ANALYZING THE IMPACT OF ORGANIZATIONAL AND INDIVIDUAL FACTORS ON INFECTION CONTROL PRACTICES AMONG NURSES IN TERTIARY CARE HOSPITAL

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By

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Under the Supervision and Guidance of

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DECLARATION BY STUDENT

I, Dr. Neha Umashankar Verma hereby declare that this dissertation titled '**ANALYZING THE IMPACT OF ORGANIZATIONAL AND INDIVIDUAL FACTORS ON INFECTION CONTROL PRACTICES AMONG NURSES IN TERTIARY CARE HOSPITAL**' is the bonafide record of my original research work. I declare that it has not been submitted to any other university or institution for the award of any degree or diploma. Information derived from the published or unpublished work of others has been duly acknowledged in the text.

NVERMA

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CERTIFICATE

This is to certify that the dissertation title **"ANALYZING THE IMPACT OF ORGANIZATIONAL AND INDIVIDUAL FACTORS ON INFECTION CONTROL PRACTICES AMONG NURSES IN TERTIARY CARE HOSPITAL"** is a record of the research work undertaken by **Dr. Neha Umashankar Verma** in partial fulfilment of the requirements for the award of the degree of MBA Hospital And Health Management from the IIHMR University, Jaipur under my guidance and supervision and his approach to the research study has been sincere, scientific, and analytical.

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Abstract

Background: The nurses employed in tertiary care hospitals are the subject of this study. In addition to offering the most sophisticated medical care, tertiary care facilities frequently treat critically ill patients who are especially susceptible to infection in hospital. It is essential to comprehend how organizational and individual factors affect nurses' adherence to infection control in this setting.

Materials and Methods: This is a cross-sectional study. Literature review was done to understand factors and 140 samples were collected. Reliability of the questionnaire was done and Cronbach's alpha value is 0.8. Statistical tests like Chi-square and Pearson correlation had been done to analyze the significance of factors. Regression had done to analyze the impact of factors on practice of nurses.

Result: The statistical analysis revealed a moderate correlation between organizational and individual factors 0.605 ($p<0.001$). No correlation was found between factors and practice of infection control. Age, training and qualification had shown significant association with the factors and practice. The regression model had shown resource allocation and training had significant impact on practice of infection control. 51% of nurses are having adequate knowledge and 60% were doing safe practice of infection control.

Conclusion: The study found that strong organizational support, including proper resource allocation and training programs, is crucial for nurses to properly follow infection control procedures. While some individual factors like age and education played a minor role, well-resourced environments with ongoing training were the most significant influences. Despite some nurses having inadequate knowledge or unsafe practices (40% and 49% respectively), the overall findings highlight the importance of a supportive hospital culture for effective infection control.

(Key words: Infection control, Practice, Individual factor, Organizational factor)

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Abbreviation and Acronym

Symbol	Description
IC	Infection Control
ICP	Infection Control Practices
IPC	Infection Prevention and Control
PPE	Personal Protective Equipment
ICN	Infection Control Nurses
HCW	Health Care Worker
HAI	Hospital Acquired Infection
KAP	Knowledge Attitude Practice
SOP	Standard Operating Procedure

1. Introduction

The purpose of this study is to examine how organizational and individual factors affect the infection control procedures used by nurses at tertiary care hospitals.

These infections have the potential to dramatically raise healthcare expenses, morbidity, and mortality. As front-line healthcare providers, nurses are essential in preventing healthcare-associated infections (HAIs) by closely adhering to infection control policies. It covers a broad range of practices, such as aseptic technique, hand cleanliness, and the appropriate use of personal protective equipment (PPE). In many healthcare settings, low adherence to ICPs persists as an issue, despite established standards and practices

1.1 Background

Infections that occur in hospitals commonly referred to as healthcare-related infections are a serious risk to patient safety in hospitals across the globe. Healthcare expenses, patient morbidity, and mortality can all rise sharply as a result of these illnesses. Critically sick patients with weakened immune systems are frequently managed at tertiary care institutions, which offer the highest quality of medical care. (Geberemariyam, Donka andWordofa, 2018) They are therefore especially vulnerable to serious illness. The risk of disease transmission is increased in these settings because of the intricate procedures andextensive care that are offered.(Sasapu, P and P, 2023)

Infections that were not present at the time of the patient's admittance but were acquired in the healthcare facilities during clinical, diagnostic, and therapeutic procedures are referred to as healthcare-associated infections. It is a significant issue that affects medical care globally and is one of the leading causes of illness and death.(Oppong *et al.*, 2020) The combined incidence rate of healthcare-associated infections was 7.6% in high-income nations and 10.1% in low- and middle-income countries,

according to a systematic evaluation of the literature.

In tertiary care facilities, nurses are the front-line healthcare providers for patients. By carefully adhering to infection control procedures, they play a vital part in preventing serious illnesses. (AhmadSabbah *et al.*, 2021)

ICPs include a broad spectrum of evidence-based tactics aimed at severing the infection chain and stopping the transmission of microbes. It has been demonstrated that putting these strategies into practice effectively lowers HAI rates, which improves patient outcomes and lowers healthcare expenditures. (Cui *et al.*, 2022) The goal of this research is to better understand how organizational and individual factors affect nurses' adherenceto ICP at tertiary care facilities.

1.1.1 The Looming Threat: Healthcare- Associated Infections

Nurses are essential in putting infection control procedures into practice, which is essential in preventing healthcare-associated infections. Since they interact with patients on a daily basis more than anybody else, nurses are in charge of putting infection control procedures like hand washing, wearing personal protective equipment, and maintaining clean environments into practice. However, a number of studies have demonstrated that nurses frequently lack sufficient knowledge and awareness of infection control procedures, which can result in HAIs. Therefore, avoiding HAIs and guaranteeing patient safety depend heavily on enhancing nurses' knowledge and understanding of infection control procedures (Lee and Jun, 2022).

These infections can greatly exacerbate a patient's underlying illness, resulting in longer hospital stays, higher rates of morbidity and mortality, and a major financial burden. Theyare typically contracted during a medical procedure or hospital stay. This problem is mademuch more difficult by the rise of multidrug-resistant bacteria, which are resistant to many standard medicines and require more expensive and time-consuming treatment (Rashmi and Kundapur, 2017).

Healthcare-associated infections (HAIs) are illnesses that patient’s contract while undergoing medical care in hospitals, assisted living facilities, and

outpatient clinics.

Numerous things, such as the use of medical devices, surgical operations, and the spreadof microorganisms from patients to healthcare personnel, can result in these infections (Gadade, 2018).

1.1.2 The Guardians of Patient Safety: Nurses and Infection Control

The backbone of the healthcare system, nurses offer patients vital support and care in a variety of situations. A vital part of a nurse's many duties is to prevent infections and to promote patient safety. The World Health Organization (WHO) reports that health-associated infections (HAIs) impact millions of individuals globally year, leading to considerable sickness, death, and medical bills.(Wasswa *et al.*, 2015)

Since nurses are frequently the first people patients see, it is their job to conduct infection control procedures like hand washing, sterilization, and following standard precautions. To avoid HAIs and guarantee patient safety, nurses' understanding and awareness of infection control procedures must be improved. A study done in several Indian hospitals revealed that nurses' knowledge differed widely about several facets of infection control, and that there was a statistically significant correlation between infection control knowledge and years of experience as well as hospital types. (Salem, 2019)

Nursing plays a more important role in patient safety than only infection control. In orderto guarantee patient safety and high-quality healthcare, nurses are in charge of arrangingcare, monitoring vital signs, and giving medication. In addition, nurses act as patient advocates, making sure that patients' needs and rights are met as well as that they receive the right care and attention. In conclusion, nurses are the protectors of patient safety and are essential to the advancement of medication safety, infection control, and general high-quality medical treatment (Nag et al., 2018).

1.1.3 Individual factors influencing infection control

Effective infection control requires not just a strong organizational framework but also the knowledge, attitudes, and behaviours of individual nurses. These

individual aspects include a variety of personal traits that affect how a nurse makes decision

when it comes to infection control practices. It is essential to understand the most recent ICP recommendations, pathogen transmission mechanisms, and the reasoning behind particular procedures. Strong knowledge of infection control concepts makes nurses more capable of seeing any threats and putting the right precautions in place. Adherence is also influenced by attitudes regarding ICPs. Nurses are motivated to regularly follow established standards when they have a positive attitude, value patient safety, and understand the necessity of infection control (Assefa, Alen and Adane, 2020).

Adherence may also be impacted by perceptions of the comfort level, time restrictions, and simplicity of usage of ICPs. For example, some nurses may think it's difficult or time- consuming to wear PPE, which could cause them to take short cuts that endanger patient safety. Workload and stress levels can also affect behaviour. Stressed-out or overworked nurses may be more prone to skip some ICP steps or value efficiency over detail. (Ogoinaet al., 2015)

The purpose of this study is to look into the ways in which these individual factors—knowledge, attitudes, profession, and stress levels—affect nurses' adherence to infection control procedures as they work in tertiary care hospitals. With a better knowledge of these variables, we can create focused interventions to help nurses become even more effective advocates for infection control, such as educational initiatives and stress- reduction strategies.

