Deanship of Graduate Studies

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Evaluating Strategies of Healthcare-Associated Infection Prevention and Control in Hebron City Hospitals – Palestine

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آية قرآنية

بسم الله الرحمن الرحيم

﴿وَفَوْقَ كُلِّ ذِي عِلْمٍ عَلِيمٌ﴾

صدق الله العظيم

Dedication

My God, the night is not good except by thanking You, and the day is not good except by obeying You. and the moments are not good except by remembering You... and the hereafter is not good except by Your forgiveness. and Paradise is not good except by seeing You

(Allah, the Almighty)

To the one who delivered the message and fulfilled the trust. and advised the nation. to the Prophet of Mercy and the Light of the Worlds.

(Our Master Muhammad, may God bless him and grant him peace)

To the one whom God crowned with awe and dignity... to the one who taught me to give without waiting... to the one whose name I carry with pride, I ask God to extend your life so that you may see the fruits that have come to be harvested after a long wait, and your words will remain stars that I am guided by today, tomorrow, and forever...

(My dear father)

To the one who crowned my head with a jasmine necklace... to my angel in life.. to the meaning of love, tenderness, and devotion... to the smile of life and the secret of existence, to the one whose prayers were the secret of my success and whose tenderness was the balm for my wounds, to the most precious of my beloveds

(My beloved mother)

To the one who was the support, the beat of my heart and my pen To the beacons of my heart

(My wife and children)

To those with whom I grow and on whom I depend. To the burning candles that light up the darkness of my life...

To those with whose presence I gained limitless strength and love...

To those with whom I learned the meaning of life

(My sisters)

To those who are closer to me than my soul

To those who shared my mother's embrace and from whom I derive my pride and determination

(My brothers)

To the one with the white hand to the one with the giving to the one to whom I will never be able to give her due, if my ink dries up from expressing you, a heart with pure affection will write you as an expression

(Rania)

To my brother and loyal friend, the man of difficult situations and the rose of the crown

(Yasser)

Saleh Salama Abu Shameh

Declaration

I certify that this thesis submitted for the degree of master is the result of my research, except where otherwise acknowledged, and that this thesis or any of its parts has not been submitted for a higher degree to any other university or institution.

Student's Name: **Saleh Salama Abu Shameh.**

Signature:

Date: 25 February 2025

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I thank Allah - Lord of the Worlds - who created, guided, and guided the steps, so this work came out with His help and success, we praise Him abundantly at the beginning and the end, and praise be to Allah who has granted me to reach this position that I would not have reached except by His grace, so praise be to Allah who inspired me with patience and steadfastness, and provided me with the strength and determination to continue my journey in research and study.

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Abstract

Background: Infections acquired during medical treatment for another medical condition are known as healthcare associated infections. Healthcare institutions such as hospitals, ambulatory surgery centers, end-stage renal disease facilities, and long-term care facilities are all susceptible to healthcare associated infections and its infections that show symptoms for the first time 48 hours or more after being admitted to the hospital or within 30 days after medical attention.

Aim: This study aimed to evaluate healthcare workers in Hebron City – Palestine from various professions and institution types' attitudes toward evaluating strategies of healthcare-associated infection prevention and control.

Methodology: The google form survey was distributed to 185 questionnaires were distributed, n= 178 participants completed the questionnaires, a response rate of 96%. 178 healthcare professionals from government, private, and non-governmental organizations, including physicians (n = 27), radiologists (n = 9), lab technicians (n = 26), nurses (n = 80), and other paramedical staff (n = 36). Chi-square analysis was used to compare the results by age group, kind of institution, and type of occupation in order to assess variability.

In additional two statistical tests were used. First, the **two independent samples (t-test)** were used to compare the means of General Policy Compliance scores between two distinct groups (for example, comparing male vs. female participants). Second, the **one-way analysis of variance (ANOVA)** was used to compare the means of General Policy Compliance scores across more than two groups

Results: Healthcare professionals demonstrated insufficient awareness regarding various aspects of infection prevention and control, including institution-specific concerns, reporting and surveillance protocols, and their preparedness to implement policies and respond to outbreaks. Evidence indicates that nurses and other staff members in private hospitals possess more experience in these areas compared to their counterparts in other healthcare settings. When asked whether essential tools for preventing healthcare-associated infections, such as hand sanitizers, masks, protective equipment, soap, and disinfectants, were available, 92.7% (n=165) of participants responded affirmatively. Additionally, 89.3% (n=159) of respondents confirmed the presence of measures within their organization to prevent healthcare-associated infections. However, 75.3% (n=134) of participants identified violations of infection control policies, rules, and guidelines as the most frequent cause of infection transmission in hospitals, with 70.8% (n=126) agreeing. Furthermore, 41% (n=73) of respondents noted that the most common type of infection reported to the Ministry of Health was "all types of infections, whether hospital-associated or not."

Conclusions:

The findings of this study highlight significant gaps in healthcare workers' awareness and preparedness regarding infection prevention and control, particularly in relation to institution-specific protocols, reporting systems, and outbreak response. While the availability of essential infection control tools is generally high, violations of infection control policies remain a major concern, contributing to the transmission of healthcare-associated infections. The study underscores the importance of strengthening training programs, reinforcing adherence to infection control guidelines, and enhancing the overall preparedness of healthcare workers to effectively mitigate the risks of healthcare-associated infections across various healthcare settings. Additionally, there is a need for continued monitoring and improvement of infection prevention strategies to ensure better outcomes for patients and healthcare workers alike.

Keywords: healthcare associated infections, healthcare worker, ministry of health.

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Abbreviations

Initials of the	Term in English
AMR	Anti-Microbial Resistance
AS	Antimicrobial Stewardship
ASCs	Active Surveillance Cultures
ASP	Antimicrobial Susceptibility Testing
BSI	Blood Stream Infection
CAUTIs	Catheter Associated Urinary Tract Infections
CDC	Center For Disease Control and Prevention
CLABSIs	Central Line Associated Bloodstream Infections
HCAIs	Health-Care Associated Infections
HCWs	Health Care Workers
HH	Hand Hygiene
ICNs	Infection Control Nurses
IPC	Infection Prevention and Control
KISS	Krankenhaus Infection Surveillance System
LMICs	Low-Middle Income Countries
LTCFs	Long-Term Care Facilities
MDR	Multi-Drug Resistance Organisms
MDROs	Multi-Drug Resistance Organisms
MOH	Ministry Of Health
MRSA	Methicillin Resistance *Staphylococcus aureus*
MS	Mass Spectrometry
PCR	Polymerase Chain Reaction
POC	Point of Care
PPEs	Personal Protective Equipment's
RCA	Root Cause Analysis
SAB	*Staphylococcus aureus* Bacteremia
SSI	Surgical Site Infection
VAP	Ventilator Associated Pneumonia
VRE	Vancomycin Resistance *Enterococcus*
WHO	World Health Organization

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Chapter One

1. Introduction

Infections acquired during medical treatment for another medical condition are known as healthcare-associated infections (HCAIs). Healthcare institutions such as hospitals, ambulatory surgery centers, end-stage renal disease facilities, and long-term care facilities (LTCFs) are all susceptible to HCAIs .HCAIs are infections that show symptoms for the first time 48 hours or more after being admitted to the hospital or within 30 days after medical attention (Haque et al., 2018; Nasiri et al., 2023).

According to data from the US Center for Disease Control and Prevention (CDC) , every year over 1.7 million hospitalized patients get HCAIs while receiving treatment for other conditions, and over 98,000 of these patient (17.3%) die as a result of HCAIs (Klevens et al., 2007). Intensive Care Unit (ICU) patients are more vulnerable to HCAIs since they are frequently extremely sick and immunocompromised (McDermid et al., 2011).

These illnesses greatly burden patients (Markwart et al., 2020). Numerous pathogens, including viruses, fungi, and bacteria, are responsible for these diseases. Ventilator-associated pneumonia (VAP), bloodstream infections (BSI), catheter-associated urinary tract infections (CAUTIs), central-line-associated bloodstream infections (CLABSIs), surgical site infections (SSI), and *Clostridioides difficile* infection (Nimer, 2022; Sartelli et al., 2023).

A survey conducted on 11,282 patients across 183 U.S. hospitals in 2015 found that 4% of patients had at least one healthcare-associated infection (HCAI), with *Clostridium difficile* being the most commonly identified bacterium. The most prevalent infections were pneumonia,

gastrointestinal tract infections, and surgical site infections (SSIs) (Shelley S. Magill et al., 2014). A similar study by the same research group, comparing data from 2011, revealed that 6% (51) of patients experienced HCAIs, with the highest occurrence (75.6%) of bloodstream infections (BSIs), urinary tract infections (UTIs), SSIs, and pneumonia. The most frequently identified pathogen in the 2011 study was *Staphylococcus aureus* (Shelley S. Magill et al., 2015).

The team compared cases of SSIs, UTIs, and central line infections between 2011 and 2015 and discovered a statistically significant ($P<0.05$) decrease in HCAIs, most likely as a result of a nationwide campaign (Shelley S Magill et al., 2017).

Across the globe, HCAIs are an issue as well. For instance, a research conducted in Singapore found that 11.9% (646) of patients had HCAIs, principally pneumonia brought on by *S. aureus* and *Pseudomonas aeruginosa* and unexplained clinical sepsis (Cai et al., 2017). Additionally, this investigation revealed that *P. aeruginosa* and *Acinetobacter* species had high levels of resistance to carbapenem(Cai et al., 2017).

According to this study, there was at least one avoidable HCAI for every 20 hospitalized patients (Cassini et al., 2016). The most frequent adverse event in healthcare that compromises patient safety is HCAI. They have a considerable negative impact on individuals, families, and healthcare systems in terms of morbidity, death, and cost.

Another issue with HCAI is the evolution of microbes resistant to many drugs (Sikora & Zahra, 2024). The *Acinetobacter* species and *Klebsiella pneumoniae* were extremely resistant to several antimicrobials, and the severe load in Europe is increased by the dearth of novel antimicrobials(Cassini et al., 2016). The frequency of HCAI was 9.1% in Greece. Higher-order HCAIs included BSI , UTIs, systemic infections, and lower respiratory tract infections (LRTIs) (Cassini et al., 2016).

There are differences in the occurrence of HCAIs between high-, mid-, and low-income nations. These infections are prevalent in middle-class and low-income nations from 6.3% to 17% and in high-income ones from 1.4% to 5.1% (5-7) ((Tadesse et al., 2020; Saleem, Hassali, Godman, Hashmi, & Saleem, 2019). There are several challenges faced by low- and middle-income Countries (LMICs) when putting strategies in place to control HCAIs (Alp et al., 2015). Issues including inadequate data (Nimer, 2022), substandard laboratory data, inadequate communication at both local and national levels, heavy provider workloads, and poor hand hygiene have made monitoring systems in LMICs nations more complex (Alp et al., 2015).

The development of HCAIs is influenced by a number of factors, including patient variables (such as the severity of the illness and overall health status), patient care variables (such as the use of antibiotics and invasive medical devices), administrative variables (such as the ratio of nurses to patients, the level of nurse education, and the use of aseptic techniques by healthcare personnel). While patient factors and provider care are frequently blamed for HCAIs, studies have also shown that other institutional factors may also play a role in unfavorable outcomes(Hugonnet , 2007; Jackson et al., 2002).

A list of tactics that are applicable to both institutional supporting measures and the clinical practice of a single health care practitioner is evaluated in order to cover total preventative efforts. Following these guidelines will show that you are an H.E.L.P. C.A.R.E. The following important ideas are introduced using this acronym in an effort to lower the frequency of illnesses linked to healthcare. It highlights the kindness and commitment of nurses in lowering morbidity and death rates from infections linked to healthcare.

Enhancing each of these elements can be a useful step toward HCAI control. For instance, raising and modifying nurse-to-patient ratios considerably lowers the risk of HCAIs, as would increasing hand hygiene among nurses, doctors, and those involved in cleaning (Han et al., 2021).

Over the past ten years, there has been a surge in scientific understanding of infection prevention and control (IPC), which has resulted in the release of several IPC guidelines and recommendations at the national, European, and global levels. HCAI continue to be a serious public health problem in spite of these recommendations (Lemaignen et al., 2015)

Implementing IPC procedures can lower the risk of HCAIs. IPC programs are crucial and significant steps in enhancing health outcomes and ensuring the security of healthcare workers and senior citizens(Storr et al., 2017). There is a wealth of data demonstrating the value of IPC programs in acute care hospitals (De Angelis et al., 2014).

There is, however, little data to back up the advantages of programs for LTCFs. Acute care hospitals and LTCFs have different environmental characteristics, resource availability, and infection risk factors(Smith & Rusnak et al., 1997). LTCFs lack some resources, such Health Care Workers (HCWs), infection control specialists, and diagnostic tools or systems (Nicolle, 2000). These elements might have an impact on the IPC program types, planning, execution, and assessment. In order to verify the efficacy of IPC programs in various environments, it is helpful to analyze them.

A useful handbook was created by the World Health Organization (WHO) to aid in the efficient execution of IPC initiatives. The handbook states that in order to enhance IPC procedures, eight essential elements—including multimodal strategies—must be used (Moralejo et al., 2018).

Before written evidence-based clinical guidelines result in an increase in the standard of patient care, there are a number of obstacles to overcome. According to a recent Cochrane evaluation, printed instructional materials often only slightly improve professional practice when used alone (Giguère et al., 2020).

HCWs understanding and compliance at all organizational levels are essential for effective infection prevention and control in healthcare facilities (Rabaan, Alhani, Bazzi, & Al-Ahmed, 2017). Thus, as for all health policy, interdisciplinary groups participation in the development and execution of IPC policies and procedures is necessary to guarantee their efficient operation, ranging from frontline workers to management (Al Khamis, 2016).

To stop the disease from spreading further in epidemic scenarios that threaten the healthcare system, outbreak control measures must be implemented right away. Such circumstances call for authoritative direction. Every nation on the planet has set up its own mechanisms to spread outbreak control guidelines and, if required, implement epidemic control systems (Brienen et al., 2010)

1.1 Problem Statement

Healthcare institutions such as hospitals, daycare and hemodialysis centers are all susceptible to HCAIs, and the most frequent adverse event in healthcare that compromises patient safety is HCAI's.

Non-compliance of HCWs with the rules and policies of preventive measures related to HCAIs is the main cause of nosocomial infection, which could be related to shortages of Personal Protective Equipment (PPE), staff, and lack of supervision.

1.2 Aim of Study

The Study Aims to Evaluate Strategies of Healthcare-Associated Infection Prevention and Control in Hebron City Hospitals - Palestine and to evaluate healthcare team awareness in different health institutions in Hebron district, including governmental, non-governmental, and private hospitals, related to infection prevention policies and procedures.

1.3 Objectives

1. Evaluate strategies of HCAIs prevention in Hebron City hospitals - Palestine.
2. Identify the level of health care team awareness in different health institutions in Hebron district—governmental, non-governmental, and private hospitals—related to infection prevention policies and procedures.
3. Estimate the disease burden related to ineffective infection prevention measures.
4. To assess the disparity in policy compliance by institution type by gender, age, occupation, and institution type.
5. To examine the relationship between health care providers' awareness and compliance related to institution policies related to infection prevention
6. To determine the relationship between the presence of supervision and the extent of the implementation of infection control policies and guidelines in units.

1.4 Significance of Study

The essential role of IPC in patient safety is recognized by accrediting organizations, their goal is to reduce the risk of HCAI and their impact across the continuum of care. Healthcare organizations as such are required to adhere to IPC guidelines and consensus recommendations, provide proper education and training to staff, monitor infection rates and measure this information throughout the hospital and beyond, and continually initiate action to further improve their operations. The effectiveness of IPC programs has been proven and recognized through accreditation processes that require evidence that the healthcare system has established a robust program to meet patient safety requirements (Vandijck et al., 2013).

The significance of the study lies in evaluating and studying the strategies of HCAIs in Hebron City hospitals – Palestine and the extent of their implementation to reduce the risk of transmission of infection within hospitals.

What are the strategies must be evaluated and implemented to reduce the transmission of infection within hospitals and which are the factors that leads to increased HCAIs?

In addition to highlighting needs such as training, policies, supplies, staff, supervision, finance, and others to reduce nosocomial infection.

1.5 Research Questions

1. To what extent are the basic strategies used effectively in reducing the transmission of infection within hospitals?
2. What is Limiting the use of basic strategies for infection prevention in health facilities?
3. Do these strategies evaluate the impact of the adoption and sustainability of infection prevention measures in hospital settings?
4. What is the commitment of policymakers to preventing or reducing nosocomial infections?
5. How does policy compliance vary by institution type, and what role do gender, age, and occupation play in these disparities?
6. Is there a relationship between healthcare providers' awareness and their compliance with institutional policies on infection prevention?
7. Is there a relationship between the presence of supervision and the extent of implementation of infection control policies and guidelines in units

Chapter Two

2. Literature Review

HCAIs are those illnesses acquired by people while getting health treatment (Advances in Patient Safety,2008). The term HCAIs originally referred to those infections linked with admission to an acute-care hospital (earlier called nosocomial infections), but the term now includes infections developed in various settings where patients obtain health care (e.g., LTCFs, family medicine clinics, home care, and ambulatory care). HCAIs are infections that initially develop 48 hours or more after hospitalization or within 30 days of receiving healthcare (Revelas, 2012).

According to several studies, the most prevalent forms of adverse events impacting hospitalized patients include adverse medication events, HCAIs, and surgical complications (Brennan et al., 1991).

According to the US CDC, about 1.7 million hospitalized patients each year get HCAIs while being treated for other health conditions, and more than 98,000 of these patients (one in 17) die as a result of HCAIs (Klevens et al., 2007). Out of every 100 hospitalized patients, seven patients in advanced nations and ten patients in emerging countries develop an HCAI. Other studies done in high-income nations indicated that 5%–15% of hospitalized patients get HCAIs, which can impact between 9% and 37% of those admitted to ICUs (Vincent, 2003).

S. aureus, ***Enterococcus*** species (e.g., ***faecalis***, ***faecium***), ***E. coli***, coagulase-negative ***Staphylococci***, ***Candida*** species (e.g., ***albicans***, ***glabrata***), ***K. pneumoniae*** and ***Klebsiella oxytoca***, ***P. aeruginosa***, ***A. baumannii***, ***Enterobacter*** species, ***Proteus*** species, yeast NOS, ***Bacteroides*** species, and other pathogens are responsible for 80%–87% of HCAIs (Hidron et al., 2008; Sievert et al., 2013; Weiner et al., 2016).

Healthcare expenses can rise, hospital stays can be prolonged, and hospital mortality and morbidity can all be increased by HCAIs. Furthermore, as bacteria become increasingly resistant to antibiotics, preventing HCAIs is essential to stopping the spread of antimicrobial resistance (AMR). One of the five steps recommended by the WHO Global Action Plan on AMR is to reduce the incidence of infection through infection prevention measures. AMR is one of the biggest dangers to public health globally (Willemsen et al., 2022).

A report on the burden of AMR in the European Union and European Economic Area (EU/EEA) from 2016 to 2020 was released in November 2022 by the European CDC. The report calculated statistically significant rising trends in the number of infections, fatalities related to antibiotic-resistant bacteria, and years of life adjusted for disability per 100,000 people (European Centre for Disease Prevention and Control. Assessing the Health Burden of Infections with Antibiotic-Resistant Bacteria in the (EU/EEA, 2016–2020).

A strong surveillance system can assist providers in making plans to lower HCAIs (Corrigan & Watson, 2002). In order to better prepare for and recognize HCAIs, a number of nations are creating and putting into place methods to monitor them. Iran has been developing and implementing a HCAI monitoring system since 2016 (Eybpoosh et al., 2019).

The system as intended entails the identification, reporting, and tracking of HCAI causes by infection control nurses (ICNs), necessitating the cooperation of many hospital departments. The most crucial parties in recognizing HCAIs are hospital department employees, laboratories, team members, infection control committees, and experts. If each of these members cannot do their job correctly, identifying and reporting HCAIs can be challenging (Eybpoosh et al .,2019; Pezhman et al ., 2021).

The efficiency with which hospital-associated MERS-CoV epidemics in Saudi Arabia and Korea have shown that the promotion and regular execution of both basic infection control practices, including hand cleanliness, and more sophisticated ones are effective (Nishiura et al .,2016).

The WHO supports and advocates for all HCWs to wash their hands before touching a patient, before clean or aseptic operations, after bodily fluid exposure or risk, after handling a patient, and after touching patient surroundings. The CDC and Prevention has developed a

comprehensive plan and guidelines for the prevention of HCAIs that cover basic IPC, antibiotic resistance, device and procedure-associated infections, disease and organism-specific infections, and guidance for health workers working in specific settings.

Multiple research studies show that policy changes and the implementation of innovative multifactorial, multimodal, and interdisciplinary solutions offer the highest likelihood of success in terms of improving hand hygiene and reducing HCAIs (Johnson et al., 2005; McLaws, 2015).

Initiating best practice in health care arises from a response to factors that are outside a purely scientific understanding of infection and not simply understood as a lack of knowledge (Williams, Rycroft-Malone, & Burton, 2016). Compliance with IPC principles ensure good infection prevention practices among HCWs (Williams et al., 2016).

Individuals serving as "change champions" might function as arbitrators or negotiators, helping to modify habits and apply best practices to guarantee patient safety (Sax et al., 2007; Williams et al., 2016). This necessitates educational initiatives that incorporate the philosophies, ideas, and cultural knowledge of dirt and illness (Jackson et al., 2014).

Other studies also illustrate how behavior change about hand washing might arise from educational interventions (Pittet et al., 2006; Widmer, Conzelmann et al., 2007).

Health personnel must use barriers such as gloves, gowns, face masks, protective glasses, and face shields to reduce the spread of germs on the job. Regular usage of PPE shields both the professional and the patient from potentially infectious bodily fluids. Nonetheless, the use of PPE does not guarantee 100% protection; for example, a needlestick injury can compromise PPE, and in many cases, concerns may go unnoticed, posing a significant health risk such as hepatitis B or HIV (Roberge, 2016; Santana et al., 2007).

Nevertheless, workers need to be provided clear instructions in order for Ministry of Health (MOH) -recommended IPC procedures to be successfully implemented in specific healthcare facilities and their component departments. Management and staff need to have clear, acknowledged expectations that are conveyed to one another (Mahmoud et al., 2016).

However, due to the growth of antibiotic-resistant bacteria and some HCWs reluctance to apply best practices in infection control, HCAIs continue to be one of the leading causes of mortality in most nations. As a result, strategic, policy, and education activities must continue to focus on treating and controlling such (mostly unnecessary) infections.

2.1 Strategies to Prevent Healthcare-Associated Infections

Concerns have been expressed by all parties involved in healthcare, including patients, healthcare providers, and the general public, regarding HCAIs and how to avoid and control them (Esfandiari et al., 2018), The emergence of harmful germs that are resistant to many drugs has significantly enhanced their influence (Kanerva et al., 2012).

Few antimicrobials are being developed for general usage, and the majority of antimicrobials on the market are resistant(Ventola, 2015), The most prevalent resistant infection among them is *K. pneumoniae*, which poses a serious risk, particularly in ICUs (Ripabelli et al., 2018). Due to the complexity of HCAI prevention and management, a multifaceted strategy and approach are needed to address this serious public health issue (Mainul Haque et al., 2018b).

The sections that follow cover the main strategies for addressing the impact of HCAIs, based on search-identified publications from reputable journals (Esfandiari et al., 2018; Mainul et al., 2018; Nathwani et al., 2019). These are the primary concerns mentioned in these publications; it should be noted that some articles focus on a single topic, while others cover many, contingent on the study's emphasis and conclusions.

- Hand hygiene.
- Maintaining a safe, clean, hygienic hospital environment.
- Sterilization, Disinfection, and Cleaning.
- Screening and categorizing patients into cohorts.
- Public health surveillance.
- Antibiotic stewardship.
- Following patient safety guidelines.
- Point of Care.

2.1.1 Hand Hygiene (HH)

Researchers from Europe and the US, such as Labarraque, Semmelweis, and Wendell Holmes, were attempting to stop nosocomial HCAIs in hospitals throughout the middle of the 19th century (Lane et al., 2010; McLaws, 2015). Despite conducting separate investigations, their discoveries led them to formulate a similar hypothesis: HCWs were carriers of harmful microbes on their hands, passing them on to susceptible patients who subsequently became infected.

Every year, HCAIs impact hundreds of millions of hospitalized patients, resulting in significant morbidity, death, and financial costs for people, communities, and the public health budget (Stone, 2009). When it comes to HCAIs, HH is the most significant single behavior modification

that healthcare personnel may do for infection management (Pittet et al., 2006). For instance, it has been stated that HH's strict practices prevent nosocomial HCAIs, strict hand washing policies in hospitals be ineffective; several studies have found that, worldwide, regular HH by healthcare professionals in various hospital wards frequently falls short of 40% (Trampuz & Widmer, 2004). Thus, failing to follow the HH guiding principles is a worldwide public health concern that needs to be addressed with more uniform rules, frequent monitoring and surveillance, and more research (Erasmus et al., 2010).

Using the acronym "HANDS" the Joint Commission suggested five crucial ideas for enhancing HH as a result of this study: H stands for "Habit." "Active feedback" is A. "No One Excused" (N) D stands for "data-driven." S stands for "Systems." This approach aims to instill in healthcare workers good HH practices so that they become automatic while entering or exiting a patient care area, as well as before and after patient treatment. Leaders in the health professions who engage in active feedback must constantly remind their employees of the significance of HH and its adherence. Health management and administrative personnel should use real-time performance data to evaluate and comment on HCWs' HH practices. Hospital authorities should periodically schedule essential training programs and must praise and reward hospital workers for attaining the goals. "No one excused" implies that all hospital employees, regardless of rank, have equal accountability and responsibility for maintaining proper HH. Hospital administrators should acknowledge that HH is critical to preserving patient care and safety, and all employees are required to abide by HH policies. A data-driven HH strategy necessitates rigorous, regular monitoring and compliance documentation. The collected data is then evaluated to determine and rank the areas that need improvement and development. Furthermore, research needs to go on to provide fresh concepts for problems that arise while applying the optimal HH practice. Systems imply that HH responsiveness is an endeavor encompassing the whole health system, with HH-related policies and guidelines being implemented across the board. The required logistical assistance must be provided by the authorities for all workers to be able to use, follow, and encourage adequate hand hygiene practices. To do this, it is necessary to make sure that personnel have easy access to HH facilities and to use technology to remind all employees to practice good HH, highlighting the advantages for both patients and HCWs personally (Erasmus et al., 2010).

A recent systematic review of 14 papers found that while a variety of strategic approaches are required to bring HCWs' HH compliance up to par, it may not be feasible to put them all into practice (Alshehari et al., 2018). The recommended solutions included administrative assistance, better access to HH agents, monitoring and feedback, and instructional programs (Alshehari et al., 2018).

Electronic and video monitoring devices may be highly helpful in improving HH practice and avoiding or managing HCAIs, according to the findings of another comprehensive analysis (Srigley., et al 2013). However, many hospitals may not be able to afford such treatments due to their high cost, particularly in LMICs. Furthermore, such constant observation of a health

practitioner's practice may not be welcomed by them, which might strain their professional relationships (Srigley et al., 2013).

The First Global Patient Safety Challenge, or "Clean Care is Safer Care," was launched in 2005 by the World Alliance for Patient Safety and the WHO with the goal of enhancing HH in the healthcare system.107 A multimodal strategy with five components is encouraged by this campaign, called WHO-5: "system change, training and education, observation and feedback, reminders in the hospital, and a hospital safety climate." (Luangasanatip et al., 2015).

HCWs' adherence to HH guidelines was shown to be enhanced by applying the WHO-5 method. According to this study, hospital administrators should also make their goals very clear, offer financial incentives to healthcare workers who achieve their goals, and hold all healthcare workers—regardless of rank—responsible. These tactics result in more advancements in HH practice. The study discovered that there were frequently insufficient infrastructure and resources needed to report on the effectiveness of intervention initiatives (Luangasanatip et al., 2015).

