



# Knowledge, Management, And Difficulties of Healthcare Workers in the Covid-19 Response

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## Abstract:

Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) has driven a global pandemic. Infection control on COVID-19 raises various difficulties faced by healthcare workers in hospitals. The function Infection prevention and control (IPC) is an evidenced-based practical approach to preventing harmful infections in patients and healthcare workers. This study aimed to determine the levels of Knowledge, Management, and Difficulties of Healthcare Workers in the Covid-19 Response in a district hospital in Northern Negros, during the fourth quarter of the Calendar year, 2022. Results shows "very high level" in the level of knowledge, management, and difficulties of healthcare workers in the covid-19 response in the areas of infection control and environment and waste control. And, in the level of difficulties encountered of healthcare workers towards covid-19 response, results shows "high level". Also, results shows that there is a significant difference in the level of knowledge of health care workers towards Covid 19 response in the area of infection control, environment and waste control, when grouped and compared as to sex. However, when grouped as to age and length of service, there is no significant difference found in the level of knowledge of health care workers towards Covid 19 response. Lastly, there is a significant relationship between the level of knowledge and the level of management of health care workers towards covid-19 response. With the given results, this papers call for the healthcare workers and administrators to continuously support the adaptation of the repeated revisions of the newly created protocol in the management of the dreadful virus, provide an appropriate and comfortable PPE, and enough number of staff must be increased to support in the workplace for the HCW to function properly.

**Keywords:** Knowledge, management, difficulties of healthcare workers, Covid-19, infection control, environment and waste control

## Introduction:

### **Nature of Problem**

Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) has driven a global pandemic. As of July 2022, it has recorded globally a total of more than 550 million cases and 6 million deaths. SARS-CoV-2 is the causative pathogenic agent of coronavirus disease-2019 (COVID-19), first discovered in Wuhan, China in December 2019. Parallel to this, infection control on COVID-19 raises various difficulties faced by healthcare workers in hospitals. In January 2020, the Department of Health (DOH), confirmed the first case of Covid 19 in the Philippines, it was then on March 2020, wherein, the World Health Organization (WHO) declared it a global pandemic.

One of the District Hospitals in Northern Negros was identified as the COVID-19 dedicated institution where it caters to all mild and moderate Covid 19 patients referred from the cities and municipalities of the Negros Occidental Province. This hospital comprises 438 total employees, 320 were permanent, 202 were nursing service and 47 were medical doctors. Other employees were composed of the pharmacist, medical technologist, job orders, and ancillary services. Most of these healthcare professionals, worked 12 hours per shift and straight 3 to 4 days duty per week to mitigate the number of staff, as well as to maximize the acute shortage of personal protective equipment (PPE) such as masks, medical gloves, and face shields to protect themselves from contracting the infectious COVID 19 virus.

Moreover, managing the pandemic brought about by the coronavirus requires successful and proven scientific practices implemented through effective institutional work. In facing the pandemic wave, it needs greater preparation and considerable experience in identifying the challenges, scientific practices, and administrative support. The function of Infection prevention and control (IPC) is an evidenced-based practical approach to preventing harmful infections in patients and healthcare workers. Its effectiveness in an institution relies on its action at all levels of the health care system most importantly in the standard precaution, environmental, and waste management.



As an Infectious Disease Specialist, the present researcher initiated this study to evaluate the knowledge, management, and difficulties encountered by the healthcare workers one of District Hospitals in Northern Negros during the COVID-19 pandemic. The study's findings were useful to public health administrators and policymakers in determining how to manage crisis waves effectively.

### Current State of Knowledge

The COVID-19 pandemic has presented numerous challenges for health workers in hospitals around the world. The demand for their services and the number of patients they need to treat has increased significantly, putting their lives, health, and well-being at great risk. The mental health impact on frontline workers has been severe, with limited support offered to them. The World Health Organization has stressed the need for governments and healthcare leaders to address persistent threats to the safety of health workers and patients. Health workers and their families have been exposed to unprecedented levels of risk, including physical and psychological stress, living in constant fear of disease exposure, and facing social stigmatization. The Biomedical Journal Liua (2020) explains that COVID-19 is the fifth recorded pandemic since 1918, and was first reported in Wuhan, China before spreading globally. It is officially named severe acute respiratory syndrome coronavirus (SARS-CoV-2) by the International Committee on Taxonomy. The virus produces symptoms like fever, cough, body malaise, and dyspnea. As of October 2022, over 624 million cases have been reported, resulting in 6.5 million deaths and 604 million recoveries, despite preventive measures around the world.

One advocacy to improve the awareness program for healthcare workers is to regularly conduct training and education programs about the latest updates on COVID-19. These programs should be tailored to address the specific needs of the staff per station, including basic infection prevention and control measures and proper use of personal protective equipment. This will ensure that all healthcare workers have a comprehensive understanding of the disease and the necessary protocols to prevent its transmission, (Castillo et al., 2020).

According to Chirico et al., (2020) "Managing healthcare workers during the COVID-19 Pandemic: Lessons from Taiwan's Experience" by Chen et al., (2020). "Managing Healthcare workers during the COVID-19 pandemic: A practical guide" by Rivera et al., (2020). "Managing healthcare workers during the COVID-19 Outbreak: Lessons from Shanghai" by Wang et al., (2020) and "Leadership and Management in Managing Healthcare Workers in Response to the COVID-19 Pandemic" (Negandhi et al., 2020). Occupational Safety and Health Administration (2020), OSHA has published guidance on preparing workplaces for Covid-19 that includes recommendations for healthcare workers, such as creating an infectious disease preparedness and response plan, providing personal protective equipment (PPE), developing policies for identifying and isolating ill persons, training workers, and conducting health checks.