1.1.4 Beyond the Individual: Organizational Factors Shaping Infection Control

The global public health community is greatly concerned about healthcare-associated infections (HAIs), which pose a serious risk to patient safety. By adopting infection control procedures including good hand hygiene, sterilizing techniques, and adherence to standard precautions, nurses play a crucial role in reducing infection rates associated with healthcare.

Organizational elements are just as important in reducing HAIs as individual factors like knowledge and awareness (AhmadSabbah et al., 2021). The efficiency of infection control

procedures can be greatly impacted by organizational factors, including staffing, governance, and organizational structure. According to a study, workflow, training, and the size and staffing of infection control departments are all important components in reducing infectious diseases (Harun et al., 2022).

Numerous research had been examined how organizational and management characteristics affect hospital infection control. Hospital methods for controlling infections can be greatly impacted by organizational characteristics including resource allocation, communication, and culture, according to a scoping review of the literature. The review also discovered that the implementation and efficacy of infection control techniques can be influenced by management factors, including policies, procedures, andresources(LeeandJun,2022).

In conclusion, organizational variables are just as important in preventing HAIs as individual factors like knowledge and awareness. To guarantee the greatest results for patients and healthcare systems, an all-encompassing approach to infection control should take organizational and individual factors into account (Kangoya *et al.*, 2023).

1.1.5 Importance Of ICP

In a hospital setting, infection control procedures are essential for the health and safety of both patients and medical staff. This is especially true in tertiary care facilities. The job of infection control nurses, who are in charge of preventing and controlling infections withinhospitals, makes the significance of infection control procedures clear (Pathak*etal.*,2022). The Infection Control Nurse is a key player in making sure that infection control policies are carried out correctly. This includes monitoring, analysing, and reporting hospital acquired infections (HAIs), training staff members on infection control, and overseeing the upkeep of established infection prevention protocols. In order to maintain a safe environment, they also make sure that patients and hospital staff are informed about thepossibility of HAIs, how to avoid them, and what steps to take in advance (Tarif *et al.*, 2022).

In addition, the Infection Control Nurse is in charge of keeping an eye on and reporting onBio-Medical Waste Management procedures and guidelines, communicating with lab and ward personnel, alerting department heads, and offering guidance on medical, nursing, housekeeping, catering, and other staff grades. They also make sure that NABH standardsare followed and look into outbreaks (Mohan and Agarwal, 2020).

A major difficulty in any hospital is raising the knowledge and awareness of nurses regarding infection prevention and control, which highlights the significance of infection control measures even more. Gaining an understanding of these variables helps enhance infection control procedures, lower the prevalence of healthcare- associated infections, and guarantee a secure and hygienic environment for both patients and medical staff. Theapplication of infection control techniques, a collection of evidence-based recommendations intended to sever the spread of infections, is led by nurses(Desta et al.,2018).

These procedures covered a wide range of topics: **Hand Hygiene:** The most effective way to stop the transmission of illnesses is to wash your hands properly with soap and water or use an alcohol-based hand massage. **Aseptic Technique:** The risk of introducing infections into a patient's body is reduced by maintaining a sterile atmosphere throughout procedures and utilizing sterile equipment. **Standard Precautions**: These general measures necessitate the use of personal protectiveequipment (PPE) such as gloves, gowns, masks, and eye protection during patient care since they operate under the assumption that all patients are potentially contagious.

Transmission Based Precautions: Patients with tuberculosis may need to take extra measures based on the way in which their infection is spread. Examples of these precautions are airborne precautions and contact precautions.

Good infection control procedures prevent healthcare personnel from contracting infections in addition to protecting patients. Developing focused treatments to

increase

compliance and eventually improve patient safety in these healthcare settings would require an understanding of these aspects (Godliness et al., 2023).

1.1.6 Challenges of Infection control

The core component of patient safety in healthcare settings is infection control procedures (ICP), but putting them into practice and keeping them up to date consistently present a challenging set of issues. These difficulties are caused by a confluence of organizational elements and personal actions of healthcare professionals. In order to ensure successful ICP implementation and reduce the incidence of hospital-acquired infections (HAIs), it is imperative that these obstacles be addressed(Sasapu, P and P, 2023).

The different challenges encountered when following ICP protocols. We'll look at how staffing levels, infrastructure, and resource constraints can make implementation less successful. Furthermore, we will examine how specific elements such as time restraints, complacency, and knowledge gaps may affect healthcare workers' adherence to ICP recommendations.

Nursing professionals frequently have to juggle a variety of duties, such as patient care, paperwork, and administrative work, which can make it difficult to give infection control procedures first priority(Gadade, 2018).

In addition, inadequate instruction and training about ICPs might present serious difficulties. In order to stay current on the newest ICPs, recommendations, and protocols, nurses need to continue receiving training and education. Nonetheless, hospitals may find it difficult to give their employees the proper instruction and training due to a lack of funding and time (Geberemariyam, Donka and Wordofa, 2018). These difficulties may contribute to the spread of infections, especially HAIs, which can have dangerous repercussions for both patients and medical personnel. To guarantee the successful deployment and upkeep of ICPs, it is crucial to address these issues and give

healthcare professionals—especially nurses— enough resources, training, and knowledge(Mohan and Agarwal, 2020)

2. Literature Review and Problem Formulation

This chapter includes a critical review of the literature. Twenty literatures from credible journals on Google Scholar and Pub Med were examined. The literature review focused on the organizational and individual factors that influence infection control and how nurses are affected by it, which is linked to patient satisfaction. Peer-reviewed journals released in English throughout the previous 10 years were taken into account.

2.1 Background:

A study was conducted to analyse the impact of organizational factors and individual factors on practice of nurses. research indicates that nurse's infection control practices can be greatly impacted by both individual and organizational factors, including knowledge, attitudes, and adherence to safety protocols. Organizational factors include program structure, resources, and safety culture. Improving patient outcomes and lowering HAIs require an understanding of the variables influencing nurses' adherence to infection control procedures. The interaction between organizational and individual factors that influences nurses' infection control behaviour isexamined in depth in this review of the research. We can find areas where healthcare organizations need to improve in order to foster an environment that values and encourages efficient infection control procedures by looking at these variables.

2.2 Availability and accessibility of resources

The accessibility and availability of personal protective equipment, or PPE, have become crucial organizational elements impacting adherence to infection control guidelines in thecontext of infection control practices among nurses.(Oppong et al., 2020) Research has repeatedly shown how important it is to have enough personal protective equipment (PPE) to support safe healthcare practices and lower the

risk of

healthcare-associated infections (HAIs). In order to stop the spread of germs in hospital environments, nurses must wear PPE, such as gloves, masks, and gowns. (Mohan and Agarwal, 2020) Empirical

evidence highlights the correlation between improved infection control practices among nurses and the availability of adequate personal protective equipment (PPE). This highlights the critical function of organizational support in guaranteeing a secure work environment.(Gadade, 2018)

2.3 Individual factors impact on infection control practice:

It has been determined that important individual-level elements that can greatly influence nurses' infection control procedures include their attitudes and knowledge on infection prevention(Godliness et al., 2023). Studies have consistently shown that nurses are more likely to follow advised infection prevention measures if they have more upbeat attitudesand higher convictions about the significance of infection control.(Nag et al., 2018) In a study looking at what influences nurses' and doctors' adherence to infection control protocols, personal attitudes and beliefs were revealed to be highly significant determinants of adherence(Wasswa et al., 2015).

Nurses' attitudes and views toward infection prevention have a substantial impact on their adherence to infection control policies, even beyond their knowledge and understanding of these standards.(Giri et al., 2016) Consistent compliance is mostly fueledby a positive outlook, which is exemplified by a strong sense of accountability for preventing infections and faith in the efficacy of control measures.(Gadade, 2018) According to studies, nurses are more inclined to include infection control procedures intotheir daily routines if they believe they are beneficial and worthwhile.(Tarif et al., 2022) On the other hand, unfavourable attitudes, such doubt about the effectiveness of protocols or annoyance with onerous procedures, might result in a lack of compliance.

It is essential to comprehend these behavioural influences.(Rashmi and Kundapur, 2017) Hospitals can use tactics to promote positive attitudes, like teaching initiatives that highlight how infection control affects staff safety and patient outcomes. Addressing issues with efficiency and practicality can also help to promote constant adherence amongnurses.(Cui et al., 2022)

According to a survey conducted in Ethiopia's Wogdie District, just 70.8% of healthcare professionals knew enough about infection control, and only 55% of them safely used it. This underscores the necessity of enhanced comprehension and compliance with infection control protocols in primary care environments. Improved patient outcomes and a substantial decrease in hospital-acquired infections can be achieved via increased understanding and application of infection prevention. (Assefa, Alen and Adane, 2020)

Nurses must be guided in the implementation of efficient ways to avoid infections by thepresence of clear control of infections policies and procedures pertaining to the use of personal protective equipment (PPE).(Geberemariyam, Donka and Wordofa, 2018) The adherence of nurses to infection control protocols is greatly improved by organizational cultures that place a high priority on infection control and offer thorough recommendations for the appropriate use of personal protective equipment.(Sasapu, P and P, 2023) These guidelines encourage a safety-conscious and accountable culture in healthcare facilities in addition to guaranteeing the proper use of personal protective equipment (PPE). (Oppong et al., 2020)Organizations can foster an environment that promotes effective infection prevention practices among nursing staff by implementing strong infection control frameworks that underscore the need of personal protective equipment(AhmadSabbah et al., 2021)

2.4 Interplay of factors in influencing infection control practices:

Numerous studies have examined the effects of organizational and individual factors on nurses' infection control practices, providing insight into the crucial components that affect healthcare professionals' compliance with infection prevention guidelines.(Godliness et al., 2023) Nurses' infection control practices are greatly influenced by organizational variables, including the availability of personal protective equipment (PPE) and the organizational culture for infection control. Research has indicated that a favourable corporate culture that places a high priority on infection

prevention and offers the required resources, such as financial and administrative

assistance, can improve nurses' adherence to infection control protocols. (Ogoina et al., 2015)

The purpose of the study in Calabar Municipal LGA, Cross River State, with regard to infection prevention and control practices. The study's main goal was to ascertain the extent to which Saudi Arabian primary healthcare nurses employed infection prevention and control techniques. It also emphasized the significance of healthcare workers' safe and appropriate use of infection prevention techniques in order to prevent nosocomial infections. A systematic study also examined the knowledge of healthcare professionals regarding infection prevention and control protocols, highlighting the vital significance of adhering to infection prevention and control methods for the safety of healthcare workers, the protection of patients, and the care setting.(Godliness et al., 2023).

