**“A STUDY TO ASSESS THE KNOWLEDGE OF HEALTH CARE PROVIDERS IN PREVENTION OF HEALTH CARE ASSOCIATED INFECTION IN SELECTED HOSPITAL KOLAR.”**



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**Research project submitted to**

**Sri DevarajUrs College of Nursing, Tamaka, Kolar**

**In partial fulfillment of the requirement for the degree of Basic**

**B. Sc. (N) and Diploma(N)**

**MEDICAL SURGICAL NURSING SPECIALITY**

**Under the guidance of**

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**2017**

**DECLARATION BY THE CANDIDATE**

Wehereby declare that the research project entitled  **“A study to assess the Knowledge of Health Care Providers in Prevention of Health Care Associated Infection, Selected Hospital Kolar”** is a bonafide and genuine research work carried out by us under the guidance and supervision of **Dr. ZeanathCariena Joseph** HOD of MSN,Sri DevarajUrs College Of Nursing, Tamaka,kolar.

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Tamaka,Kolar.Tamaka,Kolar.

 **ACKNOWLEDGEMENT**

**“Humble yourselves therefore under the mighty hand of god so that at the proper time he may exalt you casting all your anxieties on him because he cares for you.”**

 **(1 Peter5:6,7)**

 We raise our heart with profound gratitude God almighty for he has done marvelous things throughout our study. He guided us strengthened us, and enlightened us at every step for the successful completion of this study.

 Our heartfelt thanks and gratitude to our research guide **Dr**.**ZeanathCariena**HOD of Medical Surgical Nursing, Sri DevarajUrs College Of Nursing for the guidance and an out source of inspiration throughout the study.

 We immensely thank**Dr. G .Vijayalakshmi** principal of Sri DevarajUrs College Of Nursing who provided us the learning atmosphere and for constant support to conduct the study.

 We express our sincere gratitude to all **HOD’S** of various department of Nursing and all Faculties of Sri DevarajUrs College OF Nursing for their guidance, support and Valuable suggestions which helped us to complete the study.

 Our deep sense **Prof.Mr.Ravishankar,** Statistician, Dept of Community Medicine of Sri DevarajUrs College Of Nursing for his Guidance and Valuable suggestions for the study.

 Our special Word of thanks to the **Librarians**of Sri DevarajUrs College Of Nursing for their constant support and timely help in literature search.

 We express our sincere gratitude to the study subjects who had spent their generous time and co~operation by their participation in the research study.

We sincerely thank our parents , who are source of our life & inspiration and for their constant guidance.

By

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**LIST OF ABBREVIATIONS**

|  |  |
| --- | --- |
| **Sl.no** |  **Abbreviations** |
| 1. |  HCAI= Health Care Associated Infection  |
| 2. | WHO=World Health Organization  |
| 3 | Sd : Standard Deviation |
| 4 | DF : Degree of Freedom |
| 5 | Ns : Not Significant |

**ABSTRACT**

Health Care Associated Infection is recognized as the leading cause of cross-infection. Regarding Health Care Associated Infection the compliance of health care providers with preventive guidelines on hospital acquired infection seems to be vital in preventing various diseases among patients.. There is a paucity of studies exploring this subject in Asia. Especially the health care providers knowledge on standard HCAI precautions is rarely compared.

Descriptive research design was used, through convenient sampling technique on 60 Health Care Providers were included in the study and assessment of knowledge regarding health care providers.

The study revealed that regarding, socio demographic variables of health care providers majority (83%) of study participants were in the age group of <30years, and (17%)were in the age group of >30years, of them were males, 45% and females 55% .

The study findings related that the, mean knowledge level of sample were found to have moderate level (66.67%) & (30%) of them had inadequate knowledge & only (3.33%) were found to have adequate knowledge level.

Thus the study findings have implications to the nursing practice, education, administration & research, to bridge the gap between infection prevention theory & practice in health care setting.

**CHAPTER -1**

**INTRODUCTION**



**INTRODUCTION**

Astonishing scientific and technological advancements are being made in the 21st century; subsequently prevalence and incidences of health care associationinfections are also increased due to lack of knowledge and poor practice among healthcare workers.1

  In developed countries, about 5 to 10% of patients admitted due to acutehealth care associatedinfection which was not present or incubating on admission. The rate for developed countries can exceed 25% and high as 40% or more in developing countries. Such hospital –acquired or Nosocomial infections add to the  morbidity, mortality and cost expected from the patients’ underlying diseases alone and infection control is the responsibility of all health care professionals. health care association infections can be arrested or prevented only when the health care providers have adequate knowledge regarding infection control protocols .2

Infection is a painful fact of life and the chief cause of death. Even though the major infectious diseases are controlled, still infections are the main cause for disability and mortality. It is no surprise then, that a fear of infection is deeply rooted in the human consciousness 3

Nosocomial infections are the infections acquired during hospital stay. These infections concern 5-15% (estimated 2 million cases annually) of hospitalized patients and can leads to complications in 25-33% of those admitted in ICU. These are an important cause of risk in (80.000 annually) economic cost & are considerably increasing stay in hospital, drugs, delayed discharge etc.4

The source of nosocomial pathogens in health care facilities varies, but both health care workers and clients are the reservoirs in most instances. For example, Staphylococcus aureus is often carried on the skin and in the nasopharynx. Respiratory secretions, feaces, urine and blood are reservoirs for some nosocomial organisms. Liquid and inanimate objects in the hospital environment may also serve as source of nosocomial infections. The most important means of transmission is via the hands of healthcare workers.5

Meticulous infection control protocols are required to prevent health care associated nosocomial infection. The common sites of nosocomial infections in clients are the urinary tract, lower respiratory tract, surgical wounds and blood stream.6

To prevent the spread of infection in clinical setting nurses need more knowledge and resources to comply with infection control protocols7

**NEED FOR STUDY**

**Research is a way of finding out what you are going to do when you can't keep on doing what you are doing now*.***

In 19th century Louis Pasture found the science of bacteriology and Joseph Lister overcome surgical infections with phenol sprays .The concepts of asepsis and its application in hospital practice reduced the incidence of infection, but hospital associated infection still causes considerable mortality and morbidity.8

WHO indicated that international prevalence of nosocomial infection is at 9% .Assuming the cost of health care in India is 10%. An average patient in India ends up paying Rs. 1.2-1.5 lakhs over and above the actual treatment cost.9

Nosocomial infections occur about 5-10% of hospital admissions in world wide. In India nosocomial infections rate is alarming and is estimated at about 30-50% of all hospital infections

A descriptive study was conducted to evaluate nurses knowledge regarding nosocomial infections in neurosurgery unit in Istanbul university, Turkey. Questionnaire used as tool for collecting the data. Total sample size was 200 ICU staff nurses. It was found that 60% of the nurses are having inadequate knowledge regarding the nosocomial infections in neurosurgery unit. The investigator suggested that infection control measures are to be viewed as priority and have to be integrated fully into the continuous process of improvement of quality of care.10

The hospitals in the developing world lack an awareness of infection control programmers and also proper documentations and methods of controlling various infections. This making it difficult to investigate the spread of infections. Therefore immediate establishment of infection control team should be done and it should comprising of  doctors, nurses, allied staff and other health care workers for preparation  and implementation of Infection Control Protocols. 11

However as identified in assessment undertaken by the international nosocomial infection control consortium (INICC) team at health care facilities worldwide during the last 25years, there is a significant gap between the counts of the above-mentioned available recommendations and the feasibility of their implementation at hospitals in resource-limited countries due to the actual structure supplies, technology, knowledge, skills and practices at their disposal. It was commonly observed that hospitals in resource –limited countries apply the five classic components of the institute for health important (IHI) bundle along with its check list-which are, undoubtedly, significantly effective in industrialized countries however their effectiveness is hindered by the existence of unfavorable situations. Including overcrowded intensive care units (ICUs).12

 Many studies have proved that in light of these findings, there still exists a compelling need to bridge the gap between infection prevention theory and practice in health care facilities with limited resources. Thus, the investigators felt the need to highlight and comment on a few practical and essential components of a bundle to counteract those adverse differences in practice and use of outdated supplies and technologies that are evident when comparing health care facilities in high-income and resource-limited countries.Health Care Providers are not having adequate knowledge regarding infection control protocols. Hence, the researchers thought of taking the task of assessing the knowledge of health care providers and helping them in improving their knowledge regarding infection control protocols in order to reduce further incidence of Health Care Associated Infection, there to the standard care bundle protocols in preventing HCAI & decrease the cost on health care.13

**STATEMENT OF PROBLEM**

**“A study to assess the Knowledge of Health Care Providers on Health Care Associated Infection in Selected Hospital, Kolar.”**

**OBJECTIVES OF THE STUDY:**

* To assess the knowledge of health care providers on health care associatedinfection by using Structured Knowledge Questionnaire.
* To find the association between knowledge and selected demographic variables.

