Knowledge, Attitude, and Practices of Infection Prevention and Control among Healthcare Workers

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Abstract

The study evaluates infection prevention and control (IPC) practices among Bais and Bindoy District Hospital healthcare workers. It aims to gauge their knowledge, attitudes, and practices concerning IPC, analyzing the relationships between these factors and respondents' demographic profiles. Using a non-experimental descriptive-correlational design, the researchers encompassed all healthcare professionals at these hospitals and employed a validated survey questionnaire. Statistical tools such as Cronbach Alpha, percentage, Mann Whitney U Test, Chi-square, and Kruskal-Wallis were utilized. Findings reveal adequate knowledge among respondents (mean score: 1.50), indicating lower susceptibility to hospital-acquired infections. The study also highlights a significant relationship between demographic profiles and knowledge and practices in IPC, though not with attitudes. No significant differences were found in IPC attitudes, knowledge, or practices when segmented by sex, age, length of service, or working department. The study underlines the lack of training courses as a key factor influencing professionals' knowledge and practices in IPC, recommending regular and comprehensive training programs alongside stringent adherence to updated standard operational procedures for all healthcare workers (HCWs) at these hospitals.

Keywords: Infection Prevention and Control, Health Practices, health knowledge, health attitude, health education

Introduction

Healthcare units today face challenges with an increasing number of patients who have acquired infectious diseases. According to Allegranzi (2011), Hospital-acquired Infections (HAIs), also known as "nosocomial infections" as defined by the World Health Organization (WHO), are infections acquired by the patient during the process of care in any healthcare facility that was not present at the time of admission. It also includes

occupational infections among staff. HAIs are known to be the most frequent adverse event in healthcare. However, they are also believed to be preventable with efficient and effective infection prevention and control. Recommendations to healthcare facilities include hand hygiene, wearing of Personal Protective Equipment (PPE), prevention of needle sticks and injuries from other sharp instruments, respiratory hygiene and cough etiquette, environmental cleaning, proper handling of lines, proper and safe disposal and proper handling of patient care equipment (Kumar & Kumar, 2015).

As reported in the National Conference of State Legislature, about 5 to 10% of all patients in intensive care units develop at least one hospital-acquired infection, also known as a healthcare-associated or nosocomial infection. According to the National Nosocomial Infections Surveillance (NNIS) program, nearly 1.7 million HAI cases and 99,000 deaths occurred in U.S. hospitals in 2002.

According to the United States' Office of Disease Prevention and Health Promotion, those infections may be linked to medical procedures (such as surgery) and medical equipment (such as catheters or ventilators). In the United States, HAIs are a leading cause of morbidity and mortality, and they are related to a significant rise in healthcare costs per year. At any given time, an H.A. affects one out of every 25 hospitalized patients in the United States.

In a study on Hospital-acquired infection in public hospital buildings in the Philippines, the study reported that the most common HAI was pneumonia (35 percent), and further, there were more respiratory HAI cases inwards near high-traffic areas, while for pediatric and adult patients, being immune-compromised is a risk factor for HAI (Vergeirr-Dalmacion et al., 2016).

According to WHO (2016), healthcare-associated infections do not exempt any country or facility in terms of their occurrence; hence, WHO launched the program "Clean Care is Safer Care in 2005 in response to these perennial concerns. The program focused on promoting hand hygiene at all levels of care. Hand hygiene is a very simple action and is well-accepted as one of the primary modes of reducing HAI and enhancing patient safety (Pittet, 2009). This program emphasizes the need for Infection Prevention and Control (I.P. & C) programs to be reinforced nationally at all facility levels. District hospitals have implemented and supported the program at their levels by following the heart of this program and accessible handwashing facilities in strategic areas. Besides, the Department of Health (DOH) has issued several guidelines that guide healthcare facilities, specifically on

infection prevention. The advisories and issuances include the National Standards of Infection Control for Healthcare Facilities, which states that healthcare administrators and staff be aware of, understand, and apply these standards as they pertain to respective roles, functions, and responsibilities (Department of Health, 2009); Administrative Order (A.O.) 2016-0002 which states the National Policy on I.P.& C in Healthcare Facilities; Department Memorandum (D.M.) No. 2020-0181, which states the reiteration of Infection Control Committee and Infection Control Team in Healthcare Facilities; Department Circular (D.C.) No. 2020-0106 adopted the WHO interim guidelines for health workers exposure Risk Assessment and management in the context of COVID-19 virus; D.M. No.2020-0167 which states the interim guidelines on the proper handling and disinfection of non-critical items used in the management of COVID-19 patients in all health facilities and Temporary Treatment and Monitoring Facilities (Of & Secretary, 2020); D.M. No.2020-0157 which states the guidelines on cleaning and disinfection in various settings as an I.P.& C measure against COVID-19 (Dm2020-0157 Guidelines on Cleaning and Disinfection in Various Settings. Pdf, n.d.); and Regional Circular (R.C.) No. 2020-20 on infection control and transport of patient's suspected with and confirmed case of COVID-19.

Infection Prevention and Control (I.P. & C) and practices are essential in maintaining a safe environment for everyone by reducing the risk of the potential spread of disease (Siegel et al. 2019). These practices are designed to reduce the risk of hospital-associated infections and to ensure a safe and healthy hospital environment for patients, healthcare providers, and visitors. I.P.& C is vital in delivering the health care system. Its primary role is to reduce the risk of acquiring hospital-acquired infections. It helps protect patients and staff from adverse infection-related outcomes (Torriani & Taplitz, 2012). HAIs can be reduced through surveillance, outbreak management, isolation, environmental hygiene, employee health, education, and infection prevention policies (Habboush et al., 2020).

However, some hospital policies on I.P. & C are not that well-defined. Bais District Hospital (BDH) in Bais City, Negros Oriental, and Bindoy District Hospital (BDH) in Bindoy, Negros Oriental, which are both infirmary levels of care, have been embracing the concept of the present health care delivery system. Both district hospitals share roles with other health facilities by providing and promoting quality patient care within their capabilities and resources. Over the years, these two district hospitals have existed and function purely as clinical/curative services. However, in pursuing comprehensive health care congruent with the National Health Plan and mandates, these hospitals have integrated health services' preventive

and rehabilitative aspects into the community family. While it has remained service-oriented, it cannot ignore the most pressing community health needs.

Yazie et al. (2019) posit that workplace health and safety are critical elements in every organization, particularly in healthcare settings. Healthcare workers are always at risk of being exposed to potential hazards. They are often the first to encounter infected patients. They can also be the source of infection as they can be a mechanical vector for transmitting nosocomial infections from patient to patient. Thus, a healthcare provider must be equipped with the Knowledge, Attitudes, and Practices (KAP) to adhere to infection prevention and control guidelines. This leads to a successful infection control program. The KAP model is one of the most used models in the medical field. This model was first used to determine family planning and population in the mid-nineteenth century. According to the KAP model, any activities (behaviors) are decided by the person's attitude and knowledge towards the behaviors (Alzghoul & Abdullah, 2015). Many KAP studies have been published online in different countries around the world and in different healthcare settings. Studies have shown that three Trinidad and Tobago hospitals generally have poor infection prevention KAP (Unakal et al., 2017). While a study in a Tertiary Hospital in Zambia reveals that they have performed well in knowledge and have a positive attitude towards infection prevention and control, their nurses had unsatisfactory practice levels, exposing them to infection-related diseases (Chisanga, 2017).