The effectiveness of a nurse in implementing infection control practices is greatly influenced by organizational factors(Assefa, Alen and Adane, 2020). Compliance is directly impacted by elements like leadership commitment, sufficient staffing, and easily accessible supplies like PPE. Research indicates that a culture of adherence is fostered by effective leadership that places a high priority on safety. On the other hand, inadequate resources, such as difficult access to PPE, provide obstacles to effective infection management.(Salem,2019)

Individual nurses' attitudes and beliefs are just as important as organizational influences. Consistent compliance is mostly fueled by a positive outlook, which is exemplified by a strong sense of accountability for preventing infections and faith in the efficacy of controlmeasures.(Lee and Jun, 2022) On the other hand, unfavourable attitudes brought on by doubt or annoyance with onerous processes may result in a lack of adherence. To optimizeinfection control procedures, a holistic approach must take into account these combinedfactors.(Ekwere and Okafor, 2013) The purpose of the study "Perception and Barriers Regarding Infection Control Measures Among Healthcare Workers in Minia City,

Egypt" was to determine the main obstacles to

the implementation of infection control measures as well as the perceptions of healthcareworkers regarding these measures. A considerable percentage of healthcare workers had a favourable opinion of infection control procedures, according to a descriptive cross- sectional study that involved 350 healthcare professionals. Interestingly, knowledge ratings were found to be a significant predictor of the perception of healthcare personnel,with better knowledge being linked to a decreased likelihood of a negative view. In orderto improve infection control practices among healthcare professionals in Minia City, Egypt, the study emphasized that a typical obstacle to applying standard measures is the lack of appropriate gloves and gowns.(Refeai et al., 2020)A research investigation brought to light the important role that hand hygiene, personal practices, and availability of resources for infection prevention and control play in the lowrates of adherence to these practices among healthcare professionals. The study also emphasized how important it is for healthcare professionals to follow conventional precautions more closely in order to prevent and control infections, especially when it comes to hand hygiene and wearing personal protective equipment correctly.(Kangoya etal., 2023)According to a study conducted in Visakhapatnam, India, healthcare personnel lacked knowledge and practices in particular areas such as waste management and hand hygiene, even if they were aware of general infection control procedures. Of those who knew how to wear and remove personal protective equipment (PPE), just half followed the recommended handwashing practices. This emphasizes the necessity of ongoing training for healthcare professionals to increase their knowledge and proficiency in infection control, which will ultimately lowerthe rate ofhospital- acquired infections andenhance patient safety.(Geberemariyam, Donka and Wordofa, 2018)The study discovered that 87.3% of the nursing staff had a positive attitude toward standard precautions, 74.7% had good practice, and 66.7% of the staff had strong knowledge. However, 26.34% of

the nursing staff did not know enough, 19.3% did not think that conventional precautions were important

The study determined that a number of factors, such as a lack of resources, training, or favourable attitudes toward conventional precautions, influence the observance of precautions. The study highlights that in order to enhance nursing staff adherence to standard precautions in tertiary care settings, ongoing training, resource allocation, and positive reinforcement are necessary. (Rashmi and Kundapur, 2017)

The understanding of healthcare workers regarding infection control and its execution infacilities differ, according to studies conducted in the Arua district of Uganda. Most facilities lack the necessary equipment, resources, and committees. Hand hygiene behaviour can be improved with training, particularly for people with lower levels of education. This emphasizes how urgently better infrastructure, supplies, and training are needed to apply infection control and lower the rate of hospital-acquired infections.(Wasswa et al., 2015)

Nurses in Bangladesh were found to have adequate knowledge and attitudes; however, they did not follow appropriate infection control procedures. Age and experience were two factors that affected the outcomes. The study emphasizes the necessity of routine supervision and training, which is especially important when there is a pandemic because healthcare personnel are more susceptible. These results can guide treatments aimed at enhancing infection control behaviours among nurses and others working in comparableenvironments.(Harun et al., 2022)

The COVID-19 epidemic highlighted hospitals' need for qualified infection control personnel. A competency model was developed in a study with an emphasis on how wellit can improve hospital infection control in order to evaluate these practitioners. This is consistent with earlier studies emphasizing the value of competency models for medical personnel in public health emergencies.(Cui et al., 2022).

Research demonstrates a strong correlation between HAI rates and organizational behaviours. For HAI prevention to be effective, elements including capable leadership, transparent communication, and adequate resources are essential. The high

expense of healthcare-associated infections (HAIs) highlights the need for healthcare organizations

to give these areas top priority in order to enhance patient safety and lessen the load onall parties (Castro-SánchezandHolmes,2015).

2.5 Problem Formulation

2.5.1 Literature Gap

- Very few studies have been done with the organisational and individual factors ofinfection control (Wasswa et al., 2015), (Godliness et al., 2023), (Tarif et al., 2022)
- None of the studies analyse the organizational and individual factors knowledge and attitude and its impact on practice on infection control in tertiary care setting(Refeai et al., 2020), (Au et al., 2021), (Mohan and Agarwal, 2020)

2.5.2 Research Questions-

1. What are the organizational factors affecting the infection control in hospital?
2. What are the individual factors affecting the infection control in hospital?
3. Which organizational factor affecting the infection control practices?
4. Which individual factor affecting the infection control practices?
5. Which factor majorly affecting the practice of infection control among nurses?

2.5.3 Null Hypothesis

Hypothesis 1:

H0: There is no significant relationship between age and factors of infection controlH1: There is significant relationship between age and factors of infection control **Hypothesis 2:**

H0: There is no significant relationship between training and factors of infection control H1: There is significant relationship between training and factors of infection control

Hypothesis 3:

H0: There is no significant relationship between qualification and factors of infection control

H1: There is significant relationship between qualification and factors of infection control

Hypothesis 4:

H0: There is no significant association between organizational and individual factors of infection control

H1: There is significant association between organizational and individual factors of infection control

Hypothesis 5:

H0: There is no significant association between organizational factors and practice of infection control

H1: There is a significant association between organizational factors and practice ofinfection control

Hypothesis 6:

H0: There is no significant association between individual factors and practice of infectioncontrol

H1: There is significant association between individual factors and practice of infectioncontrol

3. Problem Statement

The problem statement chapter covers the investigation's title, aim, objectives, and scope of the study in addition to the methods used to accomplish each goal.

3.1 Title:

A study to analyze impact of organizational and individual factors on infection control practices among nurses in tertiary care hospital.

3.2 Aim:

To investigate the relation between organizational structures, individual behaviors, and infection control practices among nurses in a tertiary care hospital setting.

3.3 Objectives:

1. To identify organizational and individual factors of infection control
2. To assess the organizational factors and individual factors and level of infection control practice of nurses
3. To analyse the relationship between organizational factors, individual factors and their impact on infection control practices
4.

3.4 Scope of the Study:

Nurses are essential in preventing infection in tertiary care setting. The aim of this investigation is to analyse the impact of factors on infection control practices among nurses. A number of organizational factors, including the hospital's infection control policies and guidelines, the availability of resources (personal protective equipment, hand hygiene facilities), the education and training programs offered to nurses on infection control, could examined in this study. Nurses' knowledge, attitudes, and views regarding infection control, as well as their adherence to hand hygiene, wearing personal protective equipment, and other infection control

procedures, may all be examined at the individual

level of the study. The study might also look at the factors that encourage or prevent nurses from adhering to infection control protocols. The study could evaluate the nurses' actual infection-control practices, such as complying with hand hygiene guidelines, wearing personal protective equipment, cleaning and disinfecting medical equipment, and monitoring and reporting infections linked to healthcare. The effects of these practices on infection rates linked to healthcare, patient safety, and the occupational health and safety of nurses might all be investigated in this study. A mixed-methods approach could be used in the study to combine quantitative data with qualitative data in order to obtain a thorough knowledge of the factors influencing nurses' infection control practices. In order to improve methods for preventing infections and, ultimately, patient safety and healthcare quality in the tertiary care surroundings, the findings may help shape the creation of focused treatments.