**ASSUMPTION**

1) Health care providers will have some knowledge regarding Health Care AssociatedInfection.

2)Increased knowledge of Health Care Providers will reduce the risk of health care associatedinfection.

**OPERATIONAL DEFINITIONS**

1)KNOWLEDGE

In this study knowledge refers to Health Care Providers understanding about selected aspects of health care associatedinfections such as surgical site infection, ventilator associated infections, blood stream infection, thrombophlebitis.

2)HEALTH CARE PROVIDERS

 In this study health care providers refers to the team of doctors, nurses and technicians who are involved in direct and indirect activities of patient care.

3) HEALTH CARE ASSOCIATED INFECTION

In this study health care associatedinfection refers to the infection that appears after three days of patient admission to the hospital as per measured by surveillance. Examples CAUTI(catheter associated urinary tract infections), SSI( surgical site infections), VAP( ventilator associated pneumonia) etc.

**CONCEPTUAL FRAMEWORK**

Conceptual framework refers to the interrelated concepts or abstractions that are assembled together in some rational scheme by virtue of their relevance to a common theme (George BJ 2002)the present study was aimed at assess the Knowledge regarding health care associated infection among health care providers.

 The conceptual framework of this study is based on Concept, Input, Process and Product (CIPP) model on evaluation developed by Daniel Stufflebean (2003). It aims to provide an analytic and rational basis for decision making based on the cycle of planning, structuring, implementing, reviewing and revising decisions. Each concepts are examined through a different aspect of evaluating like context, input, process and product evaluation (CIPP). CIPP model provides a comprehensive systematic continuous ongoing framework for programme evaluation.14

**Concepts of Daniel Stufflebean Evaluation**

* Context evaluation
* Input evaluation
* Process evaluation
* Product evaluation

**Context Evaluation**

 It highlights the environment in which the proposed programme exists. It assess the needs, problems, opportunities, basis for defining goals, priorities and objectives. It helps in making programme planning decisions. In this context in the present study were assessed the knowledge regarding health care providers.

**Input Evaluation**

Input evaluation involves steps and resources needed to meet the goals and objectives. It serves as a basis for structuring decisions. In present study input refers to the,

* Development of structured knowledge questionnaires
* Validation of knowledge questionnaires regarding hospital acquired infection Establishment of validity and reliability of the tool.
* Selection of sample and Framing a research design

**Process Evaluation**

It involves the implementation of plans to guide the activities and later to explain outcome. In the present study it refers to;

* Administering the structured knowledge questionnaire.
* Assessing the knowledge regarding hospital acquired infection among health care providers.

**Product Evaluation**

 It helps to identify both intended and unintended outcome to keep the process on track and comparing them to anticipated outcome. It can be decided if the programme should be continued, modified or dropped altogether. In this study product evaluation refers to;

* Assessing the knowledge regarding health care providers among health care associatedinfection
* Determine the association between knowledge with selected socio-demographic variables.

This step of the model further leads to recycling decisions and need for modification to terminate which is not in the preview of this study.

**Context Evaluation**

Assess Knowledge Regarding Health Care Providers.

**Input Evaluation**

Steps And Resources Needed To Meet The Goals And Objectives.

**Process Evaluation**

Implementation Of Plans To Guide Actions.

**Product Evaluation**

Identify Intended And Unintended Outcome.

1. Develop And Validate Tool.

2. Framing TheResearch Design.

1. Assessed The Knowledge Regarding Health Care Providers.

2.Determine The Association Between Knowledge With Selected Socio-Demographic Variables.

1. Administering TheStructured Knowledge Questionnaire.

2. Assessing TheKnowledge Regarding Health Care Providers.

**Fig 1: Conceptual Framework Based On Daniel Stufflebean CIPP Model ( ) )))) (2003)**

**SUMMARY:**

This chapter dealt with need for the study, statement of problem, objectives of the study, operational definitions, and assumptions and conceptual frame work.

 **CHAPTER 2**

**REVIEW OF LITERARURE**



**REVIEW OF LITERATURE**

This chapter deals with selected studies which are related to the objectives of the proposed study. A review of research and non-research literature relevant to the study was undertaking which held the investigator to develop insight into problem and gain information on what have been done in the past.

“Review of Literature is a summary of research on a topic of interest, often prepared to put a research problem in the context as the basis for an implementation project”. A literature review helps to play the foundation for the study and can also inspire new research ideas.

The review of literature for present study has been reviewed under the headingas

 Research studies assessing knowledge of nurses on infection control.

**Research studies assessing knowledge of nurses on infection control.**

A descriptive observational study was conducted to evaluate the knowledge and practices of hand washing, use of gloves, and the handling and disposal of needles sticks and other sharp objects among health care providers in brazil by using a questionnaire and check list. The results showed that knowledge of hand hygiene procedures was higher than what was observed in the clinical practice.15

A survey of doctors’ and nurses on’ knowledge, attitude and compliance with infection control guidelines in Birmingham teaching hospitals was conducted & The results of this study indicated that overall knowledge regarding blood-borne virus transmission from an infected patient after needles stick injury was low [44.0% for hepatitis B virus, 38.1% for hepatitis C virus, and 54.6% HIV]. As per the findings of this study; education, monitoring, improved availability of resources, and disciplinary measures for poor compliance are required to improve infection control practices in hospitals.16

 A study was conducted on role of hand hygiene in health care associated infection prevention and the study reveals that factors influencing hand hygiene compliance, the impact of hand hygiene promotion on healthcare-associated pathogen cross-transmission and infection rates, and challenging issues related to the universal adoption of alcohol-based hand rub as a critical system change for successful promotion

A cross-sectional study was conducted among nurses and physicians providing direct patient care in four hospitals in Hong Kong on perceptions of the importance and impact of health care associated infections and hand hygiene. Among respondents a total of 60% of the nurses and 46% of the physicians acknowledged that over 75% of healthcare-associated infections can be prevented by hand hygiene 17

A descriptive study was conducted on the level of knowledge and practice of prevention of hospital acquired infections among trained nurses in surgical wards and the factors that hinder this practice. The findings revealed that 98% of the respondents have heard about nosocomial infections while 2% have not. About 78% of the respondents practice prevention of hospital acquired infections while 22% do not. About 94% of the respondents expressed that they have hindrances to the practice of prevention of nosocomial infections. The hindrances include poor working environment among 26%, poor knowledge about prevention of nosocomial infection was 10%, and lack of water for hand washing and other material resources 58%. The Study reveals that majority of the trained nurses in surgical wards have knowledge about the prevention of nosocomial infections but not all practice it due to lack of equipments and poor working environment 18

 A study was conducted to assess the knowledge of health team in relation to infection control measures as well as their level of practice in the application of infection control measures at the endoscopy units in El-Kasr El-Ani Hospital, The New Kasr El-Ani Teaching Hospital (French), and the Internal Medicine Hospital, all hospitals are affiliated to Cairo University. The selected sample consisted of 40 doctors, 50 nurses, and 30 workers. The result revealed that 5% of physicians, 10% of nurses had satisfactory knowledge and 30% of physicians and just 4% of nurses had adequate level of performance, while none of the workers had satisfactory level of knowledge or practice. The study recommended an educational program for the endoscopy staff about infection and infection control measures application for the protection of staff and patients.19

 A quasi-experimental study was conducted among nursing personnel to identify the impact of a promotion programme on hand hygiene practices and its effect on hospital acquired infection rates in a neonatal intensive care unit of a university hospital in Thailand. The study samples were 26 nursing personnel. The study reveals that after implementing a hand hygiene promotion program, compliance with hand hygiene among nursing personnel improved significantly from 6.3% before the program to 81.2% ,7 months after the program . All participants agreed that promotion program implemented in this project motivated them to practice better hand hygiene.

