

Infection control training effectiveness in reducing hospital acquired infections among nurses at Chinese maternity specialist hospital Seremban

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This research evaluates the impact of infection control training in enhancing reduction of hospital-acquired infections (HAIs) among the health professionals at Chinese Specialist Hospital Seremban. Hospital-acquired infections (HAIs) pose considerable risks to policies associated with infection control. Hence, an examination was done on the impact of structured infection control programs and the targeted rates of HAI, putting much focus on the association between the knowledge of Nurses and the adherence to the infection prevention practices. For this reason, quantitative data analysis was adopted where the relevant data was collected using the questionnaire technique measuring knowledge of nurses, adherence levels, and HAI adherence after and before the training interventions. Findings of this study revealed a positive correlation between HAI reduction and infection control training, putting much emphasis on the need for continuous education to sustain patients' safety improvements. Additionally, this study contributes to the wider understanding of training interventions within the healthcare industry, suggesting that compliance and enhanced knowledge can significantly result to reduction of Hospital-acquired infections (HAIs) in maternity hospitals settings.

1.1 Background to the Study

Hospital-acquired infections (HAIs) or nosocomial infections are considered an enormous problem in healthcare facilities globally. These are infections that a patient is likely to get while seeking healthcare and most of them develop in hospital but they may develop in other healthcare settings which is a danger to patient safety as well as healthcare organization efficiency (Alhumaid et al., 2021). According to the World Health Organization (WHO), HAIs remain a widespread problem with millions of patients develop them annually thereby contributing to worsened morbidity and mortality and increased cost of health care. HAIs increase the length of stay and produce a great toll in healthcare resources, particularly in contexts where there is scarcity of resources (Bayleyegn et al., 2021). HAIs also affect the confidence that the patient's family or the patient has in the health care systems making the burden of overall health systems even worse in public health.

HAIs are a significant problem in Malaysia even after attempts have been made to reduce the rate of infections. A number research works has demonstrated that Hospital Acquired Infections impact the patient and health care workers in many ways, including prolonged hospital stay, enhanced antibiotic resistance, and, in some circumstances, deaths (Blot et al., 2022). The Chinese Maternity Specialist Hospital in Seremban is similar, which is typical of maternity hospitals because the

procedures that are performed put pregnant women and newborns at a higher risk of infections. Furthermore, nursing staff that are exposition to patient are susceptible to infections and may pass it to others hence are central to infection control.

To overcome these challenges, infection control programs have been initiated for promoting good personal hygiene practices surrounding patient isolation, and for upgrading the structural capacity of patient care institutions. Nevertheless, the reported incidences of infections plateau or increase and the hospitals never cease to search for better solutions to the infection control means. This warrants some study into the training courses which have been instituted for healthcare workers especially the nurses since they are the most interface to the patients and are involved in infection control (Cole & Barnard, 2021). In this case, it stands out that education of the nurses with the aim of enhancing the ability of identifying, preventing as well as minimizing infections is significant to the reduction of HAIs.

The importance of infection control training is raised to the extent of obtaining necessary knowledge and skills to follow the regulation as healthcare personnel. According to Haque et al. (2020), this training also addresses enhanced adherence to the hospital guidelines in the use of personal protective gears, and cleanliness or infection control measures in relation to patients. However, not all the time this type of training is

effective in preventing or controlling the spread of infections in the health care facilities. This gives rise to some concerns about the adequacy of the training activities and the effectiveness of translating these training programs into improved outcomes, as measured by rates of HAI.

Finally, technical competence which concerns effective measures towards controlling infections is an important aspect of Institutional preparedness. This comprises of issues to do with staffing number, resource like protective gears and Sanitizing apparatus, as well as physical capacity of the hospital. Some of the protective and response staking points include, institutional response abilities, availability of resource and compliance with safety measures to curb the spread of infections. In the same way, technical system limitations, challenges of inadequate staff or proper equipment will negate even the sound efforts of infection control contributing to increased infections.

In this paper, a case study of The Chinese Maternity Specialist Hospital in Seremban offers a basis for focusing on infection control training and the extent to which it helps in fighting HAIs. Because it operates as a maternity hospital, it is particularly exposed to such threats because of the higher density of invasive procedures and the patient's susceptibility. What it calls for therefore is stronger infection control measures particularly in the workplace environments that are likely to entail constant training of the staff alongside strong and unwavering compliance with safety measures on the ground as well as strong support for institutional policies on the same. An important part of HAIs prevention is nurses because they are directly involved in patients' treatment. Therefore, the knowledge of the effect of the implemented infection control training will contribute to improving patients' outcomes as well as the effectiveness of healthcare organizations.

In addition, skills in understanding, recognizing, and implementing healthcare infection control policies are essential if those measures are to reach their potential of improving patient safety. Educational interventions are structured to increase knowledge of healthcare workers on infections threats and precautionary measures to be taken. However, such a training program depends on the levels of compliance of the staff members. Lack of compliance to ICPs might result

in nurses being agents of spread of infections despite the nurses having been trained. This emphasizes the value of trainings which are delivered to health care institutions but also the organizational culture which supports compliance.

This study seeks to filling the gaps by establishing the effectiveness of the available infection control training programmed on the reduction of HAIs among nurses in Chinese Maternity Specialist Hospital. This part of the study aims at ascertaining the factors that increase the success of measures in place to prevent and control infections within healthcare facilities through establishing the correlation between knowledge of the HCW, compliance to policies and institution readiness. The study will compare the hospital's infection control measures, analyses the integration of institutional readiness strategy, and the training courses meant to prepare nurses for the prevention of infection transmission. The results will be useful for improving the infection control measures for the purpose of lowering the incidence of HAIs in the hospital.

Hospital acquired infections are not only a local health problem; they are an international issue and therefore, there should be implication of managing HI thriving assessment of current practices and measures. Many papers have established the efficacy of several polymerase chain reaction measures, but these measures vary depending on the setting, which is why research needs to persist to make infection control measures ideal for different healthcare facilities. For example, infection control analysis to reveal the level of compliance in Egyptian maternity hospitals evidences overcrowding, insufficient staff, and inadequate resources as explanations of heightened incidents of infection. Besides, there are other factors affecting the levels of competency on aspects of infection control policies, including knowledge, organizational culture, and resource adequacy of the health care personnel.

The Chinese Maternity Specialist Hospital is a suitable study site due to its sensitivity of the patient group at the site that consists of pregnant women and new burns and high significance of proper practice standards in infection control measures in a setting such as this. A critical assessment of knowledge acquired in infection control training among nurses at this hospital will be significant to understanding the possibility of

protecting health care workers as well as patients from acquiring HAIs. The conclusions made by the study may also be of value to other healthcare organizations in Malaysia and other countries where the problem of infections has not yet been fully solved.

1.2 Problem Statement

HAIs also referred to as nosocomial infections remain to be a huge problem in healthcare facilities around the world with effects on patient safety, costs, and length of stay. Such infections, which a patient contracts from other patients, healthcare workers, or the environment while seeking treatment for other illnesses, are a result of a myriad of factors including; lack of proper adherence to ICPs, poor staff training, medication and facility shortcomings, and poor institutional preparedness (Hillier, 2020). The WHO estimates that more than 15% of hospitalized patients worldwide are affected by HAIs with developing and underdeveloped countries being most affected by the problem basically because these countries lack the necessary amenities, infection control measures and proper training of their personnel.

In Seremban-Malaysia, the Chinese Maternity Specialist Hospital has observed high levels of HAIs which has triggered questions on the present infection control measures as well as the competence of health care staff in the prevention and control of infections (Jin et al., 2020). Nevertheless, HAIs remain an ongoing concern, with prevalent types being UTIs, SSIs, RIs, etc., even though infection control policies had been adopted. This state of affairs gives rise to several concerns about the current training courses available, the theoretical and practical understanding of the how's about infection control measures, and the general hospital responses to these infections.

Ineffectiveness of Existing Infection Control Programs

Although the hospital has put in place some measures of infection control for instance use of PPE, cleaning and disinfection of surgical instrument etc., this itself do not guarantee the lowering of rate of HAIs. Although these measures are necessary, they fail to capture various aspects of infection transmission control in healthcare facilities especially concerning compliance in infection control measures by the

health care givers McMullen et al. (2020). This is particularly important to nurses because of the direct and or continuous interaction they have with patients and thus key players in HAI prevention.

A question that will often pose itself is how effective healthcare facilities are in the implementation of these infection control measures. Several studies have found that whenever members of the healthcare team neglect to scrupulously follow Universal or Standard Precautions, they are still able to transmit infections. This lack of adherence could have arisen due to inadequate training or perhaps due to a poor appreciation of the broader concerns attached to infection control measures (Ojanperä et al. 2020). If the promoters of the system do not understand the value of these measures or lack adequate skills to apply them as planned, then the protocols serve little purpose. This has implications for the present training approaches for infection control because these training may not have been addressing these gaps.

