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INFECTION PREVENTION AND CONTROL ADHERENCE AMONG HEALTHCARE WORKERS IN PRIVATE HOSPITALS IN DAVAO DE ORO

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ABSTRACT

This study determined the influence of demographic profile on the infection prevention and control adherence of healthcare workers. The descriptive- correlation design was utilized in this study. Data were gathered through survey questionnaire from 113 healthcare workers in selected private hospitals in Davao de Oro. Mean was employed in analyzing the demographic profile and mean level of infection prevention and control adherence. Pearson-product moment correlation was used to analyze the relationships that exist between the variables. Further, the multiple regression analysis was used to measure the demographic profile on infection prevention and control adherence of healthcare workers. The results show that the level of infection prevention and control is very high. Demographic profile and infection prevention and adherence are high among of healthcare workers. Meanwhile, in comparing in the infection prevention and control practices have a significant difference when grouped by gender, likewise, gender have significant difference when grouped by gender. Lastly, the results of independent *t-test* and ANOVA analysis indicate that that the demographic profile and infection prevention and adherence are high among of healthcare workers. Meanwhile, in comparing in the infection prevention and control practices have a significant difference when grouped by gender, likewise, gender have significant difference when grouped by gender of health care workers.

Keywords: *Infection Prevention and Control, Adherence, Health Workers, Davao de Oro*

INTRODUCTION

Hospitals face a number of infection prevention challenges, including multidrug-resistant organisms, hand hygiene compliance, healthcare-associated infection, and the use of personal protective equipment. Thus, infection prevention and control can be viewed as a critical component for hospitals to ensure patient safety, protect healthcare workers, and maintain overall public health by reducing the risk of healthcare-associated infections and outbreaks.

In Indonesia, the study of Bahegwa et al., (2023) in a sample of 226 healthcare workers reveals that only 26.5% of them were able to practice infection prevention and control. Hence, majority failed in practicing infection prevention and control because of insufficient availability of necessary resources, the pressure to attend to numerous tasks in a limited time frame may lead to shortcuts, and IPC practices might be unintentionally compromised inthe process. Similar experience in Bangladesh which reveals that 50 % of heath care workers are unaware of the high risk of infection transmission in their work environment or patient population, they may be less motivated to adhere strictly to IPC measures. In Thailand, where infectious prevention and control has not received enough attention in healthcare section, a great number of healthcare Workers have many difficulties in practicing infection and prevention control.Due to inadequate training in prevention and control practices, healthcare workers may face difficulties (Ilesanmi et al., 2021). Inadequate training can lead to a lack of understanding on the importance of specific practices,

correct procedures, and the proper use of personal protective equipment, limiting healthcare workers' ability to consistently ensure the safety of themselves and their patients (Fass, et al., 2017).When infection prevention and control practices do not receive enough information from healthcare teams, it can lead to misunderstandings or a lack of awareness about infection prevention and control guidelines.

In the Philippines, the Filipinos healthcare workers face great challenges in maintaining infectious prevention and control in practice in the hospital setting. The Demanding workloads, tight schedules, and large patient volumes place significant strain on healthcare workers, often creating an environment where the pressure to complete numerous tasks within a limited time frame can compromise the consistent implementation of infection prevention and control (IPC) practices (Gilbert et al., 2019). The pressure to complete multiple tasks in a limited amount of time is one of the reasons why Filipino health care workers may take shortcuts, compromising IPC practices unintentionally (Hor et al., 2022).

Previous study suggests that healthcare workers have a significant partin ensuring patients' health and well-being. According to Valdano et al., (2021), apropersafetyprotocolreducestheriskofhealthcare-associatedinfections (HAIs) while also protecting vulnerable patient populations in their respective assignments. IPC practices are critical to the health and well-being of patients. Preventing infection to spread, healthcare facilities can reduce the risk of healthcare-associated infections (HAIs) and protect vulnerable patient populations (Haque, et al., 2020).

As previously stated in the literature, the problem with poor infection control practices among healthcare workers is caused by a lack of education and training, limited access to resources, heavy workloads and time constraints, and insufficient leadership support (Manyisa et al., 2017). Nonetheless, the majority of studies conducted have focused on the bivariate association of infectious prevention and safety. As a result, the goal of this study is to provide new knowledge on infection prevention and control practices among healthcare workers. Thus, this study can assist healthcare institutions by implementing a framework to address institutional issues through the incorporation of effective infectious and control practices.