3.5 Methods and Methodology:

Table 3.1 - Methodology

Objective S.No.	Statement of objective	Methodology/Method	Sources Utilized
1	To identify the organizational and individual factors affecting infection control	Literature review to identify the organizational and individual factors that are affecting the infection control measures	Article from google scholar, research gateand PubMed
	To assess the organizational factors	Structured Questionnaire	

2	and individual factors and level of infection control practices of nurses	and Check list from articles was used and validated with experts' judgment. 3 experts were contacted for the face- validation. Cronbach's alpha value with test for measure of	Literature review and KAP questionnaire from articles

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		reliability. Cronbach's value was as 0.8	
3	To analyze the relationship between organizational factors, individual factors and their impact on infection control practices of nurses	❑ Descriptive statistics ❑ Multiple regression analysis to confirm the factors that affect the level of infection control practices of nurses ❑ Correlations between factors, and its impacts oninfection control practices among nurses	Microsoft excel and SPSS

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4. Problem Solving

This chapter talks about the methodology used for this study which covers the concept development, verification, validation, data collection and method used for analysis.

4.1 Method and Methodology:

A cross-sectional study was conducted on 140 nurses who worked in tertiary care hospital. A questionnaire was given to nurses to fill out to understand organizations efficiency and individual behavior towards infection control. Practice of nurses also assessed through checklist to know the impact of factors (organizational and individual) on infection control.

4.2 Concept Development

The structured questionnaires along with demographic details and checklist to assess thepractice of nurses were used for the study. The questionnaires used are having organizational factors (resource allocation, communication and collaboration, protocol and guidelines) and individual factors (nursing professionalism, time pressure, knowledgeand attitude). The variables of the questionnaire are listed below:

4.2.1 Variables for organizational factors:

Table 4.1- Organisational factors

Resource allocation	➢ This includes the accessibility of personal protective equipment (PPE), hand sanitizer, disinfectants, and other necessarysupplies for proper hygiene ➢ Sufficient manpower availability

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Effective communication and collaboration	➢ Presence of infection preventioncommittee ➢ Updates and alerts regardinginfection control
Policies and protocols	➢ Proper guidelines for infectioncontrol ➢ Availability of SOP ➢ Training and education aboutinfection control

4.2.2 Individual factors:

Table 4.2- Individual factors

Nursing Professionalism	➢ Attending the training provided ➢ Professionalism of nursing ➢ The roles of nursing service
Time Pressure	➢ Sufficient time to follow allinfection control measures ➢ Sufficient time to take care ofpatient along with infection control practices
Knowledge	➢ Knowledge about hand hygiene moments, personal protection, disinfectant and sterilization

Attitude	➢ Attitude about hand hygiene moments, personal protection,disinfectant and sterilization

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4.2.3 Variables for Practice:

Table 4.3- Practice

Practice	➢ About hand hygiene moments, personal protection, disinfectant and sterilization and organization factors

- ❖ The outcome of the knowledge, attitude and practice towards infection control was assessed with the use of mean value to classify knowledge as adequate or inadequate
- ❖ One point will be given for the correct answer and two points for incorrect answers
- ❖ If the mean score was equal or above the mean then the respondents were having adequate knowledge of infection control and if the mean score was below mean then respondents were having inadequate knowledge
- ❖ Attitude was assessed as positive attitude or negative attitude towards infection control
- ❖ If the respondent total scores were equal or above mean score then they were having positive attitude and below the mean score then negative score towards infection control
- ❖ Practice of infection control was assessed through checklist and responses were on 5Likert scale. If the total score of respondents was equal or above mean score of infection control practice then it would be safe practice and if below mean then unsafe practice

4.3 Validation of The Tool:

The validated questionnaire was used for the pilot study to check the reliability of the questionnaire.

After data collection, for the pilot study, Cronbach's alpha was used to assess the reliability of the questionnaire and checklist. Cronbach's alpha was calculated using SPSS software. The internal consistency (α) of the questionnaire was found to be 0.8, which is acceptable.

Table- 4.4 Cronbach's Alpha

Number of respondents	Cronbach's alpha	Number of items
30	0.8	35

4.4 Sample Size Calculation:

The sample size calculation done based on total number of nurses having experience morethan six months were included in sample.

$n = N/ (1+N(e)^2)$

Where:

Total count of nurses at Manipal hospital=271

Total number of nurses with less than 6 months of experience at Manipal hospital=217N = is the total sample population

n = is the sample from the population

e = is the error term, which is 5% (i.e., at 95% confidence interval)

= 217/ (1+217(0.05)2)

= 217/ (1+0.54)

= 217/1.54

Sample size (n) =136

Hence, the sample size for this study is 136

4.5 Statistical Analysis:

The collected data was entered into the Excel sheet and was coded accordingly. Thestatistical test was done in SPSS. Multiple regression analysis to confirm the factors that affect the level ofi infection control practices of nurses. Correlations

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between factors, and its impacts on infection control practices among nurses.

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5. Results and Discussions

In this chapter, the results of all the objectives done so far are discussed individually i.e., results of the literature review, pilot study results which show the reliability of the questionnaire, and the results of the data collected for the research.

5.1 Results of objective 1:

Objective 1- To identify the organizational and individual factors affecting infectioncontrol For this objective, a significant number of literatures were referred and examined to identify the organizational and individual factors affecting infection control, and the studywas built on the findings of these reviews.

Table 5.1 Organizational and individual factors description

Factors	References
Resource allocation The key to reducing the risk of infection is careful resource allocation. This entails allocating funds for necessary supplies (hand sanitizer, PPE, disinfectants, and cleaning supplies). It also includes making sure there is enough personnel to allow nurses to properly care for patients and follow infection control procedures. Healthcare facilities enable nurses to efficiently avoid infections by deploying resources strategically.	(Lee and Jun, 2022)
Effective communication and collaboration Strong infection control procedures are built on the foundations of efficient collaboration and	(Castro-Sánchez and Holmes,2015)

communication. To guarantee that everyone is on the same page regarding infection control practices and expectations, management must communicate clearly. Additionally, open lines of communication make it possible to report issues or near-misses, which promotes proactive problem-solving and continued improvement of measures to prevent infection.	
Policies and protocols A road map for avoiding infections linked to healthcare is provided by infection control policies and procedures. These guidelines include evidence- based measures such hand washing techniques, using personal protection equipment (PPE) appropriately, and equipment cleaning and disinfection processes. They guarantee uniformity in the provision of care and give employees a clear guideline to follow.	(Wasswa *et al.*, 2015)
Nursing Professionalism Maintaining infection control procedures depends heavily on the professionalism of nurses. This entails having a strong dedication to patient safety, following set procedures, and setting an example for other healthcare professionals. It is the duty of professional nurses to be current on infection control recommendations and recommended procedures. Nurses reduce the risk of HAIs and foster a culture of safety by adhering to certain professional standards.	(Tarif *et al.*, 2022)
Time Pressure	(Oppong *et al.*, 2020)

For nurses, time constraints can be a major obstacle to using effective infection control procedures. Overwork and understaffing may cause hurried processes, which may compromise hand hygiene or the appropriate use of personal protective equipment (PPE). A few techniques to help reduce time pressure are to prioritize job, streamline processes, and make sure to have enough staff.	
Knowledge It is essential for nurses to have a solid knowledge in order to properly implement infection control strategies. Nurses with an understanding of infection control can reduce the risk of infection and safeguard themselves and their patients by making well-informed decisions.	(Kangoya *et al.*, 2023)
Attitude Consistent adherence to infection control procedures by nurses is greatly influenced by their positive attitude. On the other hand, negative attitudes based on by doubt regarding protocols or annoyance with heavy procedures might result in a lack of compliance. Nurse adherence can be greatly increased by resolving practical issues and promoting a positive attitude through education.	(Mohan and Agarwal, 2020)

Practice Nurses at the bedside use a multifaceted strategy in the practice of infection control. This covers fundamental practices including wearing gloves,	(Geberemariyam, Donka andWordofa, 2018)

gowns, masks, and eye protection, washing your handsthoroughly, and using aseptic technique when doing procedures. By continuously following these guidelines, nurses contribute significantly to stopping the spread of illnesses and protecting patients' health.	

5.2 Results of objective 2:

Objective 2 - To assess the organizational factors and individual factors and level of infection control practice of nurses

The questionnaire was divided into 4 sections. Section 1 consist of demographic questions which include age, gender, years of experience, department, level of qualification. Section 2 included questions of organizational factors (resource allocation, effective communication and collaboration, policies and protocols) of total 8 questions for which responses were recorded 3- Likert scale (always, sometimes, never). Section 3 had 22 questions of individual factors i.e. nursing professionalism (4 questions), time pressure (2 questions), knowledge (7 questions) and attitude (9 questions) all are close-ended. Section 4 consist of 2 open-ended questions. Check list includes 11 questions and are assessed on 5 Likert scale (always, often, sometimes, rarely, never) The total number of questions included in goggle form are 35. The form was circulated among nurses to fill. A convenience sampling was used to select the nurses to fill the formand also to assess their practice through checklist for this study. The data collected and entered in excel sheet and coding was done. The analysis of collected data were done using SPSS. The statistical tool used are correlation and regression analysis. Data analysis was carried out for multiple regression analysis to confirm the factors that affect the level of infection control practices of nurses. Correlations between

factors, and its impacts on infection control practices among nurses.

5.2.1 Pilot Study

The intention of the data collection was to evaluate the validity and reliability of the questionnaire for the pilot study, which was conducted prior to the main investigation. The pilot study was conducted using the first 30 responses.The questionnaire's Cronbach's alpha value, which measures internal consistency and reliability, was determined to be 0.8.