Another is that infection control trainings that are usually carried out in hospitals on HCWs are somehow unidentified as to whether they elicit appropriate and sustainable HCW behavior change. One of these is in relation to the problem of whether these training sessions actually teach knowledge or whether they effectively promote changes that can engage infection control on a continuous basis (Roshan et al. 2020). The success of a training program can also be determined by factors such as, the method of delivery, the frequency of training in addition to the level of involvement from the health care staff. If the training being administered does not cover distinctly different units within the hospital or if it does not consider various factors involved in implementing infection control moralities in areas most vulnerable in, for instance, maternity wards, then the training would not produce the needed results.

Furthermore, it is clear that training programs cannot be fixed and static, since they have to address the actual Infection control problems found in various hospital subspecialties. For instance, in maternity wards, the relative risk of developing an infection is high since both, mothers and their babies are susceptible. Preventing infections in such a location demands higher levels of awareness and understanding of

what is at stake. Due to the foregoing arguments, if infection control training does not address these specific areas, then HCWs will not be well prepared to address infection prevention in such a vulnerable area. This block in the training could result in further development of HAIs even when there are set pattern on infection control.

In addition, the training is not only about the quality of procedures that are conducted, but also the general acceptance of those procedures by the hospital. People in the healthcare field need to be daily prompted on the need to maintain good hygiene and there should always be measures to penalize them for failing to do so. Maintenance of audit of ants, feedback and training courses which refresh the principles of Infection Control should be implemented in an ongoing manner in order to create a reminder that the Health Care workers must stick to protocols stringently.

In summary, though fear of infection including PPE and sanitizing tools, etc. are important barriers to the incidence of HAIs, it is not enough to ensure that the situation is improved substantially. Hence, implementation of these measures depends on compliance by health care personnel and results from the infection control training programs. This means that training should be targeted to various units in the health facility and should address the issues that are likely to crop up in sensitive sectors. However, raising favorable awareness of compliance and accountability is necessary to ensure that infections are within the guidelines permanently. Without these additional efforts the above outlined goal of substantially decreasing HAIs may not be achievable.

Knowledge Gaps and Healthcare Workers' Compliance

Another cause of HAIs which persist in the Chinese Maternity Specialist Hospital includes inadequate information by the health care workers especially the nurses on the infection control standard outlined by American Society of Health-System Pharmacists (ASHP). This lack of knowledge is worrisome especially in maternity environments because infection control is more sensitive depending on pregnant women and neonates. Delivery suites and maternity units are challenging in infection control due to vulnerability of the newborn and pregnant woman to infections and their complications respectively.

With these, there lies crucial need for nurses and other health care personnel to have adequate knowledge and skills in the appropriate infection control measures targeting MNC.

However, there is emerging empirical evidence that a considerable proportion of HCWs, and specifically nurses, may be unaware of or non-compliant with many of these fundamental infection prevention measures. This lack of compliance and poor understanding has potential of being fatal to patient safety. HAIs not only put the patient at risk of getting more severe illnesses and complications but also the length of their hospital stay increases, costs of treatment sky rocket and there is even a risk of death especially among infants and expectant women. Thus, an increase of awareness and adherence to infection control by nursing personnel would contribute to the prevention of HAIs in the identified childbirth facilities.

Compliance with infection control measures among modern HCWs presupposes not only the possession of certain kinds of knowledge and proper behavior but also the attitude to infection control measures as well. Education remains cornerstones of infection control practices and there is great potential that workers who lack education may in fact propagate the spread of infections. For example, if nurses have no knowledge of how to sterilize medical equipment appropriately or have no knowledge on the need to observe good hand hygiene practices they act as vessels in increasing the rates of HAIs. This is especially important in maternity wards since infants have a prone immune system to infections including sepsis.

Nevertheless, it is not sufficient to possess some knowledge. Infection control knowledge also refers to healthcare workers having the right attitude toward infection prevention, that is being compliant, committed and appreciating the role of employment in eradicating infections. However, even when the healthcare workers are informed on the infection control precaution, they may lack the desire to practice it always. If nurses are overworked, if there is lack of enough staff in an institution or if the staff is not trained well enough then there are high likelihood of compromise of infection control measures.

There are two major areas namely structure and behavior that are equally essential in infection control. However, if our healthcare workers know the facts but have the wrong perception about HAIs and do not adhere to appropriate infection control behaviors repeatedly, the rates of HAIs will still be high. For instance, not washing our hands after handling a patient and before touching another or putting on personal protective equipment / removing them incorrectly because doing so spreads infections. Consequently, there is a need to not only inform the HCWs on infection prevention but also provide reinforcement of those principles through training, evaluation indeed.

Since prevention of HAIs is a concern at the Chinese Maternity Specialist Hospital, there is a necessity of conducting an evaluation of knowledge and adherence of the health care personnel to the principles of infection control. Although prior studies assessed the knowledge, attitude, and practice of healthcare workers and patients regarding infection prevention measures, those surveys allowed hospital administrators to identify the gaps that need to be addressed in order to enhance the adherence of both stakeholders to recommended infection controlling practices. This may include offering more incentives for training aimed at familiarizing workers with infection control measures; making infection control essentials easily accessible; and revising the monitoring and reporting systems to ensure that health care workers especially the nurses; are punitive when they are observed to be in defiance of recommended measures to prevent infections. These measures truly from the four spheres alone can give the hospital a fighting chance at decreasing the frequency of HAIs and enhancing the treatment of patients.

Institutional Preparedness and Resource Constraints

Other areas that the author establishes may lead to HAIs include organization and staffing issues that pertain to the overall readiness of the hospital and the availability of requirements among them personal protective equipment. In this connection, the preparedness of the institution greatly influences the effectiveness of the measures on infection control. Forcing, Hospitals which do not have independent personals or inadequate infection control intuitions are more likely to

experience difficulties in implementing proper infection prevention standards.

At the Chinese Maternity Specialist Hospital, some of the resources include scarcity of medical equipment, space and personnel for infection control, overcrowded wards and insufficient or lack of effective instruments. For example, if the isolation wards in the hospital are inadequate or health care personnel lack adequate personal protective gear, infection control becomes almost impossible. In addition, the lack of professional human capital that addresses infection control requires supervision and monitoring, hence likely to be compromised.

Relevance of Infection Control Teams and Reporting Systems

This paper also established that another limitation that leads to the development of HAIs at CMSH is the probable inefficiency of the infection control teams, isolation, and reporting. Infection control is an important section which has a responsibility of ensuring that in healthcare facility, the HAIs are addressed efficiently. These teams are tasked with tracking the various infection rates, enforcing the policy as well as doing an analysis to see where the system could be flawed. But, if such teams are ill structured or lack powers to compel compliance with standards on infections control, then they might not be very productive as thought.

Like any other communication system, a weak reporting system may also result in slow intervention when there are outbreaks of infections in the hospital. At the center of infection rate monitoring and subsequent action is a well-organized reporting system. Inadequate reporting systems or failure to use the reporting system to its optimum by the health care personnel is a major issue, because in the instance where reports go unreported, infections continue to spread. Compliance with the user, accessibility and reliability requirements is a critical component of effective infection control reporting systems.

Analyzing the ongoing problems associated with HAIs in the Chinese Maternity Specialist Hospital it emerge that there is still a lot to do to enhance the performance of infection prevention and control. The issue is more complex and has been named as knowledge deficits, failure in infection control measures, preparing and training try

programs and constraints in organizations. Thus, this study eye to evade these challenges by assessing the rationality of the current infection control measures implementing in a hospital, estimating the level of the HCWs's knowledge and compliance with the infection control guidelines, and determining the correlation between institutional readiness and efficacy of implemented infection control interventions. Thus, by identifying the factors on which HAIs depend, this work will shed light on the possible ways to reinforce the infection control measures providing the healthcare setting with the necessary level of security for the patients and staff.

1.3 Objectives of the Study

1.3.1 General Objective

To evaluate the effectiveness of infection control programs and practices and the role of healthcare workers' knowledge, adherence to infection control policies, and institutional preparedness in reducing hospital-acquired infections at Chinese Maternity Hospital Seremban.

1.3.2 Specific Objective:

- a) To assess the impacts of infection control training programs on reducing hospital-acquired infections (HAIs) at Chinese Maternity Hospital Seremban.
- b) To find out the level of healthcare professionals' knowledge and adherence to infection control policies within their respective units.
- c) To determine the relationship between institutional preparedness (e.g., staffing, resources, infrastructure) and the effectiveness of infection control measures in reducing HAIs.
- d) To examine factors such as institutional preparedness, staff training, and resources availability that contribute to the spread or prevention of HAIs.
- e) To evaluate the effectiveness of infection control teams, isolation protocols, and reporting systems in preventing the spread of infections in healthcare settings.