Statement of the Problem

This study determined the influence of demographic profile on the infection prevention of healthcare workers in private hospitals in Davao de Oro. More specifically, this answered the following questions:

1. What is the demographic data of the healthcare workers in terms of:
    1.1 Age
    1.2 Sex
    1.3 Years of Experience
    1.4 Educational Attainment
2. What is the level of adherence to infection prevention and control measures among healthcare workers in hospitals in terms of:
    2.1 Injection safety
    2.2 Sharp safety
    2.3 Hand hygiene
    2.4 Handling Infectious waste
    2.5 Environmental cleaning and Disinfection

3. Is there a significant difference in their level of adherence towards Infection prevention and control measures when analyzed according to their profile?

FRAMEWORK

This study is anchored on the Health Belief Model (HBM), which posits that individuals' health-related behaviors are influenced by their perceptions of susceptibility, severity, benefits, and barriers (Rosenstock, 1974). This model is widely used in infection prevention research to understand why healthcare workers either comply or fail to comply with IPC guidelines. According to the HBM, if healthcare workers perceive a high risk of acquiring healthcare-associated infections (HAIs), recognize the serious consequences of such infections, and believe that adhering to IPC practices such as hand hygiene, use of personal protective equipment (PPE), and proper sterilization can significantly reduce those risks, they are more likely to follow IPC protocols. Conversely, perceived barriers, such as lack of resources, time constraints, or inadequate training, can hinder adherence. The relevance of this theory is especially critical in private hospital settings, such as those in Davao de Oro, where structural or resource differences may influence IPC compliance.

METHOD

Research Design

This study used the non-experimental quantitative research design employing the descriptive- survey technique. Descriptive surveys gather data about varying subjects. It is explanatory research in nature. Non-experimental research design is one of the broad categories of research designs, in which the researcher observes the phenomena as they occur naturally and introduce no external variables. (Patidar, 2013).

The process of gathering the data was based on questionnaires. The focus of the study determined the demographic data of the health care workers in terms of age, sex, years of experience and educational background. It also determined their adherence to infection prevention and control measures.

Research Respondents

The respondents were limited to the healthcare workers in the different municipalities in Davao de Oro. Private hospitals from Nabunturan, Davao de Oro namely Nabunturan Doctors Hospital, having eighteen (18) bed capacity and Miguel Cabrera Memorial Hospital, with thirty- five (35) bed capacity. Two Hospitals from Mawab, Davao de Oro, namely, Doctors Community Hospital with twenty-five (25) bed capacity and Mawab Medical Clinic with fifteen (15)bed capacity, Compostela, Davao de Oro, having one Private Hospital which is Aacuacor Health Care and Hospital with eighteen 18 bed capacity. Included as respondents were health care workers from Maco, Davo de Oro which only has oneprivate,Alaba Emergency Clinic and Hospital which is capable of twelve (12) Bed capacity and lastly another private hospital from Pantukan Doctors Infirmary Incorporated which is able to cater up to seventeen (17) beds.

Research Instrument

The study utilized the questionnaires adapted from different studies. The instrument was divided into two parts that include Demographic Profile and Infectious Prevention.

***Demographic Profile Questionnaire*.** This tool is adapted from the Centers for Disease Control and Prevention (CDC. (2020).The questions will determine the demographic profile of the health care worker such as Gender, Age, Civil Status, Position and Area of Assignment.

Infection Prevention and Control Scale. This questionnaire is adapted from Magiorakos et al. (2017). The tool has 13 -item construct from 5-Strongly Agree to 1-Strongly disagree. The scale has higher internal consistency of items with Crobach's alpha value of .87.

Statistical tool

The following statistical tools were used in the study:

Mean and Standard Deviation was used to determine the level of infectious prevention and control.

Descriptive Statistics was used to measure of central tendency and measures of variability of the demographic profile.

One-way ANOVA was used to compare means across multiple groups and determine if at least one of the group means significantly differs from the others.

RESULTS AND DISCUSSION

Demographic Profile

Table1 shows the distribution of respondents in terms of age, gender, years and education. Out from a total of 113 respondents, the findings indicate that age21—30 have the largest representation between ages (f=66, 54.4%), while ages 41-50 have the lowest (f=4, 3.5%).This indicates that ages 21—30 make up the majority of the total respondents.

In terms of sex, the findings from a total of 113 respondents show that females have the highest gender representation (f=90, 79.64%), while males have the lowest (f=23, 20.4%). This indicates that females account for the majority of total respondent in the aspect of gender. This supports the Institute for Women's Policy Research's

In the aspect of years, it shows that 1-5 years have the highest representation (f=71, 62.8%), while above 10 years have the lowest (f=19, 16.8%). This indicates that 1-5 years' account for the majority of total respondent in terms of years in service.