The results of another comprehensive review indicated that "knowledge, awareness, action control, and facilitation are not enough to change" when it comes to HH behaviors, despite interventions to that effect. Furthermore, this study found that treatments that included various inventive and creative approaches—like "social influence, attitude, self-efficacy, or intention"—led to benefits. "Group- or team-directed" tactics are rarely employed, and the majority of planning and policy now geared at ensuring improved compliance with HH guidelines is addressed largely at the individual and institutional levels. According to this research, team-directed techniques would be more successful in enhancing HH. According to the review's findings, more well-thought-out planning is needed, acknowledging the numerous obstacles and difficulties associated with modifying HH practice. This preparation should take into account issues at the individual, team, and organizational levels(Huis et al., 2012).

Among the medical personnel who devote the greatest time to patient care and interaction are nurses. Setting goals, offering incentives like bonuses, perks, or cash, and encouraging HCWs' individual accountability regardless of their administrative status are further recommendations made by this research (RN, Jones et al., 2017).

There was a poor level of knowledge and practice related HH knowledge and compliance among student nurses, according to another systematic review that included nineteen publications. Personal and administrative concerns frequently had an impact on their HH knowledge and practice (Labrague, McEnroe-Petitte, Van de Mortel, & Nasirudeen, 2018). In conclusion, failure to follow HH practices is a global public health concern that encourages the spread of HCAIs, necessitating the development of more uniform multi-modal policies as well as more study and observation (Erasmus et al., 2010).

2.1.2 Environmental Hygiene

Infection management and prevention, particularly about healthcare-associated illnesses, depend heavily on maintaining stringent environmental cleanliness (Moffa et al., 2017). Hospital surfaces that are contaminated and infected serve as a vital reservoir and means of dispersing potentially fatal pathogens, such as vancomycin-resistant *enterococci* (VRE), methicillin-resistant *Staphylococcus aureus* (MRSA), and *Clostridium difficile* (Chemaly et al., 2014). Hospital surfaces are extremely vulnerable to microbiological contamination with high-risk bacteria. This includes both porous surfaces, such as beds, mattresses, and linens, and nonporous surfaces, such as bed rails, door knobs, call bells, and light switches (Leas et al., 2015). Thus, maintaining tight cleanliness in hospitals is crucial to lowering HCAIs (Mehta et al., 2014).

Reducing the amount of pathogens on surfaces is the goal of environmental hygiene since it lessens the chance of infectious germs spreading from one object to a person, hence lowering the risk of cross-infection (Lupión et al., 2014). The intricate and multi-layered process of hospital cleaning entails the physical removal of infectious and contagious materials from all surfaces, including sputum, urine, blood, secretions, excretions, microorganisms, and dust that may foster the growth of microorganisms, using detergents, chemical disinfectants, and water (Shillabeer et al., 2016).

Regardless of the kind or scale of the organization or the type of healthcare offered, the US CDC and the Healthcare Infection Control Practices Advisory Committee support the idea that IPC is the most important and urgent issue anywhere that medical care is given to individuals or communities (Sehulster et al., 2017). To reduce the spread of infectious illnesses, regular thorough cleaning of the hospital's inpatient and outpatient spaces is one of the appropriate safety precautions (Sehulster et al., 2017).

2.1.3 Sterilization, Disinfection, and Cleaning

Regardless of the kind or scale of the organization and the healthcare offered, the US CDC and the Healthcare Infection Control Practices Advisory Committee support the idea that IPC is the most pressing and important issue anywhere that medical care is given to individuals or communities(Sehulster et al., 2003). To reduce the spread of infectious illnesses, all hospital areas—inpatient and outpatient—should undergo frequent, thorough cleanings as part of appropriate safety protocols(Sehulster et al., 2003).

Antimicrobials, used to clean hospitals, can be single or multi-component solutions designed to destroy or halt the spread of bacteria, viruses, or fungi that cause infectious diseases. Hospital cleaning solutions come in a variety of forms, including sprays, liquids, concentrated powders, and gases, and may include up to 275 distinct ingredients(Leas et al., 2015).

Users must comprehend the goal, constraints, and amount and kind of cleaning as well as the terminology, definitions, and classifications utilized (such as cleaning, disinfection, and sterilization) as well as how surfaces and equipment that call for particular precautions are categorized (Quinn et al., 2015). Sterilization employs ethylene oxide gas to eradicate all bacteria With the exception of all microbial spores, almost all metabolically active microorganisms may be eliminated by disinfection(Rutala, 2008).

One frequent substance used for high-level disinfection is hydrogen peroxide (7.5%)(Garner et al., 1986). When isopropyl alcohols are concentrated to between 70 and 90 percent, they may eradicate all vegetative microorganisms and a limited amount of bacterial spores, resulting in intermediate-level disinfection(Rutala, 2008). Low-level disinfection can be accomplished by eliminating most metabolically active bacteria, certain fungi, and viruses using a quaternary ammonium microbial detergent solution, but not metabolically inactive spores(Garner & Favero, 1986; Rutala, 2008).

Cleaning is defined as the process of brushing, scrubbing, or scraping an instrument or any physical surface to remove dirt, dust, earth, or biological pollutants. Detergent, water, and surfactant or emulsifying chemicals that lower surface tension are also used in the cleaning process. Hospital surfaces that have been cleaned are free of numerous infectious germs, which lowers the bacterial load on such surfaces. Therefore, cleaning is the first step in ensuring hospital hygiene, especially for surfaces that are obviously polluted. Cleaning also helps to ensure that following disinfection methods are successful (Quinn et al., 2015).

2.1.4 Screening and Cohorting Patients

Because several strategies have been ineffective or difficult to prevent the spread of HCAIs, leading to high rates of morbidity and death from AMR infections acquired during hospital stays, there is growing political and societal concern (Irek, Amupitan, Aboderin, & Obadare, 2018). Active surveillance cultures (ASCs), contact isolation of patients colonized with epidemiologically relevant pathogens, and preemptive isolation of high-risk patients are strategies meant to reduce and manage HCAIs (Tacconelli, 2009).

ASCs have been proposed for many hospitals to manage the rising incidence of infections caused by multidrug-resistant organisms (MDROs), but their efficacy and cost-effectiveness have not been shown, according to a systematic review that included twenty papers (McGinigle,

Gourlay, & Buchanan, 2008). Another prospective study found that bloodstream infections may not be linked to ASCs since ASCs performed on patients admitted to the ICU did not discover the bacteria causing bacteriological disorders with the most severe outcomes (Arie Soroksky et al., 2014). Once more, a four-year research in the ICU environment discovered that ASCs are not necessary for MRSA control in the ICU (Edmond et al., 2008).

Numerous studies revealed that personnel screening, ASCs, and patient isolation can reduce the spread of Multi-Drug Resistance (MDR) infections (Henderson, 2006). Lastly, a different research discovered that the proactive use of sterile "gloves, with or without a gown," particularly for patients who are at a higher risk of spreading infectious illnesses, was highly successful in controlling an MDR outbreak (Safdar et al., 2006).

2.1.5 Surveillance

The continuous, systematic gathering, evaluation of information on a health-related incident for use in public health initiatives aimed at lowering morbidity and death and enhancing health is known as public health surveillance (Tomar, 2007). Data from surveillance on HCAIs may be used to evaluate the scope, severity, and status of infections; analyze, scan, and track changes in infection rates; provide guidance for warning systems; and enhance performance, strategy, and competence development (Ridelberg & Nilsen, 2015). According to a Scottish research, the country's poorly organized monitoring system contributed to the lengthier time it took to identify HCAIs than the gold standard (Van Bunnik et al., 2015). Additionally, this study discovered that "increasing the number of hospitals participating in surveillance or by optimally selecting which hospitals to include in a surveillance system" can both shorten the time it takes to identify HCAIs (Van Bunnik et al., 2015).

According to two independent Scottish investigations that corroborated this finding, better monitoring systems might have avoided a significant number of S.aureus bacteremia (SAB) events (Morris et al., 2016; Murdoch et al., 2017). Active surveillance is strictly enforced in neurosurgical units, as evidenced by a recent observational prospective research conducted in India that found a low prevalence of HCAIs (Rath et al., 2017). Compared to other approaches, the Krankenhaus Infections Surveillance System (KISS) in Germany was found to reduce HCAIs more effectively (Zuschneid et al., 2010).

Timely identification of the distinct variations of HCAIs, particularly MDR pathogenic bacteria, is crucial; nevertheless, budgetary and practical constraints sometimes limit surveillance approaches. Thus, while the role of monitoring in preventing and managing HCAIs is well accepted, there is insufficient information regarding the operation of well-organized, healthcare-centered surveillance systems and the applicability of lessons learned in low-resource settings (Ciccolini et al., 2014).

2.1.6 Antibiotic Stewardship (AS)

McGowan and Gerding initially used the term AS in 1996. They emphasized the need for doctors and other medical professionals to view antibiotics as a very important one-time medical resource (Ciccolini et al., 2014). AS is described by the Society for Healthcare Epidemiology of America as a collection of coordinated tactics to optimize the use of antimicrobial drugs with the objectives of improving patient outcomes, lowering antibiotic resistance, and cutting down on needless expenses (M. Haque et al., 2020).

Alternative definitions of AS include the best possible clinical outcome for the treatment or prevention of an illness, with the least amount of harm to the patient and the least amount of influence on future resistance, as well as the best possible selection, dose, and duration of antimicrobial therapy (Gerding, 2001). Encourages the responsible and reasonable use of antibiotics and assists in preventing their overuse or inappropriate use(Dyar et al., 2017).

The two most significant techniques to approaching AS are explained, with the most successful projects integrating the two methods. The first stewardship technique is restraint of "prescriptive authority." Physicians should not be allowed to prescribe some antibiotics, and if they do, they should have to get permission beforehand. In order to guarantee that the antibiotic prescribed—if any—is suitable, the second technique-based therapy not only on clinical indications and symptoms but also on laboratory findings of culture sensitivity testing. Then and only then should these drugs be made available to doctors, along with instructions that therapy with antibiotics may need to be modified or stopped (Doron et al., 2011).

AS measures have specifically reduced the occurrence of infectious disorders and "colonization with antibiotic-resistant bacteria and Clostridium difficile infections in hospital inpatients," according to a recent systematic review and meta-analysis. "Evidence for the implementation of AS interventions to reduce the burden of infections from antibiotic-resistant bacteria" is what these studies offer to legislators and healthcare practitioners (Baur et al., 2017).

Better antimicrobial susceptibility testing (ASP) is necessary to prevent or slow the formation of AMR, extend the duration of antimicrobial therapy, improve patient outcomes, and lower the expenses associated with HCAIs for both people and communities, according to a separate research (Goff, 2011). Three distinct approaches to managing antibiotic resistance were delineated in a different study: IPC, diagnostic stewardship, and AS (Dik et al., 2016).

2.1.7 Following Patient Safety Guidelines

Improving patient safety requires the use of policies, guidelines, and checklists, all of which are crucial. Nevertheless, due to regional influences and customs, people, departments, and organizations frequently interpret and use these resources differently, frequently failing to take behavioral science into consideration (Treadwell et al., 2014). A research examining the reasons behind an HCAI strategy's failure discovered poor levels of physician participation and policy and guideline compliance(Dunagan et al., 1989). Within a year, it was discovered that the practices of physicians and other health professionals began to deteriorate, even at healthcare institutions where policies, standards, and checklists were successfully implemented. The explanations offered included the following: the recommendations were in contradiction with one another; there was insufficient evidence to back the rules; there was too much information presented; and the guidelines were too complex to apply (Gerber et al., 2014).As previously stated, the best way to control and prevent HCAIs is to work with healthcare facilities, public health agencies, health insurance companies, quality management, patient safety organizations, educational institutions, the general public, and the veterinary industry in a broad, integrated manner (Gastmeier, 2010). The following actions contributed to maximize the impact of a program, according to another research on improving patient safety: make sure the educational program is launched correctly and certified; make the program outcomes public; Patient safety must be carefully considered when designing healthcare environments. An informed and transparent managerial approach must also be encouraged. Clear guidance and role modeling must be given.

Collaboration between the healthcare program and government health institution must be facilitated. Hospital overcapacity must be reduced. Accountability must be ensured. Financial support must be provided (Gardam et al., 2009).

2.1.8 Point of Care (POC)

The majority of infectious illnesses are brought on by harmful microorganisms, such as bacteria, fungi, viruses, and parasites. Infectious illnesses pose a hazard to public health and may even have an adverse effect on the economy since, in contrast to other diseases, they spread rapidly across populations. Infectious illnesses are one of the biggest hazards to humanity, with over half of the world's population thought to be at risk.

"Medicine is blind without diagnostics." Without a diagnosis in the first place, diseases cannot be treated effectively and quickly. In addition to clearing the path for successful treatment, quick, accurate, and sensitive diagnostic testing is essential for stopping the spread of infectious illnesses. While assays like blood culture, high-throughput immunoassays, polymerase chain reaction (PCR), and mass spectrometry (MS) tests are sensitive and specific, they are also frequently expensive, labor- and time-intensive, and dependent on specialized equipment and

skilled operators. These assays are performed in central clinical laboratories. Conversely, POC testing enables prompt and appropriate treatment by providing quick "on-site" findings at the location of care delivery and in environments with limited resources. The WHO states that POC tests that address the need for infectious disease control, particularly in poor nations, should adhere to the following "ASSURED" criteria: Affordability, sensitivity, specificity, ease of use, speed, robustness, lack of equipment, and deliverability to end users are the first seven criteria(Chen et al., 2019).

POC diagnostics are designed to give patients quick access to actionable information at the moment of a health care interaction. The lateral flow immunoassay has been the standard platform. New developments in molecular diagnostics have recently satisfied POC applications' needs for simplicity, affordability, and speed. The capacity to identify infectious illnesses at locations with inadequate infrastructure is a key factor driving the development of POCs. For the diagnosis of a wide range of infectious illnesses, there has been a strong push to develop new technologies and improve upon current ones due to the potential applications in both affluent and resource-limited environments(Kozel et al., 2017).

Chapter Three

Methodology

3.1 Study Design

A quantitative cross-sectional study design was carried out to Evaluate Strategies of Healthcare-Associated Infection Prevention and Control in Hebron City Hospitals – Palestine, Including Governmental, Non-governmental (NGO), and Private Hospitals in Hebron City- Palestine.

Government Hospitals (Hebron Governmental Hospital (Aliah) and Muhammad Ali Al-Muhtaseb Hospital), Non-governmental hospitals (PRCS Specialized Hospital), and Private Hospitals (Al-Ahli, Almezan hospitals) in Hebron City – Palestine.

3.2 Target Groups and Target Sites

The study targets healthcare teams such as the heads of different medical departments and their staff and their staff (Head of Nurse, Head of Radiology Department, Head of Laboratory Department, Head of Pharmacist, and Head of Medical Engineering Department), administrative teams such as (Quality and Patient Safety, CEO, Medical Director, and Department of Supplies and Purchases). A mapping was created to reach the targeted groups in each institution.

3.3 Data Collection

Study data was collected from the hospitals in Hebron City- Palestine through the participants according to inclusion criteria by filling out the questionnaire directly provided by the researcher.

3.4 Study Tools

The target group received the questionnaire either in person or via an electronic link on a Google Form.
Thirty-six questions covering different aspects of knowledge, attitudes, and use of infection prevention and control strategies in their institutions were included in the questionnaire, and a few of these objects come from a different investigation (Rabaan et al., 2017). (Appendix 8.2) for a clearer understanding.

3.5 Inclusion and Exclusion Criteria

3.5.1 Inclusion Criteria:

- **All Health Care Teams, Such as:**

  Head of the Medical Department (Head of Nurse, Head of Radiology Department, Head of sterilization Department, Head of Laboratory Department, Head of Pharmacy Department, Head of Nutrition, and head of physiotherapy Department).

- **Administration Teams**

1. Head Of Quality and Patient Safety Department
2. CEO (Chive Executive Officer)
3. Medical Director
4. Medical Engineering
5. Department of Supplies and Purchases.

3.5.2 Exclusion Criteria:

Trainers, Students, Volunteers, and New Staff take less than one year.

Excluding Trainers, Students, Volunteers, and New Staff with less than one year of experience related to several factor as:

1. **Limited Experience and Knowledge**

- New staff and students may lack sufficient practical exposure to infection prevention strategies, leading to less reliable insights.
- Trainers primarily focus on education rather than direct implementation of infection control measures.

2. Inconsistent Adherence to Protocols

- New staff and students are still in the learning phase and may not strictly follow established infection prevention protocols.
- Their practices may not accurately reflect the effectiveness of current prevention strategies.

3. Variability in Training and Competence

- Training programs vary in content and quality, leading to inconsistent knowledge levels among students and new staff.
- Their responses may introduce bias or variability in study results.

3.6 Reliability and Validity of the Instrument

Content validity was done to evaluate the questionnaire for validity purposes by an expert team of academics and specialists in the field of study.
To test for reliability, a pilot study was conducted on 10 participants who were not included in the study sample. Our pilot study aimed to test if any potential or confusing variables were excluded from the actual study, whose Cronbach alpha was 86.2%. Cleaning data is performed to control errors or missing data.

3.7 Data management and statistical analysis

The data analysis was done using SPSS version 23.

The items and questions in the questionnaire were analyzed as categorical variables (e.g., questions with response options such as "yes," "no," or "don't know"). Descriptive statistics, including frequencies and percentages, were used to summarize all quantitative responses. To assess the differences in percentages and examine the relationships between variables, the Chi-square test was applied at the 5% level of significance.

For multiple-response questions (Questions 32 and 33), which included several possible response options, each selected option was recoded as 1, while unselected options were coded as 0 Subsequently, the sum of all selected options for each respondent was calculated and

converted into a percentage by dividing the sum by the total number of items and multiplying by 100%. This approach allowed the researcher to quantify the primary variables in the study as scaled measurements ranging from 0 to 100%.

The primary variables measured in this manner included healthcare providers' awareness, compliance with institutional infection prevention policies, general policy compliance, the presence of supervision, and the extent of implementation of infection control policies and guidelines in various units. For each of these variables, specific questions from the questionnaire were summed after recoding responses to 0 and 1, and responses marked as "don't know" were treated as missing data.

The means and the standard deviations were computed to describe the main measurements. The Pearson correlation coefficient was used to assess the strength and direction of the relationships between the quantitative (numeric) variables in the study, both dependent and independent. This statistical test helps determine if there is a significant connection between two variables and how strongly they are related.

To examine differences in the General Policy Compliance scores across various groups of socio-demographic and personal characteristics, two statistical tests were used. First, the **two independent samples t-test** was used to compare the means of General Policy Compliance scores between two distinct groups (for example, comparing male vs. female participants). Second, the **one-way analysis of variance (ANOVA)** was used to compare the means of General Policy Compliance scores across more than two groups (for example, comparing scores between different age groups or professional categories). These tests help to determine if there are statistically significant differences in General Policy Compliance based on characteristics such as age, gender, profession, type of hospital, or hospital itself.

3.8 Ethical Consideration

The study proposal was approved by the Faculty of Public Health Ethical Committee.
Also, Approval from the Palestinian Ministry of Health was obtained after being formally approached. Information about the purpose of the study and the questionnaire was presented in a formal letter from Al-Quds University to the Palestinian Ministry of Health.

Participants were provided with a consent form about the study, including the aim and objectives, and they were informed about their right to refuse to participate. Completing the questionnaire was considered as consent to participate in the study.

Chapter Four

Results

Our study utilized a descriptive-analytical approach, which is particularly beneficial for descriptive studies. This method aids in comprehending the current situation and strategizing for the future. Additionally, it provides insight into evaluating healthcare-associated infection prevention strategies in hospitals in Hebron City - Palestine.

As shown in Table (1), A target sample of 178 individuals took part in this study, yielding a response rate of 96%.

Table (1-A): Demographic characteristics of participants (n=178)

Category	Subcategory	Frequency (n)	Percentage (%)
Gender	**Male**	130	73
	Female	48	27
Age	**18-26**	24	13.5
	27-34	71	39.9
	35-43	46	25.8
	44 and more	37	20.8
Profession	**Radiology**	9	5.1
	Doctor	27	15.2
	Nursing	80	44.9

Table (1-B)

	Laboratory	**26**	**14.6**
	Other	36	20.1
Place of Work	**Private hospital**	81	45.5
	Government hospital	73	41
	NGOS	24	13.5

Including the Head of Quality and Patient Safety Department, CEO/Executive Director, Medical Director, Medical Engineers, Nutrition, Physiotherapy, Pharmacist and Supplies and Procurement Department.

During the main study, n= 185 questionnaires were distributed, n= 178 participants completed the questionnaires, a response rate of 96%.

Gender:

According to Table (1), the majority of participants were male: 73% (n=130), while 27% (n=48) were female.

Age:

From Table (1), the majority of participants were in the 27 to 34 age group, accounting for 39.9% (n=71), followed by the 35 to 43 age group at 25.8% (n=46), the 18 to 26 age group at 13.5% (n=24), and lastly, those above 44 years old at 20.8% (n=37).

Profession:

From Table (1), the majority of participants are nursing 44.9% (n=80), 15.2% (n=27) doctors, 14.6% (n=26) are laboratory technician. Finally, 20.2% (n=36) worked in other profession.

Place of Work:

From Table (1), most of the participants worked in private hospitals 45.5% (n=45.5), 41% (n=73) worked in governmental hospitals, and 13.5% (n=24) worked in NGOs.

Descriptive analysis

To understand of variables, that affect the evaluation of healthcare-associated infection prevention strategies in Hebron City hospitals –Palestine. Table 2 represents the number and the percentage of the participant's answer.

Table (2-A): Percentage and Number of Participants Grouped By Respondent Answers

Item	Yes	No	I don't Know
	(n %)	(n %)	(n %)
Q5. In your institution, are there strategies to prevent healthcare-associated infections?	159 (89.3)	15 (8.4)	4 (2.2)
Q6. In your institution, is there a specialized or active staff to deal with infections?	147(82.6)	23 (12.9)	8 (4.5)
Q7. In your institution, are senior policymakers involved in the health care-associated infections program?	100(56.2)	45 (25.3)	33(18.5)
Q8. Is there a surveillance system for healthcare-associated infections in your institution?	150(84.3)	21 (11.8)	7 (3.9)
Q9. If the answer is yes, is there a clear description of the committee members?	85(47.8)	43 (24.2)	50(28.1)
Q10. Do you agree that your institution's control tool is effective in preventing or controlling healthcare-associated infections?	105(59)	53 (29.8)	20(11.2)
Q11. Are there necessary tools available to prevent health care-related infections, such as gel masks, masks, protective equipment, etc., soap, and disinfectants?	165(92.7)	12 (6.7)	1 (0.06)
Q12. In your organization, do you have a work team specializing in emerging infectious diseases (dealing with outbreaks)?	100(56.2)	44 (24.7)	34(19.1)
Q13. Do you think that all employees in your unit follow appropriate control policies (rules and guidelines) for health care-associated infections?	84(47.2)	85 (47.8)	9 (5.1)
Q14. Are people infected with infectious diseases or suspected of being infected isolated in accordance with isolation policies for health care-associated infections?	142 (79.8)	25 (14)	11 (6.2)

Table (2- B)

Q15. Do cleaners receive training courses on infection prevention and control practices related to healthcare-associated infections?	59 (33.1)	65 (36.5)	54(30.3)
Q16. Do you have a list of infectious agents associated with health care?	89 (50)	57 (32)	32 (18)
Q17. Are staff given instructions and training to care for patients with health-care-associated infections?	109 (61.2)	47 (26.4)	22(12.4)
Q18. Do you think the hospital where you work is prepared to deal with an outbreak of healthcare-associated infections?	86 (48.3)	58 (32.6)	34(19.1)
Q19. Is medical waste disposed of properly and appropriately?	116 (65.2)	32 (18)	30(16.9)
Q20. Is there control over the disposal of medical waste?	101 (56.7)	32 (18)	45(25.3)
Q21. Is there oversight of employees taking the necessary vaccinations? Are all employees obligated to take the necessary vaccinations to work in the hospital?	113 (63.5)	40 (22.5)	25 (14)
Q22. Is the cultivation of bacteria in the laboratory monitored and documented according to medical and scientific principles?	124 (69.7)	6 (3.4)	48 (27)
Q23. Are there safety procedures followed in medical laboratories to prevent the spread of infection or sample contamination?	101 (56.7)	20 (11.2)	57 (32)
Q24. Have you received any training or guidance on the protection and control of healthcare-associated infections?	100 (56.2)	77 (43.3)	1(0.6)
Q25. Are their appropriate sterilization procedures for tools used in the hospital?	141 (79.2)	20 (11.2)	17(9.6)
Q26. Is there continuous monitoring of sterilization procedures for instruments and within appropriate standards and policies that limit infections associated with health care?	111 (62.4)	24 (13.5)	43(24.2)
Q27. Are employees subject to comprehensive periodic examinations?	41 (23)	102(57.3)	35(19.7)
Q28. Are there local or external workshops or training courses within the fields dealing with health care-associated infections?	84 (47.2)	65 (36.5)	29(16.3)

Table (2- C)

Q29. Are devices adequately cleaned and sterilized, including those used more than once?	132 (74.2)	24 (13.5)	22(12.4)
Q30. Is there a possibility to provide engineering control devices if necessary to reduce the risks of infection associated with health care in the hospital? If the answer is no, what are the obstacles to providing control devices?	67 (37.6)	44 (24.7)	67(37.6)
Q31. Does the hospital have a room with low air pressure that prevents air from escaping and thus prevents the spread of disease in the hospital?	34 (19.1)	101(56.7)	43(24.2)

Table (2) above presents the distribution of responses from participants on various items related to infection prevention and control strategies in healthcare settings. The responses are categorized into three groups: "Yes," "No," and "I Don't Know," with the corresponding frequency and percentage of participants for each option.

Key findings include: -

- Institutional Strategies and Staff Involvement: A high percentage (89.3%) of participants reported that their institution has strategies in place to prevent healthcare-associated infections (HAIs), and 82.6% affirmed the presence of specialized staff dealing with infections. However, only 56.2% indicated that senior policymakers are involved in infection prevention programs.
- Surveillance and Control Systems: 84.3% of participants stated that their institution has a surveillance system for healthcare-associated infections. Despite this, only 47.8% confirmed that there is a clear description of the committee members responsible for infection control.
- Availability of Resources: The majority (92.7%) of respondents reported the availability of essential tools for preventing infections, such as masks, soap, disinfectants, and protective equipment.
- Training and Awareness: A substantial proportion (61.2%) of participants reported that staff receive training to care for patients with healthcare-associated infections. However, only 33.1% of respondents confirmed that cleaners receive specific training on infection prevention practices.
- Compliance and Implementation: A significant portion of participants (79.8%) reported that infected or suspected patients are isolated according to infection control policies. On the other hand, only 47.2% believed that all employees in their units follow the appropriate infection control policies consistently.

- Medical Waste and Sterilization: While 65.2% of participants affirmed proper disposal of medical waste, 79.2% reported that appropriate sterilization procedures are in place for tools used in the hospital. However, only 62.4% indicated continuous monitoring of sterilization procedures.
- Vaccination and Safety Procedures: 63.5% of participants indicated that employees are required to take necessary vaccinations, and 69.7% reported that bacterial cultivation in laboratories is monitored according to medical and scientific standards.
- Monitoring and Evaluation: Several items related to oversight and monitoring show varying levels of compliance. For example, only 56.7% of participants confirmed that there are safety procedures followed in medical laboratories, while 57.3% reported that employees are subject to comprehensive periodic examinations.
- Training and Workshops: While 47.2% of participants affirmed the availability of local or external workshops on infection control, 36.5% did not report such opportunities.
- Engineering Controls and Specialized Rooms: A significant percentage (56.7%) of respondents noted that the hospital lacks a room with low air pressure to prevent disease spread, and a similar percentage (37.6%) reported that engineering control devices are not available to reduce infection risks.

This table provides a comprehensive overview of participants' perceptions of infection control measures and resources available in their institutions, highlighting areas where significant compliance exists, as well as areas that may require improvement.