1.4 Research Questions and Hypotheses

1.4.1 Research Questions

1. What are the impacts of infection control training programs on reducing hospital-acquired

infections at Chinese Maternity Hospital Seremban?

2. What is the knowledge and adherence of healthcare professionals to infection control policies, rules, and guidelines within their respective units?
3. What is the relationship between institutional preparedness for infection outbreaks and the perceived effectiveness of infection control measures among healthcare professionals?
4. What factors related to institutional preparedness (e.g., infrastructure, staffing, and availability of infection control resources) contribute to spreading or preventing infections within the hospital?
5. How effective are infection control teams, isolation protocols, and reporting systems in healthcare institutions?

1.4.2 Research Hypotheses

1. Null H1: Infection control programs and training do not significantly reduce hospital acquired infections (HAIs) at Chinese Maternity Hospital Seremban.

Alternate H1: Infection control programs and training significantly reduce hospital-acquired infections (HAIs) at Chinese Maternity Hospital Seremban.

2. Null H2: There is no relationship between healthcare professionals' knowledge and adherence to infection control policies and reducing HAIs.

Alternate H1: There is a relationship between healthcare professionals' knowledge and adherence to infection control policies and reducing HAIs.

3. Null H3: Institutional preparedness, including staffing, infrastructure, and availability of personal protective equipment (PPE), does not significantly associated with the effectiveness of infection control measures in reducing HAIs

Alternate H3: Institutional preparedness, including staffing, infrastructure, and availability of personal protective equipment (PPE), is significantly associated with the effectiveness of infection control measures in reducing HAIs

1.5 Significance of the Study

The significance of this study lies in its contribution to addressing one of the most pressing challenges in healthcare: acquired infections or complications during a disease that a patient contract while being treated at a hospital or other health care facility they are admitted in. Such infections not only endanger patient lives but also inflate costs, result in longer hospitality, and overburden available facility. Chong and colleagues have pointed out that high incidences of HAIs in the Chinese Maternity Specialist Hospital in Seremban are indicative of poor infection control programmers, non-commitment by health-care workers to policies banning hospital acquired infections and institutional vulnerability. The research findings of this study will fill existing research gaps concerning existing standard infection control practice and provide recommendations that may be useful in enhancing patient outcomes. Several key areas underscore the significance of this research:

Improving Patient Safety and Reducing Morbidity and Mortality Rates

This research study intends to achieve one of its major objectives, namely to assess how infection control training programs can lower the occurrence of HAIs and, therefore, enhance patient safety in the Chinese Maternity Specialist Hospital. HAIs are not joking issues considering their impact on patients' health and more so to sensitive persons such as expectant mothers and babies admitted in maternity hospitals. HAIs include sepsis infections, urinary system infections, and respiratory system infections, which cause increased morbidity and, at times, death.

Thus, through evaluating the current measures and protocols that are practiced for the prevention of infections and compliance to them by the health care workers this study will acquire important information on the reduction of these diseases. The prevention of HAIs will not only lead to enhanced quality of the patient care but also will decrease overall, avoidable mortality rates of patients who contracted nosocomial infections. The implication of this research in improving patient safety is profound because it has the potential to save the lives of many through

establishing practical approaches to dealing with a recurrent health problem.

Informing Healthcare Workers' Training Programs and Improving Compliance

Another potential strength of this study is that it targets healthcare workers mostly nurses, who are always in close contact with the patient. By adhering to or otherwise promoting standards of hygiene, healthcare workers can be a vital asset to efforts at preventing spread of infections. However, there are challenges in implementing and adhering to routinized infection controls in many centers. This research will raise questions as to whether current infection control training programs prepare health care workers adequately in infection prevention and control measures that would minimize development of HAIs.

The study will contribute to the existing literature by presenting specific gaps in knowledge and perceptions of infection prevention measures of healthcare staff of the Chinese Maternity Specialist Hospital. This will facilitate hospital administrators and policymakers to develop and implement a more appropriate and relevant training activities. Further, by determining factors that hinder the practice of infection-control measures by HCWs, this study will help develop a strategy for raising the standard of infection control knowledge among HCWs. Hence, there are increased chances of improving the training programs that will result in the achievement of long-term behavioral change that in turn will help in decreasing the HAIs levels.

Enhancing Institutional Preparedness and Resource Allocation

This study also aims at assessing the relationship of institutional readiness in reducing HAIs this encompasses; staffing, facility, and PPE. There are poor resource control in many of the healthcare facilities and this poses as a challenge to infection control programs. Understanding the direction and strength of the relationship between institutional preparedness and infection control outcomes of this study will be useful in directing hospital resources efficiently towards enhancing infection prevention.

For example, necessary implications might be better staffing, better isolation facilities or better

access to personal protective equipment. This study will therefore supply tangible quantitative information on the connection between resource supply and the capability of infection control functions which will assist in precise decision making at the hospital level. Implementing measures necessary to guarantee that the healthcare institutions meet the challenges related to control of infections is necessary to prevent hospital acquired infections and enhance the hospital quality. Thus, this study will be useful to hospitals and healthcare management to reduce their vulnerability and safeguard their personnel and clientele.

Contributing to Policy Development and Implementation

Infection control policies and protocols which are put in place therefore may be for an institution, a nation or the whole world and are driven by the current standard and guidelines. That being said, a policy is only as good as its application. This work will not only review the compliance of current measures in infection control the author will make recommendation on policy compliance in the hospital. Altogether, the research outcomes will have implications for hospital policy therefore possibly for overall health system policy.

It is likely that the results of the study will lead to changes in the recommendations on the measures concerning infection control, since pregnant women and newborns require special protection. Also, the study will shed light on the efficiency of isolation procedures measures, reportage systems, as well as infection control squads. These findings will be helpful to policymakers and hospital administrators as they can help the latter identify infection control issues relative to the specific reality's healthcare workers experience. Through closing the theoretical and practical gap, this finding will help in enhancing efforts at reducing infection rates through ideal practices that could be used at CMSH as well as other healthcare organizations that face similar issues.

Advancing the Field of Healthcare Research

These research findings will assist in filling the knowledge gap in the overall field of healthcare through offering proven data on the infection control training and practices, that help decrease HAIs. This research gap suggests that there has been a plethora of research studies on infection control in general, nevertheless it has been

established that the need to develop more special subject research studies for infection control particularly in special centered facilities like Maternity Hospitals. The contributions of this study will improve the pile of scholarly literature by detailing the features of infection control nursing in maternity care environments.

However, this research will employ quantitative to understand relationships between other factors for instance, {healthcare worker's knowledge institutional readiness and HAIs} Applying hypothesis testing using statistics will give the study sound evidence which will facilitate future research. Healthcare managers, infection control specialists, and other researchers focused on prevention and elimination of healthcare-associated infections will find the study's information useful for pursuing related research questions about training, policy compliance, and organizational readiness for infection control.

Improving the Reputation and Trust in Healthcare Institutions

Infections are greatly controlled through infection control measures and they determine the reputation of the hospital and the extent to which patients trust the hospital. HAIs can also lead to low patient and public confidence which increases dissatisfaction with health care institutions. Instead, when a hospital has a good record of proper infection control and patient safety, the members of the public will tend to believe in the particular health facility.

As this research is seeking to solve the problem of HAIs at the Chinese Maternity Specialist Hospital, its aim has the likelihood of enhancing both the hospital and the public image of this hospital. From the proposed research the hospital will be endowed with a right recommendations that will help improve its infection control hence creating confidence among the patients. Hospitals that have been proven to utilize measures that can prevent HAIs are essentially protecting the health of their patients and at the same time creating trust with the community they serve.

Consequently, the importance of this study comprises the ability to contribute in a significant manner to enhancing patient safety and the training of the healthcare workers; and shaping the readiness of the healthcare institution, in addition

to advancing the development of policies and healthcare research. By contributing to the prevention of hospital-acquired infection at the Chinese Maternity Specialist Hospital, this research hopes to contribute leads on the strategies that can lower infection rates as well as positively affect the quality of birth facilities. The implications of the results of this study will be informative to those in settings such as healthcare organizations and policy departments, as remarkably beneficial to overall progress in the healthcare field.

In essence, the importance of this study may be found in its implications for improvements in patient safety, education of healthcare workers, increased emergency readiness within an institution, enhancement of specific and general policies governing clinical practice and healthcare research. Thus, the purpose of this study is to offer practical recommendations for tackling the problem of hospital-acquired infections at the Chinese Maternity Specialist Hospital with the view of optimizing infection rates, patient experiences and the organizational conditions of maternity facilities. The implications of this study will extend to many healthcare centers, federal authorities as well as scientists to offer better safety in the medical field.