This conform to the study of Lee et al., (2017 that Organizational behavior research consistently shows that early-career stages are associated with higher turnover rates and greater employee mobility.

Likewise, in the study of Tsai, (2019) that employees' decisions to stay with or leave an organization are heavily influenced by factors such as career advancement opportunities, job satisfaction, and organizational culture.

In terms of Education, it shows that bachelor's degree has the highest representation (f=71, 62.8%), while graduate have the lowest (f=14, 12.4%). This indicates that bachelor's degree account for the majority of total respondent in the aspect of education. This support to the study of that Wolniak et al., (2020) that educational attainment patterns has consistently shown a prevalence of bachelor's degree holders in the workforce, reflecting the increasing emphasis on higher education as a pathway to career opportunities and economic mobility. Furthermore, technological advancements, globalization, and shifts in labor market demands have contributed to the growing demand for workers with bachelor's degrees or higher levels of education (Burning Glass Technologies, 2019).

Table1. Demographic Profile

Demographic Profile		**Frequency**	**Percent**
Age	21-30	66	58.4
	31-40	33	29.2
	41-50	4	3.5
	21-30	66	58.4
	51-60	5	4.4
	61above	5	4.4
	Total	**113**	**100.0**
Sex	Male	23	20.4
	female	90	79.6
	Total	113	100.0
Years of Experience	1-5	71	62.8
	6-10	23	20.4
	above10	19	16.8
	Total	**113**	**100.0**
Educational Attainment	vocational	28	24.8
	BS	71	62.8
	graduate	14	12.4
	Total	**113**	**100.0**

Level of Infection Prevention and Control Measures

Table 2.1 shows the level of Infection Prevention and Control Measures Healthcare workers in Davao de Oro.The Infection Prevention and Control Measures contains five indicators, namely Injection Safety, Sharps Safety. Hand Hygiene, Handling Infectious Waste and Environmental Cleaning and Disinfection. It garnered an overall mean o f4.75 and a standard deviation of .2.85 The SD results ranges from .399-.4.86 which denotes that the respondent's scores are not so dispersed from one another.

In terms of Injection Safety, healthcare workers exhibited the highest mean in using a new needle and syringe for each injection as recommended, with a mean of 4.94, which is described as very high. Meanwhile, the lowest mean value, indicated in two items, is in the aspect of proper disposal methods for used needles and syringes being readily available and consistently utilized, with a mean of 4.82, also described as very high. The category mean is 4.88, which is likewise described as very high. This means that the Injection Safety practices of employees are always manifested. This finding conforms to the study by Yasin et al. (2019), which highlighted the importance of using proper needles and syringes to prevent occupational exposures and reduce the risk of bloodborne pathogen transmission. Similarly, Kidayu et al. (2020) found that nurses, as frontline healthcare providers, play a crucial role in ensuring adherence to safe injection practices and maintaining infection control standard.

Table 2.1. Injection Safety

Infection Prevention and Control Items	Mean	Std. Deviation	Description
Injection Safety			
1. I constantly adhere to proper hand hygiene protocols before administering injections.	4.83	.399	Very High
2.I use a new needle and syringe for each injection as recommended	4.94	.307	Very High
3. I ensure that injection sites are properly cleaned and disinfected before administration.	4.85	.467	Very High
4. Proper disposal methods for used needles and syringes are readily available and consistently utilized.	4.82	.467	Very High
5. I am aware of the potential risks associated with unsafe injection practices.	4.89	.363	Very High
Category Mean	**4.88**	**.357**	Very High

In the category of sharp safety a shown in Table 2.2, the results show that health care workers exhibit the highest mean in awareness of the risks associated with improper handling and disposal of sharps, with a mean of 4.88, described as very high. On the other hand, the lowest mean is 4.65, also described as very high, in terms of having clear policies and procedures in place for reporting needle stick injuries in the healthcare facility. The category mean is 4.76, which is described as very high. This means that the sharp safety practices of employees are always manifested.

This conforms to the findings of Ahmad et al. (2023), which suggest that healthcare professionals are more likely to follow safe work procedures and take the necessary precautions to avoid occupational exposures if they are aware of the risks associated with sharps injuries. Healthcare personnel and patients must receive sufficient training on infection control principles, including the handling, use, and disposal of sharps

Table 2.2 Sharps Safety

Sharps Safety	Mean	Std. Deviation	Description
1. Sharp disposal containers are readily available and conveniently located in our health facility.	4.78	.513	Very High
2. I always use appropriate sharp disposal containers.	4.76	.490	Very High
3.I follow proper technique or handling and disposing sharps	4.85	.383	Very High
4.I am aware of the risks associated with improper handling and disposal of sharps	4.88	.395	Very High
5. Our healthcare facility has clear policies and procedures in place for reporting needle stick injuries.	4.65	.594	Very High
Category Mean	**4.79**	**.411**	Very High