Table (3): Number and Percentage of Participants Who Answer About the Causes of The Spread of Infection Grouped by Respondent Answers.

Q32 In your opinion, what are the causes of the spread of infection?	n	(%)
Q32A Violating infection control policies, rules, and guidelines	134	(75.3)
Q32B Negligence of healthcare workers	118	(66.3)
Q32C Lack of infection control infrastructure	91	(51.1)
Q32D Lack of supervision by the Safety Department regarding quality and patients	80	(44.9)
Q32E Lack of appropriate personal protective equipment for employees	64	(36)
Q32F There are no clear infection control policies, rules, or guidelines.	59	(33.1)

Note: From Table (3), 75.3% (n=134) of the participants answered that the most common cause of the spread of infection was "Violating infection control policies, rules, and guidelines". While 33.1%(n=59) of the participants think that the causes of the spread of infection are related to "There are no clear infection control policies, rules, or guidelines."

Table (4): Number and Percentage of Participants Who Answer About Factors Contributing to The Spread of Infection in Hospitals Grouped by Respondent Answers.

Q33 Factors that contribute to the spread of infection in hospitals.?	**n**	**(%)**
Q33A Lack of training courses and workshops necessary to limit or deal with infection	126	(70.8)
Q33B The infrastructure and design of the hospital have a shortage of staff.	98	(55.1)
Q33C Lack of medical staff expertise to prevent the spread of infection	97	(54.5)
Q33D There is no training program for infection control.	89	(50)
Q33E There is no staff specialized in giving preventive guidance.	68	(38.2)
Q33F There are no resources to fill infection control needs.	62	(34.8)
Q33G There is no infection control on demand.	48	(27)

Note: From Table (4), 70.8% (n=126) of the participants answered that the most factors that contribute to the spread of infection in hospitals are the "Lack of training courses and workshops necessary to limit or deal with infection". While 27%(n=48) of the participants think that factors that contribute to the spread of infection in hospitals are related to "There is no infection control on demand".

Table (5): Number and Percentage of Participants Who Answer About Types of Infections Reach the Ministry of Health Grouped by Respondent Answers.

Q34 What types of infections reach the Ministry of Health?	**n**	**(%)**
Q34A All types of infections (whether in hospitals or the community)	73	(41)
Q34B All healthcare-related infections	65	(36.5)
Q34C I don't know	40	(22.5)

Note: From Table (5), 41% (n=73) of the participant answered that, the most types of infections reach the Ministry of Health is "All types of infections (whether in hospitals or the community)". While few 22.5%(n=40) of the participants think that all types of infections (whether in hospitals or the community) is related to "All healthcare-related infections".

Table (6): Number and Percentage of Participants Who Answer About the Nature of The Reporting System in The Hospital Where You Work Grouped by Respondent Answers.

Q35 What is the nature of the reporting system in the hospital where you work?	**n (%)**
Q35A On paper	77 (43.3)
Q35B Electronic regulatory system	70 (39.3)
Q35C Contact by phone	31 (17.4)

Note: From Table (6), 43.3% (n=77) of the participant answered that, the nature of the reporting system in the hospital where you work "on paper". While few 17.4%(n=31) of the participants think that , the nature of the reporting system in the hospital where you work is related to "Contact by phone".

Table (7): Number and Percentage of Participants Who Answer About Most Successful Reporting System for Writing About Infectious Agents Grouped by Respondent Answers.

Q36 In your opinion, what is the most successful reporting system for writing about infectious agents?	**n (%)**
Q36A Electronic system	141 (79.2)
Q36B On paper	31 (17.4)
Q36C Contact by phone	6 (3.4)

Note: From Table (7), 79.2% (n=77) of the participant answered that, the most successful reporting system for writing about infectious agents "Electronic system". While few 3.4%(n=6) of the participants think that , the most successful reporting system for writing about infectious agents is related to "Contact by phone".

4.1 Part I: Factors of Evaluating Healthcare-Associated Infection Prevention Strategies in Hebron City Hospitals - Palestine Grouped by Participants Age.

In order to evaluate the Factors of Healthcare-Associated Infection Prevention Strategies in Hebron City Hospitals – Palestine, grouped by participants' age, the results of the Chi-square test are presented in Tables 8 through 15.

1. **Evaluating of Hand Hygiene Strategy by Participants Age**

Table (8): Questions of Hand Hygiene Grouped by Participants Age

Category	Subcategory	18-26	27-34	35-43	> 44	Chi	P-value
Q15	**Yes**	7(11.9%)	23(39%)	11(18.6%)	18(30.5%)	7.29	0.29
	No	10(15.4%)	28(43.1%)	19(29.2%)	8(12.3%)		
	DK	7(13%)	20(37%)	16(29.6%)	11(20.4%)		
Q23	**Yes**	12(11.9%)	38(37.6%)	24(23.8%)	27(26.7%)	5.28	0.51
	No	3(15%)	9(45%)	6(30%)	2(10%)		
	DK	9(15.8%)	24(42.1%)	16(28.1%)	8(14%)		
Q33	**Q33A**	12(17.6%)	31(45.6%)	17(25%)	8(11.8%)	0.72	0.87
	Q33B	13(13.4%)	37(38.1%)	26(26.8%)	21(21.6%)		
	Q33C	13(10.3%)	50(39.7%)	38(30.2%)	25(19.8%)		
	Q33D	11(11.2%)	40(40.8%)	26(26.5%)	21(21.4%)		
	Q33E	12(13.5%)	42(47.2%)	20(22.5%)	15(16.9%)		
	Q33F	8(16.7%)	19(39.6%)	11(22.9%)	10(20.8%)		
	Q33G	8(16.7%)	19(39.6%)	11(22.9%)	10(20.8%)		

Note: From Table (8), The questions related to hand hygiene, grouped by participants' age, are not statistically significant as the p-value is greater than 0.05.

2. Evaluating Of Maintaining a Safe, Clean, Hygienic Hospital Environment Strategy by Participants Age

Table (9): Questions of Maintaining a Safe, Clean, Hygienic Hospital Environment Grouped by Participants Age.

Category	Subcategory	18-26	27-34	35-43	> 44	Chi	P-value
Q19	**Yes**	13(11.2%)	44(37.9%)	27(23.3%)	32(27.6%)	11.85	0.07
	No	4(12.5%)	15(46.9%)	11(34.4%)	2(6.2%)		
	DK	7(23.3%)	12(40%)	8(26.7%)	3(10%)		
Q20	**Yes**	11(10.9%)	34(33.7%)	24(23.8%)	32(31.7%)	19	0.004
	No	4(12.5%)	16(50%)	11(34.4%)	1(3.1%)		
	DK	9(20%)	21(46.7%)	11(24.4%)	4(8.9%)		
Q32	**Q32A**	20(14.9%)	50(37.3%)	34(25.4%)	30(22.4%)	2.99	0.39
	Q32B	8(13.6%)	27(45.8%)	17(28.8%)	7(11.9%)		
	Q32C	15(12.7%)	45(38.1%)	30(25.4%)	28(23.7%)		
	Q33D	9(14.1%)	27(42.2%)	16(25%)	12(18.8%)		
	Q32E	10(11%)	41(45.1%)	21(23.1%)	19(20.9%)		
	Q32F	9(11.2%)	35(43.8%)	23(28.8%)	13(16.2%)		
	Q32G	8(13.1%)	28(41.2%)	24(23.1%)	21(22.6%)		

Note: Table (9) presents the questions of maintaining a safe, clean, and hygienic hospital environment grouped by participant's age. Except for Question 20: 'Is there control over the disposal of medical waste?', which is significant with a p-value of 0.004.

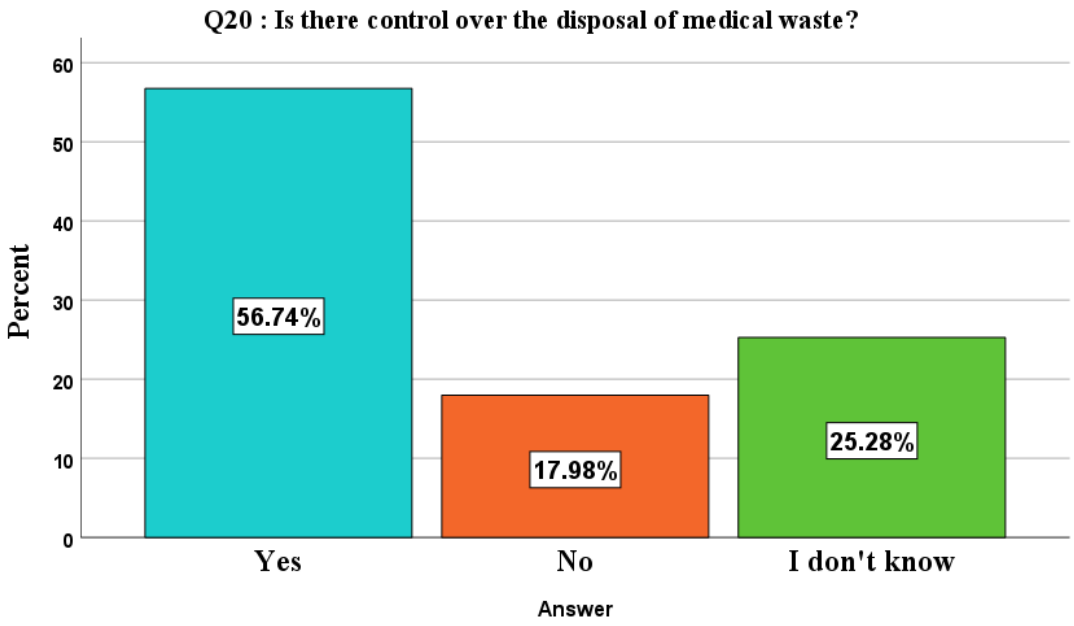

Figure (1): (Q 20): Is there control over the disposal of medical waste?

3. Evaluating of Sterilization, Disinfection, and Cleaning Strategy by Participants Age

Table (10): Questions of Sterilization, Disinfection and Cleaning Grouped by Participants Age.

Category	Subcategory	18-26	27-34	35-43	>44	Chi	P-value
Q25	**Yes**	18(12.8%)	58(41.1%)	35(24.8%)	30(21.3%)	3.26	0.76
	No	4(20%)	8(40%)	6(30%)	2(10%)		
	DK	2(11.8%)	5(29.4%)	5(29.4%)	5(29.4%)		
Q26	**Yes**	15(13.5%)	42(37.8%)	26(23.4%)	28(25.2%)	6.04	0.42
	No	4(16.7%)	12(50%)	7(29.2%)	1(4.2%)		
	DK	5(11.6%)	17(39.5%)	13(30.2%)	8(18.6%)		
Q29	**Yes**	15(11.4%)	54(40.9%)	35(26.5%)	28(21.2%)	11.43	0.08
	No	7(29.2%)	10(41.7%)	6(25%)	1(4.2%)		
	DK	2(9.1%)	7(31.8%)	5(22.7%)	8(36.4%)		

Note: From Table (10), the Questions of sterilization, disinfection and cleaning grouped by participants age are not statistically significant, as the p-value is greater than 0.05.

4. Evaluating of Screening and Categorizing Patients Into Cohorts by Participants Age

Table (11): Questions of Screening and Categorizing Patients into Cohorts Grouped by Age.

Category	Subcategory	18-26	27-34	35-43	>44	Chi	P-value
Q11	**Yes**	23(13.9%)	65(39.4%)	41(24.8%)	36(21.8%)	3.99	0.68
	No	1(8.3%)	5(41.7%)	5(41.7%)	1(8.3%)		
	DK	0	1(100%)	0	0		
Q14	**Yes**	19(13.4%)	59(41.5%)	31(21.8%)	33(23.2%)	10.34	0.11
	No	2(8%)	8(32%)	12(48%)	3(12%)		
	DK	3(27.3%)	4(36.4%)	3(27.3%)	1(9.1%)		
Q31	**Yes**	7(20.6%)	13(38.2%)	8(23.5%)	6(17.6%)	5.74	0.45
	No	9(8.9%)	40(39.6%)	27(26.7%)	25(24.8%)		
	DK	8(18.6%)	18(41.9%)	11(25.6%)	6(14%)		

Note: From Table (11), the questions of screening and categorizing patients into cohorts grouped by age not statistically significant, as the p-value is greater than 0.05.

5. Evaluating of Public Health Surveillance by Participants Age

Table (12- A): Questions of Public Health Surveillance Grouped by Participants Age

Category	Subcategory	18-26	27-34	35-43	>44	Chi	P-value
Q8	**Yes**	20(13.3%)	56(37.3%)	39(26%)	35(23.3%)	5.10	0.53
	No	3(14.3%)	12(57.1%)	5(23.8%)	1(4.8%)		
	DK	1(14.3%)	3(42.9%)	2(28.6%)	1(14.3%)		
Q9	**Yes**	6(7.1%)	28(32.9%)	27(31.8%)	24(28.2%)	16.03	0.06
	No	9(20.9%)	22(51.2%)	9(20.9%)	3(7%)		
	DK	9(18%)	21(42%)	10(20%)	10(20%)		
Q10	**Yes**	12(11.4%)	41(39%)	22(21%)	30(28.6%)	11.67	0.07
	No	8(15.1%)	23(43.4%)	18(34%)	4(7.5%)		
	DK	4(20%)	7(35%)	6(30%)	3(15%)		
Q12	**Yes**	12(12%)	39(39%)	21(21%)	28(28%)	9.75	0.14
	No	5(11.4%)	19(43.2%)	14(31.8%)	6(13.6%)		
	DK	7(20.6%)	13(38.2%)	11(32.4%)	3(8.8%)		
Q18	**Yes**	12(14%)	36(41.9)	17(19.8%)	21(24.4%)	6.55	0.37
	No	6(10.3%)	25(43.1%)	19(32.8%)	8(13.8%)		
	DK	6(17.6%)	10(29.4%)	10(29.4%)	8(23.5%)		
Q21	**Yes**	16(14.2%)	48(42.5%)	23(20.4%)	26(23%)	10.35	0.11
	No	3(7.5%)	18(45%)	12(30%)	7(17.5%)		
	DK	5(20%)	5(20%)	11(44%)	4(16%)		
Q27	**Yes**	7(17.1%)	16(39%)	9(22%)	9(22%)	9.16	0.17
	No	10(9.8%)	47(46.1%)	28(27.5%)	17(16.7%)		
	DK	7(20%)	8(22.9%)	9(25.7%)	11(31.4%)		
Q34	**Q34A**	5(12.5%)	16(40%)	11(27.5%)	8(20%)	0.64	0.99
	Q34B	11(15.1%)	30(41.1%)	17(23.3%)	15(20.5%)		
	Q34C	8(12.3%)	25(38.5%)	18(27.7%)	14(21.5%)		

Table (12- B)

Q35	**Q35A**	6(8.6%)	31(44.3%)	15(21.4%)	18(25.7%)	7.38	0.29
	Q35B	14(18.2%)	25(32.5%)	24(31.2%)	14(18.2%)		
	Q35C	4(12.9%)	15(48.4%)	7(22.6%)	5(16.1%)		
Q36	**Q36A**	17(12.1%)	58(41.1%)	37(26.2%)	29(20.6%)	5.79	0.45
	Q36B	6(19.4%)	11(35.5%)	9(29%)	5(16.1%)		
	Q36C	1(16.7%)	2(33.3%)	0(0%)	3(50%)		

Note: From Table (12), the questions of public health surveillance grouped by participants age are not statistically significant (p-value > 0.05).

6. Evaluating of Antibiotic Stewardship by Participants Age

Table (13): Questions of Antibiotic Stewardship Grouped by Participants Age

Category	Subcategory	18-26	27-34	35-43	> 44	Chi	P-value
Q16	**Yes**	12(13.5%)	36(40.4%)	18(20.2%)	23(25.8%)	7.25	0.30
	No	7(12.3%)	22(38.6%)	21(36.8%)	7(12.3%)		
	DK	5(15.6%)	13(40.6%)	7(21.9%)	7(21.9%)		
Q22	**Yes**	14(11.3%)	51(41.1%)	31(25%)	28(22.6%)	5.89	0.44
	No	0	4 (66.7%)	1(16.7%)	1(16.7%)		
	DK	10(20.8%)	16(33.3%)	14(29.2%)	8(16.7%)		
Q28	**Yes**	10(11.9%)	28(33.3%)	20(23.8%)	26(31%)	14.28	0.03
	No	8(12.3%)	32(49.2%)	20(30.8%)	5(7.7%)		
	DK	6(20.7%)	11(37.9%)	6(20.7%)	6(20.7%)		

Note: From Table (13), the questions of antibiotic stewardship grouped by participants age are statistically not significant (p-value > 0.05) except for Question 28 "Are there local or external workshops or training courses within the fields dealing with health care-associated infections?" which is significant with a p-value of 0.03.

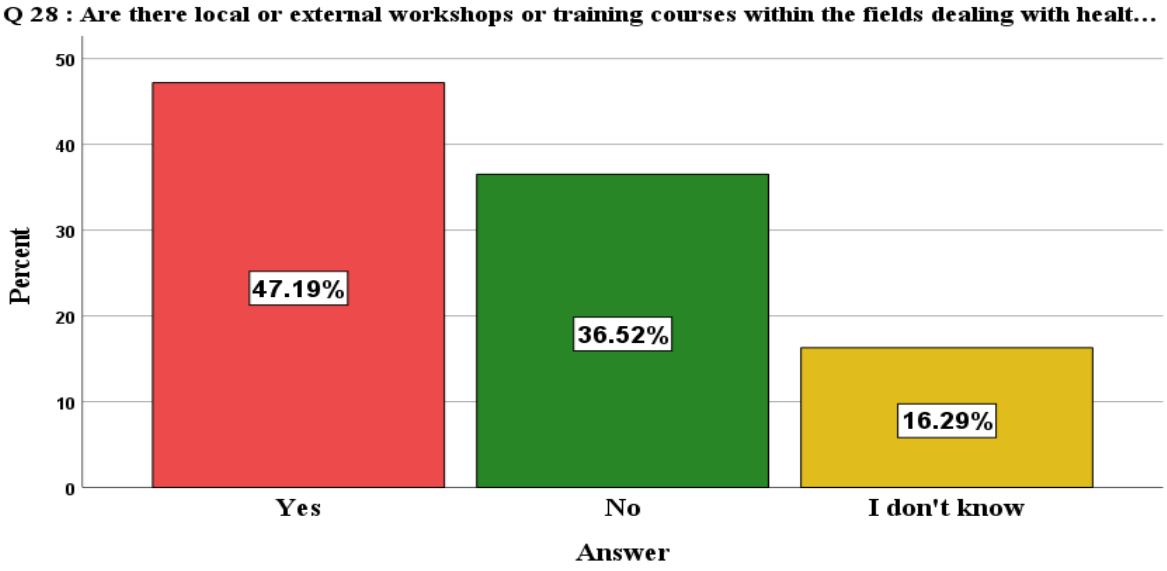

Figure (2): (Q 28): Are there local or external workshops or training courses within the fields dealing with health care-associated infections?

7. Evaluating of Following Patients Safety Guidelines by Participants Age

Table (14): Questions of Following Patients Safety Guidelines Grouped by Participants Age

Category	Subcategory	18-26	27-34	35-43	>44	Chi	P-value
Q5	**Yes**	19(11.9%)	62(39%)	42(26.4%)	36(22.6%)	11.49	0.07
	No	3(20%)	9(60%)	3(20%)	0		
	DK	2(50%)	0	1(25%)	1(25%)		
Q6	**Yes**	18(12.2%)	56(38.1%)	38(25.9%)	35(23.8%)	7.09	0.13
	No	4(17.4%)	10(43.5%)	7(30.4%)	2(8.7%)		
	DK	2(25%)	5(62.5%)	1(12.5%)	0		
Q7	**Yes**	9(9%)	37(37%)	29(29%)	25(25%)	8.11	0.23
	No	8(17.8%)	19(42.2%)	12(26.7%)	6(13.3%)		
	DK	7(21.2%)	15(45.5%)	5(15.2%)	6(18.2%)		
Q13	**Yes**	8(9.5%)	32(38.1%)	24(28.6%)	20(23.8%)	7.17	0.31
	No	15(17.6%)	33(38.8%)	22(25.9%)	15(17.6%)		
	DK	1(11.1%)	6(66.7%)	0	2(22.2%)		
Q17	**Yes**	13(11.9%)	42(38.5%)	27(24.8%)	27%(24.8)	3.50	0.74
	No	7(14.9%)	21(44.7%)	13(27.7%)	6(12.8%)		
	DK	4(18.2%)	8(36.4%)	6(27.3%)	4(18.2%)		

Note: From Table (14), the questions of following patient's safety guidelines grouped by participant's age are not statistically significant (p-value > 0.05).

8. Evaluating of Point of Care by Participants Age

Table (15): Question of Point of Care Grouped by Participants Age

Category	Subcategory	18-26	27-34	35-43	>44	Chi	P-value
Q30	**Yes**	7(10.4%)	27(40.3%)	20(29.9%)	13(19.4%)	2.84	0.83
	No	8(18.2%)	19(43.2%)	9(20.5%)	8(18.2%)		
	DK	9(13.4%)	25(37.3%)	17(25.4%)	16(23.9%)		

Note: From Table (15), the question of point of care grouped by participant's age are not statistically significant (p-value > 0.05).

4.2 Part II: Factors of Evaluating Healthcare-Associated Infection Prevention Strategies in Hebron City Hospitals - Palestine Grouped by Participants type of hospitals.

To evaluate the Factors of Healthcare-Associated Infection Prevention Strategies in Hebron City Hospitals -Palestine, grouped by participants' type of hospitals, the results of the Chi-square test are presented in Tables 16 through 23.

1. Evaluating of Hand Hygiene Strategy by Participants Type of Hospitals

Table (16): Questions of Hand Hygiene Grouped by Participants Type of Hospitals

Category	Subcategory	Private	Government	NGOS	Chi	P-value
Q15	**Yes**	28(47.5%)	19(32.2%)	12(20.3%)	12.72	0.01
	No	23(35.4%)	37(56.9%)	5(7.7%)		
	DK	30(55.6%)	17(31.5%)	7(13%)		
Q23	**Yes**	44(43.6%)	41(40.6%)	16(15.8%)	3.07	0.55
	No	7(35%)	10(50%)	3(15%)		
	DK	30(52.6%)	22(38.6%)	5(8.8%)		
Q33	**Q33A**	12(20.6%)	29(45.6%)	17(22%)	0.72	0.87
	Q33B	13(16.4%)	37(35.1%)	23(26.8%)		
	Q33C	12(14.3%)	48(35.7%)	37(30.2%)		
	Q33D	10(11.2%)	38(40.8%)	22(26.5%)		
	Q33E	11(13.5%)	40(45.2%)	22(24.5%)		
	Q33F	7(19.7%)	18(37.6%)	15(22.9%)		
	Q33G	6(14.7%)	18(39.6%)	11(24.9%)		

Note: In Table (16), the questions about hand hygiene, categorized by the type of hospitals the participants belong to, do not show statistical significance. This is indicated by the p-value being greater than 0.05, except for Question 15: "Do cleaners receive training courses on infection prevention and control practices related to healthcare-associated infections," which is statistically significant with a p-value of 0.01

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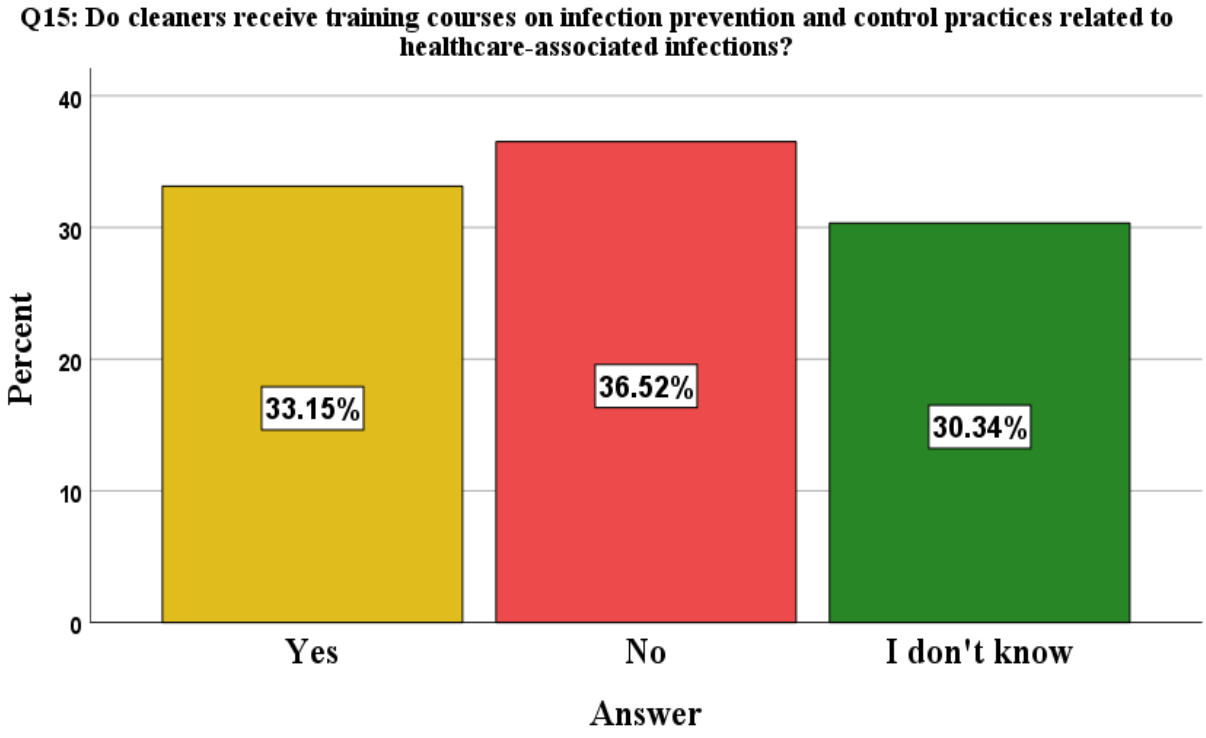


Figure (3): (Q15): Do cleaners receive training courses on infection prevention and control practices related to healthcare-associated infections?

2. Evaluating of Maintaining a Safe, Clean, Hygienic Hospital Environment Strategy by Participants Type of Hospitals

Table (17): Questions of Maintaining a Safe, Clean, Hygienic Hospital Environment Grouped by Participants Type of Hospital.

Category	Subcategory	Private	Government	NGOS	Chi	P-value
Q19	**Yes**	57(49.1%)	38(32.8%)	21(18.1%)	23.20	0.001
	No	6(18.8%)	24(75%)	2(6.3%)		
	DK	18(60%)	11(36.7%)	1(3.3%)		
Q20	**Yes**	50(49.5%)	33(32.7%)	18(17.8%)	24.58	0.001
	No	5(15.6%)	25(78.1%)	2(6.3%)		
	DK	26(57.8%)	15(33.3%)	4(8.9%)		
Q32	**Q32A**	19(17.5%)	46(35.8%)	31(24.4%)	2.99	0.39
	Q32B	10(13.6%)	25(45.8%)	17(28.8%)		
	Q32C	17(12.7%)	43(38.1%)	30(25.4%)		
	Q33D	11(14.3%)	25(42%)	16(25%)		
	Q32E	12(11%)	39(45.1%)	21(23.1%)		
	Q32F	11(11.2%)	33(43.8%)	23(28.8%)		
	Q32G	10(13.1%)	30(40%)	24(24.3%)		

Note: In Table (17), the questions related to maintaining a safe, clean, and hygienic hospital environment, categorized by the type of hospital, show statistical significance (p-value < 0.05) except for Question 32: "In your opinion, what are the causes of the spread of infection?" This question is not statistically significant, with a p-value of 0.39, which is greater than 0.05.