Table 5.2 Cronbach's alpha

Cronbach's alpha	Number of items
0.8	35

Interpretation:

The reliability test is displayed in the above table. The questionnaire has an acceptable level of internal consistency and reliability, as indicated by the Cronbach's alpha value of 0.8.

5.2.2 Assessment of demographic questionnaire-

The section on demographic data included five questions regarding the nurse's general information like gender, age, and educational qualification, years of experience and working department. The next section was regarding the organizational factors with 9 questions followed by individual factors with 23 questions. The last section focused on thechecklist related to the practice of nurses, and this section contained 11 questions andone Likert scale which had to be rated from always, often, sometimes, rarely, never.

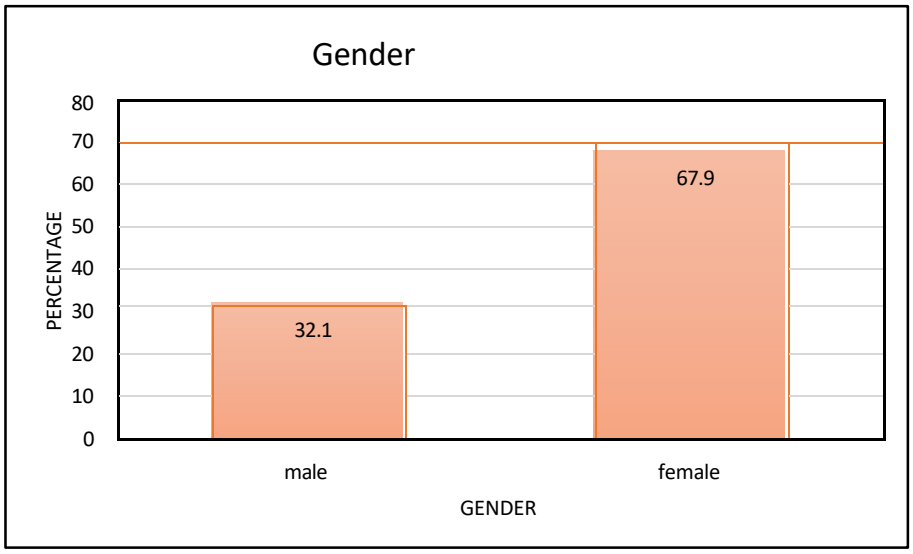

Figure 5.1- Gender distribution

Interpretation-

In the nurse's population, females constitute the majority at 67.9%, while male constitute 32.1% of total sample population which indicates that the percentage of female was higher which make more than half of the population.

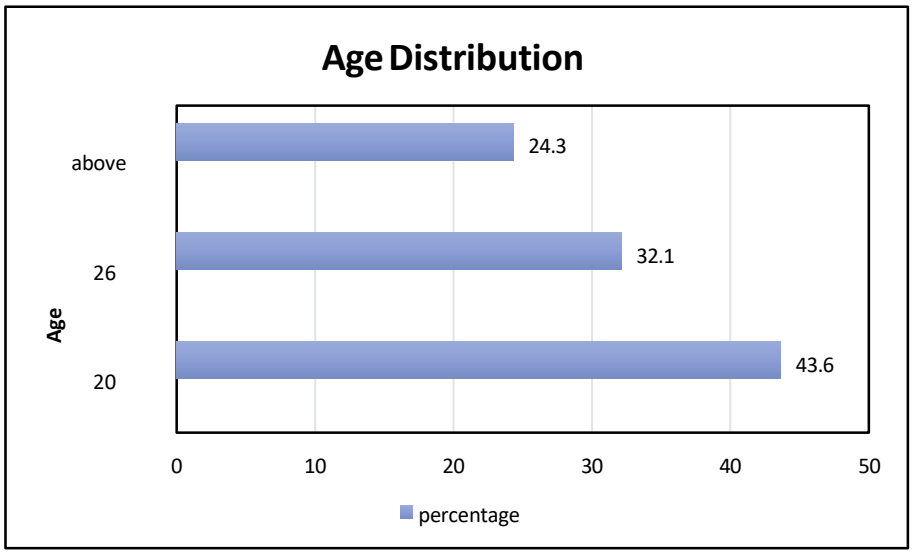

Figure 5.2 Age distribution

Interpretation-

In the nurse's population, most of the respondent belong to the age group of 20 – 25 years (43.6%) followed by 26 – 30 years (32.1%). Only 24.3% of respondent belong to theage group of above 30 years.

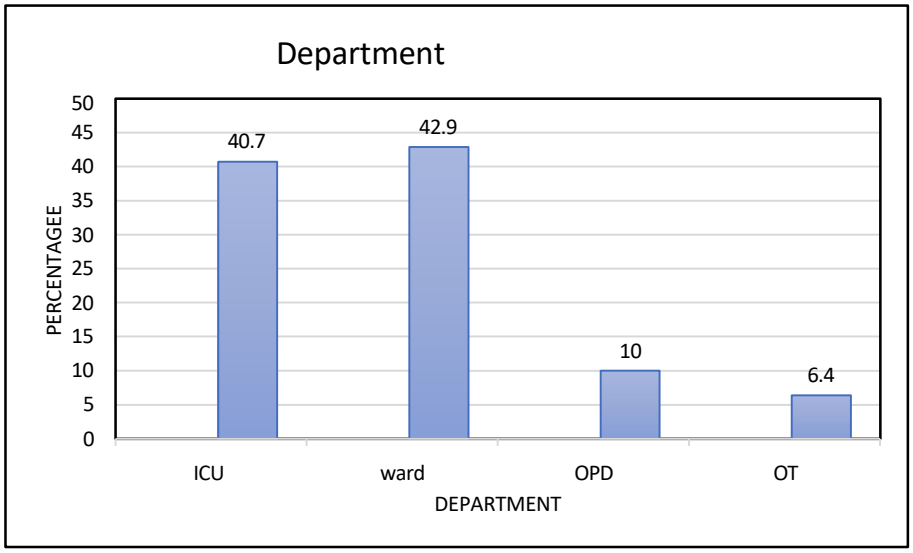

Figure 5.3- Department distribution

Interpretation-

In the nurse's population, most of the respondent are from wards and ICU with 42.9% and 40.7% respectively. Very few respondents are from OPD and OT with 10% and 6.4% respectively of whole population.

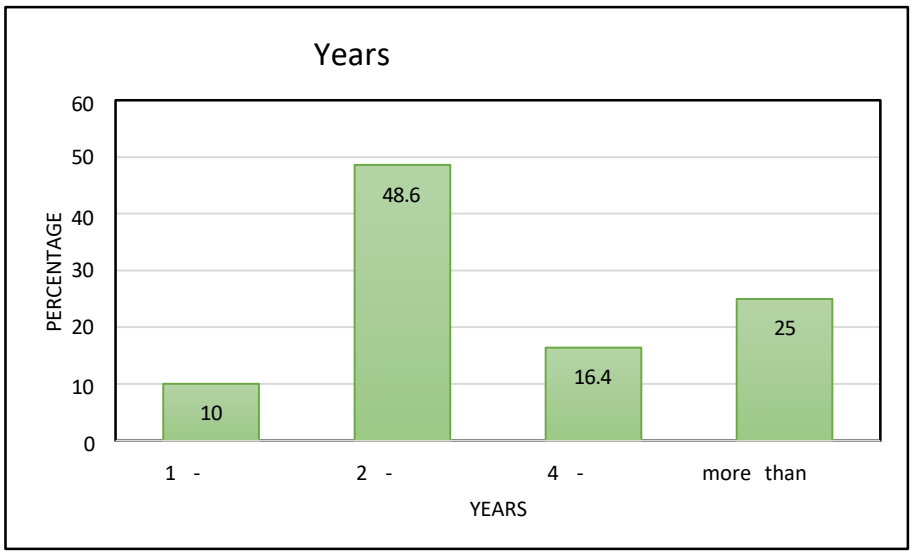

Figure 5.4- Experience distribution

Interpretation-

From the study population highest number of respondents were having experience of 2 –3 years with 48.6% followed by 25% of population were having experience of more than 5 years.

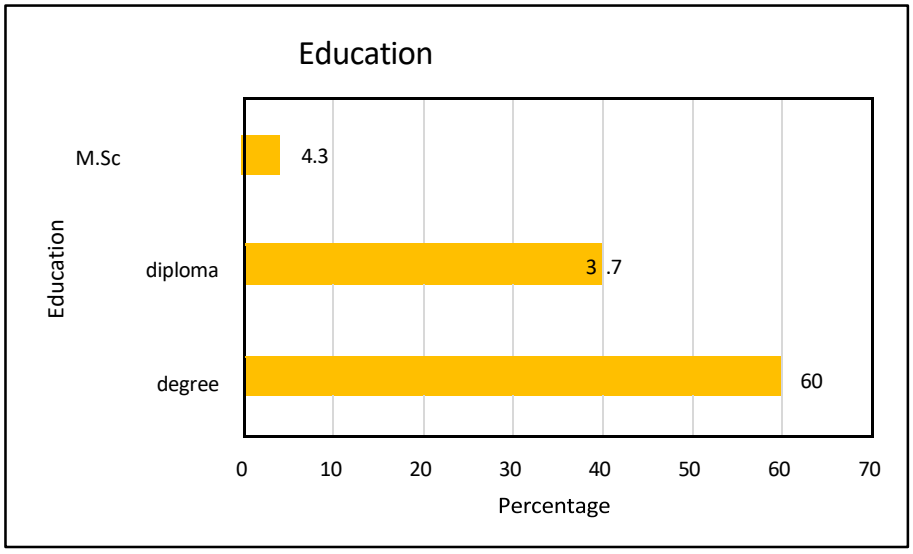

Figure 5.5- Education distribution

Interpretation-

In the nurse's population, most of the respondent were having basic degree of nursing with 60%, 35.7% were did diploma and only 4.3% of nurses were having education qualification of M.Sc. and above.