1.6 Definitions of Terms

Infection control and hospital acquired infections (HAIs) are the area of interests in this study. It is also important to define the key terms used in this study so that there will be understanding of the various terms in relation to infection control goals, training programs and institutional preparedness. Located within this section are operational definitions that are relevant to this study, conducted in the Chinese Maternity Specialist Hospital in Seremban.

Hospital-Acquired Infections (HAIs)

Hospital acquired infection are infections acquired by the patients during a course of illness treated in hospital not present at the time of admission. HAIs include; urinary tract infections, pneumonia, sepsis, surgical site infections, among others. As for HAIs, they mean the infections that take place in the Chinese Maternity Specialist Hospital during or after the patients' treatment, thus revealing the main risks related to the maternity hospital, the population of which – pregnant

women and neonates belong to the susceptible groups.

Infection Control

Infection control is the acts and measures practiced in healthcare facilities to prevent the spread of disease throughout the population. This encompasses washing of hands, PPE, cleaning and use of medical devices, isolation of infected clients etc. In this respect, infection control is assessed concerning its practices within the framework of the Chinese Maternity Specialist Hospital aimed at reducing the transmission of HAIs through the dissemination of knowledge, staff development, and compliance with norms and guidelines.

Infection Control Training Programs

Infection control training programs are organized teaching activities aimed at increasing knowledge and practical skills of health care personnel required for the correct use of anti-epidemic means. Such programmers include washing lessons, PPE wearing, patient isolation measures, and controlling an infection spread. In this study, Infection control training is defined as the formal training activities implemented by the Chinese Maternity Specialist hospital and oriented towards the prevention of HAIs with treat health care workers including nurses.

Adherence to Infection Control Policies

Adherence is defined as, adherence to set standards of infection control measures and guidelines by the workers in the health sector. The mentioned policies are meant to minimize the possibility of acute and chronic infections, and guarantee the security of patients and employees. In this study, compliance is assessed by demonstrating that the healthcare workers at the Chinese Maternity Specialist Hospital perform the study behaviors – hand washing, wear appropriate PPE and carry out proper and frequent cleaning. Table 3 shows that non-compliance or inconsistent adherence contributes to the development of HAIs.

Healthcare Workers

Healthcare workers apply to all employees concerned with the care of the patient within a

particular health facility. This category encompasses the medical practitioners such as doctors, registered nurses and nursing sisters, midwives as well as non-professionals such as technician or cleaners who perform their duties in areas accessible to patients. In this research, the term “healthcare workers” is more or less confined to nurses engaging at the Chinese Maternity Specialist Hospital and those involved directly in patient care are crucial in eradicating HAIs through protective measures.

Institutional Preparedness

Institutional preparedness is defined as an organization’s ability to recognize, prevent, and control infections, as well as have the tools, resources, and manpower to do so. It also contains aspects such as adequate PPE availability, sterilization equipment and correct isolation wards. However, in this study institutional preparedness at Chinese Maternity Specialist Hospital is considered under the independent variable that determines the HAI control measures effectiveness.

Personal Protective Equipment (PPE)

Personal protective equipment (PPE) means the protective apparel worn by healthcare practitioners in order to minimize the risk of bringing and transmitting infections. The types of PPE are gloves, masks, gowns and face shields. In the context of this study, it is important to take a closer look at PPE as one of the components of infection control in the Chinese Maternity Specialist Hospital this study finds the aspect of PPE availability and proper use important in the prevention of spread of infections.

Isolation Protocols

Isolation protocols are processes that are utilized to control spread of communicable diseases through isolation of affected patients within proximity of non-affected individuals. These measures may include getting patients stay in different rooms separating medical equipment for RT PCR test from other equipment used in the health facilities, limiting the mobility of the health personnel when attending to suspected COVID-19 patients. In this study, measures relating to isolation in the Chinese Maternity Specialist

Hospital investment, the reduction of HAIs are assessed, as other approaches to infection control.

Effectiveness of Infection Control Measures

Effectiveness describes the success of implemented infection control practices and or programmers previously developed to realize the intended goals such as the containment of HAIs. In this study, effectiveness is defined by reduced HAIs in CSMH, increased level of compliance by all HCWs to infection control measures and the presence of institutional readiness.

Quantitative Research

Quantitative research refers to studying phenomenon, aiming at collection of measurable data and putting it through statistical analysis. Consequently, the present study will employ a quantitative research design to examine the connection between Infection control training, Adherence to infection control policies, institutional preparedness, and nosocomial borne HAIs in the Chinese Maternity Specialist Hospital.

Chinese Maternity Specialist Hospital, Seremban

This is the organization that provide healthcare services and where the study is carried out. The Chinese Maternity Specialist Hospital is a maternity hospital for pregnant women, new barns and maternity health related problems situated in Seremban, Malaysia. To achieve this study goal, the hospital’s organizational practices and physical layout will be examined to establish how exactly adherence to infection control precautions is achieved and how effective this effort is in minimizing HAIs.

CHAPTER 4

4.1 Introduction

This chapter aims to examine the findings collected throughout the course of the study to evaluate the impact of infection control training in the overall minimization of HAIs among nurses of the Chinese Maternity Specialist Hospital Seremban. The demographic characteristics of the respondents, frequency tables derived from the cross-sectional survey of the infection control program, the internal consistency reliability of the instrument used in the study, assumption of normality, Pearson correlation coefficients, and

multiple linear regression of the variables of interest are examined in the analysis section of the paper.

The purpose of presenting the findings in this section is to provide a clear and coherent description of the responses: the nature of the patterns that were identified. These findings highlight several areas including infection control programs, the knowledge of healthcare workers, and institutional preparedness that themselves to infection control and hence, the HAIs. The first demographics that were looked at in this chapter are the gender, age, medical specialty, and department of work of the participants. This demographic analysis helps in the background information needed to compare and contrast perceptions and behaviors of different healthcare workers to infection control measures.

After that, the descriptive statistics present the general findings for the answers to important questions that are oriented to the assessment of the participants' infection control training sufficiency and availability of efficient infection control policies in the hospital. These descriptive research results contribute positively towards establishing the general impression created about the general infection control measures and practices in the hospital among the healthcare staff.

Besides descriptive analysis, a reliability test using Cronbach's Alpha was also done to confirm the items used in the survey measured the right attributes: infection control training and Health care workers' knowledge. In addition, normality tests are carried out to test normality which is always demanded before applying higher-order statistics in the course of carrying out correlation and regression analyses.

The correlation and regression analyses are invaluable in determining the interactive effects of infection control programs, knowledge among healthcare workers, preparedness of institutions, and decrease of HAIs. These methods support the statement that benefits of the infection control training and HCWs' knowledge influence the decrease in HAI prevalence and again underline the role of strengthening guidelines and

institutional preparedness to improve the outcomes of the patients.

4.2 Analysis of Demographic Factors

		Frequency	Percent
GENDER	Male	97	48.5
	Female	103	51.5
AGE	18 to 24 years	42	21
	25 to 29 years	100	50
	30 to 34 years	38	19
	35 years and above	20	10
MEDICAL PROFESSION	Nursing	44	22
	Non-Nursing	104	52
	3	32	16
	4	20	10
WORKING_DEPARTMENT	Speciality Unit	58	29
	5001 to 1000 dollars	126	63
	Clinics	16	8
	Total	200	100

Figure 1: Participants' Gender

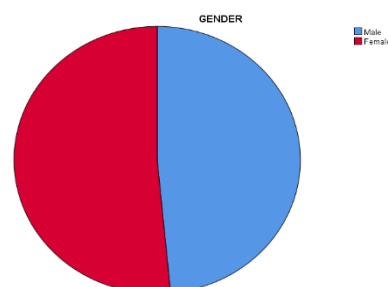
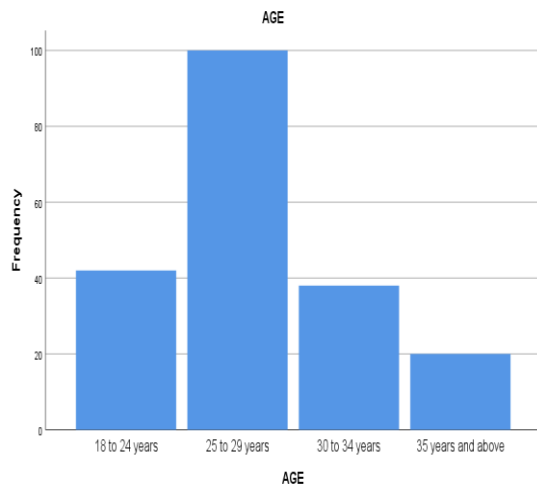


Figure 2: Participants' Age



This section of the study describes the demographic characteristics of the participants in the study with a view to illustrating the participants' response to infection control training and Hospital-acquired infections. Two hundred healthcare workers responded to the survey, and their data were analyzed according to gender, age, medical profession, and working department. Understanding these factors helps the discussion of the present study and focuses on how HCW subgroups deal with IM.