According to Wake, research shows that people in their various nations have a strong understanding, a positive attitude, and good practice regarding COVID-19. Researchers have identified factors related to COVID-19 knowledge, attitude, and practice in specific studies. Age, educational level, residence, monthly income, occupation, gender, marital status, and news media, for example, were all found to be significant contributors to knowledge. Age, occupation, educational level, monthly income, gender, place of residence, knowledge, and practice were all found to be significant predictors of attitude. Age, married status, educational level, domicile, monthly income, knowledge, gender, and attitude were all connected with practice substantially.

As observed, only a few KAP studies regarding I.P.& C have been published in the Philippines, and none so far in Negros Oriental, specifically in Bais District Hospital and Bindoy District Hospital. Therefore, the above research findings triggered the researchers to gather more information on KAP measures on I.P. & C among healthcare workers. The researchers, who are health workers serving the district hospitals in Bais City and Bindoy, Negros Oriental, utilized the findings to design a training or re-training program for the improvement of the knowledge, attitude,

and practices of health workers and formulate the necessary infections prevention and control policies suited for the health facility but aligned with the standards set by the WHO, DOH, and Center for Disease Control.

This study determined the level of knowledge, attitude, and practices on infection prevention and control among health workers in Bais and Bindoy District Hospitals. The study collected the respondents' socio-demographic profile regarding age, sex, education, profession, working department, length of service, and IPC training. Specifically, this research aimed to answer the following research questions: 1) What is the respondent's level of knowledge on infection prevention? 2) What is the attitude towards infection prevention among the respondents? 3) What are the practices of health care workers towards infection prevention? 4) Is there a significant relationship between respondents' socio-demographic profiles and knowledge, attitude, and practices? 5) Is there a significant difference in the respondents' knowledge, attitude, and practices when grouped according to age, sex, working department, and length of service?

This study limits itself to healthcare workers of Bais District Hospital located in Bais City, Negros Oriental, and Bindoy District Hospital in Bindoy, Negros Oriental, who met the eligibility criteria for respondents in I.P.& C. The researchers crafted, formulated, and adopted the Infection Prevention and Control Assessment Form for Hospital Managers and Healthcare Professionals in the Context of COVID-19(Validation Tool for Infection Prevention and Control as per D.M. No, n.d.) and modified the style of the Survey Questionnaire in observing the KAP on I.P.& C among respondents. This study was conducted from July 1-31, 2021, and was funded by the Technical Assistance Package Program (TAPP) of the Department of Health.

Related Literature

The use of nursing theories in I.P. & C acknowledges that many models and theories are specialized. For example, Roper, Logan, and Tierney's model and use of maintaining a safe environment are relevant to infection prevention and other theories, such as Nightingale's environmental theory and Dorothy Johnson's Behavioral Systems Theory. The educational theory has also been used to develop infection prevention and control link nurse programs.

Florence Nightingale's nursing theory identified the four metaparadigms: individual, environment, health, and nursing. Each of the four principles is related to the others. A person is a living being influenced

by their surroundings and acted upon by a nurse. The environment is how a nurse can manipulate natural laws to act to make the human body healthy or vice versa (Sayani, 2017).

Environmental theory paved the way for developing infection control practices in our healthcare systems today. The theory assumes that a suitable environment helps patients recover. It focused on disease prevention and health promotion, bringing a new clinical nursing approach (Gilbert, 2020). It emphasized the importance of hygiene and patient care in infection prevention and control. Currently, two recommended precautions are introduced to prevent or stop an infection in any healthcare setting. These are the standard precaution and the transmission-based precaution. The standard precautions are the bare minimum procedures required to achieve infection prevention and control at the most basic level. It aims to reduce or eliminate the risk of transmission from pathogens or bloodborne, both from recognized or unknown sources. Standard precautions include hand washing; use of Personal Protective Equipment (PPE) such as gloves, masks, face shields, eye protection, and gowns; prevention from a needle or other sharp injuries; environmental cleaning; appropriate handling of linens; environmental cleaning; waste disposal; respiratory hygiene and cough etiquette; and reprocessing or reusable equipment and instruments. Transmission-based precaution is used in addition to standard precaution. It comprises the following: droplet precaution, contact precaution, and airborne precaution (Chris, 2015). This study focused on the standard precautions for infection prevention and control. Healthcare staff is at a greater risk of contracting infectious diseases if they do not practice proper infection control. Thus, up-to-date healthcare worker's knowledge and practice can play essential roles in infection prevention and control. Data was collected using a structured questionnaire to assess the health workers' levels of knowledge, attitude, and practices. The KAP survey is easy to design, and the data input can be quantifiable, making it suitable for this study.

KAP surveys were first developed in the 1950s. After 1960, KAP surveys were extensively employed in many countries to research birth control practices (Rav-Marathe et al., 2016). The KAP studies are cheaper and conserve resources than other social research methods because they are tightly focused and limited in scope (Rav-Marathe et al., 2016).

This research framework has been widely utilized in the health education field and within the developing world for birth control. As a guide to understanding the mechanisms of health education for patient behavioral changes and patient health outcomes, KAP surveys are now a widely used methodology for studying human behavior when faced with a problem

(Unakal et al., 2017).

KAP surveys established their place among the methodologies utilized to investigate health behavior. Today, they are still widely used to gain information on health-seeking practices. In KAP surveys, the knowledge part is generally used only to assess the extent of community knowledge about public health concepts related to national and international public health programs. Measuring attitudes is the second part of a regular KAP survey questionnaire. On the other hand, many KAP research does not present findings on attitudes, owing to the significant risk of incorrectly generalizing a single group's views and attitudes. Attitudes are interlinked with the person's knowledge, beliefs, emotions, and values, and they are either positive or negative. The third and integral part of KAP surveys is the investigation of health-related practices. Questions typically concern the utilization of various treatment and prevention options. KAP surveys are criticized for providing only descriptive data, which fails to elucidate why and when specific treatment prevention and practices are chosen (Launiala, 1970).

KAP survey data is usually utilized to plan activities aimed toward behavior, supported by the false assumption that knowledge and behavior have a direct relationship. Several studies have shown that knowledge is just one factor influencing treatment-seeking practices and varied behavior. Health programs must address multiple factors, from socio-cultural to environmental, economic, and structural (Launiala, 1970).

The theory of planned behavior has previously been utilized in infection prevention and control. It uses a self-administered questionnaire that supports Planned Behavior's idea to identify handwashing predictors in hospital and community settings in Iranian healthcare workers. It identifies several predictors, including compliance with similar practices. It is also noted that the perception of handwashing requiring little effort and peer pressure affected reported behavior. Attitudes towards handwashing were also identified (Ogoina et al., 2015). The theory of planned behavior is founded on the premise that people are reasonable, use data in a structured way, and weigh the consequences of their actions before acting (Kretzer & Larson, 1998). The best predictor of behavior is intention, often impacted by three main aspects: attitude towards the behavior, subjective norm, and behavioral control.