 A prospective study conducted across three hospitals showed a significant drop in the rates of surgical site infections (SSI) and hospital-acquired urinary tract infection (UTI) by increasing the awareness of hospitalacquired infections among healthcare workers. An education program for the healthcare workers in the three different hospitals was included in the study. This showed a significant reduction rate of 8.1% for SSI (P < 0.001) and 3.9% for hospital-acquired UTI (P < 0.001). This reveals that linking of prevention efforts and continuous monitored infection rates are thus necessitated.20

An observational study was conducted among health care worker’s including nurses to determine the hand hygiene practices. The intervention consisted of problem-based and task orientated hand hygiene education, enhancement of minimal handling protocol and clustering of nursing care, liberal provision of alcohol-based hand antiseptic, improvement in hand hygiene facilities, ongoing regular hand hygiene audit, and implementation of health care– associated infection surveillance.21

The observational study was repeated 6 months after the completion of the intervention program, which extended over 1-year period. The study reveals that there was improvement in most aspects of hand-washing technique in the post intervention stage and the health care– associated infection rate decreased from 11.3 to 6.2 per 1000 patient-days and it emphasize the need for a problem-based and task-orientated education program that can improve hand hygiene compliance. 22

A Study regarding nosocomial respiratory infections and nurses' performance related to infection control measures was conducted in artificially ventilated patients in Egypt to assess nurses' practices regarding daily care activities, ventilator decontamination, use of universal infection control measures and the maintenance of the patients' care environment. The study revealed a high incidence of nosocomial respiratory infections. Also, it was revealed that pseudomonas was the causative agents in more than one fourth of the cases. Moreover, nurses' infection control practices were inadequate.23

 A recent descriptive study conducted by Eskander ,Morsy, &Elfeky (2013) to assess critical nurses' knowledge and evaluate their practice regarding infection control standard precautions. The study revealed that, approximately two thirds (63.6%) of the studied sample had unsatisfactory knowledge level, more than half (57.1%) of the studied sample had satisfactory performance level. Negative significant correlations were found between mean knowledge scores, and age; mean knowledge scores and years of experience (r = -.323 & r = - .325 at P < 0.004 respectively); between mean practice scores and age; and mean practice scores and years of experience (r = -.235 & r =-.291 at P < 0.39, 0.010 respectively). However, positive correlations were found between mean knowledge scores and mean practice scores; age and years of experience (r = 0.318 & 0.794 at P < 0.005 & 0.000 respectively). 24

A descriptive study was conducted on nurses who worked at surgical wards in in Azady Teaching Hospital in Kirkuk city to assess the practices of nurses towards standard precautions. The study revealed that the majority (91.9%) of the nurses did not get training sessions regarding infecton control and (83.4%) of them had not participated continuous learning about infection control. According to the level of practices towards standard precautions, it has revealed that poor practices of standard precautions by surgical wards nurses had shown in surgical wards.

It is generally recognized that nonsocial infection has been one of the major obstacles for improving health conditions in spite of the considerable decline of infectious disease due to progress in medical technology and medicine. The purpose of this study is to examine epidemiologic characteristics of nosocomial infection and to find out effectives measures for preventing them. The main sources of references are the medical journals published from 1960 to 1985 from which the basic information on nosocomial infection, such as incidence of nosocomial infection, major pathogens, and antibiotics resistance rate of pathogens were collected. For this analysis more than 180 articles related to nosocomial infection were reviewed. 25

A systematic review of studies published before January 1, 2009, on observed or self-reported compliance rates.

Articles on empirical studies written in English and conducted on general patient populations in industrialized countries were included. The results were grouped by type of healthcare worker before and after patient contact. Correlates contributing to compliance were grouped and listed.

We included 96 empirical studies, the majority (*n* = 65) in intensive care units. In general, the study methods were not very robust and often ill reported. We found an overall median compliance rate of 40%. Unadjusted compliance rates were lower in intensive care units (30%–40%) than in other settings (50%–60%), lower among physicians (32%) than among nurses (48%), and before (21%) rather than after (47%) patient contacts, the introduction of alcohol-based hand rub or gel, performance feedback, and accessibility of materials. A minority of studies (*n* = 12) have investigated the behavioural determinants of hand hygiene, of which only report the use of a theoretical framework with inconclusive results.26

Noncompliance with hand hygiene guidelines is a universal problem, which calls for standardized measures for research and monitoring. Theoretical models from the behavioural sciences should be used internationally and should be adapted to better explain the complexities of hand hygiene.27

**SUMMARY**; Reviewof literature has enabled the investigator to establish the need for the study ,develop the conceptual frame work , develop the tool and select the data collection technique.

**CHAPTER -3**

**METHODOLOGY**



**METHODOLOGY**

**RESEARCH METHODOLOGY**

Research methodology organizes all the components of the study in a way that is likely to lead a valid answer to the sub problems that have been posed.

 This chapter deals with the methodology of the present study and it includes research approach, research design, setting, sample and sampling technique, development and description of the instrument, data collection and plan for data analysis. The present study was aimed to assess the knowledge regarding health care associatedinfection among health care providers28

**RESEARCH APPROACH**

 Research approach is the basic procedure for the research enquiry. The research approach helps the researcher to determine what data to collect and how to analyse it. It also suggests possible conclusions to be drawn from the data. For the present study descriptive research approach was used.29

**RESEARCH DESIGN**

A research design encompasses the methodology and procedure employed to conduct a research.For the present study descriptive research design was used.

**Schematic Representation of Research Design**

**PURPOSE**

Assess The Knowledge Regarding Health Care Associated Infection Among Health Care Providers And Association With Socio-Demographic Variables

with socio- demographic variables.

**DESIGN**

Descriptive Research Design

 **ANALYSIS**

 **INTERPRETATION OF STUDY FINDINGS, REPORTING FOR UTILISATION**

 **TARGET POPULATION**

 Health Care Providers(60)

 **SETTINGS**

 R.L Jalappa Hospital And Research Centre, Tamaka, Kolar.

.

 **SAMPLE AND SAMPLE SIZE**

60 Health Care Providers Working At R.L Jalappa Hospital And Research Centre, Tamaka, Kolar.

 **DATA COLLECTION TOOL**

Structured Knowledge Questionnaire

**SETTING OF THE STUDY**

Setting refers to the area where the study was conducted.

 The present study was conducted at R.L Jalappa hospital and research center, Kolar. It is a multispecialty tertiary care hospital with 1150 bed capacity.This setting was selected based on the availability of subjects and feasibility of conducting the study.

**POPULATION**

The population referred as the target population, which represent the entire group or all the elements like individuals or objects that meet certain criteria for inclusion in the study.In the present study, population consists of health care providers working at R.L. Jalappa hospital.

**SAMPLE AND SAMPLE SIZE**

Sample refers to a portion of population which represent the entire population.In this study, sample consists of health care providers. For the present study 60 health care providers.

**SAMPLING TECHNIQUE**

 Sampling defines the process of selecting a group of people or other elements to conduct a study.For the present study convenient sampling technique was used to select the samples.

 **CRITERIA FOR SELECTING THE SAMPLE**

 **Inclusion criteria:**

* The health care providers who are working at selected hospitals
* The health care providers who are willing to participate in the study.

.

**Exclusion criteria**:

* The health care providers who are not available at the time of data collection.

**DEVELOPMENT OF THE TOOL**

A structured knowledge questionnaire was prepared based on reviewing the related literature, consulting with subject experts and the investigators personal experience. The tool was prepared in English.

**DESCRIPTION OF TOOL**

 The structured knowledge questionnaire was developed which consisted of two sections

**Section A: Demographic data**

It contained 5 items like category of health care providers age, gender, experience, department/ward.

**SectionB: Questionnaires related to knowledge regarding Health Care Associated Infection and its prevention .**

It contained 34 items.Which highlighted on common HCAI, standard precautions, and care bundles in prevention of HCAI. Each correct answer was given a score of one and wrong answer zero.

**Knowledge score**

Adequate (26 and above) -75% and above

Moderately (17-25 scores) -50%-74%

Inadequate (below 17) - less than 50%

**CONTENT VALIDITY**

validity simply means that a test are instrument is accurately measuring what its supposed to.

The structured knowledge questionnaires with answer key were submitted to experts along with the criteria checklist to establish the content validity.

The experts dietician-1, Medical surgical nursing-1, Child health nursing-1, OBG nursing-1, Community health nursing-1.psychatric health nursing-1.

**RELIABILITY OF THE TOOL**

Reliability of a research instrument is defined as the extent to which the instrument yields the same result on repeated measures.