Almost equal numbers of males and females were participants in the study: 48.5% (n = 97 males), and 51.5% (n = 103 females). This fact helped to make the representation of the two genders nearly equal, allowing the study to accommodate all aspects of gender in its research. Sex may also influence how healthcare workers consider infection control measures based on compliance and training outcomes from studies indicating that males and females differ in these areas.

Concerning age, the majority of the participants were young adults; 50 % (n=100) of them being between 25 to 29 years of age. The second largest age group was 18 to 24 years with 21% (n=42) of the respondents. Cohort participants in the 30 to 34 years bracket comprised 19% (38) while the remainder, 35 years and above, was only 10% (20). As shown in the above age distribution, the Staff in the Chinese Maternity Specialist Hospital is comprised mainly of young employees in their productive years. This could have implications for the effectiveness of training programs to promote correct infection control measures because young people, those in the middle of their career, or those

hired after existing practice patterns were established might be much more likely to adhere to best practices than older workers.

The participants were also grouped according to their type of medical care profession. Out of the respondents, 22% (44) were nurses and 52% (104) were other non-nursing professionals. The last group included 26 % (n = 52) of other medical staff who might not directly interface with the patient but work within the medical setting. The fact that the majority comprises non-nursing staff shows that in addition to training directly linked with patient care, infection control education is relevant for other members of the healthcare facility as well since they contribute to the transmission of diseases within the hospital.

Lastly, the working departments of the participants were evaluated. As for specificity, 29% (n=58) of the respondents worked in a specialty unit; 63% (n=126) worked in general departments with a higher patient workload. There were clinics and they were included and these comprised 8% of the sample size (n= 16). This heterogeneity ensures that, within departments, all aspects of infection control practices are well understood as far as the ways of covering different areas of the hospitals are concerned.

In conclusion, the demographic study aims to give a descriptive nature of a diverse healthcare workforce in the Chinese Maternity Specialist Hospital and assists in determining the efficacy of various infection control training.

Descriptive Statistics

	N	Minim um	Maxi mum	Mean	Std. Deviati on
Do you have an infection control program at your institution?	200	1.00	2.00	1.6500	.47817
Have you received any form of training or orientation about infection prevention and control?	200	1.00	2.00	1.6200	.48660
How often is infection control training provided at your institution?	200	2.00	5.00	3.5700	.77983
Do you feel that the infection control training provided is adequate?	200	2.00	5.00	3.7600	.84020
Do you have infection control policies and guidelines in your unit?	200	1.00	5.00	3.7300	.72090

To what extent do you agree that all staff in your unit promptly follow infection control policies, rules, and guidelines?	200	1.00	5.00											
How confident are you in the effectiveness of the infection control policies in your unit?	200	1.00	5.00											
Do you think your hospital is prepared for any infection outbreak?	200	2.00	5.00											
In your opinion, what is the primary cause(s) of infection outbreaks in your institution? Breaching infection control policies, rules, and guidelines	200	2.00	5.00											
In your opinion, what is the primary cause(s) of infection outbreaks in your institution? No clear infection control policies, rules, and guidelines	200	2.00	5.00											
In your opinion, what is the primary cause(s) of infection outbreaks in your institution? Shortage of appropriate personal protective equipment (PPE)	200	2.00	5.00											
In your opinion, what is the primary cause(s) of infection outbreaks in your institution? Carelessness of healthcare workers	200	1.00	5.00											
In your opinion, what is the primary cause(s) of infection outbreaks in your institution? Inadequate infection control infrastructure	200	2.00	5.00											
Rate the following factors that contribute to the spread of infection in your hospital. Hospital infrastructure and design	200	2.00	5.00											
Rate the following factors that contribute to the spread of infection in your hospital. Lack and shortage of staff	200	1.00	5.00	3.73										.72090
Rate the following factors that contribute to the spread of infection in your hospital. No infection control training program	200	1.00	5.00	3.73										.72090
Rate the following factors that contribute to the spread of infection in your hospital. Insufficient resources to fulfill infection control requirements and needs	200	1.00	5.00	3.71										.84229
Rate the following factors that contribute to the spread of infection in your hospital. No infection control on-call	200	1.00	5.00	3.73										.72090
Does your institution have an active infection control team?	200	1.00	5.00										3.71	.84229
Do you think that all staff can differentiate between different isolation protocols (e.g., droplet contact)?	200	1.00	5.00										3.71	.84229
Do you have a list of reportable infectious agents available in your unit that is accessible to all staff?	200	2.00	5.00										3.57	.77983
Is your hospital enrolled in the national surveillance system?	200	2.00	5.00										3.60	.82669
Which types of infections are reported to the Ministry of Health (MOH)?	200	2.00	5.00										3.73	.61490
In your institution, is there a known turnaround time for laboratory results of the reportable infectious agents?	200	2.00	5.00										3.70	.62607
What type of reporting system do you have at your hospital?	200	1.00	5.00										3.70	.72984
In your opinion, what is the most effective reporting system for infectious agents?	200	2.00	5.00										3.78	.75794
Does your hospital have an emerging infectious diseases task force (dealing with outbreaks)?	200	2.00	5.00										3.76	.84020
To what extent do you agree that the surveillance tools used in your institution are effective in preventing or controlling infections?	200	1.00	5.00										3.73	.72090
Valid N (listwise)	200													

In this section, we describe the results of the analysis of the answers received from the healthcare workers of the Chinese Maternity Specialist Hospital regarding the training programs in infection control and related measures. A tabular display of mean, median, mod, and standard deviation give a quantitative synthesis of the pattern in the experience and perception of infection control measures among the participants and these are part of the descriptive analysis. The assessment relates to questions regarding infection control programs, sufficiency of training, compliance with the rules of infection measures, and readiness of the corresponding hospital for infection outbreaks. These statistics provided the basis for understanding how well the measures of infection

control are viewed and implemented in the hospital.

Among the dozens of questions that were posed one of the most significant was whether or not the hospital had an infection control program at all. The results we obtained yielded an overall mean of 1.65, SD = 0.478; therefore, most participants agreed with the statement about such programs. The above score implies that most of the HCWs have a positive perception in as much as there are infection control programs in their facilities, and not many of them deviate greatly from the mean. A similar question asked whether or not the participants had received any training or orientation on infection prevention and control, which earned a mean score of 1.62 (SD = 0.486). These compliance ratings are consistent between surveys and by facility type, which indicates that training is accessible, but can be sparse or insufficient for all the staff, implying a requirement for more frequent or elaborate training sessions.

The participant's perception of the frequency of infection control training was computed as a mean value of 3.57 and a standard deviation of 0.779, indicating that training is conducted occasionally, but not regularly at most workplaces. Some respondents said that training on infection control was a yearly event, while others said that the sessions were less frequent. This variability may reduce the effectiveness of the training since participants may only attend a session once in a while and hence stop practicing infection control principles to follow the training.

Also examined was the degree of compliance with adequate infection control training as a crucial measure. Answering this question, the subjects received a mean score of 3.76 with a standard deviation of 0.840 meaning that the healthcare workers assessing the training considered it satisfactory but not outstanding. The moderate variance may mean that some of the workers feel that there are some weaknesses in the training where the delivery of this training might be different across the various departments in the hospital or where what is learned in the training may not suit the reality of the infections they encounter in practice.

It also questioned whether the respondents thought that their hospital had infection control policies and guidelines. Regarding this question, the mean

observed score was 3.73 (SD = 0.720) which again gives more credence to the notion that most of the healthcare workers are conversant with the existing infection control policies. Nevertheless, if participants were asked if all staff in their unit adhere to infection control policies as strictly, their mean score was 3.71 with a standard deviation of 0.842. This means that there can be gaps between theoretical policies that guide a health care organization and the practical implementation of these policies which can be detrimental to the hospital's goal of decreasing HAIs.

Another domain of evaluation regarded confidence in terms of infection control policies which received a mean score of 3.71 (SD = 0.842). It is also at a moderate level and indicates that while HCWs appreciate the importance of infection control policies they may have some concerns regarding their efficacy. Such concerns could be associated to essentials that include resource availabilities, staff development, or infection outbreak management in the hospital.

Therefore, the descriptive statistics results constitute a rich source of information about the participants' perceptions of infection control measures in the Chinese Maternity Specialist Hospital. Thus, infection control programs and, to some extent, policies are currently in place; however, there is a need for increasing training frequency, strengthening adherence to the established regulations, and enhancing confidence in infection control practices. These conclusions imply further requirements for intensive and systematic training regarding infection control measures to guarantee adequate readiness of all HWs to decrease the number of HAIs.

