0	0	0	0	1	0	1	0	0	1	0	0	1	0
1	1	0	1	0	1	0	1	1	19	0	1	1	0	0	1	0	1	0	0	0	1	0	1	0	1	0	1	1	0
1	1	0	0	1	0	1	1	0	19	1	0	1	1	0	0	1	0	1	0	0	1	1	1	0	1	0	0	1	1
0	1	0	1	0	1	0	1	0	16	1	0	1	1	0	0	1	1	0	1	0	1	0	1	0	1	0	1	0	0
1	1	1	0	1	0	1	1	1	20	0	0	1	0	1	1	1	0	1	0	1	0	0	0	1	0	0	1	0	0
0	1	0	1	0	0	1	1	1	17	1	0	1	1	0	0	1	0	0	0	0	1	1	1	0	1	0	0	1	0
0	1	0	1	1	1	1	1	1	16	1	1	1	1	1	1	1	1	0	0	1	1	1	0	0	1	1	0	1	1
1	1	1	1	0	1	0	1	0	21	0	1	0	1	0	0	1	1	1	0	0	1	0	0	0	1	0	0	1	0
0	1	1	1	0	0	1	1	0	17	0	1	0	1	0	1	1	1	0	0	0	0	0	0	0	1	0	0	1	1
0	1	1	1	0	0	1	1	1	16	0	1	0	1	0	0	0	0	0	0	0	1	1	0	1	0	0	1	1	1
1	0	1	0	0	1	1	0	0	17	0	1	1	0	0	1	1	1	0	1	1	0	1	0	1	1	0	1	1	1
0	1	1	1	0	1	1	1	0	18	1	1	0	1	0	0	0	1	1	0	1	1	1	1	0	1	1	0	0	1
1	1	1	0	1	0	1	1	1	20	1	1	0	0	1	0	1	1	0	1	1	0	1	0	1	0	1	0	1	1
0	1	1	1	0	0	0	1	1	16	1	0	1	1	1	1	1	1	1	0	1	1	0	1	0	1	1	0	1	0
1	1	1	1	1	1	0	0	1	22	1	0	0	0	1	1	1	1	1	1	0	1	1	0	1	1	1	0	1	0
0	0	1	1	0	0	0	1	0	20	1	0	1	1	0	0	0	0	0	0	0	1	0	1	1	0	0	1	1	1
1	1	1	1	1	1	1	1	0	23	1	1	1	1	1	0	1	1	1	1	0	1	1	1	1	1	1	1	1	0
1	0	1	1	0	1	1	0	1	16	0	1	0	1	1	0	1	1	1	0	1	1	1	0	0	1	1	1	0	1

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Age	Gender	Educational status	college	attached hospital	Clinical training	Inservice education	K1	K2	K3	K4	K5	K6	K7	K8	K9	K10	K11	K12	K13	K14	K15	K16	K17	K18	K19	K20	K21	K22
	2	2	1	2	2	2	1	0	1	1	1	0	0	1	1	0	1	1	1	1	1	1	1	1	0	0	1	1
	2	2	1	1	3	2	1	0	1	0	1	0	1	1	1	1	0	0	1	1	1	0	1	0	1	1	1	1
	1	1	1	2	3	2	1	0	1	1	1	1	0	0	1	1	0	0	0	1	1	0	1	0	1	0	1	1
	2	2	1	1	1	1	1	0	0	0	0	0	0	0	1	1	1	0	1	0	0	1	0	0	0	0	0	0
	2	2	1	1	2	1	1	1	0	1	1	1	1	1	1	1	0	0	0	1	0	1	0	0	0	0	1	1
	2	2	1	1	2	2	1	0	1	1	1	1	1	1	1	1	0	0	1	0	0	1	0	0	0	1	1	1
	2	2	1	1	1	2	1	0	0	1	1	1	0	1	1	1	0	1	0	1	0	1	1	0	0	0	1	1
	2	2	1	2	2	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1	0	0	0	0	0	1
	2	1	2	1	2	2	1	1	0	0	1	1	1	1	1	0	1	0	1	1	0	1	1	0	1	1	0	0
	1	1	1	2	2	2	1	0	1	0	1	0	1	1	0	0	0	0	1	1	1	1	0	0	1	1	1	1
	2	2	1	1	2	1	1	0	0	0	1	1	0	1	1	1	0	0	1	1	1	1	0	0	0	1	0	1
	2	2	1	2	2	2	1	1	0	1	1	1	1	1	0	1	0	0	1	0	1	0	0	0	0	0	1	0
	1	1	1	2	3	2	1	1	0	1	0	1	0	0	0	0	0	0	1	1	0	0	0	0	0	1	0	0
	1	1	1	1	3	2	1	0	0	0	1	1	0	0	1	1	0	0	1	1	1	0	0	0	1	1	0	1
	2	2	1	2	2	2	1	1	0	1	1	1	1	1	0	0	0	1	0	0	0	0	0	1	0	0	0	1
	2	2	1	1	2	1	1	0	1	1	1	1	1	1	1	1	0	1	1	1	1	0	0	0	0	1	1	1
	1	2	1	2	2	2	1	0	1	0	1	1	0	1	1	0	1	0	1	0	0	0	0	0	0	0	0	1
	1	1	1	2	2	2	1	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
	2	1	1	2	2	2	1	0	1	1	1	1	0	1	1	0	0	1	1	1	1	0	0	0	0	0	1	0
	2	1	1	2	2	2	1	1	1	1	0	1	0	0	1	1	0	0	1	0	1	1	0	0	0	0	0	0