Montaño (1992) elucidates on the Theory of Planned Behaviour. He states that "a person's behavior is decided by his/her intention to perform that behavior. The intention is made by his/her attitudes toward that behavior, his/her beliefs about what others think he/she should do, his/her motivation

that suits others' needs, and perceived behavioral control. When an individual finds an action positive and significant others approve of it, they are more likely to carry it out." He also points out that behavioral purpose does not always translate into actual actions due to environmental and contextual factors. The idea of planned behavior does not consider such interaction effects. It follows a rational path, but human behavior is not always predictable. In either case, the indicators of self-care habits are patients' actual acts, not just their plans to act.

The Theory of Planned Behavior adds to Reasoned Action's idea because it includes the concept of perceived behavioral control, which may be a person's belief that they need control over their behavior despite potential barriers. In infection prevention and control, students may believe they will comply with hand hygiene despite barriers like time and workload. This assumption would then directly impact the decision to practice hand hygiene and, thus, indirectly on the actual practice of hand hygiene. However, what must be considered here is that someone may perceive the need to control behavior (perceived behavioral control) and behave in a specific way. However, if this perception of control is flawed and someone or something else holds control, the implications could be significant. In that case, the intended behavior might not occur. For example, suppose there is no access to hand hygiene facilities. In that case, external influences prevent the behavior despite intending to perform hand hygiene. The idea of behavioral control is even low with past behavior, for instance, if the student has previously been a health care assistant who failed to comply with hand hygiene or past success or failure at behavior.

Moreover, the Health Belief Model (HBM) has also been used as an explanatory framework to know health professionals' infection prevention and control practices. According to the HBM, behavioral change is influenced by a person's background, including socio-demographic factors, personal perceptions, and cues to action. The HBM defined perceived risk/susceptibility to infection as one of the factors predicting infection control activities and the microorganism's perceived severity ("infectiousness" and consequences). If healthcare workers do not perceive themselves as at risk for their safety, they are less likely to adopt IPC precautions. Perceived benefits are another predictive element in this model of IPC behavior. Previous research has shown that as medical students progress towards the ultimate years of their training, they are less likely to work out the worth of hand hygiene to protect themselves from acquiring antibiotic-resistant microorganisms and prevent carrying microorganisms home. Higher self-efficacy facilitates increased effort and persistence towards particular

behaviors (Cox et al., 2015).

Education and training of healthcare workers (HCWs) within the theory and practice of I.P.& C are widely considered critical measures to scale back the chance of HAI. I.P.& C education provides HCWs with a knowledge domain and insight that act as a driving force behind future activities. In contrast, IPC training is task-orientated within a particular working milieu. It helps HCWs to obtain skills to complete clinical procedures in line with the set standards of care. In their publications and guidelines, leading organizations within I.P.& C like the (WHO), DOH, and, therefore, the Centers for Disease Control and Prevention (CDC) consistently emphasize the necessity for continuous IPC training of all HCWs.

Dorothy Johnson is known for her "Behavioral System Model of Nursing," first proposed in 1968. Her nursing model states, "Each individual has patterned, purposeful, repetitive ways of acting that comprise a behavioral system specific to that individual." It promotes efficient and effective patient behavior to prevent sickness and emphasizes the relevance of research-based understanding regarding the impact of nursing care on patients. Dorothy Johnson began her work on the model of the notion that nursing was a unique profession that contributed significantly to society's well-being. As a result, nursing had a clear purpose of action regarding patient welfare.

The goals of nursing, according to the Behavior System Model, are fourfold: (1) to assist the patient whose behavior is proportional to social demands; (2) To help the patient who can change his behavior in ways that are consistent with biological imperatives. (3) To assist the patient who can benefit the most from the physician's knowledge and skill during their illness. Furthermore, (4) to support the patient whose behavior does not indicate that he or she has been subjected to undue trauma as a result of disease.

Watson's Philosophy and Science of Caring is about how nurses show their patients they care. Her perspective emphasizes the humanistic components of nursing concerning scientific knowledge and nursing practice. The nursing model states that "nursing is concerned with promoting health, preventing illness, caring for the sick, and restoring health." which emphasizes both disease prevention and treatment. Watson claims that caring is at the heart of nursing practice and promotes health more effectively than a simple medical solution. She believes a holistic approach to health care is essential to nursing practice. Nurses, according to her notion, can display and practice caring. Loving for patients encourages development; a caring atmosphere embraces people for who they are while anticipating

what they may become. Research across diverse healthcare settings globally reveals that demographic factors such as gender, age, professional role, and education significantly influence healthcare workers' (HCWs) knowledge, attitudes, and practices (KAP) in infection prevention and control (IPC). For instance, a study in China found that nurses and female HCWs had higher compliance with IPC practices than other demographic groups, reflecting their direct engagement with patient care and possibly enhanced awareness of IPC risks (Zhang et al., 2020). In Nigeria, IPC compliance was also significantly higher among female HCWs and nurses, with factors like more extended work experience and advanced education levels positively impacting knowledge and practices, suggesting that experience reinforces adherence to IPC standards (Azuogu et al., 2021).

In the United States, research indicates mixed effects of age and gender on IPC practices, with younger HCWs often showing higher knowledge scores due to recent IPC-focused training, although longer-tenured staff tend to perform better in practice adherence, potentially due to experiential knowledge (Gammon et al., 2022). Similarly, an Australian study noted that higher educational attainment positively influenced IPC knowledge, with HCWs holding tertiary degrees demonstrating better IPC practices, likely due to formal training in IPC protocols (Lawson et al., 2021).

The occupational role is another crucial factor. In Saudi Arabia, for example, studies revealed that HCWs in high-acuity settings, such as intensive care units, displayed greater compliance with IPC protocols, as these environments present heightened exposure to infectious agents, making adherence essential (Alwafi et al., 2021). This pattern aligns with studies in Japan, where HCWs in emergency departments reported higher IPC adherence, likely due to departmental protocols and regular IPC training specific to high-risk patient care settings (Nakano et al., 2020).

Further, studies from various countries have demonstrated that demographic factors influence healthcare workers' (HCWs) knowledge, attitudes, and practices (KAP) in infection prevention and control (IPC) with significant variability across age, gender, education, and professional roles. For instance, a study in Nigeria on IPC adherence following a Lassa fever outbreak found that gender and job role significantly affected IPC compliance, with nurses and female HCWs showing higher adherence to protective practices than their male counterparts. The findings suggested that women and nurses often filled direct patient care roles, which could enhance compliance (Azuogu & Ogah, 2021).

In contrast, a study from Australia observed that IPC knowledge and practice scores were generally higher among HCWs with greater work

experience and higher education levels. Professionals holding postgraduate degrees were significantly more likely to adhere to IPC guidelines than those with only diploma qualifications, highlighting the influence of formal education on IPC practice (Lawson et al., 2021).