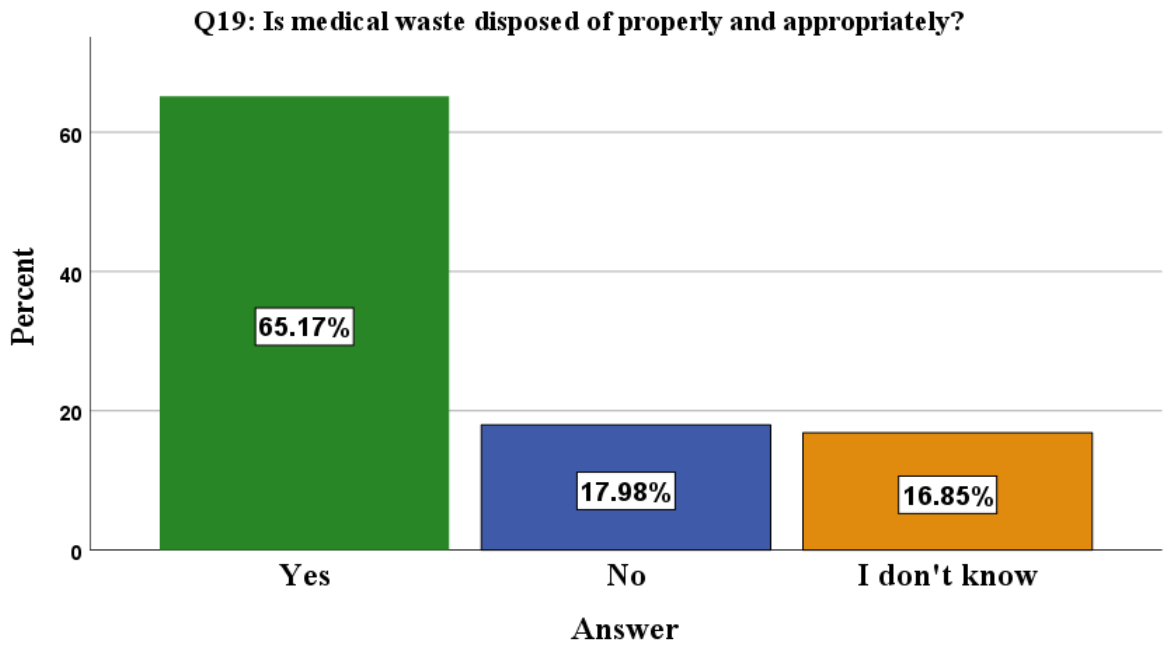


Figure (4): (Q19): Is medical waste disposed of properly and appropriately?

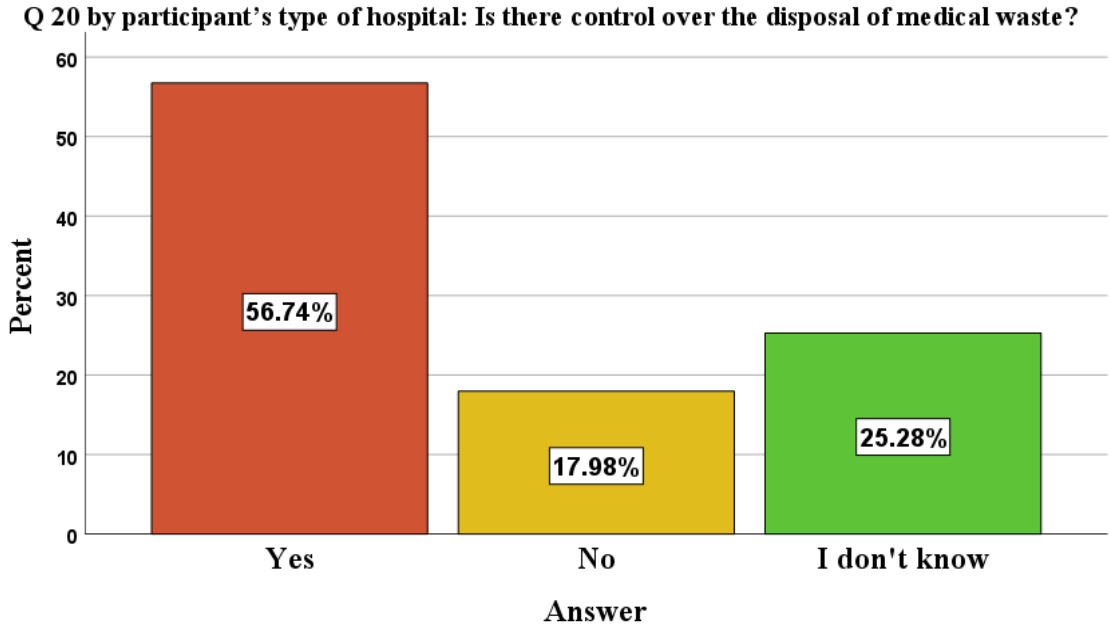


Figure (5): (Q20): by participants type of hospital (Is there control over the disposal of medical waste?)

3. Evaluating of Sterilization, Disinfection, and Cleaning Strategy by Participants Type of Hospitals

Table (18): Questions of Sterilization, Disinfection and Cleaning Grouped by Hospital Type

Category	Subcategory	Private	Government	NGOS	Chi	P-value
Q25	**Yes**	66(46.8%)	51(36.2%)	24(17%)	15.30	0.004
	No	5(25%)	15(75%)	0		
	DK	10(58.8%)	7(41.2%)	0		
Q26	**Yes**	56(50.5%)	37(33.3%)	18(16.2%)	11.56	0.02
	No	5(20.8%)	16(66.7%)	3(12.5%)		
	DK	20(46.5%)	20(46.5%)	3(7%)		
Q29	**Yes**	63(47.7%)	46(34.8%)	23(17.4%)	14.24	0.007
	No	7(29.2%)	17(70.8%)	0		
	DK	11(50%)	10(45.5%)	1(4.5%)		

Note: From Table (18), the questions regarding sterilization, disinfection, and cleaning are grouped by participants' hospital type. This grouping is statistically significant, as the p-value is less than 0.05.

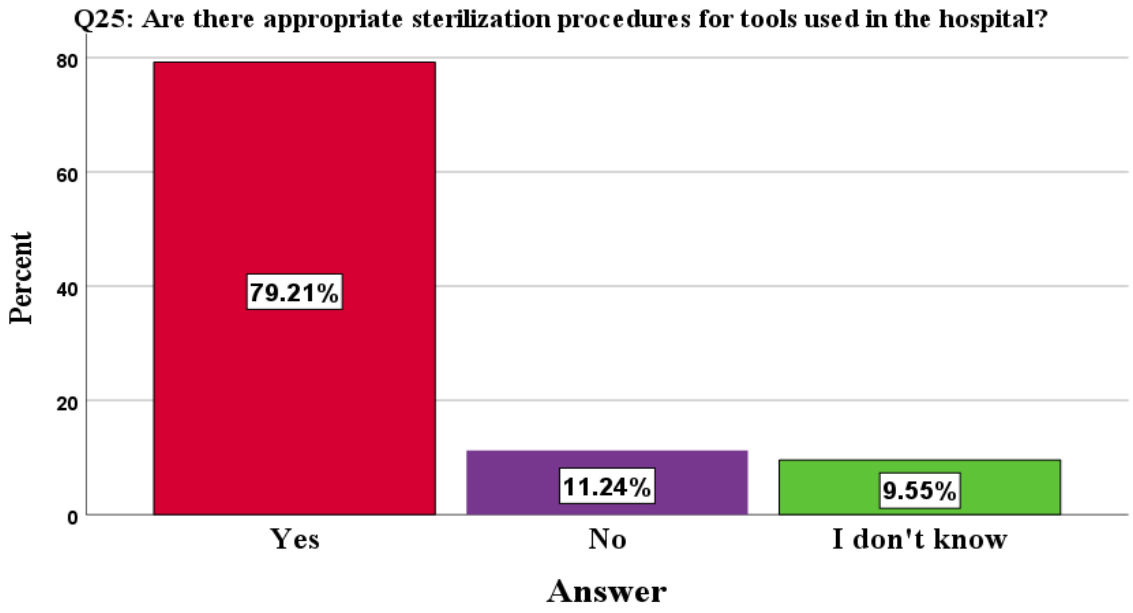


Figure (6): (Q25): Are there appropriate sterilization procedures for tools used in the hospital?

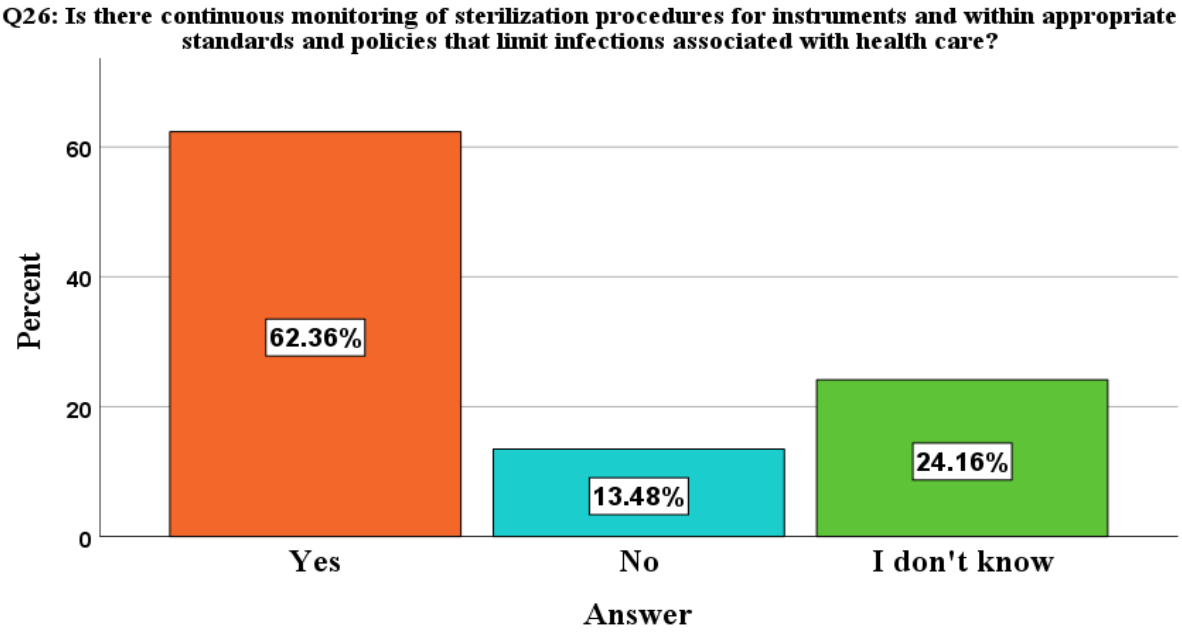


Figure (7): (Q26): Is there continuous monitoring of sterilization procedures for instruments and within appropriate standards and policies that limit infections associated with health care?

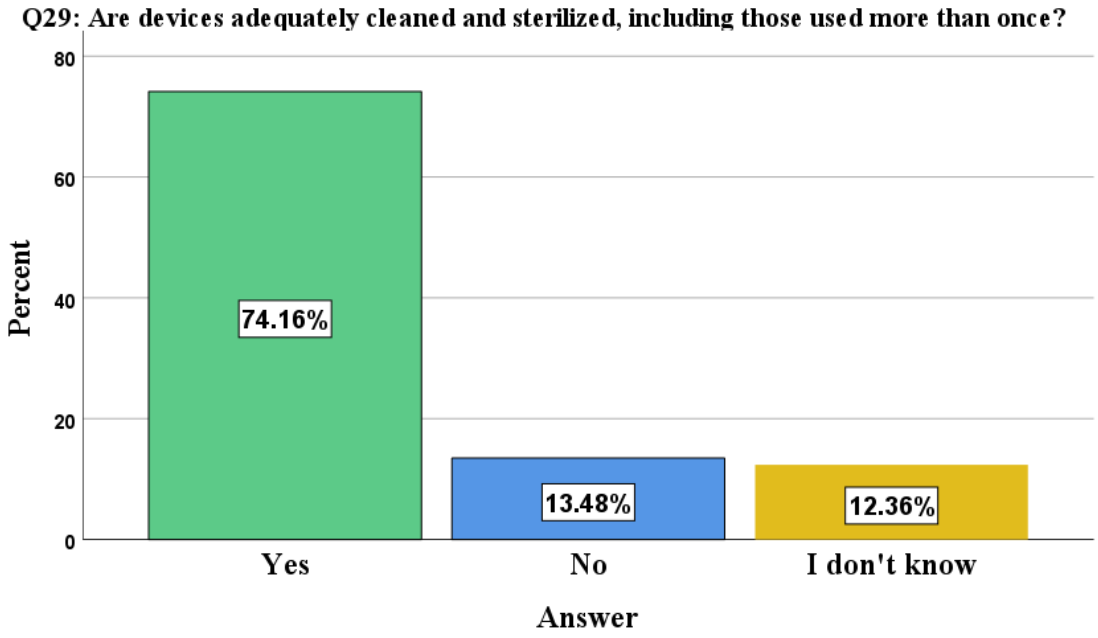


Figure (8): (Q29): Are devices adequately cleaned and sterilized, including those used more than on

4. Evaluating of Screening and Categorizing Patients into Cohorts by Participants' Type of Hospitals

Table (19 - A): Questions of Screening and Categorizing Patients into Cohorts Grouped Hospital Type

Category	Subcategory	Private	Government	NGOS	Chi	P-value
Q11	**Yes**	78(47.3%)	64(38.8%)	23(13.9%)	5.05	0.28
	No	3(25%)	8(66.7%)	1(8.3%)		
	DK	0	1(100%)	0		
Q14	**Yes**	73(51.4%)	48(33.8%)	21(14.8%)	15.39	0.004
	No	5(20%)	18(72%)	2(8%)		
	DK	3(27.3%)	7(63.6%)	1(9.1%)		
Q31	**Yes**	20(58.8%)	8(23.5%)	6(17.6%)	15.54	0.004
	No	35(34.7%)	54(53.5%)	12(11.9%)		
	DK	26(60.5%)	11(25.6%)	6(14%)		

Table (19 –B)

Note: From Table (19), the questions of screening and categorizing patients into cohorts grouped by age statistically significant, as the p-value is less than 0.05, except for Question 11: "Are there necessary tools available to prevent health care-related infections, such as gel masks, masks, protective equipment, etc., soap, and disinfectants?", which is not significant with a p-value of 0.28 > 0.05.

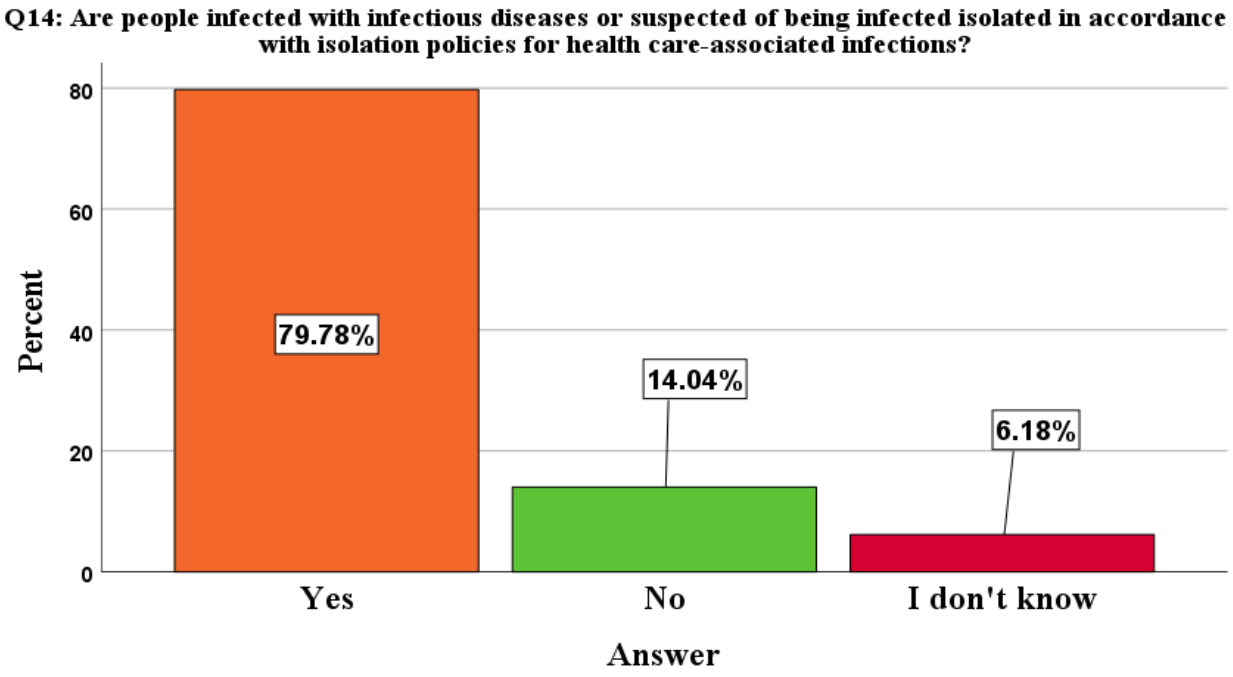


Figure (9): (Q14): Are people infected with infectious diseases or suspected of being infected isolated in accordance with isolation policies for health care-associated infections?

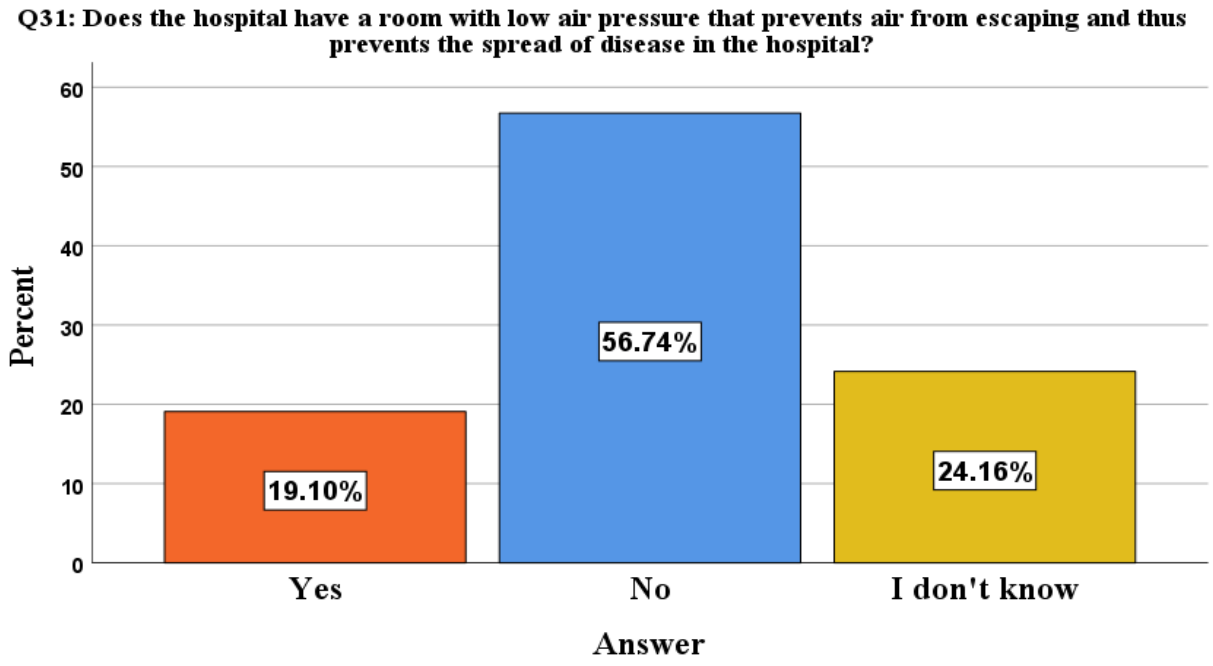


Figure (10): (Q31): Does the hospital have a room with low air pressure that prevents air from escaping and thus prevents the spread of disease in the hospital?

5. Evaluating of Public Health Surveillance by Participants Type of Hospitals

Table (20- A): Questions of Public Health Surveillance Grouped by Participants Hospital Type.

Category	Subcategory	Private	Government	NGOS	Chi	P-value
Q8	**Yes**	76(50.7%)	51(34%)	23(15.3%)	24.41	0.001
	No	2(9.5%)	19(9.5%)	0		
	DK	3(42.9%)	3(42.9%)	1(14.3%)		
Q9	**Yes**	42(49.4%)	35(41.2%)	8(9.4%)	3.23	0.52
	No	20(46.5%)	16(37.2%)	7(16.3%)		
	DK	19(38%)	22(44%)	9(18%)		
Q10	**Yes**	55(52.4%)	34(32.4%)	16(15.2%)	14.19	0.007
	No	15(28.3%)	33(62.3%)	5(9.4%)		
	DK	11(55%)	6(30%)	3(15%)		
Q12	**Yes**	54(54%)	31(31%)	15(15%)	9.97	0.04
	No	14(31.8%)	25(56.8%)	5(11.4%)		
	DK	13(38.2%)	17(50%)	4(11.8%)		
Q18	**Yes**	49(57%)	24(27.9%)	13(51.1%)	19.40	0.001
	No	15(25.9%)	37(63.8%)	6(10.3%)		
	DK	17(50%)	12(35.3%)	5(14.7%)		
Q21	**Yes**	56(49.6%)	40(35.4%)	17(15%)	7.52	0.11
	No	12(30%)	22(55%)	6(15%)		
	DK	13(52%)	11(44%)	1(4%)		
Q27	**Yes**	20(48.8%)	16(39%)	5(12.2%)	7.22	0.13
	No	39(38.2%)	46(45.1%)	17(16.7%)		
	DK	22(62.9%)	11(31.4%)	2(5.7%)		
Q34	**Q34A**	18(45%)	17(42.5%)	5(12.5%)	4.47	0.35
	Q34B	31(42.5%)	35(47.9%)	7(9.6%)		
	Q34C	32(49.2%)	21(32.3%)	12(18.5%)		

Table (20- B)

Q35	**Q35A**	27(38.6%)	34(48.6%)	9(12.9%)	4.04	0.40
	Q35B	36(46.8%)	30(39%)	11(14.3%)		
	Q35C	18(58.1%)	9(29%)	4(12.9%)		
Q36	**Q36A**	66(46.8%)	60(42.6%)	15(10.6%)	6.43	0.17
	Q36B	14(45.2%)	10(32.3%)	7(22.6%)		
	Q36C	1(16.7%)	3(50%)	2(33.3%)		

Note: Based on the data from Table (20), the questions related to public health surveillance grouped by participants' hospital type did not show any statistical significance (p-value > 0.05), except for Question 10 , Question 18, and Question 12. Question 10, "Do you agree that your institution's control tool is effective in preventing or controlling healthcare-associated infections?" showed significance with a p-value of 0.007 < 0.05. Similarly, question 18, "Do you think the hospital where you work is prepared to deal with an outbreak of healthcare-associated infections?" showed significance with a p-value of 0.001 < 0.05. Question 12 "In your organization, do you have a work team specializing in emerging infectious diseases (dealing with outbreaks)?" significant with p value 0.04.

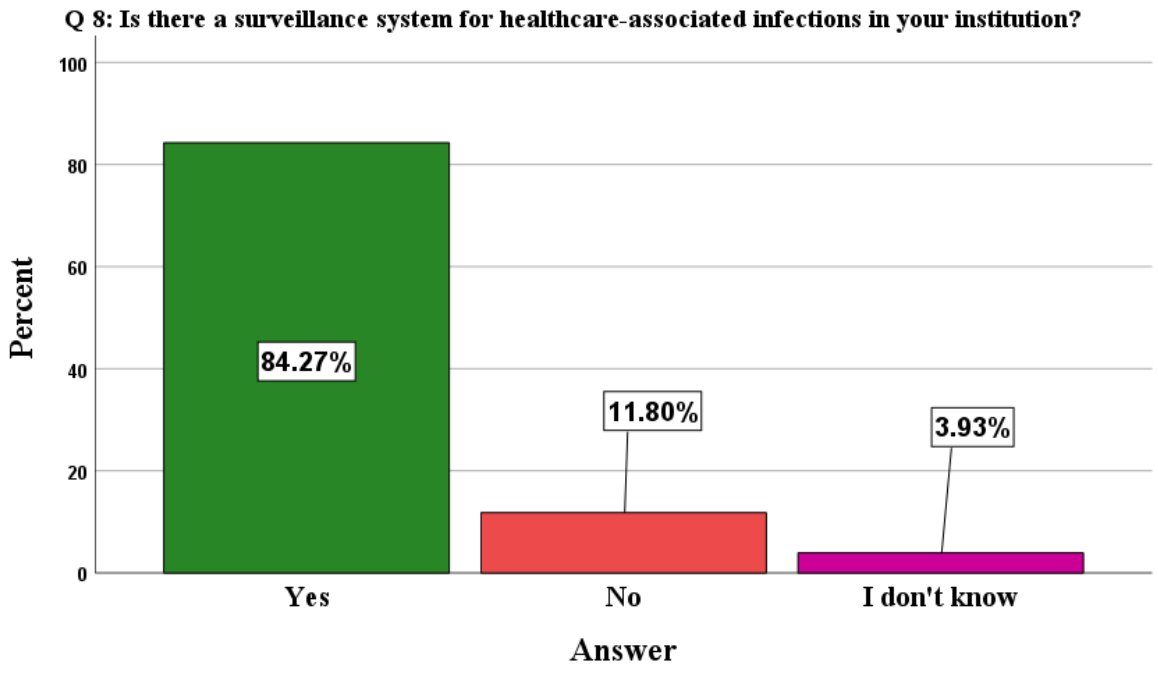


Figure (11): (Q8): Is there a surveillance system for healthcare-associated infections in your institution?

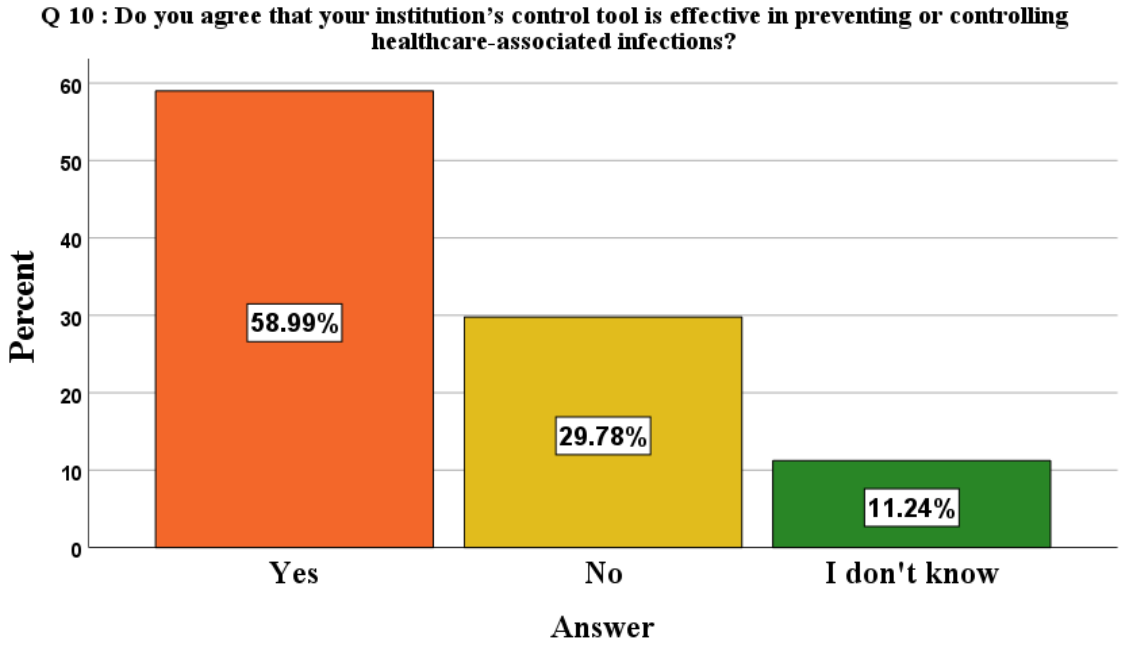


Figure (12): (Q10): Do you agree that your institution's control tool is effective in preventing or controlling healthcare-associated infections?