The tool was administered to 10 health care providers who are working in R. L. Jalapa hospital and research Centre. In order to establish reliability of the tool, Split half method was used and the reliability was found to be 0.9.Hence the tool was found to be valid, reliable and feasible to proceed for the data collection.

 **PILOT STUDY**

 A study, which is done on small number of subjects before the actual study based on a specified design called as pilot study. The principal focus is the assessment of the adequacy of the measurement.

 A pilot study was conducted at different setting on 22-12-17. Data analysis was done by using descriptive and inferential statistics. Tool was found effective. The pilot study

Confirmed that the final study is feasible.& the developed tools were feasible.30

**ETHICAL CLEARANCE**

1. The ethical clearance was obtained from the institutional ethical committee of Sri DevarajUrs college of Nursing, to conduct the study.
2. Permission was obtained from the Medical superintendent at R.L Jalappa hospital and Research center.
3. Informed consent was obtained from the study participants.

**DATA COLLECTION PROCEDURE**

The data was collected by using the following phase

1. **Preparatory phase**:

 Ethical clearance was obtained from the institutional ethical committee of Sri DevarajUrs College of Nursing. A formal written permission was obtained from the medical superintendent of R.L Jalappa hospital and Research Centre. Using convenient sampling technique 60 health care providers were selected to a written consent was obtained from the sample.

**Data collection phase:**

 The investigator introduced themselves to the HCP and explained the purpose of the study then an informed written consent was obtained from study participants. First socio demographic variables were collected then structured questionnaires were administered through interview method to assess knowledge regarding prevention of HCAI . Approximately 30-45 minutes was taken for each health worker to complete questionnaire.

**PLAN FOR DATA ANALYSIS**

Data analysis is the schematic organization of research data and the testing of research hypothesis using that data.

The data obtained from the health care providers was analyzed using descriptive and inferential statistics as follows:

* Organization of data in master sheet.
* Socio-demographic data were analyzed in terms of frequency and percentage.
* Calculation of mean, mean percentage and standard deviation of Knowledge score
* Association of selected demographic variables with knowledge scores was analyzed by chi-square test.

**SUMMARY:**

This chapter dealt with the methodology, research approach, research design, setting, population, sample and sampling technique, development and description of the tool and plan for data analysis. The fifth coming chapter deals with analysis of data using above statistical methods31.

**CHAPTER – 4**

**DATA ANALYSIS AND INTERPRETATION.**



 **DATA ANALYSIS AND INTERPRETATION**

Analysis is a process of organizing and synthesizing data in such a way that research questions can be answered. Interpreted the findings is the most challenging and structured step in the research finding which requires the investigator to be creative.

The chapter deals with the analysis and interpretation of data collected from 60 HCP through a structured knowledge questionnaire. The result were computed by both using descriptive and inferential statistics, based on the following objectives and the hypothesis of the study.

**STATEMENT OF PROBLEM**

A study to assess the Knowledge of Health Care Providers on Hospital Acquired Infection in selected hospital, Kolar.

**OBJECTIVES OF THE STUDY**

* To assess the Knowledge of Health Care Providers on Health Care AssociatedInfection by using structured knowledge questionnaire.
* To find the association between knowledge and selected demographic variables.

**Organization of findings**

The analyzed data is organized and presented under the following sections

**Section-1**

This section deals with distribution of study participants according to their selected socio-demographic variables

**Section-2**

This section deals to assess the knowledge regarding HCP by using structured knowledge questionnaire.

**Section-3**

This section deals with over all mean percentage knowledge scores.

**Section-4**

This section deals with association between knowledge with selected socio-demographic variables.

**Section-I**

This section deals with distribution of study participants according to their selected Socio- Demographic variables.

**Table-1:Frequency and percentage distribution of study participants according to their Socio- demographic variables. N=60**

|  |  |  |  |
| --- | --- | --- | --- |
|  **Sl.No** | **Variables** | **Frequency** | **Percentage** |
| **1.** | **Category of health care provider**1. Doctor
2. Nurse
3. Allied staff
 | 202020 | 33.3333.3333.34 |
| **2.** | **Age in years** 1. >30yrs

 b. <30yrs | 1050 | 17.0083.00 |
| **3.** | **Gender** 1. Male

 b. Female | 2733 | 4555 |
| **4.** | **Experience** 1. <1yrs
2. >1yrs
 | 2337 | 38.3461.66 |
| **5.** | **Department /ward posted**1. ICU
2. General ward
3. Diagnostic unit
 | 162420 | 274033 |

**Data presented in table-1 shows that:-**

1. **Category of health care provider**

The same was collected from three category of HCP who were (33.33%) equally divided for data collection process.

**2 Age in years**

Majority (83.33%)of the study participants were in the age group of <30years

**3 Gender**

Majority (55%)of the study participants were males.

 **4 experience**

Majority (61.66%) of the study participants had>1year experience.

**5 department**

Majority (40%) of the study participants were working at general wards.

**Section-2**

This section deals to assess knowledge regarding health care associatedinfection among health care providers using structured knowledge questionnaire.

**Table 2 ; Distribution of study participants according toover all level of knowledge**

 **n=60**

|  |  |  |  |
| --- | --- | --- | --- |
| **Variable level of**  | **Grade** | **frequency** | **Percentage** |
|  | **inadequate<50%** |  **18** |  **30 %** |
| **Knowledge**  | **Moderate( 50-74%)** |  **40** |  **66.67 %** |
|  | **Adequate >75%** |  **02** |  **3.33%** |

**n=60**

**fig-2 Bar Diagram Depicting The Overall Knowledge Score.**

Above graph shows the knowledge scores of different Health Care Providers, vary as follows

30% of health care providers has inadequate knowledge, 66.67% of HCP has moderate knowledge & 3.33% of HCP has adequate knowledge.

**Section-3**

This section deals with over all mean percentage of knowledge scores

**Table 3: distribution of mean percentage knowledge scores.**

 **N=60**

|  |  |  |  |
| --- | --- | --- | --- |
|  **variable**  | Knowledge assessment | Max score | Knowledge score |
| **Knowledge level** | Health Care AssociatedInfection Among Health Care Providers, Structured Knowledge Questioners  | **34** | Mean 18  | Mean%30%  | SD 3.01 |

This above table shows that the mean knowledge score of study participants regarding health care associatedinfection among health care providers was found to be (18+3.01)

**SECTION-4**

This section deals with association between knowledge with selected socio-demographic variables

 **Table-4: Association of knowledge score with socio-demographic variables**

 **n=60**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Sl.no** |  **Variables** | **health care associated infection** | **χ2** | **Df** | **P-Value** |
| **Below Median** **≤18** |  **Above Median****>18** |
| 1. | **Category of health care provider**a. Doctorsb. nursesc. allied staff | 51411 | 1569 | 0.500 | 1 | 0.0062NS |
| 2. | **Gender**1. a. Male
2. b. Female
 | 1515 | 1218 | 0.606 | 1 | 0.4363NS |
| 3. | **Age****>**30years**≤**30years | 228 | 822 | 0.320 | 1 | 0.0371NS |
| 4 | **Experience**a ≤1yearb >1year | 1020 | 1317  | 0.635 | 1 | 0.4257NS |
| 5 | **Department/ward posted**a. ICUb. general wardc. diagnostic unit | 71112 | 9138 | 0.341 | 1 | 0.5593NS |

 **NS=Not Significant,df-1=3.84 p<0.05 table value at 1**

The above table projected chi square P value of knowledge score with socio-demographic variables. There were 0.5 variables taken to find out the association.

The association between knowledge and category of Health Care Provider, gender, age, experience, department/ward posted was not statistically significant. The obtained chi-square values was less than the table value and thus the research assumption is rejected.

**SUMMARY**

 This chapter dealt with the analysis and interpretation of findings of the study .The data was analyzed using inferential statistics and descriptive statistics .The data analysis has been organized and presented under various sections like distribution of study participants according to their selected Socio- demographic variables, overall knowledge scores of health care providers among health care associatedinfection and association between the demographic variables and knowledge scores of health care providers. So to conclude that the majority (66.67%) of study participants were having moderate knowledge, 30% were having inadequate knowledge and 3.33% were having adequate knowledge.

**CHAPTER – 5**

**“SUCCESS HIDES BEHIND GREAT CONCLUSION”**



**SUMMARY**

This chapter presents the summary of the study

The present study was conducted to **A study to assess the knowledge of Health Care Providers on Health Care Association Infection in selected hospital, Kolar**.