In Saudi Arabia, a study during the COVID-19 pandemic revealed that professional roles and workplace settings influenced IPC attitudes and practices. HCWs in high-acuity areas such as emergency and intensive care units demonstrated greater adherence to IPC protocols than those in outpatient or administrative roles, likely due to the increased risk perception in high-infection environments (Alwafi et al., 2021). Similarly, a study of dental professionals in the United States found no major differences in IPC attitudes based on age or gender; however, dental assistants showed higher knowledge scores than dentists, possibly due to greater IPC training and hands-on exposure in their roles (Journal of Contemporary Dental Practice, 2022).

Methodology

This study utilized a non-experimental descriptive-correlational research design. It aimed to determine the level of knowledge, attitude, and practices on infection prevention and control among health workers in Bais and Bindoy District Hospitals. This also identified the relationship between the respondents' knowledge, attitude, and practices on infection prevention and control and their socio-demographic profile. Moreover, ethics approval was sought from the Silliman University Research Ethics Committee.

This study was conducted in Bais District Hospital and Bindoy District Hospital in the province of Negros Oriental. Both hospitals are licensed as infirmary level of care by the DOH. This was chosen as the research environment because the researchers utilized the findings to formulate protocols on infection prevention and control that are suited for the health facility but aligned with the standards set by the DOH and designed a program for re-training health care workers.

The researchers utilized a total enumeration of respondents. Bais District Hospital has 70 healthcare workers, while Bindoy District Hospital has 30. A total population of 100 healthcare workers for both hospitals was asked to answer the survey questionnaire with the inclusion criteria of healthcare workers currently employed in Bais and Bindoy District Hospitals who are directly involved in the care of patients, specifically doctors, nurses, medical technologist, midwife, nursing aides, and institutional workers.

This study utilized a survey questionnaire to gather self-report

information from respondents through the self-administration of questions in a paper and pencil format. The questionnaire was crafted, formulated, and adopted from the Infection Prevention and Control Assessment Form for Hospital Managers and Healthcare Professionals in the Context of COVID-19 (Validation Tool for Infection Prevention and Control as per D.M. No, n.d.). Healthcare workers are expected to carry out the listed items as part of ideal practices for Infection Prevention and Control (I.P. & C.).This study has four (4) parts. The first part seeks the socio-demographic and health profiles of the respondents. The second part consists of eleven (11) questions that measure the level of knowledge. Each question has four (4) alternative responses represented by numbers: 4 for strongly disagree (firmly opposed the idea); 3 for disagree (does not accept the idea); 2 for agree (acknowledge the idea); and 1 for strongly agree (fully acknowledge the idea). The 3rd part consists of eleven (11) questions that measure the attitude. The 4th part consists of eleven (11) questions. Each question has four alternative responses represented by numbers, 4 for never (not performing at all), 3 for rarely (not performing in the regular interval), 2 for often (frequently performing it), and 1 for always (performing it at all times).

Considering that the instrument was researcher-prepared, it was subjected to subjective and objective procedures to determine its validity and reliability. Experts in the field perform the former, while the latter is through statistical means. A validated self-administered questionnaire comprising four sections (socio-demographic, knowledge, attitude, and practice) was used for data collection. After completion of the initial draft of the survey questionnaire was validated and adopted as follows: firstly, the questionnaire was sent to two experts knowledgeable in the area. After coordination and consensus of all experts' opinions, the final questionnaire was drafted, and pilot testing was performed on 30 individuals at Congressman Lamberto Macias Memorial Hospital (CLMMH) to confirm the reliability of the questionnaire. The data from the pilot study were loaded into SPSS 20 and subjected to reliability coefficient analysis. The overall Cronbach's alpha reliability coefficient of KAP questions was 0.91.

Data was collected and analyzed using Cronbach Alpha, percentage, weighted mean, Chi-square test of independence, Mann-Whitney U test, and Kruskal-Wallis test. Cronbach Alpha was used to determine the extent of reliability of the questionnaire. On the other hand, percentage was utilized to present the respondents' distribution in terms of their profile and attitude. The chi-square test of independence was used to determine the significant relationship between the nominal data in the profile, which goes beyond

two categories: knowledge, attitude, and practices. Moreover, the Mann-Whitney U test was used to determine if there was a significant difference when the respondents were grouped in terms of sex. Lastly, the Kruskal-Wallis test was used to determine whether or not a significant difference exists in knowledge, attitude, and practices when the respondents are grouped in terms of their profile. Since these statistical tools are standard, their respective formulas need not be shown.

The proposed study was sent to the Silliman University Ethics Review Board on March 29, 2021, and was approved on June 28, 2021.

Results and Discussion

One hundred (100) HCWs were approached, agreed to participate, and completed the KAP infection prevention and control survey. Out of 100 respondents, results showed that in terms of respondents' sex, 71 or 71% are female, and 29 or 29% are male.

In terms of age, out of 100 respondents, 44 or 44% of the total respondents who belong to the age range of 26-35 years old ranked first and garnered the highest number while both age ranges from 18-25 years old and above 56 years old got the lowest rank among age groups. In addition, out of 100 respondents, 67 or 67% were married and provided the highest result, while 1 or 1% of respondents were a widow and showed the lowest result. Moreover, in terms of respondents' professions, out of 100 respondents, nurses ranked first and showed 31 or 31% of the total respondents, while 8 or 8% shows medical laboratory technicians with the lowest rank. In terms of educational level, results showed that out of 100 respondents, both four-year degree and two-year degree courses got 29 or 29% and were ranked first, while 7 or 7% of the respondents did not specify their degrees in the survey questionnaire.

Likewise, results revealed that out of 100 respondents, 40 or 40% chose Others, ranked first when asked about their work department. Results also revealed that out of 100 respondents, 25 or 25% of the respondents revealed that their work experiences had reached 6-10 years and were ranked the highest, while 3 or 3% of the respondents who did not indicate their work experiences were ranked the lowest. Further, out of 100 respondents, 49 or 49% of the respondents revealed that they worked for eight (8) per day, and this showed the highest number and was ranked first, while 13 or 13% of the respondents who responded Others ranked third.

Regarding Training on Infection Prevention and Control, out of 100 respondents, 72 or 72% answered "No" when asked about their Training in

IPC and was ranked first, while 2 or 2% of the total respondents did not indicate their answers to the question. Finally, out of 100 respondents, results revealed that 94 or 94% of the respondents were fully vaccinated while 6 or 6% were not vaccinated yet.