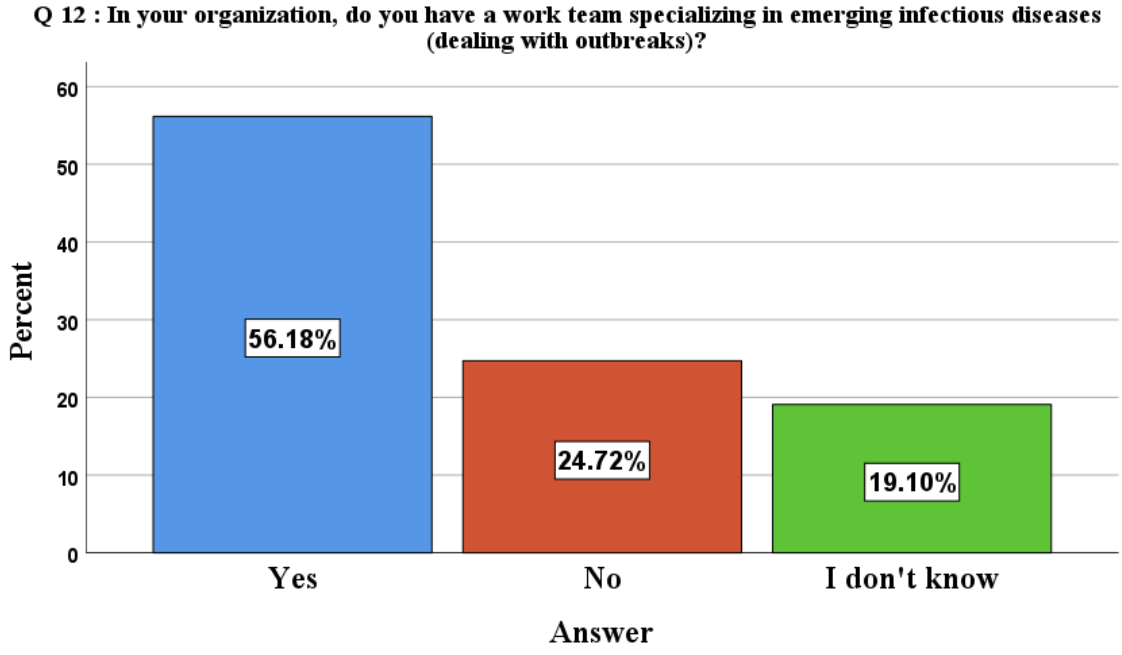


Figure (13): (Q12): In your organization, do you have a work team specializing in emerging infectious diseases (dealing with outbreaks)?

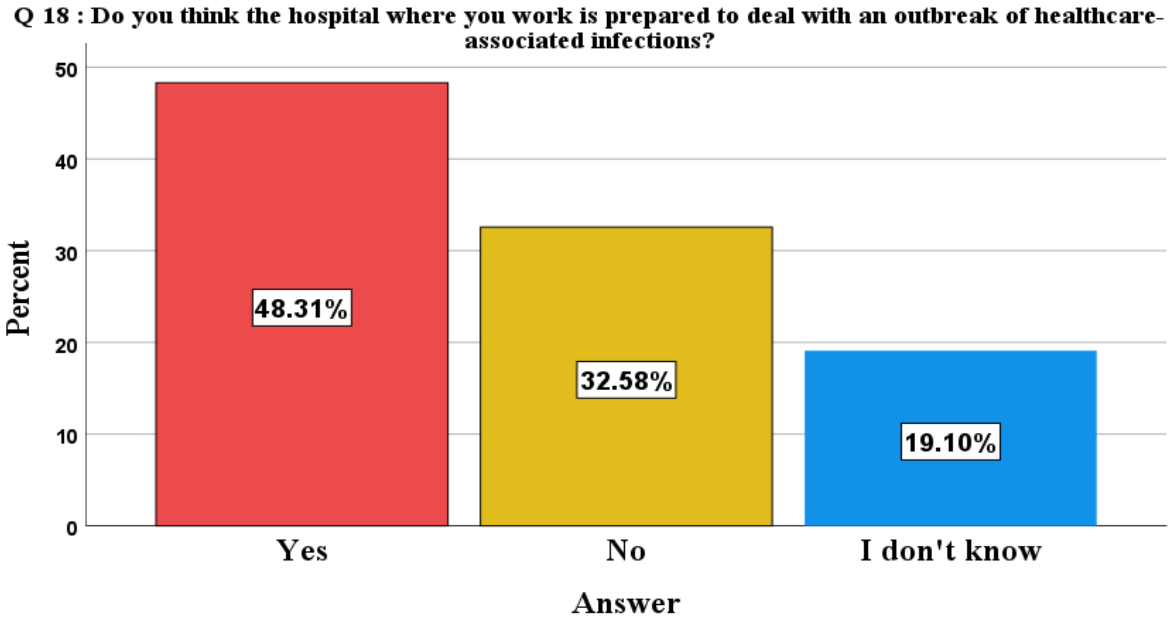


Figure (14): (Q18): Do you think the hospital where you work is prepared to deal with an outbreak of healthcare-associated infections

6. Evaluating of Antibiotic Stewardship by Participants Type of Hospitals

Table (21): Questions of Antibiotic Stewardship Grouped by Participants Hospital Type

Category	Subcategory	Private	Government	NGOS	Chi	P-value
Q16	**Yes**	43(48.3%)	33(37.1%)	13(14.6%)	2.97	0.56
	No	26(45.6%)	26(45.6%)	5(8.8%)		
	DK	12(37.5%)	14(43.8%)	6(18.8%)		
Q22	**Yes**	56(45.2%)	52(41.9%)	16(12.9%)	1.52	0.82
	No	3(50%)	3(50%)	0		
	DK	22(45.8%)	18(37.5%)	8(16.7%)		
Q28	**Yes**	40(47.6%)	31(36.9%)	13(15.5%)	1.65	0.80
	No	27(41.5%)	30(46.2%)	8(12.3%)		
	DK	14(48.3%)	12(41.4%)	3(10.3%)		

Note: From Table (21), the questions of antibiotic stewardship grouped by participants hospital type are not statistically significant (p-value > 0.05).

7. Evaluating of Following Patients Safety Guidelines by Participants Type of Hospitals

Table (22): Questions of Following Patients Safety Guidelines Grouped by Hospital Type

Category	Subcategory	Private	Government	NGOS	Chi	P-value
Q5	**Yes**	75(47.2%)	61(38.4%)	23(14.5%)	5.21	0.27
	No	4(26.7%)	10(66.7%)	1(6.7%)		
	DK	2(50%)	2(50%)	0		
Q6	**Yes**	74(50.3%)	52(35.4%)	21(14.3%)	19.74	0.001
	No	3(13%)	19(82.6%)	1(4.3%)		
	DK	4(50%)	2(25%)	2(25%)		
Q7	**Yes**	52(52%)	36(36%)	12(12%)	4.28	0.37
	No	17(37.8%)	22(48.9%)	6(13.3%)		
	DK	12(36.4%)	15(45.5%)	6(18.2%)		
Q13	**Yes**	40(47.6%)	29(34.5%)	15(17.9%)	4.82	0.31
	No	36(42.4%)	41(48.2%)	8(9.4%)		
	DK	81(45.5%)	73(41%)	24(13.5%)		
Q17	**Yes**	56(51.4%)	37(33.9%)	16(14.7%)	9.46	0.05
	No	15(31.9%)	28(59.6%)	4(8.5%)		
	DK	10(45.5%)	8(36.4%)	4(18.2%)		
Q24	**Yes**	54(54%)	33(33%)	13(13%)	8.23	0.08
	No	27(35.1%)	39(50.6%)	11(14.3%)		
	DK	0	1(100)	0		

Note: In Table (22), the questions regarding patient safety guidelines grouped by the type of hospital the participants work in are mostly not statistically significant (p-value > 0.05). However, Question 6: "In your institution, is there a specialized or active staff to deal with infections?" stands out as significant with a p-value of 0.001, which is less than 0.05.

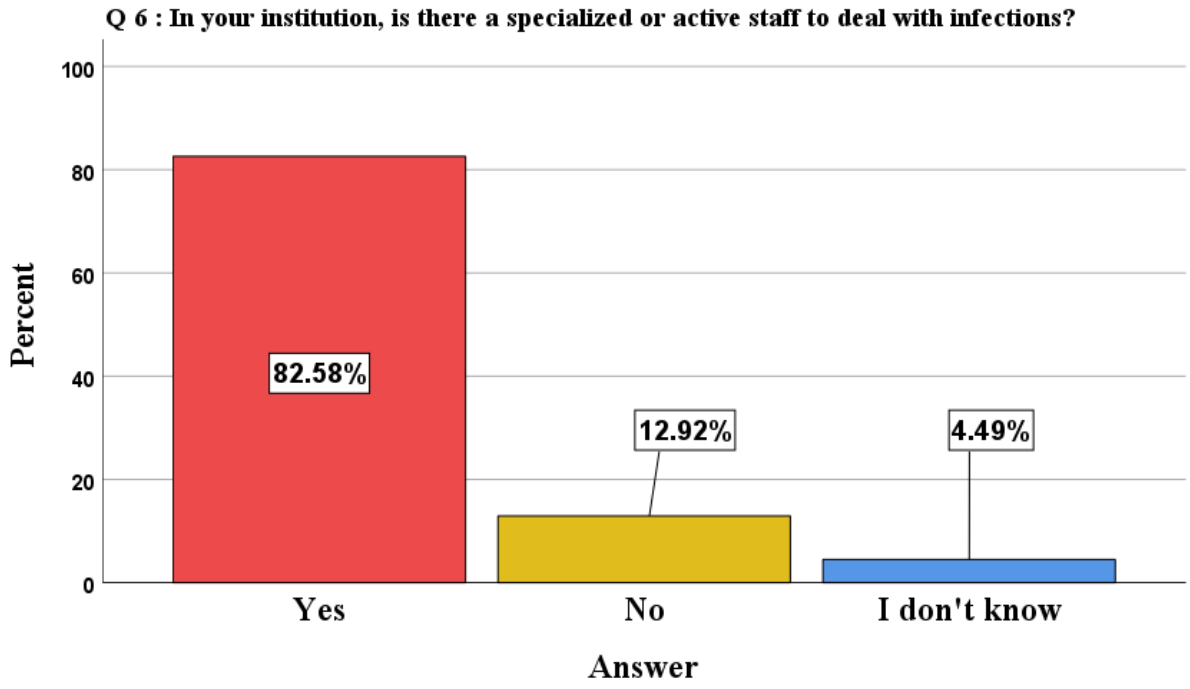


Figure (15): (Q6): In your institution, is there a specialized or active staff to deal with infections?

8. Evaluating Of Point of Care by Participants Type of Hospitals

Table (23): Question of Point of Care Grouped by Participants Hospital Type

Category	Subcategory	Private	Government	NGOS	Chi	P-value
Q30	**18-26**	33(49.3%)	23(34.3%)	11(16.4%)	8.65	0.07
	27-34	13(29.5%)	26(59.1%)	5(11.4%)		
	35-43	35(52.2%)	24(35.8%)	8(11.9%)		

Note: From Table (23), the question of point-of-care grouped by participants' age is not statistically significant (p-value=0.07 > 0.05).

Gender, Age Group, and Kind of Hospital

The distribution of ages and gender across different types of hospitals is shown in Table (24) to Table (26).

Table (24): Age Distribution of Healthcare Kind of Hospital.

Category	Subcategory	Private	Government	NGOS	Chi	P-value
Age	**18-26**	16(66.7%)	4(16.7%)	4(16.7%)	17.86	0.007
	27-34	33(46.5%)	24(33.8%)	14(19.7%)		
	35-43	16(34.8%)	28(60.9%)	2(4.3%)		
	≥ 44	16(43.2%)	17(45.9%)	4(10.8%)		

Note: According to Table (24), the P-value of 0.007 suggests a statistically significant connection between age and the type of hospital (Private, Government, NGO) people visit at the 0.05 significance level. The breakdown by age group is as follows:

- Age Group 18-26: 66.7% prefer private hospitals, while only 16.7% use government or NGO-run hospitals.
- Age Group 27-34: There's a more balanced distribution, with private hospitals still being the top choice at 46.5%.
- Age Group 35-43: The majority (60.9%) prefer government hospitals, while 34.8% choose private hospitals.
- Age Group ≥ 44: There's almost an equal preference for private (43.2%) and government hospitals (45.9%).

Table (25): Age Distribution of Healthcare Gender.

Category	Subcategory	Male	Female	Chi	P-value
Age	**18-26**	12(50%)	12(50%)	8.32	0.04
	27-34	52(73.2%)	19(26.8%)		
	35-43	36(78.3%)	10(21.7%)		
	≥ 44	30(81.1%)	7(18.9%)		

In the age group 18-26, there is an equal distribution of males and females (50% each). For the age group 27-34, males dominate with 73.2%, while females make up 26.8%. Similarly, in the

age group 35-43, 78.3% are males and 21.7% are females. For the age group of 44 and above, males constitute 81.1% and females account for 18.9%.

The P-value of 0.04 indicates a statistically significant association between age and gender in healthcare usage at the 0.05 significance level. This suggests that gender distribution in healthcare use varies significantly across different age groups.

Table (26): Gender Distribution of Healthcare Hospital Type.

Category	Subcategory	Male	Female	Chi	P-value
Hospital type	**Private**	56(69.1%)	25(30.9%)	1.95	0.38
	Government	54(74%)	19(26%)		
	NGOS	20(83.3%)	4(16.7%)		

Note: In Table (26), it is observed that in private hospitals, 69.1% of users are male and 30.9% are female. In government hospitals, 74% are male and 26% are female. In NGOs, 83.3% are male and 16.7% are female. The P-value of 0.38 indicates that there is no statistically significant association between gender and the type of hospital used, as the P-value is much larger than the common significance level of 0.05. Therefore, the distribution of males and females across hospital types does not differ significantly.

4.3 Part III: Two Independent Samples T-Test and The One-Way Analysis of Variance Test (One Way ANOVA).

- **The Level of The Disease Burden Related to Ineffective Infection Prevention Measures.**

The next table shows descriptive statistics (Mean, Standard deviation, Maximum, Minimum) for the total score of the disease burden related to ineffective infection prevention measures.

Table (27): Descriptive Statistics for The Total Score of Disease Burden Related to Ineffective Infection Prevention Measures (N=178).

Scale Measurement	Minimum	Maximum	Mean	Std. Deviation
The total score of the disease burden related to ineffective infection prevention measures.	**0.00**	**100.00**	**60.80**	**27.91**

Note: The results in the table above show that the average of the total score of the disease burden related to ineffective infection prevention measures for the study sample is about 61%.

- **Policy Compliance Vary by Institution Type, And What Role Do Gender, Age, And Occupation Play in These Disparities**

In this section, the researcher exhibits the results of the analysis of the differences in policy compliance according to the socio-demographic variables (Age, Gender, Profession, Type of the Hospital, and Hospital). The aim of this analysis is to assess the disparity in policy compliance by gender, age, occupation, and institution type.

The researcher used the two independent samples t-test and the one-way analysis of variance test (One way ANOVA) to examine the differences in the means of the total policy compliance scale due to the socio-demographic characteristics (Age, Gender, Profession, Type of the Hospital, and Hospital). Table 5 shows means, standard deviations, and the results of the t-test and ANOVA test of differences in policy compliance according to the socio-demographic variables.

Table (28 -A): Differences in Policy Compliance According to The Socio-Demographic Variables.

Variable	Group	Count	Mean	Standard Deviation	Test value	P-value
Age	18-26	24	52.65	22.18	0.858	0.464
	27-34	71	52.37	21.88		
	35-43	46	51.58	20.91		
	>=44	37	58.48	21.22		
	Total	178	53.47	21.51		
Gender	Male	130	54.09	21.95	0.630	0.530
	Female	48	51.80	20.41		
	Total	178	53.47	21.51		
Profession	Heads of Different Medical Departments	53	53.52	23.36	0.217	0.805
	Administrative Teams	45	55.15	20.96		
	Nursing	80	52.50	20.75		
	Total	178	53.47	21.51		
Type of the Hospital	Private hospital	81	56.68	20.29	4.048	0.019*
	Government hospital	73	48.13	23.60		
	Non-Governmental Clinics (NGOS)	24	58.90	15.07		
	Total	178	53.47	21.51		

Table (28 -B)

Hospital	Almezan hospital	31	61.14	17.00	3.747	0.006*
	Al Ahli hospital	50	53.91	21.79		
	PRCS hospital	24	58.90	15.07		
	Al-Muhtaseb hospital	15	58.18	16.23		
	Alia hospital	58	45.53	24.61		
	Total	178	53.47	21.51		
Note: The difference is significant at 0.05 level.						

In the Table (28), Presents the analysis of policy compliance according to various socio-demographic variables, including age, gender, profession, type of hospital, and specific hospital. The key findings are summarized as follows:

1. **Age Group**:

No significant differences in policy compliance were observed across different age groups ($p = 0.464$). The mean scores for age groups ranged from 51.58 (35-43 years) to 58.48 (≥44 years), suggesting that age does not significantly affect policy compliance.

2. **Gender**:

Gender did not show a significant impact on policy compliance ($p = 0.530$). Males had a slightly higher mean score (54.09) compared to females (51.80), but the difference was not statistically significant.

3. **Profession**:

No significant differences in policy compliance were found across different professional groups ($p = 0.805$). The mean compliance scores for heads of medical departments (53.52), administrative teams (55.15), and nursing staff (52.50) were all similar, indicating that profession does not influence compliance.

4. **Type of Hospital**:

There was a significant difference in policy compliance based on the type of hospital ($p = 0.019$). Private hospitals had the highest mean compliance score (56.68), followed by non-governmental clinics (NGOs) (58.90). Government hospitals had the lowest mean score (48.13).

This suggests that hospital type influences the adherence to infection prevention and control policies.

5. **Hospital**:

Significant differences were also found between specific hospitals (p = 0.006). **Almezan hospital** had the highest mean compliance score (61.14), while **Alia hospital** had the lowest (45.53). Other hospitals, such as Al Ahli (53.91) and PRCS (58.90), showed varying levels of compliance. This indicates that individual hospital characteristics, management, and resources can impact policy adherence.

In conclusion, the analysis highlights significant differences in policy compliance based on the type of hospital and specific hospital, while age, gender, and profession did not show notable effects on compliance levels. Private hospitals and certain hospitals like Almezan performed better in policy compliance, suggesting that resources, infrastructure, and management play a crucial role in successful implementation of infection prevention policies.

Table (29- A): Multiple Comparisons (Tukey Post-Hoc) Test of Differences in Policy Compliance Scale According to The Type of Hospital and The Hospitals.

Variable	Type of the Hospital (I)	Type of the Hospital (J)	Mean Difference (I-J)	Sig.
Type of the Hospital	Private hospital	Government hospital	8.546*	0.035
		Non-Governmental Clinics (NGOS)	-2.224	0.893
	Government hospital	Private hospital	-8.546*	0.035
		Non-Governmental Clinics (NGOS)	-10.769	0.080
	Non-Governmental Clinics (NGOS)	Private hospital	2.224	0.893
		Government hospital	10.769	0.080
Variable	**(I) Hospital**	**(J) Hospital**	**Mean Difference (I-J)**	**Sig.**
Hospital	**Almezan Hospital**	Al Ahli Hospital	7.235	0.553
		PRCS hospital	2.242	0.995
		Al-Muhtaseb hospital	2.962	0.991
		Alia Hospital	15.611*	0.008
	Al Ahli Hospital	Almezan hospital	-7.235	0.553
		PRCS hospital	-4.992	0.871
		Al-Muhtaseb Hospital	-4.273	0.957
		Alia hospital	8.376	0.234
	PRCS Hospital	Almezan hospital	-2.242	0.995

Table (29 – B)

	Al Ahli hospital	4.992	0.871
	Al-Muhtaseb hospital	0.719	1.000
	Alia hospital	13.369	0.068
Al-Muhtaseb hospital	Almezan hospital	-2.962	0.991
	Al Ahli hospital	4.273	0.957
	PRCS hospital	-0.719	1.000
	Alia hospital	12.649	0.228
Alia hospital	Almezan hospital	-15.611*	0.008
	Al Ahli hospital	-8.376	0.234
	PRCS hospital	-13.369	0.068
	Al-Muhtaseb hospital	-12.649	0.228

Note: The difference is significant at 0.05 level.

- **Relationship Between Healthcare Providers Awareness and Their Compliance with Institutional Policies on Infection Prevention**

In this section, the researcher exhibits the results of the analysis of the relationship between the score of the healthcare providers' compliance with institutional policies on infection prevention as independent variable and the score of the healthcare providers' awareness as dependent variable.

The researcher computed Pearson Correlation Coefficient to examine the relationships between the dependent and the independent variables. Table (4.30), shows the results of the test of Pearson Correlation Coefficients.

Table (30): Pearson Correlation Coefficients Between the Healthcare Providers Awareness and Their Compliance and Institutional Policies on Infection Prevention.

Independent and Dependent variables	Measurement	Compliance With Institutional Policies	Policy Compliance	Awareness
Compliance With Institutional Policies	Pearson Correlation (r)	1	0.988**	-0.781**
	Sig. (2-tailed)		0.000	0.000
	N	178	178	178
Policy Compliance	Pearson Correlation (r)	0.988**	1	-0.771**
	Sig. (2-tailed)	0.000		0.000
	N	178	178	178
Awareness	Pearson Correlation (r)	-0.781**	-0.771**	1
	Sig. (2-tailed)	0.000	0.000	
	N	178	178	178

Note: The correlation is significant at the 0.05 level. ** The dependent variable is the total score of the healthcare providers' awareness.

The results in the table above show that there is significant negative relationship between the healthcare providers' compliance with institutional policies on infection prevention and the healthcare providers' awareness at the 0.05 level, and also there is significant negative relationship between the general policy compliance and the healthcare providers' awareness at the 0.05 level. The results show that the Pearson Correlations are high (r = -0.781 & r = -0.771,

P-values=0.000), indicating that the increase of the healthcare providers' compliance with institutional policies on infection prevention and the increase of their general policy compliance decrease their awareness.

The results also show that there is significant positive relationship between the healthcare providers' compliance with institutional policies on infection prevention and the general policy compliance at the 0.05 level. The results show that the Pearson Correlation is very high (r = 0.988, P-values=0.000), indicating that the increase of the healthcare providers' compliance with institutional policies on infection prevention increases their general policy compliance, or vice versa.

This result answers the sixth study question **"Is there a relationship between healthcare providers' awareness and their compliance with institutional policies on infection prevention?"**, hence, the sixth objective **"6. To examine the relationship between healthcare providers' awareness and compliance related to institution policies related to infection prevention"** is achieved.

- **Relationship Between the Presence of Supervision and The Extent of Implementation of Infection Control Policies and Guidelines in Units?**

In this section, the researcher exhibits the results of the analysis of the relationship between the score of the presence of supervision as independent variable and the score that represents the extent of implementation of infection control policies and guidelines in units as dependent variable.

The researcher computed Pearson Correlation Coefficient to examine the relationships between the dependent and the independent variables. Table (4.31), shows the results of the test of Pearson Correlation Coefficients.

Table (31): Pearson Correlation Coefficients Between the Presence of Supervision and The Extent of Implementation of Infection Control Policies and Guidelines in Units.

Independent and Dependent variables	Measurement	The Presence of Supervision	The Extent of Implementation of Infection Control Policies and Guidelines in Units
The presence of supervision	Pearson Correlation (r)	1	0.946**
	Sig. (2-tailed)		0.000
	N	178	178
The extent of implementation of infection control policies and guidelines in units	Pearson Correlation (r)	0.946**	1
	Sig. (2-tailed)	0.000	
	N	178	178

Note: The correlation is significant at the 0.05 level. The dependent variable is the total score of the extent of implementation of infection control policies and guidelines in units.

The results in the table above show that there is significant positive relationship between the presence of supervision and the extent of implementation of infection control policies and guidelines in units at the 0.05 level. The results show that the Pearson Correlation is very high (r=0.946, P-value=0.000), indicating that the increase of Supervision increases the extent of implementation of infection control policies and guidelines in units.

This result answers the seventh study question **"Is there a relationship between the presence of supervision and the extent of implementation of infection control policies and guidelines in units?"**, hence, the seventh objective "**7. To determine the relationship between the presence of supervision and the extent of the implementation of infection**

control policies and guidelines in units” is achieved.

- **Descriptive Statistics for the Main Study Measurements.**

The next table (32), shows some descriptive statistics (Mean, Standard deviation, Maximum, Minimum) for the main study measurements (Healthcare Providers' Awareness, Compliance with Institutional Policies on Infection Prevention, General Policy Compliance, The Presence of Supervision, and The Extent of Implementation of Infection Control Policies and Guidelines In Units).

Table (32): Descriptive Statistics for the Main Study Measurements (N=178).

Main Study Measurements	Minimum	Maximum	Mean	Std. Deviation
Healthcare providers' awareness	11.76	94.12	49.90	19.87
Compliance With Institutional Policies on Infection Prevention	0.00	90.91	51.76	22.68
General policy compliance	0.00	86.36	53.47	21.51
The Presence of Supervision	5.56	88.89	52.15	21.43
The Extent of Implementation of Infection Control Policies and Guidelines in Units	0.00	88.89	54.12	23.69

The results in the table above show that the average of the Healthcare Providers' Awareness for the study sample is about 50%, the average of the Compliance with Institutional Policies on Infection Prevention for the study sample is about 52%, the average of the General Policy Compliance for the study sample is about 53.5%, the average of the Presence of Supervision is about 52%, and the average of the Extent of Implementation of Infection Control Policies and Guidelines in Units is about 54%.

Summary

- **Research Q5: How does policy compliance vary by institution type, and what role do gender, age, and occupation play in these disparities?**

The results showed that there are significant differences in the means of the total policy compliance scale only due to the type of the hospital and the Hospitals, and the mean of the policy compliance scale for the private hospitals is significantly higher than only the mean of the governmental hospitals, and the mean of the policy compliance scale in Almezan Hospital is significantly higher than the mean of the policy compliance scale in Alia Hospital.

On the other hand, the results showed that there are **no** significant differences in the means of the total policy compliance scale due to the Age, Gender, and Profession.

- **Research Q6: Is There a Relationship Between Healthcare Providers Awareness and Their Compliance With Institutional Policies on Infection Prevention?**

The results showed that there is significant negative relationship between the healthcare providers' compliance with institutional policies on infection prevention and the healthcare providers' awareness, and also there is significant negative relationship between the general policy compliance and the healthcare providers' awareness. These results indicated that the increase of the healthcare providers' compliance with institutional policies on infection prevention and the increase of their general policy compliance decrease their awareness.

The results also showed that there is significant positive relationship between the healthcare providers' compliance with institutional policies on infection prevention and the general policy compliance, indicating that the increase of the healthcare providers' compliance with institutional policies on infection prevention increases their general policy compliance, or vice versa.

- **Research Q7: Is There a Relationship Between the Presence of Supervision and The Extent of Implementation of Infection Control Policies and Guidelines in Units?**

The results showed that there is significant positive relationship between the presence of supervision and the extent of implementation of infection control policies and guidelines in units. The results showed that the relationship is very high indicating that the increase of Supervision increases the extent of implementation of infection control policies and guidelines in units.

Chapter Five

Discussion

5.1 Evaluate the Strategies of Implementation of HCAIS Prevention in Hebron City Hospitals – Palestine.

Responses to a set of questions about infection prevention and control were evaluated from the viewpoints of various participant age groups, institution kinds, and HCW professions. Our study's responses indicated that HCWs had comparatively high degrees of uncertainty regarding surveillance and reporting criteria, personnel and institution-specific difficulties, and their preparedness and competence to carry out policies and respond to outbreaks. Variability among various HCW occupations, institution types, and age groups was demonstrated.