5.2.3 Assessment of each questionnaire-

Table 5.3- Distribution of organizational factors

Resource allocation		Category	Frequency	Percentage
Q.1	Do you have readily available access to personal protective equipment (PPE) such as gloves, masks, and gowns?	Always Sometimes Never	115 25 0	82.15% 17.85% 0
Q.2	Are there sufficient handhygiene stations located throughout your work area?	Always Sometimes Never	115 21 4	82.15% 15% 2.85%
Q.3	Hospital is having enoughman power?	Always Sometimes Never	62 59 19	44.35% 42.15% 13.5%
Effective communication and collaboration		Category	Frequency	Percentage
Q.4	Are infection control updatesand alert regularly communicated to staff?	Always Sometimes Never	119 17 4	85% 12% 3%
Q.5	Is there a multidisciplinary team approach to infectioncontrol?	Always Sometimes Never	106 28 6	75.7% 20% 4.3%

Policies and protocol		Category	Frequency	Percentage
Q.6	How often do you report incidents related to infection control?	Always Sometimes Never	102 15 23	72.9% 10.7% 16.4%
Q.7	How often do you receive training and education on infection control protocols and procedures?	Always Sometimes Never	118 21 1	84.3% 15% 0.7%

Nursing professionalism		Responses	Frequency	Percentage
Q.8	How often do you attend infection control training?	Always Frequently Occasionally Rarely Never	64 53 18 5 0	45.7% 37.8% 12.8% 3.5% 0
Q.9	How often you get exposed to infectionwhile working in hospital?	Always Frequently Occasionally Rarely Never	37 24 36 31 12	26.4% 17.1% 25.7% 22.1% 8.5%
	How confident do you	Extremely confident	39 78	27.9% 55.7%

Q.10	feel in your knowledgeof standard precautions?	Very confident Moderately confidentSlightly confident Not at all	15 8 0	10.7% 5.7% 0%
Time pressure		Category	Frequency	Percentage

Table 5.4 – Distribution of individual factors

Q.11	Do you feel rushed when providing patient	Strongly agree	30	21.4%
		Agree	54	38.5%

	care, which affects yourability to follow infection control practices?	Neutral Disagre e Strongly disagree	28 24 4	20% 17.1% 3%
Q.12	Do you have enough time to follow infectioncontrol practices during your shifts?	Strongly agree Agree Neutral Disagre e Strongly disagree	50 67 15 8 0	35.7% 47.8% 10.7% 5.7% 0%
Knowledge		Category	Frequency	Percentage
Q.13	Which of the following is the factor in preventing the spread of infections in healthcare settings?	Correct Incorrect	106 34	75.7% 24.3%
Q.14	When performing hand hygiene, how long should you wash your hands with soap and water?	Correct Incorrect	69 71	49.3% 50.7%
Q.15	What are the main routes of transmission for healthcare-associated infections (HCAIs)?	Correct Incorrec t	77 63	55% 45%

Q.16	When performing handhygiene, how long should you wash your	Correct Incorrect	71 69	50.7% 49.3%

	hands with alcohol-based hand rub?			
Q.17	What are the main types of personal protective equipment(PPE) used in healthcare settings?	Correct Incorrect	123 17	87.85% 12.15%
Q.18	When should you weara mask in a healthcare setting?	Correct Incorrect	107 33	76.4% 23.6%
Q.19	What is the difference between cleaning and disinfection in healthcare settings?	Correct Incorrect	93 47	66.4% 33.6%
Attitude		Category	Frequency	Percentage
Q.20	Frequent hand washing damages skin and causes dryness and irritation	Agree Neutral Disagree	70 49 21	50% 35% 15%
Q.21	Standard precautions should be used only when attending to high-risk patients	Agree Neutral Disagree	65 23 52	46.4% 16.4% 37.1%

Q.22	Hand washing is unnecessary when gloves are worn	Agree Neutra l Disagree	50 14 76	35.7% 10% 54.3%
Q.23	You have a very low risk of acquiring	Agree Neutral	32 41	22.9% 29.2%

	infections from your patients	Disagree	67	47.9%
Q.24	Adequate disinfection of medical equipment should be ensured by all	Agree Neutral Disagree	117 15 8	83.5% 10.7% 5.7%
Q.25	Infectious disease canbe treated hence PPE are not required	Agree Neutral Disagree	34 17 89	24.3% 12.2% 63.5%
Q.26	Prefer to perform handhygiene before and after intervention with patients	Agree Neutral Disagree	119 14 7	85% 10% 5%
Q.27	It is difficult to workwearing PPE	Agree Neutral Disagree	29 47 64	20.7% 33.5% 45.8%
Q.28	Sufficient number ofstaff is available in every ward	Agree Neutral Disagree	56 49 35	40% 35% 25%
Practice		Category	Frequency	Percentage

Q.29	Are they following theWHO'S moments for hand hygiene	Always Often Sometime sRarely Never	65 63 11 1 0	46.4% 45% 7.8% 0.8%
Q.30	Are they performinghand hygiene with	Always Often Sometimes	67 55 16	47.7% 39.3% 11.4%

	water and soap before and after patient care	Rarely Never	1 1	0.8% 0.8%
Q.31	Have you witnessed other nurses skippinghand hygiene procedure	Always Often Sometime sRarely Never	10 18 28 52 32	7.1% 12.8% 20% 37.1% 23%
Q.32	Are they washing theirhands with water and soap after touching blood, bodily fluid and contaminated item	Always Often Sometime sRarely Never	115 16 8 1 0	82.1% 11.5% 5.7% 0.7% 0
Q.33	Are they wearing a clean gown during patient care	Always Often Sometime sRarely Never	16 28 60 20 16	11.4% 20% 42.8% 14.2% 11.4%
Q.34	Do they change gloves between contacts withdifferent patients	Always Often Sometime sRarely Never	9 15 24 37 55	6.4% 10.7% 17.1% 26.4% 39.3%

Q.35	Do they feel comfortable putting onand taking off PPE correctly to avoid contamination	Always	20	14.2%
		Often	49	35%
		Sometime	46	32.8%
		sRarely	18	12.9%
		Never	7	5%

Q.36	Do they practice high level disinfection wheresterilization is not applicable	Always Often Sometime sRarely Never	36 44 40 13 7	25.7% 31.4% 28.5% 9.2% 5%
Q.37	Do they follow hospital's guidelines forchoosing the appropriate disinfectant for different surfaces	Always Often Sometime sRarely Never	40 38 45 13 4	28.5% 27.1% 32.1% 9.3% 2.8%
Q.38	Avoid PPE in case ofemergencies	Always Often Sometime sRarely Never	19 36 49 15 21	13.5% 25.7% 35% 10.7% 15%
Q.39	Sufficient number of staff for patient care inwards to avoid infection	Always Often Sometime sRarely Never	42 59 33 6 0	30% 42.1% 23.5% 4.3% 0

Table 5.5 – Descriptive statistics of factors

Factors	N Statistics	Range	Minimum	Maximum	Mean	Standard deviation
Resource allocation	140	1	1	2	1.35	.377

Effective communicatio nand collaboration	140	3	1	4	1.65	.726
Policies and protocols	140	3	1	3	1.17	.333
Nursing professionalism	140	3	1	4	2.12	.659
Time pressure	140	3	1	4	2.14	.730
Attitude	140	2	1	3	1.88	.362
Knowledge	140	1	1	2	1.39	.249
Practice	140	1	3	4	3.54	.228

Table 5.6- Knowledge distribution

Knowledge	Adequate	Inadequate
Frequency	71	69
Percentage	51%	49%

Interpretation-

51% of nurses were having adequate knowledge of infection control while 49% of themare having inadequate knowledge.

Table 5.7 – Attitude distribution

Attitude	Positive attitude	Negative attitude
Frequency	92	48

Percentage	65.7%	34.3%

Interpretation-

65.7% of nurses were having positive attitude towards infection control while 34.3% of them are having negative attitude.

Table 5.8- Practice distribution

Practice	Safe	Unsafe
Frequency	84	56
Percentage	60%	40%

Interpretation-

60% of nurses were having safe practice of infection control while 40% of them are havingunsafe practice of infection control.