Table 1

Respondent's Level of Knowledge, Attitude, and Practices Regarding Infection Prevention and Control

Item	1(%)	2(%)	3(%)	4(%)	WX	VD
I am aware of the current Institutional guidelines regarding Infection Prevention and Control in my facility.	31	45	14	10	2.03	Agree
I know how to properly assess patient placement.	49	42	0	9	1.69	Strongly Agree
I am aware of the WHO approach on "5 Moments of Hand Hygiene" and correct sequence of proper hand washing.	66	30	2	2	1.5	Strongly Agree
I know how to disinfect and decontaminate the patient-care equipment and my workstation.	63	29	6	2	1.47	Strongly Agree
I know how to maintain and provide a safe and clean surface environment for my patients.	60	36	1	3	1.47	Strongly Agree
I know how to perform proper donning and doffing of PPE.	61	34	4	1	1.45	Strongly Agree
I know how to properly segregate health care waste based on this institution's color-coding scheme.	62	36	1	1	1.41	Strongly Agree
I know when to use appropriate PPE when caring for each patient.	65	33	1	1	1.38	Strongly Agree
I know how to dispose used PPE properly.	66	32	1	1	1.37	Strongly Agree
I know that recapping of used needles can increase needle stick injury.	70	26	1	3	1.37	Strongly Agree
I know where to dispose sharps properly.	73	23	1	3	1.34	Strongly Agree
Aggregate					1.50	Strongly Agree

Verbal Description: (1)SA= Strongly Agree (1.00-1.74); (2) A Agree (1.75-2.49); (3)D= Disagree (2.50-3.24); (4)SD= Strongly Disagree (3.25-4.00

Table 1 presents data on the respondents' level of knowledge regarding infection prevention and control. The findings indicate that the highest level of knowledge was demonstrated in their agreement with Item 2, which had a weighted mean of 2.03, suggesting that respondents believe they are familiar with the current institutional guidelines on infection prevention and control.

In descending order, respondents strongly agreed with the following items: Item 1, 'I know how to properly assess patient placement,' with a weighted mean of 1.69; Item 3, 'I am aware of the WHO approach on the "5 Moments of Hand Hygiene" and the correct sequence of proper hand washing,' with a weighted mean of 1.50. Item 8, 'I know how to disinfect and decontaminate patient-care equipment and my workstation,' and Item 9, 'I know how to maintain and provide a safe and clean surface environment for my patients,' had a mean of 1.47. Item 5, 'I know how to perform proper donning and doffing of PPE,' had a weighted mean of 1.45; Item 7, 'I know how to properly segregate healthcare waste according to the institution's color-coding scheme,' had a weighted mean of 1.41; and Item 4, 'I know when to use appropriate PPE when caring for each patient,' had a weighted mean of 1.38. Both Item 6, 'I know how to properly dispose of used PPE,' and Item 11, 'I know that recapping used needles can increase the risk of needle-stick injury,' had weighted means of 1.37. Lastly, Item 10, 'I know where to dispose of sharps properly,' had a weighted mean of 1.34.

Overall, the mean knowledge score of 1.50 indicates that respondents possess an adequate understanding of infection prevention and control, suggesting they are less likely to contract hospital-acquired infections."

These findings align with a study conducted at a Zambian tertiary hospital by Chisanga (2017), which reported that most participants demonstrated a strong understanding of infection prevention and control, achieving an average score of 83.21. In contrast, a study by Unakal et al. (2017) conducted across three regional hospitals in Trinidad and Tobago revealed that only 20.3% of 300 healthcare workers were knowledgeable about infection prevention measures, while the remaining 79.7% lacked awareness of infection prevention and control protocols.

Table 2 presents data on respondents' attitudes toward infection prevention and control. The results indicate that all 100 respondents (100%) expressed strong agreement (SA) with all survey items regarding their attitudes. Item 2 ('I will adhere to Infection Prevention & Control practices based on the institution's policies') ranked highest, with a weighted mean of 1.42. Respondents also strongly agreed with the following items ranked in descending order: Item 4 ('I believe that wearing appropriate PPE can protect me from acquiring any infectious diseases') with a weighted mean of 1.32; Item 3 ('I believe that hand hygiene is the most effective measure to avoid transmission of infections') at 1.27; and Item 5 ('I believe that correct donning and doffing of PPE is crucial when caring for patients') at 1.26. Item 1 ('I believe that proper patient placement reduces the risk of infection transmission') recorded a mean of 1.24.

Items 7 ('I believe that proper waste segregation and disposal help prevent the spread of infectious diseases'), 8 ('I believe that patient-care equipment should be cleaned and disinfected after each use'), and 9 ('I believe that regular disinfection of high-touch surfaces enhances patient safety') shared a mean of 1.23. Items 6 ('Proper trash bins are essential where I doff PPE') and 10 ('Sharps should be discarded in a puncture-proof container') recorded a mean of 1.20. Item 11 ('I believe in using "one needle, one syringe" at a time') ranked last, with a mean of 1.18.

Overall, the aggregate mean score for the respondents' attitudes was 1.25, indicating a strong agreement and a positive outlook towards infection prevention and control measures.

These findings are congruent with the study entitled Knowledge, Attitude, and Practice of Infection Control among Primary Care Professionals in Abha City, Kingdom of Saudi Arabia (Al-Ahmari et al., 2021), which revealed that about one-third of the participants (31.6%) had poor knowledge about infection control and 88.2% had a positive attitude toward infection control policy and procedures. Furthermore, a KAP research conducted in Nigeria revealed a 90 percent positive attitude toward basic precautions. The results of these two studies are higher than those of Unakal et al. 's studies in Trinidad and Tobago. Less than half of the survey participants (46.7 %) showed a positive attitude toward infection prevention, highlighting their HCWs' overall negative attitude.

Table 2
Level of Attitude

Item	1(%)	2(%)	3(%)	4(%)	WX	VD
I will adhere with Infection Prevention & Control practices based on institution's policies.	61	35	2	1	1.42	Strongly Agree
I believe that wearing appropriate PPE can protect me from acquiring any infectious disease.	81	16	0	2	1.32	Strongly Agree
I believe that hand hygiene is the most effective measure to avoid transmission of infections.	79	15	3	2	1.27	Strongly Agree
I believe that correct donning and doffing of PPE is crucial when caring for any patients following standards and transmission-based precautions.	77	19	0	2	1.26	Strongly Agree
I believe that proper patient-placement reduce the risk of transmission of infection	77	21	0	1	1.24	Strongly Agree
I believe that proper waste segregation & disposal helps prevent the spread of infectious disease.	80	17	0	2	1.23	Strongly Agree
I believe that patient-care equipment should be cleaned & disinfected every after use of each patient or before using to another patient; and workstations should be disinfected.	80	17	0	2	1.23	Strongly Agree
I believe that regular disinfection and decontamination of the high-touch surface in my patients' environment will keep them safe.	79	18	1	1	1.23	Strongly Agree
It is important to me that proper trash bins are available where I doff my PPE	81	17	0	1	1.2	Strongly Agree
I believe that sharps should be discarded in a punctured-proof container	81	17	0	1	1.2	Strongly Agree
I believe in "one needle, one syringe" at one time.	85	12	0	2	1.18	Strongly Agree
Aggregate					1.25	Strongly Agree

Verbal Description: (1)SA= Strongly Agree (1.00-1.74); (2)A= Agree (1.75-2.49); (3)D= Disagree (2.50-3.24); (4)SD= Strongly Disagree (3.25-4.00).