In the category of Hand Hygiene in Table 2.3, the highest mean is in understanding the importance of hand hygiene in preventing the spread of infection, with a mean of 4.88, described as very high. The lowest mean is 4.48, still described as very high, in the aspect of following the recommended hand washing techniques, including washing for 20 seconds with soap and water. The category mean is 4.76, which is described as very high. This means that the hand hygiene practices of employees are always manifested. This finding supports the study by Vermeil et al. (2019), which indicates that maintaining good hand hygiene can stop the spread of infectious diseases in medical environments. Likewise, the study by Pincock et al. (2018) emphasizes that infection control programs designed to lower the risk of healthcare-associated infections are not complete without proper hand hygiene practices, such as routine washing with soap and water or using alcohol-based hand rubs.

Table 2.3 Hand Hygiene

Hand Hygiene	Mean	Std. Deviation	Description
1.Ialwayswashmyhandsbefore and after patient contact	4.76	.508	Very High
2. I follow the recommended hand washing techniques, including washing for 20 second with soap and water.	4.48	.710	Very High
3.Hand hygiene facilities (sink, soap, sanitizer) are easily accessible in my work area	4.75	.528	Very High
4. I use hand sanitizer when soap and water are not readily available.	4.62	.647	Very High
5. I understand the importance of hand hygiene in preventing the spread of infections.	4.88	.349	Very High
Category Mean	**4.76**	**.450**	Very High

In terms of Handling Infectious Waste as shown in Table 2.4, the results show the highest mean in understanding the importance of following guidelines for the safe handling of infectious waste, with a mean of 4.88, described as very high. The lowest mean is 4.48, in the aspect of consistently using personal protective equipment (PPE) when handling infectious waste, also described as very high. Meanwhile, the category mean for management commitment is 4.77, described as very high. This means that handling infectious waste is always evident. This coincides with the study by WHO (2014) that proper segregation, packaging, and disposal of infectious waste are critical components of infection control programs designed to reduce the risk of healthcare-associated infections and ensure workplace safety. Furthermore, the study by Gupta (2012) found that adhering to guidelines for handling infectious waste demonstrates healthcare workers' awareness of the potential risks associated with poor waste management practices. Education and training programs on waste handling protocols are critical for increasing compliance and lowering the risk of occupational exposures.

Table 2.4 Handling Infectious Waste

Handling Infectious Waste	Mean	SD	Description
1. I am aware of the proper procedures for segregating different types of infectious waste.	4.81	.531	Very High
2.I consistently use personal protective equipment(PPE)when handling infectious waste	4.48	.696	Very High
3. I ensure that infectious waste containers are properly sealed and secured.	4.68	.587	Very High
4. The containers used for infectious waste disposal are clearly labeled and easily accessible.	4.80	.485	Very High
5.I understand the importance of following guidelines for the safe handling of infectious waste	4.88	.404	Very High
Category Mean	**4.77**	**.463**	Very High

In the aspect of environmental cleaning and disinfection, the results show the highest mean in the aspect of believing that environmental cleaning and disinfection are crucial for patient safety, with a mean of 4.91. The lowest mean is 4.30, in the aspect of receiving regular feedback on performance regarding environmental cleaning and disinfection. Meanwhile, the category mean from a systems perspective is 4.58, described as very high. This means that Environmental Cleaning and Disinfection practices are always evident. This suggests that healthcare workers recognize the importance of environmental cleaning and disinfection for patient safety. The findings support the study by Facciola et al. (2019), which indicated that environmental surfaces act as reservoirs for pathogens, contributing to the spread of HAIs in healthcare settings. Cleaning and disinfecting patient care areas, equipment, and frequently touched surfaces are critical components of infection prevention and control programs designed to reduce the risk of HAIs (Boyce, 2017).

Table 2.5 Environmental Cleaning and Disinfection

Environmental Cleaning and Disinfection	Mean	SD	Description
1. I am provided with adequate training on environmental cleaning and disinfection protocols.	4.62	.619	Very High
2. I have access to appropriate cleaning and disinfection agents and equipment.	4.42	.731	Very High
3.I consistently follow the recommended environmental cleaning and disinfection procedures in my workplace	4.63	.569	Very High
4. I believe that environmental cleaning and disinfection are crucial for patient safety.	4.91	.286	Very High
5.I receive regular feedback on my performance regarding environmental cleaning and disinfection	4.30	.847	Very High
Category Mean	4.58	.486	Very High

Comparative Analysis in the Infection Prevention and Control When Grouped According to Profile

The Table 3.1 compares infection prevention and control adherence based on gender. The results show a significant difference when grouped by gender (t=-.865, p.105). This means that healthcare workers' prevention and control practices are most likely different regardless of gender. The findings support Courtenay's (2018) study, which found that women adhere to hygiene practices more strictly than men due to societal expectations of cleanliness and nurturing roles. However, men may be less likely to prioritize infection prevention and control measures due to feelings of invulnerability or a desire not to appear overly cautious (Schmitt et al., 2016).