Signature of candidate _____

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K23	K24	K25	K26	K27	K28	K29	K30	**Ktotal**	P1	P2	P3	P4	P5	P6	P7	P8	P9	P10	P11	P12	P13	P14	P15	P16	P17	P18	P19	P20	**Ptotal**
1	0	1	1	1	1	1	1	**23**	0	1	1	1	1	1	0	0	1	1	1	1	0	1	0	1	1	0	1	0	**13**
0	1	1	0	1	1	1	1	**21**	0	1	1	1	1	1	0	1	0	0	0	1	0	0	1	1	1	1	1	1	**13**
1	1	1	0	1	1	1	1	**20**	1	0	1	1	0	1	1	1	0	0	0	1	0	1	0	1	0	1	1	0	**11**
0	0	0	1	0	0	0	0	**7**	1	1	1	0	0	1	1	0	0	0	1	0	0	0	1	0	1	0	1	0	**9**
1	1	1	0	1	0	0	0	**17**	1	1	1	1	1	1	1	1	0	1	0	1	0	0	1	0	1	1	0	0	**13**
1	1	0	1	1	1	0	1	**20**	0	0	0	0	1	0	1	1	1	0	1	1	0	1	1	0	0	0	1	0	**9**
1	1	1	0	0	1	1	0	**18**	1	0	0	1	0	1	0	0	1	1	0	1	0	0	1	1	1	1	0	1	**11**
1	1	1	1	1	0	1	1	**23**	1	0	1	0	0	1	1	1	1	0	0	1	0	0	1	1	0	1	1	0	**11**
1	1	1	0	1	1	1	1	**21**	1	0	1	1	0	1	1	1	0	0	0	1	0	0	0	1	1	0	1	0	**10**
0	1	1	0	1	1	0	1	**18**	1	1	1	1	0	1	1	0	0	0	0	1	1	0	0	1	0	1	1	0	**11**
0	0	0	1	1	0	1	1	**16**	1	0	1	1	0	1	1	1	1	1	0	1	0	1	0	1	0	0	1	0	**12**
1	0	1	1	0	1	0	0	**15**	1	1	0	1	0	0	0	1	1	1	1	1	0	1	1	1	1	1	0	0	**13**
0	0	0	1	0	0	0	0	**8**	1	0	1	0	1	1	1	1	0	1	0	0	1	1	0	1	0	1	0	0	**11**
1	0	0	0	1	1	0	1	**15**	1	0	0	0	0	1	1	1	0	1	1	0	0	0	0	1	0	1	0	0	**8**
1	0	0	0	0	0	0	0	**11**	1	1	1	1	0	1	0	0	0	1	1	0	0	0	0	0	1	0	1	1	**10**
0	0	0	1	1	1	0	1	**20**	0	0	1	0	0	0	1	1	0	1	1	0	1	0	0	1	1	1	0	0	**9**
0	0	0	0	1	1	1	0	**12**	1	0	1	1	0	0	0	1	0	0	0	1	0	0	0	0	0	0	1	0	**6**
0	0	0	1	0	0	0	0	**4**	0	0	0	0	0	1	0	0	0	0	1	1	1	0	1	0	1	0	0	1	**7**
0	0	0	0	0	0	1	1	**14**	0	0	1	1	0	0	1	0	0	0	0	0	1	1	1	0	1	0	0	1	**8**
1	0	0	1	1	0	1	0	**14**	1	0	0	0	0	0	1	1	1	0	1	1	0	0	1	1	1	1	0	0	**10**

Signature of candidate _____ signature of guide _____