Table 3 presents data on the respondents' infection prevention and control (IPC) practices. The results indicate that respondents consistently selected 'Always' for all 10 items related to their IPC practices. Notably, Item 9, 'I properly disinfect and decontaminate high-touch surfaces and areas within a 3-foot proximity of the patients' environment,' ranked highest with a weighted mean of 1.80.

Respondents also expressed strong agreement with the following items, ranked from second to last, along with their corresponding weighted means: Item 2, 'I follow the institution's IPC guidelines throughout my tour of duty' (1.74); Item 8, 'I properly disinfect and decontaminate patient-care equipment and workstations during my tour of duty' (1.61); Item 1, 'I properly assign patients to their appropriate rooms/wards' (1.53); Item 5, 'I strictly adhere to the sequence of proper donning and doffing of PPE' (1.38); Item 4, 'I use appropriate PPE when caring for patients, following standards and transmission-based precautions' (1.34); and Item 3, 'I wash my hands properly, following WHO's "5 Moments of Hand Hygiene" using the correct technique and duration' (1.28).

Furthermore, Item 7, 'I practice proper segregation and disposal of waste in all areas of the hospital,' received a weighted mean of 1.27; Item 6, 'I properly discard used PPE in the appropriate trash bin' (1.24); and Items 10 and 11, 'I properly discard sharp materials directly into safety boxes or puncture-proof containers' and 'I use "one needle, one syringe" for each patient,' both received a weighted mean of 1.22, ranking last.

The overall mean score for respondents' IPC practices was 1.42, indicating that many respondents consistently chose 'Always.' These results suggest that respondents exhibit good IPC practices, reinforcing the implementation of safety measures in their workplace.

A 2021 study titled Knowledge, Attitudes, and Practices Regarding COVID-19 Prevention among Vietnamese Healthcare Workers (Tien et al., 2021) reported that healthcare workers in Daklak province, Vietnam demonstrated substantial knowledge (91.3%), maintained a positive attitude (71.5%), and engaged in appropriate practices (83.1%) related to COVID-19 prevention. In contrast, research conducted by Ogoina et al. in Nigeria indicated a median practice score of 50.8%, reflecting poor overall adherence to standard infection prevention and control protocols among Nigerian healthcare workers.

Yakob et al. reported that among 135 respondents, 57 healthcare workers (42.2%) consistently adhered to standard precautions, 59 (43.7%) disposed of sharp materials in open pails, and 63 (46.8%) consistently used standard blood and body fluid precautions. The study concluded that while healthcare workers displayed a generally favorable attitude toward standard precautions, their knowledge and practice fell short of meeting the expected standards, indicating overall insufficiency.

Table 3
Level of Practice

Item	1(%)	2(%)	3(%)	4(%)	WX	VD
I properly disinfect and decontaminate high-touch surfaces and areas of close proximity (3 feet) of the patient.	52	28	6	13	1.80	Often
I follow the institution's IP & C guidelines throughout my tour of duty.	60	20	6	14	1.74	Always
I properly disinfect and decontaminate patient-care equipment and workstations during my tour of duty.	61	24	8	7	1.61	Always
I properly assign patients to their appropriate rooms/ward.	71	16	2	11	1.53	Always
I strictly adhere to the sequence of proper donning and doffing of PPE.	70	25	2	3	1.38	Always
I use appropriate PPE when caring for patients following standards and transmission-based precautions.	73	22	3	2	1.34	Always
I wash my hands properly following WHO's "5 moments of hand hygiene" using the correct technique and time duration.	76	22	0	2	1.28	Always
I practice proper segregation and disposal of waste in all areas of the hospital.	78	19	1	2	1.27	Always
I properly discard my used PPE in the appropriate trash bin.	82	14	2	2	1.24	Always
I properly discard sharp materials directly into the safety box or punctured-proof containers.	87	8	1	4	1.22	Always
I only use "one needle, one syringe" at one time.	88	7	0	5	1.22	Always
Aggregate					1.42	Always

Verbal Description: (1)A= Always (1.00-1.74); (2)O= Often (1.75-2.49); (3)R= Rarely (2.50-3.24); (4) N= Never (3.25-4.00).

Table 4 shows that among the respondents' profiles, only the working department, PPE availability, and source of information on safety precautions are significantly related to knowledge. This is exemplified in their respective p values, which are less than the margin of error at 0.05. Specifically, the Working Department has a p-value of 0.02 (less than the significance level of 0.05), and those in the OPD, Lab Room, and ER are the top 3 with the lowest ratings (within 1.00-1.74), which means that they Strongly Disagree on the infection and prevention control. For the variable Source of Information, the p-value is 0.00, which is below the significance level of 0.05. This indicates a statistically significant difference.

Respondents who cited training programs, a combination of various sources, and guidelines as their primary sources of information had the lowest ratings (ranging from 1.00 to 1.74). This suggest that they Strongly Disagree with statements related to infection prevention and control. Furthermore, those respondents who answered "Yes" and "No" on PPE Availability got a p-value of 0.02 (less than the significance level of 0.05) and showed lower ratings (within Strongly Disagree) compared to those who said they were not sure.

Table 4

Relationship between Socio-Demographic Profile and Knowledge

Knowledge and	χ^2	**p**
Sex	0.06	0.81
Age	4.89	0.30
Marital status	2.90	0.23
Profession	5.41	0.25
Educational level	5.66	0.23
Working department	12.09	0.02*
Work experience	1.52	0.82
Working hours per day	1.27	0.53
Training on IPC	2.56	0.11
Vaccination	3.03	0.08
PPE availability	8.04	0.02*
IPC guidelines availability	2.14	0.34
Source of information on safety precautions	13.20	0.00*

In a study conducted by Ogoina et al. in Nigeria, a total of 290 HCWs participated in the study (76% response rate), including 111 (38.3%) doctors, 147 (50.7%) nurses, and 32 (11%) laboratory scientists. The result shows that House officers, laboratory scientists, and junior cadres of nurses had lower knowledge and compliance with standard precautions than more experienced doctors and nurses.

In another study conducted by Tien et al., findings revealed that healthcare workers (HCWs) accessed COVID-19 information primarily from three primary sources: the Ministry of Health's website (97.7%), television (97.5%), and the Internet (96.7%). Additionally, over 80% of respondents utilized supplementary sources, including radio, newspapers, and input from relatives, friends, or colleagues. The study indicated that 83.8% of HCWs considered the information accurate, while 12.6% believed there was an overabundance. The remaining participants either possessed limited knowledge or none at all. The results highlighted an average knowledge score of 963, with 91.3% (879 HCWs) achieving high scores. Significant differences in mean knowledge scores were observed across

gender, educational level, and occupational groups.

Female health workers, those holding bachelor's or master's degrees, and doctors or technicians masks, respectively. However, 52.1% of respondents indicated they felt the demonstrated greater knowledge of COVID 19 compared to other groups ($P < 0.5$).