5.3 Results of objective 3:

Objective 3 - To analyse the relationship between organizational factors, individual factors and their impact on infection control practices

5.3.1: To test significant relationship between demographic variable against all factorsHypothesis 1:

H0: There is no significant relationship between age and factors of infection controlH1: There is significant relationship between age and factors of infection control

Table 5.9 – Age and factors of infection control

S. No	Demographic Variable	Factor	Chi-square statistic	p-value
1	Age	Resource allocation	8.197	0.414
2		Effective communication andcollaboration	14.539	0.139
3		Policies and protocols	5.116	0.529
4		Nursing professionalis m	22.0	0.142
5		Time pressure	5.428	0.942
6		Attitude	16.6	0.412
7		Knowledge	20.7	0.109
8		Practice	42.9	0.005

Interpretation:

From the above table we conclude that we can reject H0 at alpha level of significance forage and practice. Where as in all the other cases we accept H0 at alpha level of significance. Since we conclude that there is an association of age and practice and in all the other cases there is no association.

Hypothesis 2:

H0: There is no significant relationship between training and factors of infection control H1: There is significant relationship between training and factors of infection control

Table 5.10- Training and factors of infection control

S. No	Demographic Variable	Factor	Chi-square statistic	p-value
1	Training	Resource allocation	52.948	<0.001
2		Effective communication and collaboration	35.384	<0.001
3		Policies and protocols	93.58	<0.001
4		Nursing professionalism	40.984	<0.001
5		Time pressure	14.46	0.272
6		Attitude	13.75	0.617
7		Knowledge	70.936	<0.001
8		Practice	75.809	<0.001

Interpretation-

From the above table we can conclude that we can accept H0 at the level of significance for time pressure and attitude with training and accept H1. This means there is significantrelationship between training and resource allocation, policies and protocols, time pressure, knowledge and practice of infection control.

Hypothesis 3:

H0: There is no significant relationship between qualification and factors of infection control

H1: There is significant relationship between qualification and factors of infection control

Table 5.11- Qualification and factors of infection control

S. No	Demographic Variable	Factor	Chi-square statistic	p-value
1	Qualification	Resource allocation	15.942	0.05
2		Effective communication and collaboration	11.772	0.301
3		Policies and protocols	58.992	<0.001
4		Nursing professionalism	172.963	<0.001
5		Time pressure	21.881	0.039
6		Attitude	25.509	0.490
7		Knowledge	29.236	0.505
8		Practice	28.298	0.248

Interpretation:

From the above table we can conclude that we can accept H0 at the level of significance for effective communication and collaboration, knowledge, attitude and practice with qualification and reject H1. This means there is significant relationship between training and resource allocation, policies and protocols, time pressure, knowledge and practice ofinfection control.

5.3.2: Test to find the significant association between organizational and individual factors of infection control

Hypothesis 4:

H0: There is no significant association between organizational and individual factors ofinfection control

H1: There is significant association between organizational and individual factors On infection control

Table 5.12: Correlation between organizational and individual factors

Variables	Pearson correlation value (r)	Level of significance	Hypothesis
Organizational and individual factors	0.605	<0.001	H0: rejected H1: accepted

Table 5.13: Correlation Strength

Strong correlation	(|r| > = 0.6)
Moderate correlation	(0.3 < = |r| < = 0.6)
Weak correlation	(|r|< 0.3)

Interpretation: There is a strong correlation between organizational and individual factorswith a coefficient value of 0.605 (p <0.001). Hence, we reject null hypothesis and accept alternate hypothesis.

Hypothesis 5:

H0: There is no association between organizational factors and practice of infectioncontrol

H1: There is no association between organizational factors and practice of infectioncontrol

Table 5.14: Correlation between organizational factors and practice

Variables	Pearson correlation value (r)	Level of significance	Hypothesis

Organizational factors and practice	-0.047	0.581	H0: accepted H1: rejected

Interpretation:

There is a correlation between organizational factors and practice of infection control with a coefficient value of -0.047 (p >0.05). Hence, we accept null hypothesis and reject alternate hypothesis.

Hypothesis 6:

H0: There is no association between individual factors and practice of infection control H1: There is no association between individual factors and practice of infection control **Table 5.15: Correlation between individual factors and practice**

Variables	Pearson correlation value (r)	Level of significance	Hypothesis
Individual factors and practice	-0.043	0.616	H0: accepted H1: rejected

Interpretation:

There is no correlation between individual factors and practice of infection control with a coefficient value of -0.043 (p >0.05). Hence, we accept null hypothesis and reject alternate hypothesis.

Pearson correlation among all factors-

Table 5.16: Pearson Correlation among all factors

Correlation	Resource allocation	Effective communication and collaboration	Protocol and policies	Nursing professionalism	Time pressure	Knowledge	Attitude
Resource allocation	1	0.430	**.617**	**.737**	.280	.329	-.015
Effective communication and collaboration	0.430	1	.476	**.773**	.270	.102	.052
Protocol and policies	**.617**	.476	1	**.777**	.271	.366	-.092
Nursing professionalism	**.737**	**.773**	**.777**	1	.376	.301	-.019
Time pressure	.280	.270	.271	.376	1	.047	.173
Knowledge	.329	.102	.366	.301	.047	1	-.295
Attitude	-.015	.052	-.092	-.019	.173	-.295	1

Interpretation:

Positive Correlation (significant p-value <0.05)

- Resource allocation and policies and protocols (r = 0.617), strong positive correlation, indicating that availability of resources closely associated with the policies and protocols of the hospital

- ❖ Resource allocation and nursing professionalism (r= 0.737), strong positive correlation, indicating that availability of resources closely associated with the profession of the nurses in the hospital
- ❖ Effective communication and collaboration and nursing professionalism (r= 0.773),strong positive correlation, indicating that effective communication and profession of nurses are closely associated
- ❖ Nursing profession and protocol and policies (r = 0.777), strong positive correlation, indicating that policies and protocols are closely associated with the nursing profession
- ❖ Nursing professionalism and qualification (r = 0.595), moderate positive correlation, indicating that nursing professionalism and qualification are closely associated with each other

Negative correlation: (Significant p-value < 0.05)

- ❖ Attitude and knowledge (r = 0.295), weak negative correlation, indicating knowledge and attitude are weakly associated with each other

5.3.3: Test to find the significant relationship between factors of infection control andimpact on practice

Hypothesis 7:

H0: There is no significant relationship between factors of infection control and its impacton practices

H1: There is significant relationship between factors of infection control and its impact on practices

Table 5.17: Model summary

Model	R	R Square	Adjusted R square	F	Significance
1	.396	.157	.084	2.163	0.020

Interpretation:

R- The correlation coefficient (R = 0.396) indicates the strength and direction of the linear relationship between the factors and the practice.

R square- The coefficient of determination (0.157) indicates approximately 15.7% of thevariance in the dependent variable (practice) can be explained by the factors.

p-value- The significance value is 0.020 which is less than 0.005, suggests that overall regression model is statistically significant.

Table 5.18: ANOVA

Model	Sum of square	Mean square	F	Significance
Regression	1.259	0.114	2.163	0.020

Interpretation:

The p-value 0.020 indicates that overall regression model is statistically significant. Since p-value 0.020 is less than alpha level of 0.05, which means that the factors collectively have a significant impact on the practice of nurses.

Table 5.19: Regression to analyse the factors impact on practice

Model	Unstandardized coefficient (B)	Standardized coefficient (Beta)	t	P
Constant	3.372		22.328	<0.001
Resource allocation	-0.078	-.226	-2.467	**0.015**
Effective communication and collaboration	.017	.083	.940	0.349
Protocol and policies	.009	-.017	-.172	0.863

Nursing professionalism	.043	.144	1.191	0.236
Time pressure	0.009	.038	.311	0.756
Qualification	.021	.047	.484	0.629
Training	.038	.196	2.357	**0.020**
Age	.002	.006	.068	0.946
Experience	.034	.161	1.893	**0.061**
Attitude	-.016	-.049	-.526	0.600
Knowledge	-.017	-.059	-.675	.501

Interpretation:

Statistically significant factors- Resource allocation (negative) and training, this indicatesthat these two are having significant impact on the practice of nurses.

Marginally significant factor- Experience (0.061), this indicates experience is having marginal impact on the practice of nurses.

Non-significant factors- Policies and procedures, effective communication and collaboration, time pressure, age, knowledge, attitude are having no impact on the practice of nurses.

5.4 Discussion:

The demographic analysis of the nurse population reveals that females dominate the population at 67.9%, while males constitute 32.1%. This gender distribution is consistent with the global trend where nursing is predominantly a female-dominated profession. Theage distribution shows that most nurses belong to the age group of 20- 25 years (43.6%) and 26-30 years (32.1%), with only 24.3% belonging to the age group above 30 years. Thissuggests that the majority of nurses are relatively young and early in their careers.

The experience distribution shows that most nurses have 2-3 years of experience (48.6%),followed by those with more than 5 years of experience (25%). This suggests that the majority of nurses are relatively new to their profession.

The educational qualifications of nurses indicate that most have a basic degree in nursing(60%), followed by diploma holders (35.7%), and only a small percentage have a master'sdegree or higher (4.3%). This suggests that the majority of nurses have a basic educationalbackground in nursing. In this study 51% of nurses are having adequate knowledge of infection control which is below average, similarly 60% are having safe practice of infection control which is average.Individual factors such as age, training, and qualification showed moderate to weak correlation with the practice of infection control, leading to the acceptance of the null hypothesis for these variables unlike Kangoya *et al* (2023) showed no correlation with the demographic. Strong correlation between Organizational and Individual Factors (r= 0.605, p= <0.001), indicating a significant relationship. This suggests that these factors are interrelated and both contribute to the overall effectiveness of infection control practices which contradict the study of infection control practices. Organizational factors and practice of infection control had no correlation (r = 0.047, p= 0.578) indicating no significant relationship. Which is contradicting with the study model of *Lee and Jun (2022)*. The results of a study by Kumar et al. (2022), which discovered that time pressure did notsignificantly influence infection control practices among nurses, are consistent with

the absence of a significant correlation between time pressure and infection control practices.

but contraindicating the finding of Lee and Jun (2022) of among nurses. This implies that other variables, like organizational and personal variables, might be more important in deciding infection control procedures.