Saudi Arabia has seen a number of infection outbreaks in recent years, most notably Middle East Respiratory Syndrome (MERS). In line with the results of our study, which show that staff members in private hospitals are more confident and prepared than those in government hospitals, outbreaks mostly happen in government hospitals. In 2014, the most notable hospital-associated epidemic occurred in a Jeddah government hospital, impacting both patients and medical staff. Government hospitals in Riyadh reported additional clusters of MERS-CoV patients in 2014 and 2015 (Mackay et al., 2015), This suggests that the idea of disease spread is consistent with the presence of increased awareness among medical professionals to avoid this through the current study.

According to WHO investigation, MERS-CoV outbreaks in Saudi Arabian hospitals were caused by a number of problems, including crowded the emergency department waiting areas and uneven implementation of fundamental infection control practices like hand hygiene and PPE use(Brown, 2014). Aggressive improvement in infection control shortcomings led to a decrease in instances at the hospital in Jeddah(Hastings et al., 2016). For MERS-CoV patients, the MOH released revised infection prevention and control recommendations (Madani et al., 2014). With a focus on standard, contact, droplet, and airborne precautions, overcrowding management, and emergency department triage, many of these principles are broadly relevant to infection prevention and control for all infectious illnesses(Madani et al., 2014). The MOH stated their expectation that all healthcare workers and facilities will rigorously follow them(Madani et al., 2014), The results of the current study were showed that there is an application of infection prevention strategies and their implementation by various medical teams, which is consistent with these studies.

5.2 Burden of Disease Related to Ineffective Infection Prevention Measures.

There was evidence, for instance, that many employees lacked confidence in their colleagues' implementation of infection control protocols and standards, felt they lacked enough training, and were not aware of the information on reportable illnesses in their own units.

Despite this, the majority of staff members across all professions in our survey did not believe that all staff members could distinguish between various prevention methods, such as droplet or contact, or that staff members in their unit were rapidly adhering to infection control policies, regulations, and guidelines. Although positive responses were limited to a small percentage of staff, there was no discernible difference across institution types regarding staff's ability to distinguish between various prevention protocols, such as droplet or contact, and private hospital staff were more likely to believe that staff in their unit were promptly adhering to infection control policies, rules, and guidelines. There seems to be an urgent need for effective staff training on these components.

Frontline staff consultation is crucial for the successful implementation of MOH-recommended infection control and prevention measures, and management and staff expectations should be clearly stated, conveyed, and understood (Al Khamis, 2016). The MERS-CoV epidemics associated with hospitals in Saudi Arabia and Korea have demonstrated the need to consistently promote and implement both basic infection control practices, such as hand cleanliness, and more complex ones (Butt et al., 2016; Nishiura et al., 2016), On the other hand, the current study was showed the necessity of using prevention standards strategies by healthcare providers in hospitals and the necessity of adhering to them to reduce the risks of hospitals acquired infections inside hospitals and health facilities.

The efficacy of following efficient infection control protocols has been shown. For instance, a five-year sequence of treatments that improved hand hygiene compliance was linked to a decrease in HC-MRSA and device-associated infections in a Saudi hospital(Al-Tawfiq et al., 2014). Additionally, a combination of fundamental IC procedures and a suite of advanced infection control methods prevented MERS-CoV from being transmitted to healthcare workers(Butt et al., 2016).When all the HCFs in our study were evaluated, the participating HCFs (178) and response rate 96%. According to the findings of our research, the question, "Are there necessary tools available to prevent health care-related infections, such as gel masks, masks, protective equipment, etc., soap, and disinfectants?" and its majority 92.7% ask "yes". "Are there strategies to prevent healthcare-associated infections in your institution?" 89.3% of the participants. "Does the hospital have a room with low air pressure that prevents air from escaping and thus prevents the spread of disease in the hospital?" 19.1% of the participants answer yes, from these results, the study shows that there is an acceptable percentage of availability of personal protective equipment that reduces the risk of transmission of infection within health facilities, which is in its concept the basic line for preventing the spread of diseases.

According to 75.3% of participants, "Violating infection control policies, rules, and guidelines" is the main reason why infections spread. However, only 33.1% of the participants believe that "There are no clear infection control policies, rules, or guidelines" is a contributing factor in the spread of illness. 70.8% of participants, "Lack of training courses and workshops necessary to limit or deal with infection" is the most common cause contributing to the development of infection in hospitals. However, just 27% of participants believe that "There is no infection control on demand" is a role in the development of infections in hospitals.34,3% reporting system in hospital by using paper and 17,4% by using phone. The most successful reporting system for writing about infectious agents by using electronic system 79.2% and should by documented in system.

In order to evaluate the Factors of Healthcare-Associated Infection Prevention Strategies for hand hygiene, maintaining a safe, clean, and hygienic hospital environment, sterilization, disinfection and cleaning, of screening and categorizing patients into cohorts, public health surveillance, antibiotic stewardship, patient’s safety guidelines ,and point of care are not statically significant with age grouped as the p-value is greater than 0.05, except the question : 'Is there control over the disposal of medical waste?', which is significant with a p-value of 0.004.

5.3 Participants Type of Hospitals to Evaluate the Factors of HCAI Prevention and Control

Hand hygiene, maintaining a safe, clean, and hygienic hospital environment, sterilization, disinfection, and cleaning, public health surveillance, antibiotic stewardship, patient's safety guidelines, and point of care are not statically significant with age grouped as the p-value is greater than 0.05.

E**x**cept ' Do cleaners receive training courses on infection prevention and control practices related to healthcare-associated infections', which is significant with a p-value of 0.01, screening and categorizing patients into cohorts grouped by age statistically significant, as the p-value is less than 0.05,

"Do you agree that your institution's control tool is effective in preventing or controlling healthcare-associated infections?", and "Do you think the hospital where you work is prepared to deal with an outbreak of healthcare-associated infections?" which are significant with a p-value of 0.007 <0.05 0.001 <0.05 respectively.

"In your institution, is there a specialized or active staff to deal with infections?", which is significant with a p-value of 0.001 <0.05.

According to current study result as above, many of study consistent with study, although timely detection of the unique forms of HCAIs, especially MDR pathogenic bacteria, is essential, surveillance strategies are occasionally constrained by financial and practical issues. Therefore, although monitoring plays a widely acknowledged role in preventing and managing healthcare-associated infections (HCAIs), little is known about how well-run, healthcare-centered surveillance systems function and whether lessons learned can be applied in settings with limited resources (Ciccolini et al., 2014).

5.4 Assess the Disparity in Policy Compliance by Institution Type by Gender, Age, Occupation, and Institution Type.

The differences in policy compliance based on various socio-demographic variables, including age, gender, profession, type of hospital, and specific hospital. The table presents the count, mean, standard deviation, test value, and p-value for each group, indicating whether there is a statistically significant difference in policy compliance across different categories. The results are analyzed as follows:

1. Age Group:

The data shows no significant differences in policy compliance across different age groups (p = 0.464). The mean policy compliance scores are relatively similar across the age groups, with the youngest group (18-26) showing a mean of 52.65 and the oldest group (>=44) showing a mean of 58.48. Although the 44+ age group has a slightly higher mean score, the lack of statistical significance suggests that age does not have a substantial impact on adherence to infection prevention policies.

2. Gender:

Gender does not appear to influence policy compliance, as there is no significant difference between males and females (p = 0.530). The mean compliance score for males is 54.09, while for females it is 51.80. The data suggests that both genders are relatively similar in their compliance levels with institutional policies on infection prevention.

3. Profession:

There are no significant differences in policy compliance based on profession (p = 0.805). Heads of different medical departments (53.52), administrative teams (55.15), and nursing staff (52.50) all show similar mean scores. This finding implies that professional role or designation does not significantly affect the degree to which individuals adhere to infection control policies, suggesting that institutional practices may be similarly followed across different professional groups.

4. Type of Hospital:

A significant difference in policy compliance is observed based on the type of hospital (p = 0.019). Private hospitals have a higher mean compliance score (56.68) compared to governmental hospitals (48.13). Non-governmental clinics (NGOs) also show a relatively higher mean score (58.90). The differences in compliance between hospital types could be due to various factors, such as better resource allocation, staff training, and infrastructure in private hospitals and NGOs. These facilities may have more flexibility and resources to implement infection prevention protocols effectively, leading to higher compliance rates.

5. Hospital:

There are significant differences in policy compliance across different hospitals (p = 0.006). **Almezan hospital** has the highest mean compliance score (61.14), which may reflect effective infection control practices or more rigorous enforcement of policies. **Al Ahli hospital** (53.91) and **PRCS hospital** (58.90) also show relatively high compliance, while **Alia hospital** has the

lowest compliance score (45.53). These variations may be attributed to differences in hospital management, available resources, staff training, or patient population. The significant differences suggest that specific hospitals, like Almezan, may have more robust infection prevention systems in place compared to others.

Conclusion:

The analysis of the table reveals that age, gender, and profession do not significantly influence policy compliance. However, both the **type of hospital** and **specific hospital** show significant differences, with private hospitals and certain hospitals (e.g., Almezan) performing better in terms of policy compliance. These findings highlight the impact of organizational factors such as hospital type and management, which can affect adherence to infection prevention and control measures. Factors like resource availability, infrastructure, and management practices may play a critical role in determining how well infection control policies are implemented across different hospital settings. Further investigation into the specific practices and resources at each hospital could provide valuable insights into why certain hospitals excel in policy compliance while others struggle.

The result was showed a significant implementation of infection prevention strategies in privet hospitals more than non-governmental hospitals, and governmental hospitals more than non-governmental.

The better performance of private hospitals in the implementation of infection prevention and control (IPC) strategies compared to non-governmental and governmental hospitals can be attributed to several factors:

1. **Resource Availability**: Private hospitals have more financial resources to invest in infrastructure, equipment, PPE, and sanitizing supplies, making infection control easier to implement.
2. **Staff Training and Education**: Private hospitals offer specialized and frequent training for staff, ensuring higher awareness and adherence to infection prevention protocols.
3. **Management and Governance**: Private hospitals have streamlined decision-making processes and dedicated infection control teams, allowing for quicker implementation of IPC strategies.
4. **Patient Population**: With a lower patient-to-staff ratio and wealthier patients, private hospitals can provide more individualized attention, promoting better infection control adherence.
5. **Incentive to Maintain Reputation**: Private hospitals prioritize reputation and patient satisfaction, motivating them to maintain high hygiene standards and effective infection control.

6. **Faster Adaptation to New Guidelines**: Private hospitals can quickly adapt to new infection prevention guidelines and best practices due to less bureaucratic red tape.
7. **Governmental and NGO Constraints**: Governmental and non-governmental hospitals face budget constraints, fewer resources, and slower decision-making, limiting their ability to implement effective IPC strategies.
8. **Regulatory and Accreditation Factors**: Private hospitals often meet international accreditation standards that emphasize infection control, pushing them to adopt stricter IPC measures.
9. **Infrastructure and Facility Design**: Private hospitals may have better-designed facilities with isolation rooms and better ventilation, aiding infection control, whereas governmental and NGO hospitals may have outdated facilities.
10. **Monitoring and Evaluation**: Private hospitals implement robust monitoring and evaluation systems to track infection rates, while governmental and NGO hospitals may lack consistent monitoring.

In conclusion, private hospitals generally perform better in infection prevention and control due to better resources, governance, and incentives to maintain high standards compared to governmental and non-governmental hospitals.

5.5 Identify the Level of Health Care Team Awareness in Different Health Institutions in Hebron District—Governmental, Non-Governmental, and Private Hospitals—Related to Infection Prevention Policies and Procedures.

In private hospitals, 30.9% of users are female, while 69.1% are male. In government hospitals, men are slightly more common than women (74% vs. 26%). In NGOs, men make up the majority (83.3%), with women making up only 16.7%. The P-value of 0.38, which is significantly higher than the typical significance level of 0.05, suggests that there is no statistically significant correlation between gender and the kind of hospital utilized. As a result, there is little variation in the proportion of men and women among hospital kinds.

More employees of all kinds and at all institutions reported having some sort of orientation or training experience; nurses and employees in private hospitals were more likely to have done so. In spite of this, hospital workers also noted that one of the main reasons why infections spread there is a lack of an infection control training program. This shows that HCWs do not believe that staff training is sufficient to prepare them to implement infection control and prevention policies and guidelines.

As a result, although nurses generally and personnel at private hospitals were more optimistic, there was a low degree of trust in the institutions' readiness for any infection epidemic. Employees believe that in order to guarantee the efficient application of MOH recommendations

and guarantee readiness for any infection epidemic, government hospitals and NGOs in particular urgently need to address staff training and orientation.

The MERS-CoV epidemics linked to hospitals in Saudi Arabia have shown the need of consistently promote and implementing both fundamental infection control practices, including hand hygiene, and more advanced ones , In a recent research conducted in a Saudi Arabian tertiary care facility, a mix of sophisticated and fundamental infection control strategies also decreased the spread of MERS-CoV to healthcare workers(Butt et al., 2016).

although, multiple research studies show that policy changes and the implementation of innovative multifactorial, multimodal, and interdisciplinary solutions offer the highest likelihood of success in terms of improving hand hygiene and reducing HCAIs (Johnson et al., 2005; McLaws, 2015).

However, for the Ministry of Health (MOH)-recommended IPC protocols to be properly implemented in particular healthcare facilities and their component departments, personnel must be given clear instructions. Management and employees must communicate their expectations to each other in a clear and acknowledged manner (Mahmoud et al., 2016), there is a consistent with current study to improved health care worker knowledge and adherence to HAI strategies.

5.6 Relationship Between the Presence of Supervision and The Extent of The Implementation of Infection Control Policies and Guidelines in Units.

The majority of assessment reviews are produced following a not significant, but in other research the majority of assessment is significant and potentially fatal error Traditionally, when an assessment found that a procedure carried out by staff members was inadequate, the focus of problem-solving efforts was on identifying the particular person or people who were the "cause" of the issue. Subsequent efforts to enhance quality concentrated on creating a culture of safety and acknowledged that complicated, badly built systems were responsible for further mistakes(Edmond et al., 2008).

The benefit of an evaluation that examines system issues is that it can encourage healthcare providers to report adverse events and near misses that could be avoided in the future, while also striking a balance between identifying system problems and holding individual providers accountable for their daily practices. Improvement is impossible without evaluation reports that provide insights into the reasons behind mistakes and lead to subsequent individual and organizational changes that encourage safer habits.

Chapter Six

6. Conclusions

Although not all infections can be prevented, it is the duty of all healthcare professionals to implement care guidelines in order to prevent illnesses linked to their services. A patient's risk of infection is directly increased by a number of non-modifiable patient risk factors, including advanced age, underlying disease, the severity of their sickness, and occasionally their immunological state. A patient may become infected by cross-contamination in the medical environment or through the appearance of their own endogenous germs, depending on their sensitivity. Antimicrobial medication benefits the microbial ecology by decreasing the prevalence of some microorganisms, but it may also allow others to arise and cause a new side effect (such as antibiotic-associated diarrhea).

By employing evidence-based aseptic work practices that minimize the introduction of endogenous or exogenous organisms through invasive medical devices, nurses can lower the risk of infection and colonization. It is crucial to utilize personal protective barriers and practice good HH while trying to lower the chance of an exposed patient contracting an external infection. For instance, bacteria have been discovered on portable medical equipment utilized in the room as well as in the surroundings of a patient. Surfaces in the vicinity of a patient who has a MDRO infection or colonization may also get contaminated. Healthcare professionals should be aware that even when they are not directly caring for patients, they might still come into contact with environmental germs on their hands or gloves. The minute microbiological burden that can be transferred to oneself or others can be decreased by using PPE appropriately and discarding it afterward. It has been demonstrated that identified aseptic and infection control

procedures decrease the spread of organisms to a single patient, stop recurrent transmissions that lead to a situation where multiple patients are in an outbreak, or allow the organisms to become endemic hospital flora and become established in the healthcare environment.

According to policy compliance the results show that there are no significant differences in the means of the total policy compliance scale due to the Age, Gender, and Profession, also, there is significant negative relationship between the healthcare providers' compliance with institutional policies on infection prevention and the healthcare providers' awareness, and also there is significant negative relationship between the general policy compliance and the healthcare providers' awareness . And we have increase of the healthcare providers' compliance with institutional policies on infection prevention and the increase of their general policy compliance decrease their awareness.

although, we have significant positive relationship between the presence of supervision and the extent of implementation of infection control policies and guidelines in units at the 0.05 level and indicating that the increase of Supervision increases the extent of implementation of infection control policies and guidelines in units.

According to health care strategies for preventing health care infection and evaluation, there have a good awareness and knowledge referred to healthcare worker , but there's no enough adherence to that due to poor policy maker in site and lake of resources of equipment in the other site , also we have a variation of implementation according to work job like as direct work with patient or indirect work with patient , in the other hand the indirect work with patient may be lead to increase of infection between hospital worker in high percentage.

It has been shown that surfaces in the environment and undamaged patient skin can harbor transitory bacteria that are picked up by nursing and medical procedures. Even while the precise incidence and amount of contamination are unknown, it does happen. The transitory transport and transmission of pathogens can be minimized by using aseptic procedures and hand cleanliness prior to providing care for a vulnerable patient. Evidence-based practices for infection control have many, cost-effective protective benefits. They not only help achieve the best possible outcomes for individual patients but also safeguard healthcare personnel, raise public awareness of infection control issues in all healthcare settings, and uphold the highest standards of nursing, all of which help us achieve our goal of the best possible outcomes for patients and the general public.

We have determined the infection prevention and control concerns of healthcare workers in Hebron's healthcare facilities, which varied between institutions and professions. In order to improve the implementation of infection prevention and control policies and attempt to ensure that outbreaks can be minimized and contained, these issues warrant immediate attention in the

form of staff training and consultation, improved communication of guidelines and policies, and the provision of sufficient resources and equipment.

6.1 Recommendations

1. **Strengthen Healthcare-Associated Infection Prevention Strategies:**

   Develop and continuously improve infection prevention strategies in line with national and international standards. These strategies should be implemented across all levels of healthcare settings and regularly updated to incorporate new research and evidence-based practices.

2. **Enhance Communication**:

   Establish clear and effective communication channels for sharing information about infection prevention measures among healthcare staff, patients, and visitors. Regular meetings, updates, and real-time alerts should be used to keep everyone informed about infection risks, protocols, and any potential outbreaks.

3. **Ongoing Training on Infection Prevention Strategies**:

   Provide regular, comprehensive training on healthcare-associated infection prevention strategies for all healthcare staff. The training should cover the latest infection control practices, personal protective equipment (PPE) usage, hand hygiene protocols, and antimicrobial stewardship. Periodic refresher courses should be scheduled to keep the knowledge current.

4. **Establish a Robust Surveillance System:**

   Implement and maintain a comprehensive surveillance system to monitor healthcare associated infections. This system should allow for early detection of trends or outbreaks, enabling timely interventions and adjustments to infection control strategies to prevent further transmission.

5. **Promote Continuous Health Education and Patient Awareness**:

   Educate patients, visitors, and healthcare workers about infection prevention and control practices. Ongoing health promotion efforts, including brochures, posters, digital media, and in-person sessions, should be used to raise awareness and empower individuals to actively participate in infection prevention.

6. **Conduct Root Cause Analysis During Outbreaks**:

   When an outbreak of healthcare-associated infection occurs, perform a thorough root cause analysis (RCA) to understand the underlying factors contributing to the outbreak. This process should be multi-disciplinary, involving infection control specialists, epidemiologists, and healthcare managers, and the findings should be used to inform corrective actions and prevent future outbreaks.

7. **Ensure Access to Laboratory Services**:

   Ensure that there is ready access to laboratory services for timely and accurate diagnosis of infections. Laboratories should be equipped with the necessary tools to identify pathogens quickly, and the results should be communicated to healthcare teams promptly to guide treatment decisions and infection control measures.

8. **Implementation of Guidelines and Protocols**:

   Ensure that evidence-based guidelines for infection prevention are developed, disseminated, and strictly followed. Regular audits should be conducted to assess adherence to these guidelines, and adjustments should be made as needed to improve compliance and outcomes.

9. **Supervision and Monitoring of Infection Prevention Practices:**

   Implement a robust system of supervision and monitoring to ensure infection prevention protocols are consistently followed. This could include regular audits, spot checks, and peer reviews. Supervisors should be trained to identify areas of non-compliance and provide immediate corrective action.

By incorporating these recommendations, healthcare facilities can improve infection prevention and control practices, enhance patient and staff safety, and reduce the incidence of healthcare-associated infections.

6.2 Limitations of Study

While our study provided valuable insights into healthcare workers' perceptions and understanding of infection prevention and control within their organizations, it is subject to several limitations:

1. The study was restricted to hospitals in Hebron city and did not encompass other hospitals across the West Bank.
2. The study was limited to specific participants from departments, which reduces the generalizability of the results to the entire institution.
3. The study was constrained by limited resources and access to relevant literature.
4. The research lacked adequate financial support, which hindered its scope and depth.
5. Transportation and traffic crises that make it difficult to move to hospitals.

6.3 Budget

Total cost for study			
Expense description	**Number of units**	**Cost of each unit**	**Total cost**
Transportation	20 visits	50 ILS	1000 ILS
Data analysis/Software/ printing			3500 ILS
Miscellaneous			1000 ILS
Total			5500 ILS

References

- Agarwal, R., Mohapatra, S., Rath, G. P., & Kapil, A. (2017). Active Surveillance Of Health Care Associated Infections In Neurosurgical Patients. *Journal Of Clinical And Diagnostic Research: JCDR, 11*(7), DC01.

- Al-Hameed, F., Wahla, A. S., Siddiqui, S., Ghabashi, A., Al-Shomrani, M., Al-Thaqafi, A., & Tashkandi, Y. (2016). Characteristics And Outcomes Of Middle East Respiratory Syndrome Coronavirus Patients Admitted To An Intensive Care Unit In Jeddah, Saudi Arabia. *Journal Of Intensive Care Medicine, 31*(5), 344-348.

- Al-Tawfiq, J. A., Zumla, A., & Memish, Z. A. (2014). Coronaviruses: Severe Acute Respiratory Syndrome Coronavirus And Middle East Respiratory Syndrome Coronavirus In Travelers. *Curr Opin Infect Dis, 27*(5), 411-417. Doi: 10.1097/QCO.0000000000000089

- Al Khamis, A. A. (2016). Framing Health Policy In The Context Of Saudi Arabia. *Journal Of Infection And Public Health, 9*(1), 3-6. Doi: Https://Doi.Org/10.1016/J.Jiph.2015.11.002

- Alemu, A. A., Yitayew, M., Azazeh, A., & Kebede, S. (2020). Utilization of personal protective equipment and associated factors among building construction workers in Addis Ababa, Ethiopia, 2019. BMC Public Health, 20, 1-7.

- Alshehari, A., Park, S., & Rashid, H. (2018). Strategies To Improve Hand Hygiene Compliance Among Healthcare Workers In Adult Intensive Care Units: A Mini Systematic Review. *Journal Of Hospital Infection*, *100*(2), 152-158.

- Arie Soroksky, M., Sergey Nagornov, M., Eliezer Klinowski, M., Yuval Leonov, M., Eduard Ilgiyaev, M., Orit Yossepowitch, M., & Galina Goltsman, M. (2014). Active Surveillance Cultures In Critically Ill Patients: Pathogens, Patterns, And Correlation With Eventual Bloodstream Infections.

- AS, C. (2008 Apr). Preventing Health Care–Associated Infections. In: Hughes RG, Editor. Patient Safety And Quality: An Evidence-Based Handbook For Nurses. Rockville (MD): Agency For Healthcare Research And Quality (US).

- Baur, D., Gladstone, B. P., Burkert, F., Carrara, E., Foschi, F., Döbele, S., & Tacconelli, E. (2017). Effect Of Antibiotic Stewardship On The Incidence Of Infection And Colonisation With Antibiotic-Resistant Bacteria And Clostridium Difficile Infection: A

Systematic Review And Meta-Analysis. *The Lancet Infectious Diseases, 17*(9), 990-1001.

- Brienen, N. C. J., Timen, A., Wallinga, J., Van Steenbergen, J. E., & Teunis, P. F. M. (2010). The Effect of Mask Use on the Spread of Influenza During a Pandemic: The Effect of Mask Use on the Spread of Influenza During a Pandemic. *Risk Analysis, 30*(8), 1210–1218. https://doi.org/10.1111/j.1539-6924.2010.01428.x

- Brown, C. (2014). Call For Infection Control To Stem MERS. *Canadian Medical Association Journal, 186*(10), E349-E349. Doi: 10.1503/Cmaj.109-4806

- Butt, T. S., Koutlakis-Barron, I., Aljumaah, S., Althawadi, S., & Almofada, S. (2016). Infection Control And Prevention Practices Implemented To Reduce Transmission Risk Of Middle East Respiratory Syndrome-Coronavirus In A Tertiary Care Institution In Saudi Arabia. *Am J Infect Control, 44*(5), 605-611. Doi: Https://Doi.Org/10.1016/J.Ajic.2016.01.004

- Cai, Y., Venkatachalam, I., Tee, N. W., Tan, T. Y., Kurup, A., Wong, S. Y., . . . Marimuthu, K. (2017). Prevalence Of Healthcare-Associated Infections And Antimicrobial Use Among Adult Inpatients In Singapore Acute-Care Hospitals: Results From The First National Point Prevalence Survey. *Clinical Infectious Diseases, 64*(Suppl_2), S61-S67. Doi: 10.1093/Cid/Cix103

- Cassini, A., Plachouras, D., Eckmanns, T., Abu Sin, M., Blank, H.-P., Ducomble, T., . . . Suetens, C. (2016). Burden Of Six Healthcare-Associated Infections On European Population Health: Estimating Incidence-Based Disability-Adjusted Life Years Through A Population Prevalence-Based Modelling Study. *PLOS Medicine, 13*(10), E1002150. Doi: 10.1371/Journal.Pmed.1002150

- Chemaly, R. F., Simmons, S., Dale Jr, C., Ghantoji, S. S., Rodriguez, M., Gubb, J., . . . Stibich, M. (2014). The Role Of The Healthcare Environment In The Spread Of Multidrug-Resistant Organisms: Update On Current Best Practices For Containment. *Therapeutic Advances In Infectious Disease, 2*(3-4), 79-90.

- Chen, H., Liu, K., Li, Z., & Wang, P. (2019). Point Of Care Testing For Infectious Diseases. *Clinica Chimica Acta, 493*, 138-147. Doi: Https://Doi.Org/10.1016/J.Cca.2019.03.008

- Ciccolini, M., Donker, T., Grundmann, H., Bonten, M. J., & Woolhouse, M. E. (2014). Efficient Surveillance For Healthcare-Associated Infections Spreading Between Hospitals. *Proceedings Of The National Academy Of Sciences, 111*(6), 2271-2276.

- De Angelis, G., Cataldo, M. A., De Waure, C., Venturiello, S., La Torre, G., Cauda, R., . . . Tacconelli, E. (2014). Infection Control And Prevention Measures To Reduce The Spread Of Vancomycin-Resistant Enterococci In Hospitalized Patients: A Systematic Review And Meta-Analysis. *Journal Of Antimicrobial Chemotherapy, 69*(5), 1185-1192.

- Dik, J.-W. H., Poelman, R., Friedrich, A. W., Panday, P. N., Lo-Ten-Foe, J. R., Assen, S. V., . . . Sinha, B. (2016). An Integrated Stewardship Model: Antimicrobial, Infection Prevention And Diagnostic (AID). *Future Microbiology, 11*(1), 93-102.

- Doron, S., & Davidson, L. E. (2011). *Antimicrobial Stewardship.* Paper Presented At The Mayo Clinic Proceedings.

- Dunagan, W. C., Woodward, R. S., Medoff, G., Gray III, J. L., Casabar, E., Smith, M. D., . . . Spitznagel, E. (1989). Antimicrobial Misuse In Patients With Positive Blood Cultures. *The American Journal Of Medicine, 87*(3), 253-259.

- Dyar, O., Huttner, B., Schouten, J., & Pulcini, C. (2017). What Is Antimicrobial Stewardship *Clinical Microbiology And Infection, 23*(11), 793-798.