**The objectives of the study are:**

* To assess the knowledge of health care providers on health care associatedinfection by using structured knowledge questionnaire.
* To find the association between knowledge and selected demographic variables.
* To recommend on required facility for prevention of health care associatedinfection
* To prepare the information leaflet on hospital associated infection

**Major findings of the study**

1. **Findings related to Socio-demographic variables**
* Related to age majority (83%) of the study participants were in the age group of <30years and (17%) were in the age group of >30years.
* Related to gender majority (45%) of the study participants were males and 55% of them were females.
* Related to category of Health Care Providers (33.33%) of doctors (33.33%) of nurses (33.34%) allied health staff.
* Related to experience (38.33%) of <1 year (61.66%) of >1year.
* Related to department (27%) of ICU staff (40%)of general ward (33.%) of diagnostic unit.
1. **Assessment of knowledge regarding Health Care Providers of Health Care AssociationInfection by using structured knowledge questionnaire.**
* The first objective was to assess the knowledge regarding Health Care Providers of Health Care AssociatedInfection. The level of knowledge regarding this was assessed and tabulated in table-2. Majority 66.67 % of study participants were having moderate knowledge, 30% were having inadequate knowledge and only 3.33% were having adequate knowledge.
1. **Association between knowledge with selected socio-demographic variables**

The second objective was to find out the association between the knowledge withselected socio-demographic variables. A Chi square test was computed to find an association between the knowledge withselected socio-demographic variables like age, gender, category of health care provider, qualification, experience, department.

The association between knowledge and category of Health Care Provider, gender, age, experience, department/ward posted was not statistically significant. The obtained chi-square values was less than the table value and thus the research assumption is rejected.

**CONCLUSION**

A descriptive Study was under taken to assess the Knowledge regarding health care associatedinfection among health care providers at R.L.Jalappa Hospital and Research Centre, Tamaka, Kolar. Using descriptive research design through convenient sampling technique 60 health care providers included. The knowledge regarding Health Care Providersmajority 66.67% had moderate knowledge, 30% of Health Care Providers had inadequate knowledge and 3.33%of them had adequate knowledge. Hence the

Health care providers have moderately adequate Knowledge regarding Health Care AssociatedInfection. Hence the study concluded that adequate information, motivation and counseling are essential to improve knowledge regarding Health Care Associated Infection among Health Care Providers.

**NURSING IMPLICATION**

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

**NURSING PRACTICE**

Nursing professionals working in the hospital setting will be able to find the opportunities to teach and improve the knowledge of the health care providers regarding the aspects of HCAI during their working hours. Health care workers should place health in the hands in every time especially before and after doing any procedure. It is essential for self – protection and patients health.

**NURSING EDUCATION**

 Nursing education is an essential tool for development of nursing profession. From the study findings the nurse educator can plan as follows;

* Nursing education should prepare nurses to impart Health Care AssociatedInfection among Health Care Providers by using various teaching methods.
* Education can be given on Hospital Acquired Infection forHealth Care Providers.
* Students can be motivated to impart specialized knowledge and skills in the field of health care setups.

**NURSING ADMINISTRATION**

 As patient advocates, nurses are in the unique position to affect change to improve

patient care standards. The nurse has many tools available to create a safe environment

for patients. Universal precautions are the cornerstones of a safe environment that is

freeof infection.**32**

.

* The present study helps the nursing administrator to take adequate steps in formulating policies in providing health education on Health Care Associated Infections for Health Care Providers.
* The nurse administrator should encourage social support networking in organization of awareness programs about Health Care AssociatedInfections.
* The hospital nurse administrators can plan manpower, money, material, methods and time to conduct successful Health Care Providers education in patient care.

**NURSING RESEARCH**

Nursing research is an integral part of nursing profession. Nurses role is not only limited to prevention of Health Care AssociatedInfection. This role can be expanded by conducting research on various roles of a nurse. The findings of the study serve as a basis for the nursing body of knowledge and the students to conduct further studies in different hospitals. The present study helped the nurse researcher to develop insight in to the research areas ofHealth Care AssociatedInfection.33

* Nurse researchers must involve in conducting more studies in this area.

**LIMITATIONS**

* The study was limited only to health care providers at R.L. Jalappa Hospital and Research Centre.
* The study group was limited only to 60Health Care Providers.

 **RECOMMENDATIONS**

* A Similar study can be replicated using larger populations.
* A similar study can be conducted with qualitative study.
* An experimental study can be conducted on knowledge regarding Health Care AssociatedInfection among health care providers by using planned teaching programme.

**BIBILOGRAPHY**

1. Hauser Lango. A Guide to infection control in hospital. 3rd edition. New York (US) McGraw Hill Medical Publishing division; 2005.
2. Anantha Narayan R, Panikar CK. Text book of Microbiology.Chennai:Orient Longman Ltd; 2000.
3. Parvcz et al., Nosocomial infections: Measures for prevention and control. Nursing Journal of India (12505741) 2005 Mar (cited 2007 Nov 7); 56 (1): 59-66. Available from URL: http:// www. Pubmed.com.
4. Health Care Management. WHO Report. New Delhi, 2000. WHO.
5. Mukherjee V.Nosocomial infections in India.Assuming dangerous proportions. Indian Journal of Tuberculosis (126221232) 2004 Jan ( Cited 2007 Nov); 51(1): 5-16) Available from URL: <http://www.infarm.com>.
6. Ghang S, Role of infection control nurses in the surveillance of Nosocomial infection. The Journal of India: 2002; 3:57-58.
7. Celik SA. Nosocomial infections in neurosurgery intensive care units. J ClinNurs (15317514) 2004 Sep 13 (Cited 2007 Nov 8); 13(6): 741-7. Available from: URL: http:// [www.pubmed.com](http://www.pubmed.com).
8. Joyce MB et al. Medical Surgical Nursing- clinical management for positive outcomes, 6th ed. Philadelphia (US): Saunders; 2003.
9. Abdellahetal.Better patient care through Nursing Research. London:The Mac Millan Company; 19650
10. Labeau S et al. Critical care nurses knowledge of evidence based guidelines for preventing ventilator associated pneumonia: an evaluation questionnaire. Am J care (17595369) 2000 Jul (Cited Nov 8): 16(4): 371-7. Available from: URL: http:// [www.pubmed.com](http://www.pubmed.com).
11. Easton PM et al. Infection control and management of MRSA: assessing the knowledge of staff in an acute care setting. J Hosp Infect.(17316895)2007 May Cited Nov 866(1):29-33: Available from: http:// [www.pubmed.com](http://www.pubmed.com).
12. Lines L. A study of senior staff nurses’ perceptions about MRSA. Nurs Times. (16640211) 2006 Apr (Cited 2007 Nov 8); 102 (15): 32-5. Available from URL: http:// www. Pubmed.com.
13. Moro ML. Health care associated infections. Surg infect (16895497) 2006 Sep (Cited 2007 Nov 8) 7(2): 21-23. Available from: URL :<http://www.pubmed.com>.
14. MichalopoulosA et al. Post operative wound infections. Nurs Stand (12889394) 2003 Jul 16 9Cited 2007 Nov 8); 17(44): 53-60: Available from: URL: http: // [www.pubmed.com](http://www.pubmed.com).
15. Regina. Cross sectional survey on universal precautions. Med PR (11682892) 2002 June (Cited 2007 Nov 7); 26(6): (41-48). Available from: URL: <http://www.pubmed.com>.
16. Sporat LJ et al. A multicentre survey of hand hygiene practice in intensive care units. J Hosp infect (7911148).1999 Feb (Cited 2007 Nov 7) ; 26 (2): 137-48. Available from URL: http:// [www.pubmed.com](http://www.pubmed.com).
17. Regina. Cross sectional survey on universal precautions. Med PR (11682892) 2002 June (Cited 2007 Nov 7); 26(6): (41-48). Available from: URL: <http://www.pubmed.com>.
18. Sporat LJ et al. A multicentre survey of hand hygiene practice in intensive care units. J Hosp infect (7911148).1999 Feb (Cited 2007 Nov 7) ; 26 (2): 137-48. Available from URL: http:// [www.pubmed.com](http://www.pubmed.com).
19. Menon V et al. Aquired Immunodeficiency Syndrome and health care professionals. J Assoc Physicians India (7836241) 1994 Jan (Cited 2007 Nov 8) ; 42(1) : 22-3. Available from:URL: http:// [www.pubmed.com](http://www.pubmed.com).
20. Horton R.Nurses’s perceptions of infection control issues in two small district general hospitals.Nurspract. (1528294) 2003 May (Cited 2007 Nov 6) ; 5(4) :17-22. Available from:URL: http:// [www.pubmed.com](http://www.pubmed.com).
21. Abdellahetal.Better patient care through Nursing Research. London:The Mac Millan Company; 1965.
22. Joan Webster, Barrier properties and Cost implications of a single versus a double wrap for storing sterile instruments packs,2000
23. Mehtars, Hospital hygiene and infection control, India, 2012
24. Jacqueline M. Smith, Dyan B. Lokhorst, Infection control: Can nurse improve hand hygiene practices, 2009 Nov
25. Parker M.T, Hospital- acquired infections: guidelines to laboratory methods, World Health Organisation, Europe, 2008
26. Chelliah A, Ali A.M, Change in infection control practices and awareness of hospital medical staff in the aftermath of SARS, Malaysia, 2012, Dec: 59(5):659-64
27. Potter and Perry. Text book of Fundamental Nursing. 5thedn. Mosby Publishers 2000.
28. [http://www.wrongdiagnosis.com/n/nosocomial infections/stats-country.htm](http://www.wrongdiagnosis.com/n/nosocomial%20infections/stats-country.htm)
29. Meena A. Prevalence of post operative nosocomial infection in neuro surgical patients and associated risk factors. A prospective study of 2441 patients. 2003.
30. Williams and Watermen. A study on aseptic technique at Liverpool. American journal of infection control. August 1-7, 2001.
31. Harbour. Better Nursing care through Nursing Research. London. MC Million Company. 1986;
32. Jeong, Cho, Park, Sunmi. Compliance with standard precautions among operating room nurses in South Korea. AJIC: American Journal of Infection Control 2008; 36 (10): 739-742.
33. Basvanthappa BT, Nursing research, 1stedition, Newdelhi, Jaypee brothers publication,2001:p;92
34. Paudyal p, Simkhada p, Bruce j, “Infection control knowledge, attitude and practice among Nepalese health care workers”, Am J infect control. 2008 oct;36(8);595-7
35. Ibarra,M,Flattt,VanMaele D, Ahmed A, Fergie J, Purcell.k,“Prevalence of MRSA nasal carriage in health care workers”,Pediatr infect. Infect Dis J. 2008 Dec:27(12):1109
36. **.**World Health Organization (WHO). Clean care is safer care: the first global patient safety challenge, <http://www.who.int/gpsc/en/>. Accessed May 25, 2009.[Google Schola](https://scholar.google.com/scholar?q=1.+World+Health+Organization+(WHO).+Clean+care+is+safer+care:+the+first+global+patient+safety+challenge+http://www.who.int/gpsc/en/.+Accessed+May+25+2009.)
37. Center for disease control, prevention. National Nosocomial infection surveillance report. Americal Journal of Infection Control; 1997. 25: 447-487.