4.4 Reliability Test

Reliability Statistics

Cronbach's Alpha	N of Items
.958	28

To check the internal consistency of the questionnaire items used in this research study a Cronbach's Alpha test was done. The test was taken about all 28 aspects that are concerned with infection control training, knowledge amongst the healthcare workers, institutional readiness, and

Hospital Acquired Infections. Hence Cronbach's Alpha coefficient was 0.958 showing high coefficient reliability among the scale items. It is according to the suggestions that a Cronbach's Alpha value of more than 0.9 is exceedingly reliable since all the items on the questionnaire consistently gauged the intended variables.

Such a high degree of internal reliability simply indicates that the survey instrument was developed to a high standard and consistency in the respondents' reactions along the different domains under assessment. The reliability of the data increases the credibility of the result to be used for other statistical analyses such as correlation and regression analysis in the following sections or chapters.

4.5 Normality Test

The normality test is useful before proceeding into statistical analysis since it helps in ascertaining if the data in question follows the normal distribution prerequisite of the particular, selected major family statistical tests. In this study, the Kolmogorov-Smirnov and Shapiro-Wilk tests were used to assess the normality of the data for three key variables: Healthcare workers' awareness, organizations' readiness, and infection rates of acquired conditions birthed by HAIs. The outcomes of these tests define the usability of the dataset to undergo even more statistical analysis including regression and correlation.

Tests of Normality

	HEALTHCARE PROFESSIONALS' KNOWLEDGE	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
		Statistic	df	Sig.	Statistic	df	Sig.
REDUCTION OF HAIs	2.00	.	2	.			
	2.67	.	2	.			
	3.00	.460	50	.000	.559	50	.000
	3.33	.324	16	.000	.791	16	.002
	3.67	.217	28	.002	.880	28	.004
	4.00	.359	54	.000	.768	54	.000
	4.33	.233	26	.001	.812	26	.000
	4.67	.221	22	.006	.851	22	.004

a. Lilliefors Significance Correction

The distribution of the variable Healthcare Professionals' Knowledge was tested for normality using the Kolmogorov-Smirnov and Shapiro-Wilk tests. When performing the Non-Parametric Test, the Shapiro-Wilk test, it estimated a P value, which is <0.05, meaning that the data was non-normal. For instance, where Shapiro-Wilk test results present a statistic of 0.559 and p-value of 0.000 when carrying the test using data obtained from 50 participants, this is a clear indication that the data is non-normally distributed. In the same way, for other categories within the healthcare professionals' knowledge variable, the test always revealed such deviations with p<.05. The Kolmogorov-Smirnov test also gave comparable results: knowledge scores of healthcare workers are not normally distributed. The results presented here imply that knowledge-related responses are not normally distributed, which raises the possibility that healthcare workers either possess highly similar levels of knowledge across the sample population or that the distribution is clustered around specific points.

Tests of Normality

	HEALTHCARE PROFESSIONALS' KNOWLEDGE	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
		Statistic	df	Sig.	Statistic	df	Sig.
REDUCTION OF HAIs	2.00	.	2	.			
	2.67	.	2	.			
	3.00	.460	50	.000	.559	50	.000
	3.33	.324	16	.000	.791	16	.002
	3.67	.217	28	.002	.880	28	.004
	4.00	.359	54	.000	.768	54	.000
	4.33	.233	26	.001	.812	26	.000
	4.67	.221	22	.006	.851	22	.004

a. Lilliefors Significance Correction

A normality test on institutional preparedness was done using the Kolmogorov-Smirnov and Shapiro-Wilk tests. In examining the normality assumption across different data subsets a smaller sample Shapiro-Wilk test revealed is skewed. For example, at a sample of 54, the Shapiro-Wilk

statistic of 0.768 while the p-value is 0.000, hence the data is not normally distributed. The test results across other groups in this variable continued to show non-normally distributed data, and most tests produced $p < 0.05$. As far as the normality test, even the Kolmogorov-Smirnov test ascertained non-normality; the institutional preparedness scores were not normally distributed. This phenomenon may indicate that the institution is either completely ready or not ready at all, or that responses are centered around certain values attributed to the participants' experience with infection control resources, staffing, and protocols. The above results depict that the distribution of the data set is not normal and therefore either the data requires transformation to normal data or a non-parametric method is applicable in testing the interaction of institutional preparedness and decreased HAIs. Resultantly, the deviations from normality suggest that institutional preparedness is not homogeneously distributed in the sample, which might impact the nature in which this variable affects the general efficacy of infection control programs. Thus, the analysis of institutional preparedness using normality tests showed that general distributions are shifted significantly from normality, and thus various statistical distributions should be employed. This will ensure that whenever the relationships between institutional preparedness and HAIs are being assessed the results accord with the distributional properties of the data.

Tests of Normality

	INSTITUTIONAL PREPAREDNESS	Kolmogorov-Smirnov ^a			Shapiro-Wilk	
		Statistic	df	Sig.	Statistic	df Sig.
REDUCTION OF HAIs	2.00	.307	4	.	.729	4 .024
	2.33	.250	8	.150	.849	8 .093
	2.67	.	2	.		
	3.00	.415	50	.000	.573	50 .000
	3.33	.208	12	.159	.895	12 .137
	3.67	.365	18	.000	.799	18 .001
	4.00	.213	82	.000	.920	82 .000
	4.33	.193	10	.200*	.887	10 .158
	4.67	.417	12	.000	.608	12 .000

5.00	.	2	.			
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*. This is a lower bound of the true significance.

a. Lilliefors Significance Correction

The dependent variable Reduction of Hospital-Acquired Infections (HAIs) was tested for normality using Kolmogorov-Smirnov and Shapiro-Wilk tests. Newman test was significant both for the first and for the second session: p-values are less than 0.05 and the distribution of the data is not normal. For instance, the Shapiro-Wilk statistic was 0.768, p-value = 0.000, for one of the data groups and the sample size was 54 which redefined the normality test. They also held on different partitions of the data set and hence the variable was confirmatively not normally distributed. The Kolmogorov-Smirnov test also indicated a non-normal distribution and supported the earlier conclusion that the distribution of the reduction of HAIs does not follow a normal curve. This shift in data distribution may be a result of these differences in the extent of implementing infection control programs or in compliance with infection control policies between different departments. Given that HAIs are a reduction outcome variable in the study, it can also be seen that these distributions raise some concerns that could warrant adjusted/alternative advanced parametric methods such as linear regression to address; or warrant non-parametric testing such as the application of the Mann Whitney U test. Concisely, all the normality tests of the reduction of HAIs show that the data cannot be a normal distribution, and this is why the statistical method of analysis has to be adjusted. By controlling for this non-normality, the study can justify the effects of infection control programs and institutional preparation on lowering HAIs in that the results acquired are precise and accurate as per the attributes of dependable validity dealing with skewed data.

4.6 Pearson's Correlation

		Correlations			
		INFECTION CONTROL PROGRAMS AND TRAINING (IV1)	HEALTHCARE PROFESSIONALS' KNOWLEDGE (IV2)	INSTITUTIONAL PREPAREDNESS (IV3)	REDUCTION OF HAIs (DV)
INFECTION CONTROL PROGRAMS AND TRAINING (IV1)	Pearson Correlation	1	.764**	.434**	.797**
	Sig. (2-tailed)		.000	.000	.000
	N	200	200	200	200
HEALTHCARE PROFESSIONALS' KNOWLEDGE (IV2)	Pearson Correlation	.764**	1	.705**	.890**
	Sig. (2-tailed)	.000		.000	.000
	N	200	200	200	200
INSTITUTIONAL PREPAREDNESS (IV3)	Pearson Correlation	.434**	.705**	1	.456**
	Sig. (2-tailed)	.000	.000		.000
	N	200	200	200	200
REDUCTION OF HAIs (DV)	Pearson Correlation	.797**	.890**	.456**	1
	Sig. (2-tailed)	.000	.000	.000	
	N	200	200	200	200

** . Correlation is significant at the 0.01 level (2-tailed).

The correlation between the major constructs in the study, including infection control programs and training, HCW's knowledge, institutional preparedness, and the decrease in HAIs was tested using Pearson's correlation. Pearson correlation coefficient (r) is a measure of the straight-line association between two variables which ranges from -1 to +1; + 1 shows there is a positive relation; - 1 shows there is a negative relation, 0 shows there is no relation.

The first variable investigated was Infection control programs and training (IV1) and the dependent variable (DV) was the decrease in HAIs. The findings show that there is a highly significant positive relationship ($r = 0.797^{**}$, $p < 0.01$) between the effectiveness of the infection control programs and training and HAIs that

effectiveness increases better means of infection control reduce HAIs. Regarding this evidence, it becomes clear that training interventions need to be organized and accessed regularly to reduce infection risks in healthcare facilities. Thus, the positive link confirms that hospitals that provide intensive infection control training to caregivers are likely to post a few HAIs.