- Edmond, M. B., Ober, J. F., & Bearman, G. (2008). Active Surveillance Cultures Are Not Required To Control MRSA Infections In The Critical Care Setting. *Am J Infect Control, 36*(6), 461-463.

- Erasmus, V., Daha, T. J., Brug, H., Richardus, J. H., Behrendt, M. D., Vos, M. C., & Van Beeck, E. F. (2010). Systematic Review Of Studies On Compliance With Hand Hygiene Guidelines In Hospital Care. *Infection Control & Hospital Epidemiology, 31*(3), 283-294.

- Esfandiari, A., Salari, H., Rashidian, A., Asl, H. M., Foroushani, A. R., & Sari, A. A. (2018). Eliminating Healthcare-Associated Infections In Iran: A Qualitative Study To Explore Stakeholders' Views. *International Journal Of Health Policy And Management, 7*(1), 27.

- Gardam, M. A., Lemieux, C., Reason, P., Van Dijk, M., & Goel, V. (2009). Healthcare-Associated Infections As Patient Safety Indicators. *Healthc Pap, 9*(3), 8-24.

- Garner, J. S., & Favero, M. S. (1986). Guideline For Handwashing And Hospital Environmental Control, 1985 Supersedes Guideline For Hospital Environmental Control Published In 1981. *Am J Infect Control, 14*(3), 110-126.

- Gastmeier, P. (2010). Healthcare-Associated Versus Community-Acquired Infections: A New Challenge For Science And Society. *International Journal Of Medical Microbiology, 300*(6), 342-345.

- Gerber, J. S., Prasad, P. A., Fiks, A. G., Localio, A. R., Bell, L. M., Keren, R., & Zaoutis, T. E. (2014). Durability Of Benefits Of An Outpatient Antimicrobial Stewardship Intervention After Discontinuation Of Audit And Feedback. *Jama, 312*(23), 2569-2570.

- Gerding, D. N. (2001). The Search For Good Antimicrobial Stewardship. *Joint Commission Journal On Quality Improvement, 27*(8), 403-404.

- Giguère, A., Zomahoun, H. T. V., Carmichael, P. H., Uwizeye, C. B., Légaré, F., Grimshaw, J. M., ... & Massougbodji, J. (2020). Printed educational materials: effects on professional practice and healthcare outcomes. Cochrane Database of Systematic Reviews, (8).

- Gill, C. J., & Gill, G. C. (2005). Nightingale In Scutari: Her Legacy Reexamined. *Clinical Infectious Diseases : An Official Publication Of The Infectious Diseases Society Of America, 40*(12), 1799-1805. Doi: 10.1086/430380

- Han, B., Song, Y., Li, C., Yang, W., Ma, Q., Jiang, Z., ... & Gao, Q. (2021). Safety, tolerability, and immunogenicity of an inactivated SARS-CoV-2 vaccine (CoronaVac) in healthy children and adolescents: a double-blind, randomised, controlled, phase 1/2 clinical trial. Lancet Infect Dis, 21, 1645-53.

- Haque, M., & Mckimm, J. (2020). Strategies To Prevent Healthcare-Associated Infections: A Narrative Overview. *13,* 1765-1780. Doi: 10.2147/Rmhp.S269315

- Haque, M., Sartelli, M., Mckimm, J., & Bakar, M. A. (2018a). Health Care-Associated Infections–An Overview. *Infect Drug Resist,* 2321-2333.

- Haque, M., Sartelli, M., Mckimm, J., & Bakar, M. A. (2018b). Health Care-Associated Infections – An Overview. *Infect Drug Resist, 11*(Null), 2321-2333. Doi: 10.2147/IDR.S177247

- Hastings, D., Tokars, J., Abdel Aziz, I. Z. A. M., Alkhaldi, K., Bensadek, A., Alraddadi, B., . . . Madani, T. (2016). Outbreak Of Middle East Respiratory Syndrome At Tertiary Care Hospital, Jeddah, Saudi Arabia, 2014. *Emerging Infectious Disease Journal, 22*(5), 794. Doi: 10.3201/Eid2205.151797

- Henderson, D. K. (2006). Managing Methicillin-Resistant Staphylococci: A Paradigm For Preventing Nosocomial Transmission Of Resistant Organisms. *The American Journal Of Medicine, 119*(6), S45-S52.

- Hugonnet, S., Villaveces, A., & Pittet, D. (2007). Nurse Staffing Level And Nosocomial Infections: Empirical Evaluation Of The Case-Crossover And Case-Time-Control Designs. *Am J Epidemiol, 165*(11), 1321-1327. Doi: 10.1093/Aje/Kwm041

- Huis, A., Van Achterberg, T., De Bruin, M., Grol, R., Schoonhoven, L., & Hulscher, M. (2012). A Systematic Review Of Hand Hygiene Improvement Strategies: A Behavioural Approach. *Implementation Science, 7*, 1-14.

- Irek, E. O., Amupitan, A. A., Aboderin, A. O., & Obadare, T. O. (2018). A Systematic Review Of Healthcare-Associated Infections In Africa: An Antimicrobial Resistance Perspective. *African Journal Of Laboratory Medicine, 7*(2), 1-9.

- Jackson, M., Chiarello, L. A., Gaynes, R. P., & Gerberding, J. L. (2002). Nurse Staffing And Healthcare-Associated Infections: Proceedings From A Working Group Meeting. *J Nurs Adm, 32*(6), 314-322. Doi: 10.1097/00005110-200206000-00007

- Kanerva, M., Ollgren, J., Hakanen, A. J., & Lyytikäinen, O. (2012). Estimating The Burden Of Healthcare-Associated Infections Caused By Selected Multidrug-Resistant Bacteria Finland, 2010. *Antimicrobial Resistance And Infection Control, 1*, 1-5.

- Klevens, R. M., Edwards, J. R., Richards, C. L., Horan, T. C., Gaynes, R. P., Pollock, D. A., & Cardo, D. M. (2007). Estimating Health Care-Associated Infections And Deaths In U.S. Hospitals, 2002. *Public Health Reports®, 122*(2), 160-166. Doi: 10.1177/003335490712200205

- Kozel, T. R., & Burnham-Marusich, A. R. (2017). Point-Of-Care Testing For Infectious Diseases: Past, Present, And Future. *Journal Of Clinical Microbiology, 55*(8), 2313-2320. Doi: Doi:10.1128/Jcm.00476-17

- Kritsotakis EI, K. F., Astrinaki E, Roumbelaki M, Ioannidou E, Gikas A. Prevalence, Incidence Burden, And Clinical Impact Of Healthcare-Associated Infections And

Antimicrobial Resistance: A National Prevalent Cohort Study In Acute Care Hospitals In Greece. Infect Drug Resist. 2017;10:317-328, & Https://Doi.Org/10.2147/IDR.S147459.

- Labrague, L., Mcenroe‐Petitte, D., Van De Mortel, T., & Nasirudeen, A. (2018). A Systematic Review On Hand Hygiene Knowledge And Compliance In Student Nurses. *International Nursing Review, 65*(3), 336-348.

- Lane, H. J., Blum, N., & Fee, E. (2010). Oliver Wendell Holmes (1809–1894) And Ignaz Philipp Semmelweis (1818–1865): Preventing The Transmission Of Puerperal Fever. *American Journal Of Public Health, 100*(6), 1008-1009.

- Leas, B. F., Sullivan, N., Han, J. H., Pegues, D. A., Kaczmarek, J. L., & Umscheid, C. A. (2015). Environmental Cleaning For The Prevention Of Healthcare-Associated Infections.

- Lemaignen, A., Birgand, G., Ghodhbane, W., Alkhoder, S., Lolom, I., Belorgey, S., Lescure, F.-X., Armand-Lefevre, L., Raffoul, R., Dilly, M.-P., Nataf, P., & Lucet, J. C. (2015). Sternal wound infection after cardiac surgery: Incidence and risk factors according to clinical presentation. *Clinical Microbiology and Infection*, *21*(7), 674.e11-674.e18. https://doi.org/10.1016/j.cmi.2015.03.025

- Luangasanatip, N., Hongsuwan, M., Limmathurotsakul, D., Lubell, Y., Lee, A. S., Harbarth, S., . . . Cooper, B. S. (2015). Comparative Efficacy Of Interventions To Promote Hand Hygiene In Hospital: Systematic Review And Network Meta-Analysis. *Bmj, 351*.

- Ludwick, R., & Cipriano Silva, M. (2006). What Would You Do? Ethics And Infection Control. *Online J Issues Nurs, 12*(1), 8.

- Lupión, C., López-Cortés, L. E., & Rodríguez-Bano, J. (2014). Medidas De Prevención De La Transmisión De Microorganismos Entre Pacientes Hospitalizados. Higiene De Manos. *Enferm Infecc Microbiol Clin, 32*(9), 603-609.

- Mackay, I. M., & Arden, K. E. (2015). MERS Coronavirus: Diagnostics, Epidemiology And Transmission. *Virology Journal, 12*(1). Doi: 10.1186/S12985-015-0439-5

- Madani, T. A., Althaqafi, A. O., & Alraddadi, B. M. (2014). Infection Prevention And Control Guidelines For Patients With Middle East Respiratory Syndrome Coronavirus (MERS-Cov) Infection. *Saudi Medical Journal, 35*(8), 897-913.

- Magill, S. S., Edwards, J. R., Bamberg, W., Beldavs, Z. G., Dumyati, G., Kainer, M. A., . . . Fridkin, S. K. (2014). Multistate Point-Prevalence Survey Of Health Care–Associated Infections. *New England Journal Of Medicine, 370*(13), 1198-1208. Doi: Doi:10.1056/Nejmoa1306801

- Magill, S. S., Hellinger, W., Cohen, J., Kay, R., Bailey, C., Boland, B., . . . Fridkin, S. (2015). Prevalence Of Healthcare-Associated Infections In Acute Care Hospitals In Jacksonville, Florida. *Infection Control & Hospital Epidemiology, 33*(3), 283-291. Doi: 10.1086/664048

- Magill, S. S., Wilson, L. E., Thompson, D. L., Ray, S. M., Nadle, J., Lynfield, R., . . . Team, E. I. P. H. P. S. (2017). Reduction In The Prevalence Of Healthcare-Associated Infections In U.S. Acute Care Hospitals, 2015 Vs 2011. *Open Forum Infectious Diseases, 4*(Suppl_1), S49-S49. Doi: 10.1093/Ofid/Ofx162.116

- Mcdermid, R. C., Stelfox, H. T., & Bagshaw, S. M. (2011). Frailty In The Critically Ill: A Novel Concept. *Critical Care, 15*(1), 301. Doi: 10.1186/Cc9297

- Mcginigle, K. L., Gourlay, M. L., & Buchanan, I. B. (2008). The Use Of Active Surveillance Cultures In Adult Intensive Care Units To Reduce Methicillin-Resistant Staphylococcus Aureus-Related Morbidity, Mortality, And Costs: A Systematic Review. *Clinical Infectious Diseases, 46*(11), 1717-1725.

- Mclaws, M.-L. (2015). The Relationship Between Hand Hygiene And Health Care-Associated Infection: It's Complicated. *Infect Drug Resist*, 7-18.

- Mehta, Y., Gupta, A., Todi, S., Myatra, S., Samaddar, D., Patil, V., . . . Ramasubban, S. (2014). Guidelines For Prevention Of Hospital Acquired Infections. *Indian Journal Of Critical Care Medicine: Peer-Reviewed, Official Publication Of Indian Society Of Critical Care Medicine, 18*(3), 149.

- Moffa, M., Guo, W., Li, T., Cronk, R., Abebe, L. S., & Bartram, J. (2017). A Systematic Review Of Nosocomial Waterborne Infections In Neonates And Mothers. *International Journal Of Hygiene And Environmental Health, 220*(8), 1199-1206.

- Moralejo, D., El Dib, R., Prata, R. A., Barretti, P., & Corrêa, I. (2018). Improving Adherence To Standard Precautions For The Control Of Health Care-Associated Infections. *Cochrane Database Syst Rev, 2*(2), Cd010768. Doi: 10.1002/14651858.CD010768.Pub2

- Morris, A., & Russell, C. (2016). Enhanced Surveillance Of Staphylococcus Aureus Bacteraemia To Identify Targets For Infection Prevention. *Journal Of Hospital Infection, 93*(2), 169-174.

- Murdoch, F., Danial, J., Morris, A., Czarniak, E., Bishop, J., Glass, E., & Imrie, L. (2017). The Scottish Enhanced Staphylococcus Aureus Bacteraemia Surveillance Programme: The First 18 Months Of Data In Adults. *Journal Of Hospital Infection, 97*(2), 133-139.

- Nathwani, D., Varghese, D., Stephens, J., Ansari, W., Martin, S., & Charbonneau, C. (2019). Value Of Hospital Antimicrobial Stewardship Programs [Asps]: A Systematic Review. *Antimicrobial Resistance & Infection Control, 8*, 1-13.

- Nicolle, L. E. (2000). Infection Control In Long-Term Care Facilities. *Clinical Infectious Diseases, 31*(3), 752-756.

- Nimer, N. A. (2022). Nosocomial Infection and Antibiotic-Resistant Threat in the Middle East. *Infection and Drug Resistance, Volume 15*, 631–639.

- Nishiura, H., Miyamatsu, Y., & Mizumoto, K. (2016). Objective Determination Of End Of MERS Outbreak, South Korea, 2015. *Emerging Infectious Disease Journal, 22*(1), 146. Doi: 10.3201/Eid2201.151383

- Pittet, D., Allegranzi, B., Sax, H., Dharan, S., Pessoa-Silva, C. L., Donaldson, L., & Boyce, J. M. (2006). Evidence-Based Model For Hand Transmission During Patient Care And The Role Of Improved Practices. *Lancet Infect Dis, 6*(10), 641-652. Doi: 10.1016/S1473-3099(06)70600-4

- Quinn, M. M., Henneberger, P. K., Braun, B., Delclos, G. L., Fagan, K., Huang, V., . . . Le Moual, N. (2015). Cleaning And Disinfecting Environmental Surfaces In Health Care: Toward An Integrated Framework For Infection And Occupational Illness Prevention. *Am J Infect Control, 43*(5), 424-434.

- Rabaan, A. A., Alhani, H. M., Bazzi, A. M., & Al-Ahmed, S. H. (2017). Questionnaire-Based Analysis Of Infection Prevention And Control In Healthcare Facilities In Saudi Arabia In Regards To Middle East Respiratory Syndrome. *J Infect Public Health, 10*(5), 548-563. Doi: 10.1016/J.Jiph.2016.11.008

- Ridelberg, M., & Nilsen, P. (2015). Using Surveillance Data To Reduce Healthcare–Associated Infection: A Qualitative Study In Sweden. *Journal Of Infection Prevention, 16*(5), 208-214.

- Ripabelli, G., Tamburro, M., Guerrizio, G., Fanelli, I., Flocco, R., Scutellà, M., & Sammarco, M. L. (2018). Tracking Multidrug-Resistant Klebsiella Pneumoniae From An Italian Hospital: Molecular Epidemiology And Surveillance By PFGE, RAPD And PCR-Based Resistance Genes Prevalence. *Current Microbiology, 75*, 977-987.

- RN, O. D., Jones, D., Martello, M., Biron, A., & Lavoie‐Tremblay, M. (2017). A Systematic Review On The Effectiveness Of Interventions To Improve Hand Hygiene Compliance Of Nurses In The Hospital Setting. *Journal Of Nursing Scholarship, 49*(2), 143-152.
- Roberge, R. J. (2016). Face Shields For Infection Control: A Review. *J Occup Environ Hyg, 13*(4), 235-242. Doi: 10.1080/15459624.2015.1095302

- Rutala, W. A. (2008). Guideline For Disinfection And Sterilization In Healthcare Facilities. *Http://Www. Cdc. Gov/Ncidod/Dhqp/Pdf/Guidelines/Disinfection_Nov_2008. Pdf*.

- Safdar, N., Marx, J., Meyer, N. A., & Maki, D. G. (2006). Effectiveness Of Preemptive Barrier Precautions In Controlling Nosocomial Colonization And Infection By Methicillin-Resistant Staphylococcus Aureus In A Burn Unit. *Am J Infect Control, 34*(8), 476-483.

- Saleem, Z., Hassali, M. A., Hashmi, F. K., Godman, B., & Ahmed, Z. (2019). Snapshot of antimicrobial stewardship programs in the hospitals of Pakistan: Findings and implications. *Heliyon*, *5*(7), e02159. https://doi.org/10.1016/j.heliyon.2019.e02159

- Santana, S. L., Furtado, G. H., Coutinho, A. P., & Medeiros, E. A. (2007). Assessment Of Healthcare Professionals' Adherence To Hand Hygiene After Alcohol-Based Hand Rub Introduction At An Intensive Care Unit In São Paulo, Brazil. *Infect Control Hosp Epidemiol, 28*(3), 365-367. Doi: 10.1086/510791

- Sercan Alp, Ö., Durlanik, S., Schulz, D., McGrath, M., Grün, J. R., Bardua, M., ... & Radbruch, A. (2015). Memory CD8+ T cells colocalize with IL-7+ stromal cells in bone marrow and rest in terms of proliferation and transcription. European journal of immunology, 45(4), 975-987.

- Sehulster, L., & Chinn, R. Y. Guidelines For Environmental Infection Control In Healt.

- Sehulster, L., Chinn, R. Y., Arduino, M. J., Carpenter, J., Donlan, R., Ashford, D., . . . Whitney, C. (2003). Guidelines For Environmental Infection Control In Health-Care Facilities. *Morbidity And Mortality Weekly Report Recommendations And Reports RR, 52*(10).

- Shillabeer, A. G., & Shillabeer, A. G. (2016). Current Status. *The Health Of Vietnam*, 57-89.

- Smith, P. W., & Rusnak, P. G. (1997). Infection Prevention And Control In The Long-Term-Care Facility. *Infection Control & Hospital Epidemiology, 18*(12), 831-849.

- Srigley, J. A., Lightfoot, D., Fernie, G., Gardam, M., & Muller, M. P. (2013). Hand Hygiene Monitoring Technology: Protocol For A Systematic Review. *Systematic Reviews, 2*, 1-8.

- Stone, P. W. (2009). Economic Burden Of Healthcare-Associated Infections: An American Perspective. *Expert Review Of Pharmacoeconomics & Outcomes Research, 9*(5), 417-422.

- Storr, J., Twyman, A., Zingg, W., Damani, N., Kilpatrick, C., Reilly, J., . . . The, W. H. O. G. D. G. (2017). Core Components For Effective Infection Prevention And Control Programmes: New WHO Evidence-Based Recommendations. *Antimicrobial Resistance & Infection Control, 6*(1), 6. Doi: 10.1186/S13756-016-0149-9

- Tacconelli, E. (2009). Screening And Isolation For Infection Control. *Journal Of Hospital Infection, 73*(4), 371-377.

- Tadesse, T., Alemu, T., Amogne, G., Endazenew, G., & Mamo, E. (2020). Predictors of Coronavirus Disease 2019 (COVID-19) Prevention Practices Using Health Belief Model Among Employees in Addis Ababa, Ethiopia, 2020. *Infection and Drug Resistance*, *Volume 13*, 3751–3761. https://doi.org/10.2147/IDR.S275933

- Tomar, S. L. (2007). Public Health Perspectives On Surveillance For Periodontal Diseases. *Journal Of Periodontology, 78,* 1380-1386.

- Trampuz, A., & Widmer, A. F. (2004). *Hand Hygiene: A Frequently Missed Lifesaving Opportunity During Patient Care.* Paper Presented At The Mayo Clinic Proceedings.

- Treadwell, J. R., Lucas, S., & Tsou, A. Y. (2014). Surgical Checklists: A Systematic Review Of Impacts And Implementation. *BMJ Quality & Safety, 23*(4), 299-318.

- Van Bunnik, B., Ciccolini, M., Gibbons, C., Edwards, G., Fitzgerald, R., Mcadam, P., . . . Woolhouse, M. (2015). Efficient National Surveillance For Health-Care-Associated Infections. *BMC Public Health, 15*, 1-9.

- Ventola, C. L. (2015). The Antibiotic Resistance Crisis: Part 1: Causes And Threats. *Pharmacy And Therapeutics, 40*(4), 277.

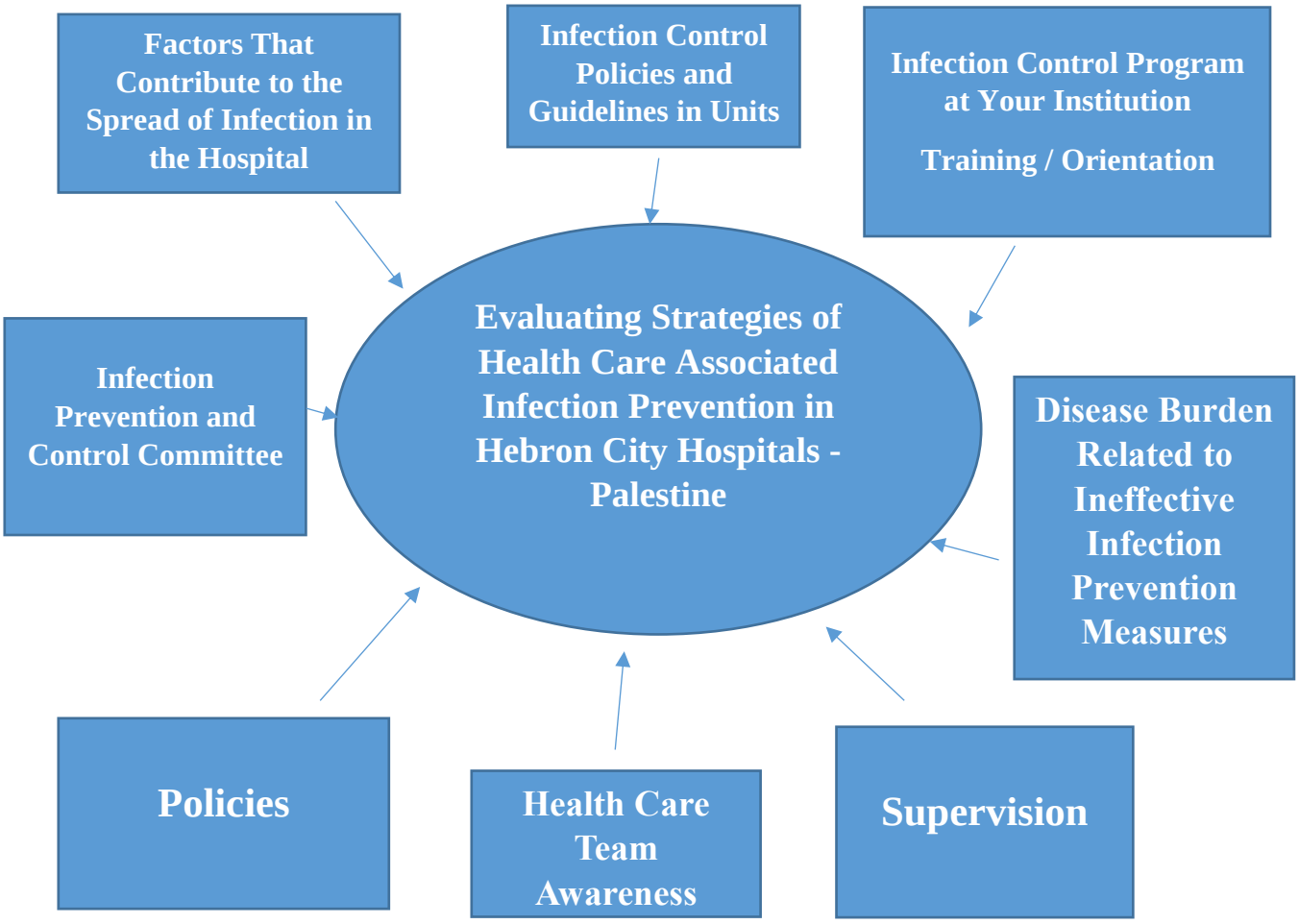
- Widmer, A. F., Conzelmann, M., Tomic, M., Frei, R., & Stranden, A. M. (2007). Introducing Alcohol-Based Hand Rub For Hand Hygiene: The Critical Need For Training. *Infect Control Hosp Epidemiol, 28*(1), 50-54. Doi: 10.1086/510788

- Willemsen, A., Reid, S., & Assefa, Y. (2022). A Review Of National Action Plans On Antimicrobial Resistance: Strengths And Weaknesses. *Antimicrobial Resistance & Infection Control, 11*(1), 90. Doi: 10.1186/S13756-022-01130-X

- Zuschneid, I., Rücker, G., Schoop, R., Beyersmann, J., Schumacher, M., Geffers, C., . . . Gastmeier, P. (2010). Representativeness Of The Surveillance Data In The Intensive Care Unit Component Of The German Nosocomial Infections Surveillance System. *Infection Control & Hospital Epidemiology, 31*(9), 934-938.

Appendix

Annex (1): Structural Framework



Annex (2): Study

Questionnaire (English version)

" نموذج الموافقة على البحث العلمي "

عنوان البحث " **تقييم استراتيجيات الوقاية من العدوى المرتبطة بالرعاية الصحية في مستشفيات مدينة الخليل".**

هدف البحث: الحصول على إجابات واضحة حول استراتيجيات الوقاية من العدوى المرتبطة بالرعاية الصحية للحد والتقليل من العدوى المنقولة داخل المستشفيات في مدينة الخليل

يأتي هذا البحث بمثابة متطلب رسالة ماجستير في تخصص"Infection control and prevention"

للطالب صالح سلامة أبو شامة، من جامعة القدس-أبو ديس لنيل هذه الدرجة بكامل امتيازاتها وتحت اشراف الدكتور القدير أسعد الرملاوي.

بمجرد تعبئتك عزيزي المشترك لهذه الاستبانة سيتم اشتراكك بالبحث بشكل تلقائي، وهناك سرية تامة للاشتراك بهذا البحث ولن يكون هناك أي معلومات شخصية تدل عليك، ووجودك ضمن عينة البحث هذا هو ليس اجبار في الاشتراك فيه وعليك انت صاحب اختيار للانضمام.

وأخيرا إذا تم اشتراكك بالبحث وكنت تريد الانسحاب سيكون لك كامل الحق بالانسحاب دون علم من قبلنا بأي أسباب أدت لذلك، وعليك فقط التواصل مع الباحث مباشرة.

اسم الباحث: صالح سلامة أبو شامة

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وتفضلوا بقبول فائق الاحترام والتقدير

"Questionnaire paper"

1. Age: -

- 18-26
- 27-34
- 35-43
- 44-51
- 52-59
- 60 or more

2. Gender: -

- Male
- Female

3. Profession: -

- Radiology
- Doctor
- Nursing
- Laboratory
- Cleaning services supervisor
- Nutrition
- Physiotherapy
- Pharmacist
- Other, including the Head of Quality and Patient Safety Department, CEO/Executive Director, Medical Director, Medical Engineers, and Supplies and Procurement Department.

4. Work in:

- Private hospital

- Government hospital
- Non-Governmental Clinics (NGOS)

5. In your institution, are there strategies to prevent healthcare-associated infections?

- Yes
- No
- I don't know

6. In your institution, is there a specialized or active staff to deal with infections?

- Yes
- No
- I don't know

7. In your institution, are senior policymakers involved in the health care-associated infections program?

- Yes
- No
- I don't know

8. Is there a surveillance system for healthcare-associated infections in your institution?

- Yes
- No
- I don't know

9. Is there a clear description of the committee members?

- Yes
- No
- I don't know.

10. Do you agree that your institution's control tool is effective in preventing or controlling healthcare-associated infections?

- Yes
- No
- I don't know

11: Are there necessary tools available to prevent health care-related infections, such as gel masks, masks, protective equipment, etc., soap, and disinfectants?

- Yes
- No
- I don't know

12. In your organization, do you have a work team specializing in emerging infectious diseases (dealing with outbreaks)?

- Yes
- No
- I don't know

13. Do you think that all employees in your unit follow appropriate control policies (rules and guidelines) for health care-associated infections?