**ANNEXURES**



**ANNEXURE-I**

**LETTER REQUESTING PERMISSION FOR CONDUCTING RESEARCH STUDY**

**From,**

 4th year BSc(N)and intern students

 Dept. medical and surgical nursing

 Sri devarajurs school and college of nursing

Tamaka kolar-563101.

**To,**

 Medical Superintendent.

 R.L.J. Hospital and Research Centre

Tamaka, Kolar-563103.

**Forwarded Through:**

 The Principal and Research Guide

 Sri DevarajUrs College of Nursing

Kolar-563103.

**Respected Sir,**

**Sub: Requesting Permission for Conducting Research Study.**

we the 4th year BSc(N) and GNM intern students of Sri DevarajUrs school & College of Nursing, Tamaka, Kolar has selected the below mentioned topic for research project, as a partial fulfilment for BSc. Nursing Programme.

**Title of the topic:**

**“A Study to Assess the Knowledge of Health Care Providers in Prevention of Health Care Associated Infection in Selected Hospital Kolar”**

 With regard to the above mentioned subject, I request you to grant permission to collect data from doctors, nurses& allied health staff in R. L. J. Hospital for my research study. So kindly consider this letter and do the needful.

 Thanking You,

 Yours faithfully

**Mr. Mani Kumar**

 **Mr. Mahesh Kumar**

**Mr.Manimaran**

 **Mr. Raj Kumar**

**ANNEXURE-II**

**LETTER REQUESTING OPINION & SUGGESTION OF EXPERTS FOR ESTABLIESHING CONTENT VALIDITY OF RESEARCH TOOL**

**From,**

IVth Year Bsc (N) and GNM intern students,

Dept. Medical and surgical nursing

Sri DevarajUrs School and College of Nursing,

Tamaka, kolar-563101

**To, Respected Sir/Madam,**

**Subject: Request for opinion and suggestions of experts for establishing content validity of research tool-reg.**

We, the IVth year B.Sc.(N) and GNM intern students of Sri DevarajUrs College of Nursing, Tamaka, Kolar have selected the below mentioned topic for research project for the fulfilment of the requirement of nursing research subject for B.Sc. (N) degree and GNM course.

**Title of the Topic:**

**“A Study to Assess the Knowledge of Health Care Providers in Prevention of Health Care Associated Infection in Selected Hospital Kolar”**

With regard to the above matter, we kindly request you to validate the tool for its appropriateness and relevancy we are hereby enclosing the objectives of the study and the knowledge questionnaire for your reference. We will be highly obliged and thankful for your great help.

Thanking you Sir/Madam.

**Yours faithfully,**

1. **Mr. Mani Kumar**
2. **Mr.Mahesh Kumar**
3. **MrManimaran**
4. **Mr Raj Kumar**

**Date:**

**Time:**

**Enclosures:**

* Statement of the problem with objectives
* Structured knowledge questionnaire
* Answer key.
* Criteria rating scale
* Content validity certificate

**ANNEXURE – III**

**Criteria rating scale for validating research tool of structured questionnaire on knowledge regarding health care associated infection among health care providers.**

**Respected sir/Madam,**

 Kindly go through the content and rate the content in the appropriate columns given and your expert opinion in the remarks column.

**Section-A**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  **Sl.no** |  **Item** |  **Very**  **Relevant** |  **Relevant** |  **Needs modification** |  **Not** **Relevant** |
|  | **Section-A Demographic data**  |  |  |  |  |
| **1.** | Category of HCP  |  |  |  |  |
| **2.** | Age  |  |  |  |  |
| **3.** | Gender |  |  |  |  |
| **4.** | Experience  |  |  |  |  |
| **5.** | Department/Ward posted  |  |  |  |  |

**Section-B: structured questionnaire on knowledge regarding HCAI among health care providers.**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  **Sl.no** |  **Item** |  **Very**  **Relevant** |  **Relevant** |  **Needs modification** |  **Not** **Relevant** |
| **1.** |  |  |  |  |  |
| **2.** |  |  |  |  |  |
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| **30** |  |  |  |  |  |
| **31** |  |  |  |  |  |
| **32** |  |  |  |  |  |
| **33** |  |  |  |  |  |
| **34** |  |  |  |  |  |

**ANNEXURE - IV**

**CONTENT VALIDITY CERTIFICATE**

I hereby certify that I have validated the tool of 4th year B.sc nursing & GNM intern students of sridevarajurs school and college of nursing, TamakaKolar, who are undertaking a research project as a requirement for Bachelor & diploma science in nursing degree on

**“A Study to Assess the Knowledge of Health Care Providers in Prevention of Health Care Associated Infection in Selected Hospital Kolar’’**

 **SIGNATURE OF EXPERT**

**PLACE: NAME & DESIGNATION**

**DATE:**

**Your Valuable Suggestions:**

**Section: A---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------**

**Section: B---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------**

**ANNEXURE - V**

**LIST OF EXPERTS**

**1 DR. G. VIJAYALAKSHMI**

 Principal

SDUCON

Tamaka, Kolar- 563101

**2 MRS. RADHA M.S**

 Vice Principal

SDUCON

Tamaka, Kolar- 563101

**3 MRS. MARY MINERVA**

 HOD OfCommunity Health Nursing

 SDUCON

TAMAKA, Kolar- 563101

**4 MRS. ARUNA JAYRAKHINI**

 HOD Of Psychiatric Health Nursing

 SDUCON

Tamaka Kolar-563101

 **5 MRS. SILVIA SUREKHA**

 HOD Of Obstetrics And Gynecology

SDUCON

Tamaka, Kolar- 563101

**6 MR. KRISHANA**

 Lecture

 SDUCON

Tamaka Kolar-563101

**ANNEXURE - VI**

 **INFORMED CONSENT FORM**

**NAME OF THE INVESTIGATORS:**Mr Mani Kumar Mr Mahesh Kumar MrManimaranMr Raj Kumar

**NAME OF THE ORGANIZATION:** RL.Jalappa Hospital

**TITLE OF THE STUDY**: **A study to assess the knowledge of Health Care Providers on Health Care Associated Infection in selected hospital, kolar.**

If you agree to participate in the study I will collect information as per perform from you or a person responsible for you or both. I will collect information related to Health Care AssociatedInfection and its relevant details.