The results in Table 5 show no significant relationship between the respondents' socio-demographic profile and their attitude toward infection prevention and control. This is exemplified in their respective p values, greater than the margin of error at 0.05. Like Sex, with a p-value of 1.00; Age, with p-value of 0.37; Marital Status, with p-value of 0.50; Profession, with p-value of 0.15; Educational level, with p-value of 0.06; Working department, with p-value of 0.30; Work experience, with p-value of 0.52; Working hours per day, with p-value of 0.77; Training of IPC, with p-value of 0.78; Vaccination, with p-value of 0.50; PPE availability with 0.17; IPC guidelines ability, with p-value of 0.67; and Source of information on safety precautions, with p-value of 0.39. The study shows no significant relationship between the socio-demographic profile of the respondents and their attitude toward infection prevention and control.

Table 5

Relationship between Socio-Demographic Profile and Attitude

Attitude and	χ^2	p
Sex	0.00	1.00
Age	4.30	0.37
Marital status	1.40	0.50
Profession	6.70	0.15
Educational level	9.30	0.06
Working department	4.85	0.30
Work experience	3.22	0.52
Working hours per day	0.52	0.77
Training of IPC	0.08	0.78
Vaccination	0.46	0.50
PPE availability	3.59	0.17
IPC guidelines availability	0.81	0.67
Source of information on safety precautions	3.01	0.39

Reuben (2020) reported that 589 individuals participated in a survey conducted in North Central Nigeria. Of these respondents, 80.6% were aged between 18 and 39, 59.6% were male, 90.4% held a bachelor's degree or higher, and 56.2% resided in urban areas. The survey was predominantly composed of male respondents (59.6%) and single individuals (60.1%), with most participants having a college-level education or higher (90.4%). The

data revealed a high level of awareness of COVID-19 among respondents, with 99.5% acknowledging awareness of the pandemic. Additionally, 79.5% expressed confidence in government infection prevention and control (IPC) easures, while 92.7%, 96.4%, and 82.3% adhered to practices such as social distancing/self-isolation, enhanced personal hygiene, and wearing face Nigerian government was not taking sufficient action to address COVID-19.

According to Tien et al., the overall score of attitudes ranged from 0 to 8. 71.5 % of HCWs expressed positive feelings about COVID-19 prevention, whereas 28.5 % expressed unfavorable feelings. There were no significant differences in attitudes among age groups, education levels, occupations, residences, or workplaces. The only significant difference was revealed to be gender. Female employees had a higher attitude score than male employees (P =.042).

Unakal et al. discovered that 140 workers (46.7 %) had a positive attitude toward infection prevention, while 160 workers (53.3 %) did not. In general, they responded negatively to queries on their attitudes (70 %). There is no significant link between age, sex, or educational status and attitude, according to socio-demographic factors ($p>0.05$). However, ethnicity, work experience, and attitude had a significant relationship ($p<0.05$).

Table 6

Relationship between Socio-Demographic Profile and Practices

Practices and	χ^2	**p**
Sex	0.67	0.41
Age	4.97	0.29
Marital status	2.12	0.15
Profession	18.36	0.00*
Educational level	18.32	0.00*
Working department	8.99	0.06
Work experience	3.06	0.55
Working hours per day	4.57	0.10
Training on IPC	0.05	0.82
Vaccination	4.50	0.03*
PPE availability	6.31	0.04*
IPC guidelines availability	19.28	0.00*
Source of information on safety precautions	1.08	0.78

Table 6 showed that among the respondents' profiles, only profession, educational level, vaccination, PPE, and IPC guidelines availability are significantly related to practices. This is exemplified in their respective p values, which are less than the margin of error at 0.05. Results revealed that, in terms of Profession, with a p-value of 0.00 (less than the significance level of 0.05), Midwifery/nursing aids, med lab, and nurses were at the top

3 who Strongly Disagree (within 1.00-1.74) on their perception about their infection prevention and control practices. It denotes that one's profession is affecting one's practices. In terms of Vaccination, with a p-value of 0.03 (less than the significance level of 0.05); PPE Availability, with a p-value of 0.04 (less than the significance level of 0.05); and IPC guidelines, with p-value of 0.00 (less than the significance level of 0.05), results showed that there was a higher percentage in respondents who answered "Yes" they strongly disagree on infection prevention and control compared to those who answered "No" and "Not Sure." On the other hand, in terms of respondents' educational level, with a p-value of 0.00 (less than the significance level of 0.05), those with 2-year courses, 4-year courses, and graduate courses were the top 3 who strongly disagreed on infection and prevention control practices.

In a study conducted by Tien et al., most HCWs (83.1%) completed all six steps for preparing for COVID-19, whereas 16.9% of respondents had insufficient experience. It means that one out of every six HCWs was not following COVID-19 preventive measures to the letter. Up to 89.6% of participants said they had difficulty implementing preventive measures. More than half of the 863 HCWs who had trouble adopting measures (56.4%) said it was difficult to modify their daily practices, and 40% said they lacked personal protective equipment such as face masks (N95), gloves, face shields, gowns, and sanitizer. Other obstacles mentioned were the inconvenience of putting these measures into effect (14.4 %), feeling uncomfortable (3 %), and feeling unnecessary (1.7 %).

In Unakal et al.'s study, 12 questions were asked to assess infection prevention measures among HCWs. It shows that 132 workers (44 %) had good habits, while 168 workers (56 %) did not. In general, they have a negative response to practice-related inquiries (70 % There was no statistically significant relationship between socio-demographic factors and their practices ($p>0.05$).

Desta et al. found out that in the practice of IPC, there is a substantial association between respondents' age, educational level, work experience, trainings, and availability of PPE and IPC guidelines. According to the findings, healthcare workers aged 31 and up were nearly twice as likely to conduct infection prevention activities than those aged 21–25. As one's educational level rises, so does the practice of infection prevention.

In this study, multiple logistic regression analyses indicated that healthcare workers with a master's degree or higher were four times more likely to engage in infection prevention activities than those with diploma-level qualifications. Similarly, those holding bachelor's degrees were twice as likely to practice infection prevention as their diploma-holding counterparts.

Additionally, healthcare workers with over ten years of work experience demonstrated a greater likelihood of adhering to infection prevention practices than those with less than five years of experience. The data also revealed that healthcare personnel receiving infection prevention training were four times more likely to implement these practices than those not. Access to a steady supply of infection prevention materials increased the likelihood of adherence to these practices. Moreover, healthcare workers who followed infection prevention guidelines were four times more likely to engage in these measures than those who did not.

Table 7

Differences in the Respondents' Knowledge when Grouped according to Sex, Age, Working Department, and Length of Service

Sex					U	p
Mean Ranks for Sample						
Female	Male					
53.1	44.2				847.5	0.17
Age						
Mean Ranks for Sample						
18-25	26-35	36-45	46-55	≥ 56	H	p
24.7	46.8	54.2	59.8	61.3	10.88	0.03*
Working Department						
Mean Ranks for Sample						
OPD	Ward	Lab Rm	ER	Others	H	p
-	59.1	40.8	40.9	46.5	6.53	0.09
Length of Service						
Mean Ranks for Sample						
1-2	3-5	6-10	11-20	≥ 21	H	p
50.6	38.7	49.9	63.3	51.7	6.05	0.20

Table 7 shows no significant difference in the respondents' knowledge of infection prevention and control when grouped according to sex, working department, and length of service. This is exemplified in their respective p values, greater than the margin of error at 0.05. However, the result differs in terms of the respondent's age. Among the age groups, only those 18-25 years old and 36-45 years old significantly differ in favor of the latter. The result shows that respondents 18-25 years old showed a more intense disagreement than those who belong to the age groups of 36-45 years old. Results showed that Sex, with a p-value of 0.17, and Length of service, with a p-value of 0.20, while OPD, with a p-value of 0.09, cannot be included since there are only two ratings.