Finally, subsequent regression analysis examining the association between the level of HCP knowledge (IV2) toward HAIs was again more highly correlated with the level of HAI reduction ($r = 0.890$, $p < 0.01$). They attributed this to the fact that acquiring more knowledge about infection prevention and control measures makes you more effective in preventing HAIs. This result underscores the importance of education and knowledge as measures that have to be employed when trying to institute and sustain sound infection control practices in high-risk environments where compliance with infection control measures is paramount in preventing the spread of infections.

The third IV, institutional preparedness (IV3) also shared a positive correlation with the decrease in HAIs rates with a coefficient of correlation of 0.456 $p < 0.01$ yet lower than IV 1 and IV 2. This implies that after controlling factors such as; the availability of PPEs, staffing, and infrastructural development to combat HAIs, other factors like Infection Control training or healthcare workers' knowledge are stronger influences. Where the correlations are somewhat weaker may be the institutional factors that require further boost or more rigorous and standard practice to bear the results on HAI reduction.

Therefore, from Pearson's correlation analysis, it can be concluded that all three independent variables, namely the infection control programs and training, healthcare professionals' knowledge, and institutional preparedness have a moderate positive correlation with the dependent variable, HAI reduction but with a small difference with a higher figure with the second independent variable namely healthcare professionals knowledge towards infections control. These studies underline the significance of knowledge and training as the key determinants in terms of prevailing and favorable results for infection

control; however, institutional preparedness seems to have a less crucial but complementary role.

4.7 Regression Analysis

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.932 ^a	.868	.866	.23415

a. Predictors: (Constant), INSTITUTIONAL PREPAREDNESS (IV3), INFECTION CONTROL PROGRAMS AND TRAINING (IV1), HEALTHCARE PROFESSIONALS' KNOWLEDGE (IV2)

ANOVA

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	70.523	3	23.508	428.778	.000 ^b
	Residual	10.746	196	.055		
	Total	81.269	199			

a. Dependent Variable: REDUCTION OF HAIs (DV)

b. Predictors: (Constant), INSTITUTIONAL PREPAREDNESS (IV3), INFECTION CONTROL PROGRAMS AND TRAINING (IV1), HEALTHCARE PROFESSIONALS' KNOWLEDGE (IV2)

Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.281	.116		2.427	.016
	INFECTION CONTROL PROGRAMS AND TRAINING (IV1)	.208	.041	.207	5.010	.000
	HEALTHCARE PROFESSIONALS' KNOWLEDGE (IV2)	1.014	.056	.942	17.945	.000
	INSTITUTIONAL PREPAREDNESS (IV3)	-.301	.038	-.298	-7.923	.000

a. Dependent Variable: REDUCTION OF HAIs (DV)

The regression analysis was used to identify the significance of infection control programs and training, health care workers' knowledge, and institutional readiness as effective means for decreasing HAIs at the Chinese Maternity Specialist Hospital Seremban. This analysis makes it possible to evaluate the research hypotheses in terms of each independent variable and the relationship with the dependent variable, which is a decrease in HAIs.

The model summary also shows us that the regression model delivers a fairly good explanation since the r- r-squared value is high with 0.868 estimated. They, in conjunction with implementing infection control programs and training, accounted for 86.8% of the variation within the reduction of HAIs. The adjusted R-squared value of 0.866 signifies that this sector's

model is significant and that the model does reflect the number of predictors entered into the analysis equation. This figure is relatively high and signifies that the factors that have been considered here are relevant in the prediction of HAI reduction and approval of measures that deal with the spread of infections in healthcare facilities.

The ANOVA also supports the model validity with F-statistic = 428.778, p-value = 0.000. This large F-value assures the acceptability of the overall regression model, thus implying that the independent variables taken together are useful in the reduction of HAIs. Consequently, the application of the regression model can be used to conclude the connection between the implementation of IPC, healthcare workers' awareness, institutional readiness, and decreased rate of HAIs.

Hypothesis 1: Infectious Diseases Control Programs and Education

Consequently, H1 is fully supported and it is confirmed that infection control programs and training (IV1) have a positive and significant relationship with HAI reduction with an estimate of 0.207 and $p < 0.05$. This result affirms the alternate hypothesis, H1, that post-implementation of the infection control program and training, the prevalence of HAIs in the Chinese Maternity Hospital Seremban has been considerably cut down. That is why, the positive beta coefficient suggests that increases in infection control programs and training decrease HAIs. This underscores the need for proper and elaborate training exercises that will enable the health care workers to be in a good position to observe and implement the set down infection control measures. Units and hospitals that have an effective infection control program implemented into their system are more likely to have fewer HAIs because healthcare practitioners handle patients with better precautions and fewer infection transmissions than others.

Hypothesis 2: Healthcare Workers Knowledge

The findings show that out of all the variables in the model, knowledge (IV2) has the strongest positive impact on minimizing HAIs with a standardized beta of 0.942, and p-value of 0.000.

According to this result, the study supports the alternate hypothesis H2 which assumes that there is a strong correlation between the healthcare professional's knowledge and the prevention of HAIs. The high beta coefficient suggests that healthcare personnel's awareness level is the most influential factor in minimizing HAIs. This highlights the, therefore, importance of education and training in the principles of infection control since the staff is more likely to follow the recommendations in the infection prevention and control guidelines. Knowledge is thus a strong and significant determinant of HAI reduction; this implies the ongoing need to learn about infection prevention more thoroughly and one's ability to improve current practices and techniques as seen from the failure rate, for instance, new requirements on pathogens or changes in courses of treatment.

Hypothesis 3: Institutional Preparedness

As per the result of regression analysis, institutional preparedness (IV3) hurts the rate of HAI reduction, with a standardized beta coefficient of -0.298 and a p-value of 0.000. The current study negates the alternate hypothesis H3 that posited that variables relating to staff and physical infrastructure and essential commodities such as PPE are significantly related to declining HAIs. However, the negative beta coefficient means that very high levels of institutional preparedness may not reduce HAIs and, in some instances may be associated with higher infections. This counterintuitive finding implies that having the right institutional infrastructure (including access to PPE, appropriate facilities, and personnel) is not enough to ensure that targeted HAI rates will be realized without proper infection prevention and control compliance and meaningful staff involvement. These include; failure to adhere to PPE, weak adherence to infection control standards, and reliance on institutions' resources without proper governance of preparedness guidelines.

The regression analysis offers important information on the trends between infection control programs, the awareness of healthcare personnel, institutional readiness, and HAIs decrease. The above study proves the first two hypotheses asserting that infection control programs and training, and the knowledge of healthcare professionals are all crucial in the fight

against HAIs. Therefore, the third hypothesis is dismissed because the measure of institutional preparedness does not generate the hypothesized positive effect on the decrease in HAI. These results imply that although institutional resources necessitate a worthy cause; pertinent barriers must be backed by splendid infection control practices and knowledgeable healthcare workers to avoid HAIs.

4.8 Summary of Hypotheses

Hypothesis	Conclusion
Alternate H1: Infection control programs and training significantly reduce hospital-acquired infections (HAIs) at Chinese Maternity Hospital Seremban.	Accepted: Infection control programs and training were found to significantly reduce HAIs at the hospital.
Alternate H2: There is a relationship between healthcare professionals' knowledge and adherence to infection control policies and reducing HAIs.	Accepted: A strong positive relationship exists between healthcare professionals' knowledge and the reduction of HAIs.
Alternate H3: Institutional preparedness, including staffing, infrastructure, and availability of personal protective equipment (PPE), is significantly associated with the effectiveness of infection control measures in reducing HAIs.	Rejected: Institutional preparedness had a negative impact, suggesting that preparedness alone does not reduce HAIs.

CHAPTER 5: DISCUSSION AND CONCLUSION

5.1 Major Findings

The aim of the current study was to assess the efficacy of infection control training; and its impact on reducing HAIs among the nurses. Some of the major lessons arising from the study are on enhancing the training, education, and institutional capacity of organizations.

High Positive Impact of Training: The findings indicated that the level of infection control training was closely related to a decrease in HAIs. This finding points out that structured training interventions lead to a precise reduction of infections. The positive relationship that exists here supports the notion that adequate, routine training sessions would improve the compliance of healthcare workers with emergent, considered superior methods, in Infection control.

Knowledge as a Central Factor: Embedded in the scores from the assessed factors, knowledge held the greatest positive correlation towards protection from HAIs among healthcare workers. This confirms that there is need for broad

education and awareness of various preventions paradigms in effort to reduce the given infection rates. The existence of the positive relationship proves that staff with adequate knowledge is in a better position to practice prevention procedures as expected by the hypothesis of the study.