 You are invited to take part in this research study. You are being asked to participate in this study because you are satisfying our eligible criteria. The information in the given document is meant to help you decide whether or not to take part please feel free to ask any queries.

 I have read or it has been read and explained to me in my own language. I have understood the purpose of this study, the nature of information that will be collected and disclosed during the study. I had the opportunity to ask questions and the same has been answered to my satisfaction. I understand that I remain free to withdraw from this study at any time and this will not change my future care. The undersigned agree to participate in this study and authorize the collection and disclosure of my personal information for presentation and publication.

|  |  |  |  |
| --- | --- | --- | --- |
| **Sl.No** | **Date** |  **Name of the Participant** | **Signature** |
| 1 |  |  |  |
| 2 |  |  |  |
| 3 |  |  |  |
| 4 |  |  |  |
| 5 |  |  |  |
| 6 |  |  |  |
| 7 |  |  |  |

**ANNEXURE – VII**

**Structured Knowledge Questionnaire on Knowledge Regarding HCAI among Health Care Providers**

 **Section: A Socio-Demographic Performa**

Code: Date

1. **Category of Health Care Provider:**

**a)**

Doctors

**b)**

Nurses

**c)**

Allied staff

1. **Age :**

>30 Years

**a)**

<30 years

**b)**

1. **Gender :**

**a)**

Male

Female

**b)**

1. **Experience :**

<1 year

 **a)**

 **b)**

>1 year

1. **Department / ward posted :**

**a)**

ICU

GENERAL WARD

**b)**

DIAGNOSTIC UNIT

**C)**

**Structured Knowledge Questionnaire on Knowledge Regarding HCAI among Health Care Providers**

 **Section: B Structured Knowledge Questionnaire on health care associated Infection**

**The researcher introduces the purpose of the study and obtains consent of the study participants.**

**Instruction to study participant:**

1. Please Tick only one answer to each question.
2. Please read the questions carefully before answering.
3. Your answers will be kept confidential.
4. **Components of infection prevention and control include all, except;**
5. Microbiological surveillance
6. Investigation and control of outbreak
7. Monitoring the use of antibiotics
8. Assessment of health care workers health fitness
9. **Hospital infection control committee is formed by all except**
10. Housekeeping officer
11. Infection control officer
12. Infection control nurse
13. Security officer
14. **What is the purpose of hospital infection prevention and control program?**
15. Reduce the infection in patients and staff
16. Monitoring the infection control practices
17. Immunization of health care workers
18. Bringing out antibiotic policy
19. a , b and c only
20. all of the above
21. **Health care associated infections are also called as**
22. Primary infection
23. Nosocomial and hospital acquired infection
24. Secondary infection
25. Latent infection
26. **Which is best method for controlling infection**
	1. Hand Washing
	2. Disinfecting
	3. Fumigation
	4. All of the above
27. **The standard precautions include,**
	1. Hand hygiene
	2. PPE
	3. Patient care equipment
	4. Only b, & c
	5. a, b, c, d
28. **In which of the following situation should hand hygiene be performed**?
29. before having direct contact with a patient
30. when moving from a contaminated body site to a clean body site during an episode of patient care
31. after removing gloves
32. all of the above
33. **According to WHO hand hygiene guidelines, how many steps should be followed for hand washing with soap and water**
34. 7
35. 8
36. 10
37. 11
38. **What is the minimal time needed for alcohol based hand rub to kill most germs on your hand?**
	1. 20 seconds
	2. 10 seconds
	3. 1 minute
	4. 3 seconds
39. **The common types of hand hygiene are?**
	1. Hand washing with soap and running water
	2. Alcohol based hand rub
	3. Surgical hand scrub
	4. all of the above
	5. None of the above
40. **Hand hygiene including proper use of gloves prevents transmission of the following to healthcare workers:**
	1. Herpes simplex virus
	2. Methicillin-resistant Staphylococcus aureus
	3. Hepatitis B
	4. All of the above
41. Which of the following hand hygiene actions prevents transmission of germs to the

Health-care worker?

* 1. Immediately after a risk of body fluid exposure
	2. Immediately before a clean/aseptic procedure
	3. After exposure to the immediate surroundings of a patient
	4. After touching a patient
	5. All of the above.
1. **Hospital acquired infections include:**
	1. Surgical site infection
	2. Ventilator associated pneumonia
	3. Catheter associated urinary tract infection
	4. All of the above
2. **The reservoir is the source of infection (Person, animal water, food)**
	1. True
	2. False
3. **The correct order to remove PPE is**
	1. Apron first, gloves second, mask and finally eye protection if worn
	2. Eye protection, then mask if worn, then apron and finally gloves
	3. Gloves first, apron second, mask and finally eye protection if worn
	4. It doesn’t matter in what order they are removed
4. **The Personal Protective Equipment that should be worn when there may be a risk of**

**splashing includes**

* 1. Gloves
	2. Gloves and apron
	3. Gloves apron and face mask
	4. Gloves, apron, face mask and eye protection
1. **In which situation would you not be required to wear disposable gloves in a care setting**
	1. Preparing food
	2. Changing a catheter bag
	3. Cleaning up a urine spill
	4. Washing a commode
2. **For the airborne precautions, the most preferred PPE is**
	1. Gloves and hand hygiene
	2. Mask and hand hygiene
	3. Cap and hand hygiene
	4. Gown and hand hygiene
3. **Hospital waste refers to**
	1. Biological waste
	2. Non biological waste
	3. Both a and b
	4. None of the above
4. **What are the types of hospital waste?**
	1. Liquid waste
	2. Solid waste
	3. Chemical and hazardous waste
	4. All of the above
5. **What are the infections caused by infective materials of Hospital waste?**
	1. Hepatitis A, AIDS, TB
	2. Septicaemia, hepatitis B, Tetanus
	3. Anemia, cancer,
	4. Burns, scalds corrosive
6. **What is the colour code used for the 4 categories**
	1. Yellow, red, blue, white
	2. Yellow, red, green, black
	3. Yellow, white, red
	4. Black, green, red
7. **What is the colour code used for category NO-1**
	1. Yellow
	2. Red
	3. White
	4. Blue
8. **Recapping the needle after injection is**
	1. Recommended
	2. Compulsory
	3. Contraindicated
	4. None of the above
9. **Which vaccines are recommended for direct health care providers?**
	1. T. T.
	2. Hepatitis –B
	3. Chickenpox
	4. Polio
	5. All of the above except polio
10. **In case of blood or body fluid spill the common solution used for cleaning is;**
	1. Lysol
	2. Dettol
	3. Hypochlorite solution
	4. Chlorine reagent
11. **In case of needle stick injury the first reporting on the incident to be done to;**
	1. Medical superintendent office,
	2. Intensive care unit,
	3. Emergency room / casuality,
	4. In-patient registration counter
12. **The multi-dose vial can be used for**
	1. 38 days
	2. 28 days
	3. 18 days
	4. 08 days
13. **The assessments of phlebitis is done by**
	1. VAP Score
	2. VIP Score
	3. VAN Score
	4. VPA Score
14. **The most common method of sterilising the patient care articles is**
	1. cold sterilisation
	2. flash sterilisation
	3. ultrasonic steriliser
	4. steam under pressure sterilisation

**31. During catheterization the best technique adopted is**

 a**)** No Touch Technique

 b) Clean Technique

 c) Care Technique

 d) Touch Technique

**32**. **The IV cannula to be labelled with,**

a). Name of the staff, time and date.

 b) Name of the doctor, staff, time, and date.

 c) Name of the patient, staff, time and date.

 d) Name of the drug, staff, time and date.