Desta et al. 's data revealed that healthcare employees aged 31 and over were nearly three times more educated about infection control than those aged 21–25. Male healthcare workers were two times more likely to be

knowledgeable than female healthcare workers. Those healthcare personnel with more than ten years of experience were four times more likely to be knowledgeable about infection control than those with less than five years of experience.

The results in Table 8 indicated no significant differences in respondents' attitudes toward infection prevention and control when analyzed by sex, age, department, and length of service. This conclusion is supported by p-values exceeding the margin of error of 0.05. Specifically, the p-values were 0.70 for sex, 0.35 for age, and 0.77 for length of service. However, data for the OPD department could not be considered, as only two ratings were available.

Table 8

Differences in the Respondents' Attitude when Grouped according to Sex, Age, Working Department, and Length of Service

Sex					U	p
Mean Ranks for Sample						
Female	Male					
49.3	51.7				1065	0.70
Age						
Mean Ranks for Sample						
18-25	26-35	36-45	46-55	≥ 56	H	p
31.5	49.4	56.1	53.9	48.8	4.46	0.35
Working Department						
Mean Ranks for Sample						
OPD	Ward	Lab Rm	ER	Others	H	p
-	52	37.6	45	50.4	2.11	0.55
Length of Service						
Mean Ranks for Sample						
1-2	3-5	6-10	11-20	≥ 21	H	p
48.5	49.7	43.3	56.9	49.4	1.83	0.77

Table 9

Difference in the Respondents' Practices when Grouped according to Sex, Age, Working Department, and Length of Service

Sex					U	p
Mean Ranks for Sample						
Female	Male					
53.2	43.8				835.5	0.14
Age						
Mean Ranks for Sample						
18-25	26-35	36-45	46-55	≥ 56	H	p
35.2	48.8	55.3	53.9	55.1	3.34	0.50
Working Department						
Mean Ranks for Sample						
OPD	Ward	Lab Rm	ER	Others	H	p
-	47.7	43.4	44.3	54.4	2.23	0.53
Length of Service						
Mean Ranks for Sample						
1-2	3-5	6-10	11-20	≥ 21	H	p
42.9	45.4	55.3	63.3	43.9	5.76	0.22

Table 9 showed no significant difference in the respondents' infection prevention and control practices when grouped according to sex, age, working department, and length of service. This is exemplified in their respective p values, greater than the margin of error at 0.05. Results showed that Sex, with a p-value of 0.14; Age, with a p-value of 0.50; and Length of service, with a p-value of 0.22. However, OPD cannot be included since there are only two ratings.

According to Al Ahmari et al., a study in Abha City, Kingdom of Saudi Arabia. About a third of the participants (31.6%) had insufficient understanding of infection control, 88.2% had a positive attitude toward infection control policies and procedures, and 49.5 % had insufficient practice. The result suggests no significant differences in participants' knowledge or attitude according to their socio-demographic characteristics. At the same time, their practices were significantly better among those with a training program about infection control and those with experience <5 years in primary care (p = 0.040 and P = 0.032, respectively).

In another study conducted in Debre Markos Referral, Northwest Ethiopia, more than two-thirds of healthcare staff (84.7%) were knowledgeable, but only 57.3 % of respondents demonstrated good infection prevention practices. Awareness and infection prevention practice were significantly correlated with older age, comprehensive work experience, and higher educational status. The infection prevention practice was also linked to in-service preparation, the availability of infection prevention supplies, and adherence to infection prevention guidelines. Compared to those aged 21–25, healthcare staff aged 31 and up were about three times

more knowledgeable about infection prevention. Male healthcare staff were twice as likely as female healthcare workers to be knowledgeable (Desta et al., 2018).

Conclusion and Recommendations

Infection control programs have been strictly implemented by the Department of Health and the World Health Organization (WHO) in all healthcare facilities over the years to improve healthcare workers' preparedness to respond to threats of outbreaks of highly transmissible infectious diseases and, more importantly, to reduce, if not eliminate, hospital-acquired infections. All healthcare workers in any department must adhere to infection control standards, policies, and procedures. Hospital-acquired infections can be caused by a lack of knowledge, negative attitudes, and inappropriate practices in the prevention and control of infection. Assessing knowledge, attitudes, and practices in infection prevention and control among healthcare workers is crucial to protect both the patient and the healthcare worker. For this, we conducted a study to assess the knowledge, attitude, and practice status of infection prevention and control among healthcare workers to understand better the possible areas for improving infection prevention strategies and practices in Bais and Bindoy District hospitals.

Based on the results obtained, it was evident that the Healthcare workers of Bais and Bindoy District Hospital were knowledgeable in infection prevention and control, with an overall weighted mean score of 1.50. The total mean score for attitude among the respondents was 1.25, indicating a positive attitude towards infection prevention and control. Lastly, the respondents' total mean score for infection prevention and control practices was 1.42, which falls under the category "Good," meaning they have good practices in infection prevention and control.

The study shows a significant relationship between the socio-demographic profile of the respondents and their knowledge and practices on infection prevention and control. The respondents' knowledge of infection prevention was significantly associated with the working department, the availability of personal protective equipment, and the source of information. However, the study also suggests that there was no significant relationship between the socio-demographic profile of the respondents and their attitude toward infection prevention and control.

This study revealed that most professionals do not undergo training courses on infection control, which affects their knowledge and practices

despite a good attitude toward infection prevention and control.

Furthermore, this study shows no significant difference in the respondents' infection prevention and control knowledge, attitude, and practices when grouped by sex, age, length of service, and working department. Among the age groups, only those respondents who belong to the age ranges from 18-25 years old and 36-45 years old significantly differ in favor of the latter.

Even though the respondents have good knowledge, a positive attitude, and high levels of practice in infection prevention and control, good knowledge did not translate into prudent practices. Training on IPC was the independent risk factor towards IPC of attitude and practice. Bais and Bindoy District Hospitals should provide regular and additional on-job and off-job training programs on IPC and strict implementation of updated standard operational procedures (SOP) for all HCWs. PPE and IPC guidelines should always be available for the HCW. Regular and continuing education should be provided, and CPD units should be applied.

Additionally, the IPC audit should include the integration and evaluation of infection prevention and control knowledge, attitudes, and practices of health personnel. The institutions should regularly monitor their employees on the strict implementation of IPC. More studies on KAP regarding Infection Prevention and Control in Negros Oriental are needed. Furthermore, examining the correlation between KAP variables is suggested to provide more precise insights for developing effective strategies.

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