Table 3.1 Independent t-test Comparison in the Infection prevention and control adherence accordingto Gender

Gender	Mean	t	P-value	Remarks
Male	4.6818	-.865	.105	Not significant
Female	4.7435	-.762		

In Table 3.2, it shows the comparison in the prevention and control adherence when analyzed according to age. It can be observed in the results that there is no significant difference in the healthcare worker's prevention and control practices when grouped according to age *(F=.278, p >.05).* This finding corroborate to the study of Bah et al., (2022) that age may not be a determining factor in shaping how healthcare professionals approach and implement measures to prevent and control infections in healthcare settings. Furthermore, infection prevention and control practices are standardized across age groups within healthcare professions. This could imply that raining programs, protocols and guidelines for infection control are effectively disseminated and adhered to regardless of the age of the healthcare worker.

Table 3.2 One-way ANOVA showing the Comparison in the Infection prevention and control adherence when analyzed according to Age

Age	N	Mean	F	P-value	Remarks
21-30	64	4.7381	.278	.892	Not Significant
31-40	33	4.7139			
41-50	4	4.7800			
51-60	5	4.8140			
61above	5	4.6360			

The Table 3.3 shows the comparison in the prevention and control adherence when analyzed according to years in service. It can be observed in the results that there is no significant difference in the health care prevention and control practices when grouped according to gender *(F=.806, p >.05).* This finding support to the study of Ferdous et al., (2020) that age-related infection prevention and control practices may reflect the universal importance of these measures in the healthcare sector. Healthcare workers, regardless of age, are likely to understand the critical importance of preventing the spread of infections in healthcare settings and, as a result, may adhere to established protocols consistently.

Table 3.3 One-way ANOVA showing the Comparison in the Infection prevention and control adherence when analyzed according to Years of service

Years in Service	N	Mean	F	P-value	Remarks
1-5	69	4.7513	.806	.449	Not significant
6-10	23	4.6609			
above10	19	4.7437			

The Table 3.4 shows the comparison in the prevention and control adherence when analyzed according to education. It can be observed in the results that there is a significant difference in the health care prevention and control practices when grouped according to grade level *(F=4.750, p <.05).*

Table 3.4 One-way ANOVA showing the comparison in the Infection prevention and control adherence when analyzed according to education

Education	N	Mean	F	P-value	Remarks
vocational	26	4.8738	4.750	.011	Significant
BS	71	4.7032			
graduate	14	4.6086			

Since the ANOVA result is significant, a post hoc test was performed to provide multiple comparisons and determine which group have significant difference (see Table below). Based from post hoc test, the vocational have significant performance when compared to other education *(p.05)* the result shows that participants with vocational education follow infection control measures significantly better than those with a Bachelor's degree (BS) or a graduate degree. The average difference between vocational education and BS with a *p-value of < 0.05*, indicating a significant difference, similarly, the mean difference between vocational and graduate education with a *p-value of < 0.05*, indicating significance. These findings suggest that the practical and hands-on nature of vocational training, which focuses on real-world applications and continuous skill reinforcement, leads to better adherence to infection control protocols. These findings suggest that integrating more practical, hands-on infection control training into BS and graduate programs could improve adherence. Healthcare institutions and policymakers should consider increasing training efforts for BS and graduate degree holders to match the levels of adherence seen in vocationally trained individuals (Courtenay, 2019).

CONCLUSIONS

Based on the findings, the following conclusions were drawn:

1. The demographic profile among healthcare workers revealed that age 21- 30 have the largest representation between ages Furthermore, in terms of gender, females have the highest gender representation, and in terms of years in service, 1-5 years have the highest representation and bachelor's degree have the highest representation.
2. The level of adherence to Infection Prevention and Control Measures of among healthcare workers exhibit very high. Moreover, the organizational learning also exhibits high level in the aspects of Injection safety, sharp safety, hand hygiene, handling Infectious waste, and environmental cleaning and disinfection
3. There is a significant difference on the adherence of Infection prevention and control measures with the profile of healthcare workers in terms of educational background that favors vocational as compared to BS and Graduate.

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