Institutional Preparedness: This research also looked at institutional readiness factors that comprised of aspects such as personal protective equipment and structures. As critical to yml infection control, institutional readiness appeared to have a variable effect on diminishing HAIs. While resource sufficiency has a positive impact on the environment, it yielded less effect as compared to training and knowledge. This means that the possession of the right tools is adequate an indication of their actual effectiveness as the extent as they are applied by the healthcare staff to adhere to the principles of infection control.

Compliance Gaps: One of the patient barriers highlighted in the study was lack of compliance to infection control measures. However, there were some health care workers' noncompliance with training requirements and written policies that were in existence. This may be due to compression between the work pressure, lack of supervision, or even due to a difference in organizational culture in the departments. These gaps call for constant reinforcement and strong enforcement strategies as pointed out in the study.

Together, these results highlight the need for training, education, and environmental approaches that enhance staff compliance with policies as crucial target methods for preventing HAIs.

5.2 Discussion

The conclusions drawn from this study support existing literature identifying that effective infection control training is particularly prominent in combating HAIs. In agreement with Haque et al. (2020), the results evidence for the idea that extending universal, evidence-based comprehensive and updated infection control training programmes that are fit for the needs of healthcare staff significantly reduces the rates of HAIs. This complements the systematically noted significant positive relationship between the healthcare workers' knowledge and the level of HAIs with knowledge taking central role in the core components of the infection prevention plans.

This opinion is supported by McMullen et al.'s (2020) results which confirmed that knowledge is essential to prevent the spread of infections. The present study showed that knowledge of relative infection prevention strategies enabled healthcare professionals to employ these actions optimally and decrease infections. This indicates the need to embrace normal set training sessions that are focused and which entail health facilities' employee's update on various protocols and practices. Furthermore, knowledge must not merely be theoretical, but must be placed into practice and guarantee that what is taught in training will be effective.

Another variable tested in this study was institutional preparedness. The results of the study did point to institutional readiness, the availability of PPE and infrastructure, as factors in infection control but these factors did not have as significant an effect as training and knowledge. This is in line with the work of Bayleyegn et al. (2021) who noted that having access to resources is insufficient to explain infection control outcomes successfully. Institutional readiness for combating common infectious diseases should be focused on and pursued endorsed by proper implementation of infection prevention and control measures and culture. Lacking this, even those facilities that possess ostentatious glamour and modern amenities may have difficulty sustaining minimal HAI incidence.

The moderate success attributed to institutional preparedness in this study supports the argument that while institutions require resources, they must also have a constant reinforcement of methods of infection control. Using the data, the authors also pointed out the importance of staff compliance with these measures, which are equally important prerequisites for assessing the effectiveness of implemented infection control measures. This point proves Ojanperä et al.'s (2020) hypothesis that non-compliance with hand hygiene, as well as the use of PPE, remains a concern in healthcare organizations and even where those enforceable protocols are already in place. This policy implementation analysis has revealed that indeed there is a policy implementation dilemma as experienced by health care facilities in their attempt to implement policies in practice.

The findings associated with compliance gaps explain why it is a challenge to get high adherence rates among the healthcare staff. The final component, which realized consistency of staff practices with training and policies, differs from training and policies as it requires constant reinforcement, staff surveillance, and a permissive organisational climate. The variability in the level of adherence could be due to many reasons, including a high work load or inadequate supervision or failure to embrace the practices of infection control. Attacking these problems is not an issue of offering employees training occasionally; it entails an extensive system of putting learners through refresher courses, auditing comprehensively, and having a culture of assigning responsibility so as to sustain high compliance levels.

The varied effects also underscore the need to go beyond stock recipes of institutional preparedness by developing more systematic approaches. For example, while the staff and the patients have to have access to PPE and better infrastructure, it has to be accompanied by proper guidelines and demystifying the “how” of the infection prevention. This way, healthcare workers appreciate the need to practice and adopt infection controls measures frequently using practical skills that can be applied in practice.

Enhanced by the results, it is necessary to underline that infection control is not in the availability of the material and personnel resources and existence of the political decisions, but, first of all, in the efficiency of implementation of these decisions and strict following of the norms. The findings of the present study support the existing literature that promotes the development of a compliance culture in healthcare organisations. High compliance of health care policies or rules are created in a centre that is receptive to the principles of infection control hence reducing incidence of HAIs distinctly.

In conclusion, it is evident that despite the role of institutional preparedness as being the overall foundation to the infection control process, the actual difference is the degree of training, increased knowledge and more importantly strict adherence to the processes in place to prevent

HAIs. This has a wide-ranging implication for healthcare organisations which should aim to provide ongoing, applied training to optimise staff engagement; in addition, monitoring systems should be robust to minimise staff lapsing. Promoting the right culture for maintaining compliance through positive reinforcement, and follow-ups or penalties in the case of non-compliance is crucial in preventing the continued spread of infections.

Hence, by evaluating all these factors, the discussion provides an implication that the human factor, Issues of knowledge, training, and compliance, are central to effective infection control than resources and infrastructure. To get the best results, more healthcare institutions should spend their money and effort on implementing such measures while at the same time ensuring that reinforcement of staff commitment to infection prevention measures is witnessed. This balance will be important in reducing the prevalence of HAIs and enhancing safety in some of the most precarious settings such as China’s Maternity Specialist Hospital Seremban.

5.3 Implications

In light of the above research findings the following conclusions can be made: Implications for this study for enhancing infection control practices in healthcare facilities are as follows:

Policy Enhancement: It is the responsibility of the management of the hospital to ensure that staff undergoes various training, which should include, a comprehensive refresher course. Find the training from time to time assist in achieving and sustaining the required standards of awareness on the measures applied in minimizing infections among the health practitioners. This will help make knowledge updated and practice made uniform in order for there to be constant decrease in hospital acquired infections (HAIs).

Targeted Training: The recommended infection control training should incorporate the type of risks associated with all departments of a given hospital. For instance, units such as maternity units owe it to their patients’ higher vulnerability to infections by virtue of pregnancy and neonates to advance training. Designing educational materials to address such requirements can foster

follow through of protocols that diminish the threats posed by infections among these high-risk areas.

Monitoring and Compliance: Improving the surveillance process is important in order to guarantee adherence to recommended measures among healthcare workers. It noted that gaps in compliance are still a big issue that hampers the fight against infections. If hospitals will incorporate a regular audit together with the feedback which they can give, this will lead to a culture that is marked by excellence. This would assist in identifying places where there are likely to be a breach in compliance and thus trigger action that can prevent it.

Resource Allocation: From the study, asserting that proper infrastructure like PPEs, other work traits enhance effectiveness when paired with a proper accountability culture. Besides ensuring that hospital has adequate resources to contain spread of infection, hospital management should ensure that all health Care worker are motivated to practice standard infection control precautions. This means incorporating methods that constantly remind staff of the value of compliance by leaders and implementing ways that will ensure personal accountability amongst staff.

In an essence, to achieve the optimum results, hospitals should accentuate on several essential changes within the structure: policy improvement, staff education, adequate control and communicate environment that has strong intermediate mechanisms. Altogether these measures can also ensure better compliance, decrease HAIs and enhance patient safety.

5.4 Limitations of the Study

Therefore, this study has come across a number of limitations that could influence the way the results are being interpreted. The number of participants was restricted to only one hospital, and therefore the external validity of this study is questionable. Furthermore, the study was cross-sectional in nature thus it could not capture changes in the levels of infection control training and policies overtime. The second weakness was that the study

collected data through self-report, people might give illusory recall or even lie. Lastly, some data variables did not follow normal distribution and strictly speaking, applied certain tests that are relevant to parametric studies; this would affect not only the strength of the conclusions drawn. Nonetheless, it is crucial considering some of these limitations in the subsequent research for extending our knowledge of the effects of ICP training on HAIs and for improving the reliability and generalisability of the research results across a vast range of healthcare institutions.

5.5 Future Research Areas

Various steps will need to be taken to undertake future research based on the results of this investigation. First of all, the extension of the sample to include one or more hospitals in different areas would enhance external validity. This approach would give better insight into how infection control training affects several care organizations.

Second, more long-term kinds of research should be carried out to assess the long-term effects of the training activities in minimizing HAIs. If researchers were able to conduct a longitudinal study, they could determine how rates change with time after training administrators and implementing new policies and the areas that need improvement.

Moreover, behavioral findings are also required to examine the predisposing factors to non-compliance amongst key healthcare personnel. Knowledge of the factors that influence the intentions and decisions regarding compliance with infection control practices could help design more successful approaches to enhancing their use.

Lastly, future studies should incorporate other factors for instance the patient characteristics and ecological influences on HAI trends. These may shed more light on the factors that make up the context within which transmission of infections occurs and pinpoint specific details that can be used to prevent transmission. This broader approach would help towards a better understanding of interactions between training, individual behavior, and environment on infection prevention and control.

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