In the healthcare industry, resource allocation describes how funds, personnel, and equipment are distributed among various patient care domains. Research has indicated a noteworthy association between the professional conduct of nurses and the distribution of resources.

Well-resourced healthcare settings help nurses carry out their responsibilities more successfully and uphold professional standards, claim in study of Johnson et al. 2020. Forinstance, having enough staff members helps nurses avoid burnout and spend more timewith each patient, improving care quality and promoting appropriate behaviour. The provision of treatment that complies with defined protocols and procedures is made possible by the availability of medical equipment and supplies, which further fosters professionalism among nurses. On the other hand, insufficient resource distribution maycause nurses to become more stressed out, be dissatisfied with their jobs, and behave lessprofessionally. Research by Smith et al. (2019) demonstrated the crucial role resource allocation plays in nursing professionalism by showing that nurses working in settings with limited resources were more likely to encounter moral conundrums and were less able touphold professional norms.

In nursing, professionalism entails a dedication to adhering to established standards and procedures. According to research by Brown et al. (2021), nurses with high levels of professionalism are more likely to follow clinical recommendations to the letter, which improves patient outcomes. This adherence is often driven by a deep sense of responsibility and accountability, which are core

components of nursing professionalism. Additionally, the research by Green et al. (2022) showed that maintaining high levels of adherence to protocols and procedures requires continual professional development andtraining.

Continuous education and professional development give nurses the tools they need to stay current with emerging best practices and increase the likelihood that they will applythem successfully in their day-to-day work. On the other hand, a lack of professionalism may result in straying from approved procedures, endangering patient security and the standard of treatment. It is impossible to exaggerate the significance of upholding strict professional standards to guarantee protocol adherence. Effective resource allocation training, according to Johnson et al. (2020), enables nurses to manage and utilize resources effectively, which is essential to upholding high standards of professional practice. In the identical way, thorough policy and protocol training guarantees that nurses follow set protocols, which lowers errors andenhances patient outcomes in Brown et al. (2021). In addition, nurses are kept up to date on the newest advancements and best practices in healthcare through ongoing knowledge enhancement via training, which promotes a culture of professionalism and excellence (Green et al., 2022).

On the other hand, the lack of a substantial relationship between nurse professionalism and time pressure implies that, although time restrictions are a common problem in the healthcare industry, they do not always prevent professional behaviour. This result is consistent with that of Taylor et al. (2019), who discovered that organizational and systemic support can lessen the negative effects of time pressure, enabling nurses to remain professional in the face of difficult work situations. Therefore, in order to maintainand advance nursing professionalism across a variety of healthcare settings, the emphasis should continue to be on improving training in resource management, policy adherence, and knowledge development.

It's captivating to consider that there is no significant relationship ($p = 0.505$) between knowledge and qualifications, suggesting that having more qualifications may not always transfer into having more knowledge in real-world situations. This result is consistent with the findings of Taylor et al. (2019), who pointed out that although

credentials offer a basicknowledge base, continuous professional development and real-world experience are

crucial for keeping nurses abreast of changes in the healthcare industry. To close this knowledge gap and guarantee that nurses maintain thorough and up-to-date information,ongoing education and training programs are required.

From regression model, resource allocation (beta= 0.226, p= 0.015) and training (beta= 0.196, p=0.020) are statistically significant factors affecting the infection control practices of nurses, underscoring the importance of these elements in healthcare settings and it was found to explain 15.7% of impact on infection control practices (F= 2.163, p= 0.020). In *Lee and Jun* (2022) study availability of resources had shown no impact on the practiceof infection control which is contradicting to this study. Atalla, Aboalizm, & Shaban (2020), study indicate that training was having impact on nurses practice of infection control which is align to this study. Factors such as policies and procedures, effective communication and collaboration, time pressure, age, knowledge, and attitude were found to have no significant impact on infection control practices which is also importantfor the infection control practice.

Effective communication and collaboration have a coefficient of 0.017 and a p-value of

0.349. This suggests that, although not statistically significant, good communication andteamwork have a favourable impact on the dependent variable. Kourkouta and Papathanasiou (2014) assert that good communication between medical teams is necessary to ensure patient safety and high-quality treatment. Regression analysis doesnot reveal a significant effect, but other research indicates that improving nurses' communication abilities can promote better teamwork and better patient outcomes. The dependent variable and nursing professionalism have a positive but non-significantassociation, as indicated by the coefficient of 0.043 and p-value of 0.236. In nursing,professionalism entails upholding moral principles, ongoing education, and a dedicationto providing high-calibres care. According to Johnson et al. (2020), nurses who exhibit highlevels of professionalism provide

better patient care and report higher levels of job satisfaction. The significance of nursing professionalism cannot be overstated, even

though the regression analysis does not reveal a statistically significant effect. This is because nursing professionalism enhances the overall standard of healthcare delivery.

5.5 Recommendations

- **Regular assessment of training is necessary to improve the knowledge of nurses**: Continuous evaluation of training programs is essential to ensure that nurses remain proficient and knowledgeable about the latest healthcare practices and protocols. By identifying knowledge gaps and areas needing improvement, regular assessments help maintain high standards of care and enhance the overall competence of nursing staff, ultimately leading to better patient outcomes.
- **Availability of resources for good and safe practice of nurses**: Providing nurses with the necessary tools, equipment, and materials is crucial for delivering high- quality and safe patient care. Adequate resources include access to up-to-date medical information, guidelines, and support systems. Proper resource allocation prevents errors, reduces stress, and promotes an efficient healthcare environment, ensuring that nurses can perform their duties effectively and safely.
- **Encouraging a culture of safety and collaboration through better communication and organizational practices could further enhance infection control efforts**: Fostering a culture that emphasizes safety and collaboration is vital for effective infection control. Clear communication within the healthcare team ensures everyone follows proper protocols, while organizational practices that promote teamwork and a shared commitment to safety lead to better patient outcomes. This collaborative approach helps reduce healthcare- associated infections and enhances overall patient care.
- **Importance of reducing time pressure on nurses, which, while not directly significant, could improve the quality of care provided**:

Reducing time

pressure on nurses allows them to spend more time with each patient, leading to thorough assessments and personalized care. Decreasing demands on nurses' time can reduce burnout and job-related stress, improving their performance and job satisfaction. Although not directly linked to infection control, giving nurses more time can indirectly contribute to better adherence to safety protocols and a higher standard of patient care.

6. Conclusions and Future Directions

This chapter will provide with the conclusion of the study and give future directions to research scholars on the areas where future studies can be executed.

6.1 Conclusion:

This study proved that not only the knowledge, attitude and practice of nurses plays an important role for infection control. There are other factors also that are contributing towards the infection control practice of nurses in hospital. The study revealed that nurses were having average level of knowledge, attitude and practice towards infection control in that hospital.

This study identified the factors related to the organization and individual for infection control the hospital. More training is required to improve the knowledge, attitude and practice of infection control. The study's findings highlight the critical role of organizational support and structured training programs in enhancing infection control practices among nurses. The moderate correlation between organizational and individualfactors suggests that both personal and systemic elements, is essential for effective infection control. While demographic factors like age and qualification did not show a direct impact, the significant influence of resource allocation and training emphasizes theneed for well-supported healthcare environments. The non-significance of policies and procedures suggests that merely having these in place is insufficient; their effective implementation and regular updates are crucial. A study also points to the importance of reducing time pressure on nurses, which, while not directly significant, could improve thequality of care provided. Encouraging a culture of safety and collaboration through better communication and organizational practices could further enhance infection control efforts. Over-all, the study underscores the need for comprehensive strategies that

integrate training, resource management, and organizational support to improve infection control practices in healthcare settings.

In order to increase nurses' qualifications and, consequently, their ability to allocate resources, follow protocols, and manage their time more effectively, healthcare facilitiesshould place a high priority on advanced education and training for nurses. To make surethat nurses' knowledge is current and applicable, an emphasis on continuing professionaldevelopment should also be made.

Investing in nursing education and training improves patient outcomes and overall healthcare quality in addition to improving individual performance. These considerations should be taken into account by hospital administrators and policymakers when creating educational initiatives and allocating funding for nursing staff development.

6.1.1 Limitations:

- The sample were collected based on convenience sampling and with small samplewhich led to biased sampling study
- The data was collected only from one hospital
- Only nurses were included in the study other health care workers might alsoincluded
- Time frame was less to study the whole factors in detail

6.2 Future Suggestions:

- Future research should focus on expanding studies to include a broader range of hospital and consider the unique characteristic of different healthcare setting to better understand the relationship between organizational and individual factorsof infection control practices
- Developing administrative intervention programs and continuous education initiatives for healthcare staff is key to improving infection control practices and reducing infection in limited resource setting

- It is crucial to foster an organizational factor that support to enhance the hospitalenvironment which help in preventing infection among healthcare workers.

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