- Yes
- No
- I don't know

14. Are people infected with infectious diseases or suspected of being infected isolated in accordance with isolation policies for health care-associated infections?

- Yes
- No
- I don't know

15- Do cleaners receive training courses on infection prevention and control practices related to healthcare-associated infections?

- Yes
- No
- I don't know

16: Do you have a list of infectious agents associated with health care?

- Yes
- No
- I don't know

17. Are staff given instructions and training to care for patients with health-care-associated infections?

- Yes
- No
- I don't know

18: Do you think the hospital where you work is prepared to deal with an outbreak of healthcare-associated infections?

- Yes
- No
- I don't know

19. Is medical waste disposed of properly and appropriately?

- Yes
- No
- I don't know

20. Is there control over the disposal of medical waste?

- Yes
- No
- I don't know

21. Is there oversight of employees taking the necessary vaccinations? Are all employees obligated to take the necessary vaccinations to work in the hospital?

- Yes
- No
- I don't know

22. Is the cultivation of bacteria in the laboratory monitored and documented according to medical and scientific principles?

- Yes
- No
- I don't know

23. Are there safety procedures followed in medical laboratories to prevent the spread of infection or sample contamination?

- Yes
- No
- I don't know

24: Have you received any training or guidance on the protection and control of healthcare-associated infections?

- Yes
- No
- I don't know

25. Are there appropriate sterilization procedures for tools used in the hospital?

- Yes
- No
- I don't know

26. Is there continuous monitoring of sterilization procedures for instruments and within appropriate standards and policies that limit infections associated with health care?

- Yes
- No
- I don't know

27: Are employees subject to comprehensive periodic examinations?

- Yes
- No
- I don't know

28. Are there local or external workshops or training courses within the fields dealing with health care-associated infections?

- Yes
- No
- I don't know

29. Are devices adequately cleaned and sterilized, including those used more than once?

- Yes
- No
- I don't know

30. Is there a possibility to provide engineering control devices if necessary to reduce the risks of infection associated with health care in the hospital? If the answer is no, what are the obstacles to providing control devices?

- Yes

- No
- I don't know

31. Does the hospital have a room with low air pressure that prevents air from escaping and thus prevents the spread of disease in the hospital?

- Yes
- No
- I don't know

32. In your opinion, what are the causes of the spread of infection? You can choose more than one answer.

- Violating infection control policies, rules, and guidelines
- There are no clear infection control policies, rules, or guidelines.
- Negligence of health care workers
- Lack of appropriate personal protective equipment for employees
- Lack of infection control infrastructure
- Lack of supervision by the Safety Department regarding quality and patients.

33. Factors that contribute to the spread of infection in hospitals. You can choose more than one answer.

- There is no staff specialized in giving preventive guidance.
- Lack of medical staff expertise to prevent the spread of infection
- Lack of training courses and workshops necessary to limit or deal with infection
- The infrastructure and design of the hospital have a shortage of staff.
- There is no training program for infection control.
- There are no resources to fill infection control needs.
- Infection control is not implemented as needed.

34. What types of infections reach the Ministry of Health?

- All healthcare-related infections
- All types of infections (whether in hospitals or the community)
- I don't know

35. What is the nature of the reporting system in the hospital where you work?

- Electronic regulatory system
- On paper
- Contact by phone

36. **In your opinion, what is the most successful reporting system for writing about infectious agents?**

• Electronic system
• On paper
• Contact by phone

Annex (3): Study Questionnaire (Arabic version)

استبيان الدراسة

" نموذج الموافقة على البحث العلمي "

عنوان البحث " **تقييم استراتيجيات الوقاية من العدوى المرتبطة بالرعاية الصحية في مستشفيات مدينة الخليل".**

هدف البحث: الحصول على إجابات واضحة حول استراتيجيات الوقاية من العدوى المرتبطة بالرعاية الصحية للحد والتقليل من العدوى المنقولة داخل المستشفيات في مدينة الخليل

يأتي هذا البحث بمثابة متطلب رسالة ماجستير في تخصص"Infection control and prevention" للطالب صالح سلامة أبو شامة، من جامعة القدس-أبو ديس لنيل هذه الدرجة بكامل امتيازاتها وتحت اشراف الدكتور القدير أسعد الرملاوي.

بمجرد تعبئتك عزيزي المشترك لهذه الاستبانة سيتم اشتراكك بالبحث بشكل تلقائي، وهناك سرية تامة للاشتراك بهذا البحث ولن يكون هناك أي معلومات شخصية تدل عليك، ووجودك ضمن عينة البحث هذا هو ليس اجبار في الاشتراك فيه وعليك انت صاحب اختيار للانضمام.

وأخيرا إذا تم اشتراكك بالبحث وكنت تريد الانسحاب سيكون لك كامل الحق بالانسحاب دون علم من قبلنا بأي أسباب أدت لذلك، وعليك فقط التواصل مع الباحث مباشرة.

اسم الباحث: صالح سلامة أبو شامة

تلفون: 0569998942

ايميل: abushamehsaleh1@gmail.com

وتفضلوا بقبول فائق الاحترام والتقدير

البيانات الأولية: -

1. **العمر: -**
   - **18-26**
   - **27-34**
   - **35-43**
   - **44-51**
   - **52-59**
   - **60 فأكثر**

2. **الجنس:-**
   - **ذكر**
   - **أنثى**

3. **المهنة: -**
   - **فني أشعة**
   - **طبيب**
   - **ممرض / ممرضة**
   - **فني مختبر**
   - **مشرف خدمات نظافة**
   - **التغذية**
   - **العلاج الطبيعي**
   - **صيدلي / صيدلانية**
   - **غير ذلك ويشمل (رئيس قسم الجودة وسلامة المرضى، الرئيس التنفيذي / المدير التنفيذي، المدير الطبي، المهندسين الطبيين، قسم اللوازم والمشتريات).**

4. **اعمل في:**
   - **مستشفى خاص**
   - **مستشفى حكومي**
   - **عيادات غير حكومية (NGOS)**

5. في مؤسستكم: هل هناك استراتيجيات للوقاية من العدوى المرتبطة بالرعاية الصحية؟

- **نعم**
- **لا**
- **لا أعلم**

7 في مؤسستكم هل يوجد طاقم متخصص / نشط للتعامل مع العدوى؟

- **نعم**
- **لا**
- **لا أعلم**

7 . في مؤسستكم: هل صُناع السياسة العليا منخرطون في برنامج العدوى المرتبطة بالرعاية الصحية؟

- **نعم**
- **لا**
- **لا أعلم**

8 . في مؤسستكم هل يوجد نظام مراقبة للعدوى المرتبطة بالرعاية الصحية؟

- **نعم**
- **لا**
- **لا أعلم**

9. **هل يوجد وصف وظيفي واضح لأعضاء لجنة مراقبة العدوى المرتبطة بالرعاية الصحية.**

- **نعم**
- **لا**
- **لا أعلم**

10. **هل توافق على أن أداة الرقابة في مؤسستكم فعالة في منع أو السيطرة على العدوى المرتبطة بالرعاية الصحية؟**

- **نعم**
- **لا**
- **لا أعلم**

11 .هل يتوفر أدوات ضرورية لمنع العدوى المرتبطة بالرعاية الصحية مثل جلو فزات، اقنعة وأدوات حماية وغيرها، صابون ومطهرات؟

- **نعم**

- لا
- لا أعلم

12. في مؤسستكم: هل لديكم فريق عمل متخصص في الأمراض المعدية الناشئة (التعامل مع الاندلاعات)؟

- نعم
- لا
- لا أعلم

13 .هل تعتقد ان كل الموظفين في وحدتك يتبعون سياسات (قواعد وارشادات) رقابية مناسبة للعدوى المرتبطة بالرعاية الصحية؟

- نعم
- لا
- لا أعلم

14 .هل المصابون بأمراض معدية أو المشتبه بإصابتهم يتم عزلهم طبقاً لسياسات العزل الخاصة بالعدوى المرتبطة بالرعاية الصحية؟

- نعم
- لا
- لا أعلم

15.هل يتلقى عمال النظافة دورات تدريبية عن منع العدوى وممارسات رقابية ذات صلة بالعدوى المرتبطة بالرعاية الصحية؟

- نعم
- لا
- لا أعلم

16 .هل لديكم قائمة بالعوامل الناقلة للعدوى المرتبطة بالرعاية الصحية؟

- نعم
- لا
- لا أعلم

17 .هل يتم إعطاء العاملين تعليمات وتدريب للعناية بالمرضى المصابون بالعدوى المرتبطة بالرعاية الصحية؟

- **نعم**
- **لا**
- **لا أعلم**

18.هل تعتقد أن المستشفى الذي تعمل به جاهز للتعامل مع تفشي العدوى المرتبطة بالرعاية الصحية؟

- **نعم**
- **لا**
- **لا أعلم**

19 .هل يتم التخلص من النفايات الطبية بشكل سليم / مناسب؟

- **نعم**
- **لا**
- **لا أعلم**

20 .هل هناك رقابة على التخلص من النفايات الطبية؟

- **نعم**
- **لا**
- **لا أعلم**

21. هل هناك رقابة على اخذ الموظفين التطعيمات اللازمة / هل يلتزم جميع الموظفين بأخذ التطعيمات اللازمة للعمل في المستشفى؟

- **نعم**
- **لا**
- **لا أعلم**

22 .هل تتم مراقبة وتوثيق زراعة البكتيريا في المختبر وفق الأسس العلمية الطبية؟

- **نعم**
- **لا**
- **لا أعلم**

23. هل هناك إجراءات سلامة متبعة في المختبرات الطبية لمنع انتشار العدوى او تلوث العينة؟

- **نعم**
- **لا**
- **لا أعلم**

24.هل تلقيت شيئا من التدريب او التوجيه عن الحماية من العدوى المرتبطة بالرعاية الصحية والسيطرة عليها؟

- **نعم**
- **لا**
- **لا أعلم**

25 .هل هناك إجراءات تعقيم مناسبة للأدوات المستخدمة في المستشفى؟

- **نعم**
- **لا**
- **لا أعلم**

26 .هل هناك رقابة على إجراءات التعقيم للأدوات بشكل مستمر وضمن المعايير والسياسات المناسبة التي تحد من العدوى المرتبطة بالرعاية الصحية؟

- **نعم**
- **لا**
- **لا أعلم**

27 :هل يخضع الموظفون لفحوصات دورية شاملة؟

- **نعم**
- **لا**
- **لا أعلم**

28. هل هناك ورشات عمل او دورات تدريبية محلية / خارجية ضمن المجالات التي تُعنى بالعدوى المرتبطة بالرعاية الصحية؟

- **نعم**
- **لا**
- **لا أعلم**

29 .هل يتم تنظيف وتعقيم الأجهزة بشكل كافٍ، بما في ذلك تلك المستخدمة أكثر من مرة؟

- **نعم**
- **لا**
- **لا أعلم**

30. هل يوجد إمكانية بتزويد أجهزة رقابة هندسية إذا دعت الضرورة لتقليل المخاطر من العدوى المرتبطة بالرعاية الصحية في المستشفى.

- **نعم**
- **لا**
- **لا أعلم**

31 .هل يتوفر في المستشفى غرفة ذات ضغط هواء منخفض يمنع خروج الهواء وعلى ذلك يمنع انتشار المرض في المستشفى؟

- **نعم**
- **لا**
- **لا أعلم**

32. حسب رأيك ما هي أسباب تفشي العدوى؟ بإمكانك اختيار أكثر من اجابة

- **مخالفة سياسات وقواعد وإرشادات مكافحة العدوى**
- **عدم وجود سياسات وقواعد وإرشادات واضحة لمكافحة العدوى.**
- **إهمال العاملين بالرعاية الصحية**
- **عدم وجود معدات الوقاية الشخصية المناسبة للموظفين**
- **عدم وجود بنية تحتية لمكافحة العدوى**
- **عدم وجود إشراف من قبل قسم السلامة فيما يتعلق بالجودة والمرضى.**

33 .عوامل تساهم في انتشار العدوى في المستشفيات. بإمكانك اختيار أكثر من اجابة

- **عدم وجود طاقم متخصص في تقديم الإرشادات الوقائية.**
- **عدم وجود خبرة لدى الطاقم الطبي لمنع انتشار العدوى**
- **عدم وجود دورات تدريبية وورش عمل ضرورية للحد من العدوى أو التعامل معها**
- **البنية التحتية وتصميم المستشفى يعانيان من نقص في الموظفين.**
- **عدم وجود برنامج تدريبي لمكافحة العدوى.**

- **لا توجد موارد لتلبية احتياجات مكافحة العدوى.**
- **لا يتم تنفيذ مكافحة العدوى بالشكل المطلوب.**

34 .ما هي أنواع العدوى التي تصل إلى وزارة الصحة –:

- **جميع أنواع العدوى المرتبطة بالرعاية الصحية**
- **جميع أنواع العدوى (سواء في المستشفيات أو المجتمع)**
- **لا أعرف**

35. ما هو طبيعة نظام الإخبار (تقرير) في المستشفى الذي تعمل فيه :

- **نظام تنظيمي إلكتروني**
- **على الورق**
- **الاتصال عبر الهاتف**

36. حسب رأيك، ما هو انجح نظام تقريري للكتابة عن عوامل العدوى؟

- **نظام إلكتروني**
- **على الورق**
- **الاتصال عبر الهاتف**

نشكر لكم تعاونكم معنا في ملئ الاستبيان... الرجاء الضغط على ارسال لاعتماد الاستبيان

Annex (4): IRB Approval

Al-Quds University
Jerusalem
School of Public Health

جـامـعـة الـقـدس
القدس
كلية الصحة العامة

التاريخ: 2024/6/5
الرقم: REF.22/24

عزيزي الطالب صالح ابو شامة المحترم
برنامج ماجستير الوقاية وضبط الامراض المعدية

الموضوع: موافقة لجنة اخلاقيات البحث العلمي

قامت اللجنة الفرعية لأخلاقيات البحث التابعة لكلية الصحة العامة بمراجعة مشروع الرسالة بعنوان:
"Evaluating the Strategies of Healthcare-Associated Infections Prevention in Hebron City Hospitals"

المقدم من (مشرف البحث/د. اسعد رملاوي).

يعتبر مشروعك مستوفيًا لمتطلبات أخلاقيات البحث في جامعة القدس.

نتمنى لكم كل التوفيق في تسيير المشروع.

ملاحظة: في حالة الحاجة الى موافقة من اللجنة المركزية في الجامعة، تستطيع التقدم باستخدام هذه الموافقة على الرابط.https://research.alquds.edu/en/ethics/48-how-to-apply.html

رئيسة اللجنة الفرعية لاخلاقيات البحث
كلية الصحة العامة
د. نهى الشريف

نسخة/ أعضاء لجنة البحث
نسخة/ الملف

Jerusalem Branch/Telefax 02-2799234
Gaza Branch/Telefax 08-2644220 -2644210
P.O. box 51000 Jerusalem

فرع القدس / تلفاكس 02-2799234
فرع غزة / تلفاكس 08-264420-2644210
ص.ب. 51000 القدس

Annex (5): Research questionnaire arbitration

تحكيم استبانة بحث علمي بعنوان:

" تقييم استراتيجيات الوقاية من العدوى المرتبطة بالرعاية الصحية في مستشفيات مدينة الخليل ".

يأتي هذا البحث بمثابة متطلب رسالة ماجستير في تخصص "Infection control and prevention " للطالب صالح سلامة أبو شامة، من جامعة القدس-أبو ديس لنيل درجة الماجستير بكامل امتيازاتها وتحت اشراف الدكتور أسعد الرملاوي.

هدف البحث هو: الحصول على إجابات واضحة حول استراتيجيات الوقاية من العدوى المرتبطة بالرعاية الصحية للحد والتقليل من العدوى المنقولة داخل المستشفيات في محافظة الخليل.

تم إعداد استبانة البحث وعرضها على مجموعة من المحكمين المختصين في مجال البحث، للتأكد من موضوعية محتوى الأسئلة ومصداقيتها، وبعد الأخذ بملاحظاتهم وتوجيهاتم تم تعديل الاستبانة بما يتلائم مع أغراض البحث، وهم:

- الدكتور محمد طحاينة/ دكتوراه في العلوم الطبية
- الدكتور مراد شنيور/ دكتوراه في الاحياء الدقيقة الطبية
- الدكتور خلف عليات/ دكتوراه تمريض طوارئ

الدكتور محمد طحاينة	الدكتور مراد شنيور	الدكتور خلف عليات
0599826483		0566-006211

Annex (6): Facilitate the task

State of Palestine
Ministry of Health
Education in Health and Scientific
Research Unit

دولة فلسطين
وزارة الصحة
وحدة التعليم الصحي
والبحث العلمي

Ref.: .....
Date:.....

الرقم: ع ت/ ١٥٢٤/ ٢٠١٤
التاريخ: ٢٠١٤/٠٣/١١

عطوفة الوكيل المساعد لشؤون المستشفيات والطوارئ المحترم،،،

تحية واحترام،،

الموضـــوع: تسهيل مهمة بحث

يرجى تسهيل مهمة **الطالب: صالح سلامة ابو شامة– ماجستير الوقاية وضبط الامراض المعدية/ جامعة القدس**، وباشراف د. اسعد رملاوي، في عمل بحث بعنوان:

Evaluation the strategies of health care associated infection prevention in Hebron city hospitals

من خلال السماح للطالب بجمع المعلومات عن طريق تعبئة استبانة من قبل الطاقم الطبي بعد اخذ موافقتهم، وذلك في:

– مستشفى عاليه – مستشفى المحتسب

على ان يتم الالتزام باساليب واخلاقيات البحث العلمي، والحفاظ على سرية المعلومات.

على ان يتم تزويد الوزارة بنسخة PDF من نتائج البحث، التعهد بعدم النشر لحين الحصول على موافقة الوزارة على نتائج البحث.

مع الاحترام،،

د. عبد الله القواسمي
رئيس وحدة التعليم الصحي والبحث العلمي

نسخة: عميد كلية الصحة العامة المحترم/ جامعة القدس

Al-Quds University
Jerusalem
School of Public Health

جامعة القدس
القدس
كلية الصحة العامة

التاريخ: 2024/6/24

حضرة السيد حاتم البربراوي المحترم
المدير العام لجمعية الهلال الأحمر الفلسطيني التخصصي/ الخليل

الموضوع: تسهيل مهمة للطالب صالح أبو شامة

تحية طيبة وبعد،،

يقوم الطالب صالح سلامة أبو شامة / برنامج ماجستير الوقاية وضبط الامراض المعدية/ كلية الصحة العامة/ جامعة القدس بإجراء بحث الرسالة في مستشفيات الخليل وذلك بإشراف د. اسعد رملاوي وبعنوان:

" Evaluating the Strategies of Healthcare-Associated Infections Prevention in Hebron City Hospitals"

وتهدف الدراسة على الحصول على إجابات واضحة حول استراتيجيات الوقاية من العدوى المرتبطة بالرعاية الصحية للحد والتقليل من العدوى المنقولة داخل المستشفيات في محافظة الخليل، حيث سيقوم الطالب بتوزيع استبانة الدارسة على مدراء المستشفيات، ورؤساء الأقسام الطبية، والهندسة الطبية، ومشرفو الخدمات الطبية، ورؤساء اقسام الجودة، والمختبرات، والاشعة، والمشتريات وقسم التمريض والعاملين في مشفى جمعية الهلال الأحمر التخصصي/ الخليل، لذا ارجو من حضرتكم مساعدة الطالب والسماح له بتوزيع الاستبانة على عينة الدراسة ليتسنى له إنهاء متطلبات بحث الرسالة. علماً بأن المعلومات ستكون لأغراض البحث العلمي فقط.

وتفضلوا بقبول فائق الاحترام،

د. حازم اغا

عميد كلية الصحة العامة

نسخة: الملف

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كلية الصحة العامة

التاريخ: 2024/6/24

حضرة الدكتور يوسف التكروري المحترم
مدير مستشفى الاهلي

الموضوع: تسهيل مهمة للطالب صالح أبو شامة

تحية طيبة وبعد،،

يقوم الطالب صالح سلامة أبو شامة / برنامج ماجستير الوقاية وضبط الامراض المعدية/ كلية الصحة العامة/ جامعة القدس بإجراء بحث الرسالة في مستشفيات الخليل وذلك بإشراف د. اسعد رملاوي وبعنوان:

" Evaluating the Strategies of Healthcare-Associated Infections Prevention in Hebron City Hospitals"

وتهدف الدراسة على الحصول على إجابات واضحة حول استراتيجيات الوقاية من العدوى المرتبطة بالرعاية الصحية للحد والتقليل من العدوى المنقولة داخل المستشفيات في محافظة الخليل، حيث سيقوم الطالب بتوزيع استبانة الدارسة على مدراء المستشفيات، ورؤساء الأقسام الطبية، والهندسة الطبية، ومشرفو الخدمات الطبية، ورؤساء اقسام الجودة، والمختبرات، والاشعة، والمشتريات وقسم التمريض والعاملين في مستشفى الاهلي، لذا ارجو من حضرتكم مساعدة الطالب والسماح له بتوزيع الاستبانة على عينة الدراسة ليتسنى له إنهاء متطلبات بحث الرسالة. علماً بأن المعلومات ستكون لأغراض البحث العلمي فقط.

وتفضلوا بقبول فائق الاحترام،

كلية الصحة العامة
Faculty of Public Health

د. حازم اغا

عميد كلية الصحة العامة

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حضرة الدكتور حازم شلالدة المحترم
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الموضوع: تسهيل مهمة للطالب صالح أبو شامة

تحية طيبة وبعد،،

يقوم الطالب صالح سلامة أبو شامة / برنامج ماجستير الوقاية وضبط الامراض المعدية/ كلية الصحة العامة/ جامعة القدس بإجراء بحث الرسالة في مستشفيات الخليل وذلك بإشراف د. اسعد رملاوي وبعنوان:

" Evaluating the Strategies of Healthcare-Associated Infections Prevention in Hebron City Hospitals"

وتهدف الدراسة على الحصول على إجابات واضحة حول استراتيجيات الوقاية من العدوى المرتبطة بالرعاية الصحية للحد والتقليل من العدوى المنقولة داخل المستشفيات في محافظة الخليل، حيث سيقوم الطالب بتوزيع استبانة الدارسة على مدراء المستشفيات، ورؤساء الأقسام الطبية، والهندسة الطبية، ومشرفو الخدمات الطبية، ورؤساء اقسام الجودة، والمختبرات، والاشعة، والمشتريات وقسم التمريض والعاملين في مستشفى الميزان التخصصي، لذا ارجو من حضرتكم مساعدة الطالب والسماح له بتوزيع الاستبانة على عينة الدراسة ليتسنى له إنهاء متطلبات بحث الرسالة. علماً بأن المعلومات ستكون لأغراض البحث العلمي فقط.

وتفضلوا بقبول فائق الاحترام،

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عنوان الرسالة:

تقييم استراتيجيات الوقاية من العدوى المرتبطة بالرعاية الصحية ومكافحتها في مستشفيات مدينة الخليل – فلسطين

اعداد الباحث: صالح سلامة أبو شامة

اشراف: الدكتور أسعد الرملاوي

الملخص

الخلفية: تُعرف العدوى المكتسبة أثناء العلاج الطبي على انها حالة طبية مرضية اكتسبت العدوى داخل مرافق الرعاية الصحية. إن مؤسسات الرعاية الصحية مثل المستشفيات ومراكز الجراحة الخارجية ومرافق أمراض الكلى في المرحلة النهائية ومرافق الرعاية طويلة الأجل كلها عرضة للعدوى المرتبطة بالرعاية الصحية والعدوى التي تظهر أعراضها لأول مرة بعد 48 ساعة أو أكثر من دخول المستشفى أو في غضون 30 يومًا بعد الرعاية الطبية.

الهدف: هدفت هذه الدراسة إلى تقييم العاملين في مجال الرعاية الصحية في مدينة الخليل – فلسطين من مختلف المهن ومواقف أنواع المؤسسات تجاه تقييم استراتيجيات الوقاية من العدوى المرتبطة بالرعاية الصحية ومكافحتها.

المنهجية: تم توزيع استبيان نموذج جوجل على 178 من المتخصصين في الرعاية الصحية من المستشفيات الحكومية والخاصة وغير الحكومية، بما في ذلك الأطباء (ن = 27) وأخصائيين الأشعة (ن = 9) وفنيي المختبرات (ن = 26) والممرضين (ن = 80) وغيرهم من الموظفين المساعدين الطبيين (ن = 36). تم استخدام تحليل مربع كاي لمقارنة النتائج حسب الفئة العمرية ونوع المؤسسة ونوع المهنة من أجل تقييم التباين.

تم استخدام اختبارين إحصائيين إضافيين. أولاً، تم استخدام اختبار العينات المستقلة (t–test) لمقارنة متوسطات درجات الامتثال للسياسات العامة بين مجموعتين مختلفتين (على سبيل المثال، مقارنة المشاركين

الذكور بالمشاركين الإناث). ثانيًا، تم استخدام تحليل التباين الأحادي (ANOVA) لمقارنة متوسطات درجات الامتثال للسياسات العامة عبر أكثر من مجموعتين.

النتائج: أظهر المتخصصون في الرعاية الصحية نقصًا في الوعي بشأن جوانب متعددة من الوقاية والسيطرة على العدوى، بما في ذلك القضايا الخاصة بالمؤسسات، بروتوكولات الإبلاغ والمراقبة، واستعدادهم لتنفيذ السياسات والاستجابة لتفشي الأمراض. تشير الأدلة إلى أن الممرضين وأفراد الطاقم في المستشفيات الخاصة لديهم خبرة أكبر في هذه المجالات مقارنة بنظرائهم في المؤسسات الصحية الأخرى.

عند سؤالهم عما إذا كانت الأدوات الأساسية للوقاية من العدوى المرتبطة بالرعاية الصحية، مثل معقمات اليدين، الكمامات، معدات الحماية، الصابون، والمطهرات، متوفرة، أجاب 92.7٪ (n=165)من المشاركين بالإيجاب. بالإضافة إلى ذلك، أكد 89.3٪ (n=159)من المشاركين وجود تدابير داخل مؤسساتهم للوقاية من العدوى المرتبطة بالرعاية الصحية. ومع ذلك، حدد 75.3٪ (n=134)من المشاركين أن انتهاك سياسات وقواعد وإرشادات مكافحة العدوى هو السبب الأكثر شيوعًا لانتقال العدوى في المستشفيات، واتفق 70.8٪ (n=126)على ذلك. علاوة على ذلك، لاحظ 41٪ (n=73)من المشاركين أن أكثر أنواع العدوى التي يتم الإبلاغ عنها إلى وزارة الصحة هي "جميع أنواع العدوى، سواء كانت مرتبطة بالمستشفيات أو لا."

الاستنتاجات: تسلط نتائج هذه الدراسة الضوء على الفجوات الكبيرة في وعي العاملين في الرعاية الصحية واستعدادهم فيما يتعلق بالوقاية والسيطرة على العدوى، خاصة فيما يتعلق بالبروتوكولات الخاصة بالمؤسسات، أنظمة الإبلاغ، والاستجابة لتفشي الأمراض. على الرغم من أن توفر الأدوات الأساسية للتحكم في العدوى بشكل عام مرتفع، إلا أن انتهاك سياسات التحكم في العدوى لا يزال مصدر قلق رئيسي، مما يساهم في انتقال العدوى المرتبطة بالرعاية الصحية. تؤكد الدراسة على أهمية تعزيز برامج التدريب، تعزيز الالتزام بإرشادات مكافحة العدوى، وتحسين الاستعداد العام للعاملين في الرعاية الصحية للتخفيف بشكل فعال من مخاطر العدوى المرتبطة بالرعاية الصحية عبر مختلف بيئات الرعاية الصحية. بالإضافة إلى ذلك، هناك حاجة إلى متابعة مستمرة وتحسين استراتيجيات الوقاية من العدوى لضمان نتائج أفضل للمرضى والعاملين في الرعاية الصحية على حد سواء.