**33. To prevent Hospital Acquired Infection the common surface cleaning agent preferred is**,

a) Dettol, and savlon.

 b) Dettol, and bleaching solution,

 c) Bleaching solution and bacillol spray

 d) Bleaching solution

**34. To prevent Hospital Acquired Infection the hand rub in ICU should be kept at the ratio of**,

 a) 1hand rub for four patients

 b) 1hand rub for three patients,

 c) 1hand rub for two patients

 d) 1hand rub for one patient

1. You didn't answer this question.

You answered

The correct answer is

Hemodialysis uses a machine to clean and filter your blood. The procedure also helps control blood pressure. And it helps your body keep the proper balance of chemicals like potassium, sodium, calcium, and bicarbonate, the NIDDK says.

**ANSWER KEY**

|  |  |
| --- | --- |
| **Que.No** |  **Answers** |
| 1. | D |
| 2. | D |
| 3. | F |
| 4. | B |
| 5. | A |
| 6. | E |
| 7. | D |
| 8. | D |
| 9. | A |
| 10. | D |
| 11. | D |
| 12. | E |
| 13. | D |
| 14. | A |
| 15. | C |
| 16. | C |
| 17. | A |
| 18. | B |
| 19. | C |
| 20. | D |
| 21. | A |
| 22. | A |
| 23. | A |
| 24. | C |
| 25. | D |
| 26. | C |
| 27 | C |
| 28 | B |
| 29 | B |
| 30 | D |
| 31 | A |
| 32 | A |
| 33 | C |
| 34 | D |

**ANNEXURE –IX**

**FORMULAS USED FOR DATA ANALYSIS**

1. Mean= x = ∑x/n
2. Standard Deviation ( SD) = √∑(x-x)2

 n

1. Spearman Brown’s formula:

r1 = 2r

 1+ r

 r=Correlation coefficient

r1 =Estimated reliability of the entire test

1. Difficulty Index

 DI= H+L× 100

 N

1. Discrimination Index

 DI= H-L

 N/2

1. Chi- Square test

x2= ∑(O-E)2

E

 O=Observed frequency

 E=Expected frequency

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| SLNO | 1 | 2 | 3 | 4 | 5 | 6 | 7**MASTER DATA SHEET** | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | 33 | 34 | TOTAL | % |
| 1 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 28 | 82.3 |
| 2 | 1 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 17 | 50 |
| 3 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 22 | 64.7 |
| 4 | 0 | 0 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 0 | 1 | 21 | 61.7 |
| 5 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 1 | 24 | 70.5 |
| 6 | 1 | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 1 | 24 | 70.5 |
| 7 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 28 | 82.3 |
| 8 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 22 | 64.7 |
| 9 | 1 | 0 | 0 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 20 | 58.8 |
| 10 | 0 | 1 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 18 | 52.9 |
| 11 | 1 | 0 | 0 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 1 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 1 | 20 | 58.8 |
| 12 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 1 | 1 | 1 | 24 | 70.5 |
| 13 | 0 | 0 | 1 | 1 | 0 | 1 | 0 | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 1 | 17 | 50 |
| 14 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 18 | 52.9 |
| 15 | 0 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 1 | 1 | 21 | 61.7 |
| 16 | 1 | 1 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 1 | 0 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 0 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 1 | 21 | 61.1 |
| 17 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 19 | 55.8 |
| 18 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 1 | 0 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 17 | 50 |
| 19 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 1 | 21 | 61.7 |
| 20 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 1 | 20 | 58.8 |
| 21 | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 1 | 1 | 18 | 52.9 |
| 22 | 1 | 0 | 0 | 1 | 1 | 0 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 17 | 50 |
| 23 | 0 | 1 | 0 | 0 | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 16 | 47 |
| 24 | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 17 | 50 |
| 25 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 8 | 23.5 |
| 26 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 18 | 52 |
| 27 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 1 | 0 | 20 | 58.8 |
| 28 | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 1 | 0 | 1 | 0 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 1 | 19 | 55.8 |
| 29 | 1 | 1 | 0 | 1 | 0 | 0 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 1 | 0 | 22 | 64.7 |
| 30 | 0 | 0 | 1 | 1 | 0 | 1 | 0 | 1 | 1 | 0 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 19 | 55.8 |
| 31 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 1 | 1 | 0 | 1 | 0 | 1 | 15 | 44.1 |
| 32 | 0 | 1 | 0 | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 17 | 50 |
| 33 | 0 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 15 | 44.1 |
| 34 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 17 | 50 |
| 35 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 18 | 52.9 |
| 36 | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 17 | 50 |
| 37 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 18 | 52.9 |
| 38 | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 17 | 50 |
| 39 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 21 | 61.7 |
| 40 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 1 | 1 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 19 | 55.8 |
| 41 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 19 | 55.8 |
| 42 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 1 | 1 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 20 | 58.8 |
| 43 | 0 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 1 | 18 | 52.9 |
| 44 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 18 | 52.9 |
| 45 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 1 | 1 | 18 | 52.9 |
| 46 | 1 | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 1 | 0 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 1 | 1 | 20 | 58.8 |
| 47 | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 18 | 52.9 |
| 48 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 21 | 61.7 |
| 49 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 16 | 47 |
| 50 | 1 | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 18 | 52.9 |
| 51 | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 17 | 50 |
| 52 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 1 | 0 | 1 | 20 | 58.8 |
| 53 | 0 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 18 | 52.9 |
| 54 | 0 | 0 | 1 | 0 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 16 | 53.3 |
| 55 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 17 | 50 |
| 56 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 19 | 55.9 |
| 57 | 1 | 0 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 20 | 58.8 |
| 58 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 0 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 18 | 52.9 |
| 59 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 20 | 58.8 |
| 60 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 1 | 21 | 61.7 |

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  |  |  |  |  | socio-demographic data |  |  |  |
|  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| SLNO | catagiri of HAI | Age | gender | experience | departement |
| 1 | a | a | a | b | c |
| 2 | a | b | b | a | a |
| 3 | a | b | a | b | b |
| 4 | a | b | b | a | a |
| 5 | a | b | a | b | b |
| 6 | a | b | b | a | a |
| 7 | a | b | b | b | c |
| 8 | a | b | b | a | a |
| 9 | a | b | b | a | b |
| 10 | a | b | b | a | b |
| 11 | a | a | a | b | b |
| 12 | a | a | b | a | c |
| 13 | a | b | a | a | c |
| 14 | a | b | a | b | b |
| 15 | a | b | a | a | c |
| 16 | a | b | a | a | b |
| 17 | a | b | b | a | a |
| 18 | a | b | a | a | c |
| 19 | a | b | a | a | c |
| 20 | a | a | b | b | b |
| 21 | b | b | a | a | c |
| 22 | b | b | b | b | a |
| 23 | b | b | b | b | a |
| 24 | b | b | b | b | b |
| 25 | b | b | a | a | b |
| 26 | b | b | a | b | b |
| 27 | b | b | b | b | b |
| 28 | b | b | a | b | b |
| 29 | b | b | a | a | b |
| 30 | b | b | b | a | b |
| 31 | b | b | b | a | c |
| 32 | b | b | a | b | c |
| 33 | b | b | a | b | b |
| 34 | b | a | b | b | c |
| 35 | b | b | b | b | b |
| 36 | b | b | b | b | b |
| 37 | b | b | b | b | b |
| 38 | b | b | b | b | c |
| 39 | b | b | b | b | b |
| 40 | c | b | b | b | b |
| 41 | c | b | b | b | c |
| 42 | c | b | a | a | c |
| 43 | c | b | a | a | c |
| 44 | c | b | a | b | c |
| 45 | c | b | b | b | c |
| 46 | c | a | b | b | c |
| 47 | c | b | b | b | c |
| 48 | c | b | b | b | c |
| 49 | c | b | a | b | c |
| 50 | c | b | a | b | c |
| 51 | c | b | a | b | c |
| 52 | c | b | a | b | c |
| 53 | c | a | a | a | c |
| 54 | c | b | a | a | c |
| 55 | c | b | b | b | c |
| 56 | c | a | b | b | c |
| 57 | c | b | a | b | c |
| 58 | c | b | b | b | c |
| 59 | c | b | b | a | c |
| 60 | c | a | b | b | c |