Also, Solante (2020) discussed that there have been numerous health workers in the Philippines who have been at the forefront of managing COVID-19 control in hospitals. The specific citation and year depending on the individual health worker and hospital involved. However, some notable examples of health workers who have played crucial roles in managing COVID-19 in the Philippines. Doctor in medicine, an infectious disease specialist at San Lazaro Hospital in Manila, who has been a key figure in educating the public on COVID-19 prevention measures and treating patients.

The Centers for Disease Control and Prevention (2020) acknowledged that providing care and services during the COVID-19 pandemic can cause stress and other strong emotions. It is important to recognize the causes of stress and take steps to build resilience and cope with these feelings. Communication with colleagues, supervisors, and employees is essential to combat work-related stress. Maintaining a healthy daily routine, such as getting enough sleep and eating well, is important for overall mental and physical health. Healthcare professionals are highly vulnerable to acquiring the COVID-19 virus, thus it is necessary to provide them with adequate protective gear. Additionally, depending on the region, they may encounter various forms of hostility and jeopardize their safety. Instances of violence towards health workers can occur when individuals resist screening or are placed in quarantine. In some countries, healthcare workers may encounter barriers enforced by security personnel as they attempt to travel to work during lockdowns. Moreover, there have been reports of healthcare workers being evicted from their homes or refused service at public locations due to fears that they may spread the virus (Wille, 2020).

Several medical networks, organizations, and respected figures have expressed disappointment and highlighted significant flaws and shortcomings in the response to the COVID-19 pandemic. In response to the rising number of cases and the potential for overwhelming the health system, the Philippine Health Care Professionals against COVID-19 have called for a two-week break and a reassessment of the government's approach to the crisis. SHAPE UP, another coalition of health personnel and advocates criticized the government's lack of a comprehensive plan to combat COVID-19 and laid out six specific demands to address the pandemic (Department of Health, 2021). The healthcare facilities stated that their primary difficulties were focused on managing patients with confirmed or suspected COVID-19, conducting adequate testing, and ensuring staff safety. They also faced significant obstacles in maintaining or increasing their capability to treat COVID-19 patients. Hospitals highlighted specific hurdles, strategies to reduce or eliminate them, and requirements for support involving personal protective equipment, testing supplies, staff, equipment, expanding or maintaining facilities, and financing (Grimm, 2020).



## Theoretical Underpinnings

This study theorizes to understand the extent of knowledge, management, and difficulties encountered by healthcare workers towards Covid 19 pandemic in primary hospitals in a second-class city in Northern Negros. This study was anchored in the Theory of Knowledge on Disease Causation (Henle and Kock, 1965), the Complexity Theory on Communicable Disease Management (Simon, 2002), and Social Safety Theory (Slavich, 2020).

The theory of Knowledge on Disease Causation provides a clear picture of the causal mechanism of disease and aids in understanding the disease process, its course, and treatment planning. Proper knowledge of disease causation also helps in planning epidemiological studies, adjusting for confounding factors, and ensuring a competent method of research. In the statement of this theory, the observation using the senses allowed the researcher to identify the gaps that require explanation while providing the information to discover the solution to the identified problems.

The Complexity Theory might assist in our changing microbiological environment. It demonstrates how change continues to occur. Moreover, the surveillance activities should be robust enough to withstand continued change and maintain the flow of information, if public health is not to be compromised. To flourish in such an environment where the COVID-19 pandemic dominates the entire healthcare services, practitioners must develop new and smart ways of working; hence, the networking concept: 'smart' working means identifying the things that you have to do, assisting others to do those things that you currently do unnecessarily and automate those tasks that a machine can do for the workforce. All of this within a collaborative environment ensures knowledge and information are available to those who need it when they need it.

A new theory was found during the COVID-19 pandemic, the Social Safety Theory. Human challenges developed a fundamental drive to create and maintain friendly social bonds and to mount anticipatory biobehavioral responses to social, physical, and microbial threats that increased the risk for physical injury and infection throughout evolution. Accordingly, the brain continually monitors the social environment, interprets social signals and behaviors, and judges the extent to which its surroundings are socially safe versus threatening. The unexpected evolution of the coronavirus has caused public stress and a series of physical and mental challenges which subjectively affect an individual.

## Objectives

This study aimed to determine the levels of Knowledge, Management, and Difficulties of Healthcare Workers in the Covid-19 Response in a district hospital in Northern Negros, during the fourth quarter of the Calendar year, 2022. Specifically, it sought to answer the following questions: 1) level of knowledge of Healthcare Workers in the Covid-19 Response in terms of infection control and environment and waste control; 2) the level of management of Healthcare Workers in the Covid-19 Response according to the aforementioned areas; 3) the level of difficulties of Healthcare Workers in the Covid-19 Response; 4) the significant difference in the level of knowledge of Healthcare Workers in the Covid-19 Response when grouped and compared according to the aforementioned variables; 5) the significant difference in the level of management of Healthcare Workers in the Covid-19 Response when grouped and compared according to the aforementioned variables; 6) the significant difference in the level of difficulties of Healthcare Workers in the Covid-19 Response when grouped and compared according to the aforementioned variables; and 7) the significant relationship in the level of knowledge and the level of management of Health Care Workers towards Covid-19 Response.

## Research Methodology:

This section discusses the type of research used in the investigation, the research design, setting, the study subjects and population, the research instrument, its validity and reliability, the data gathering procedure and the statistical tools that were used for analyzing the data gathered for the study.

## Research Design

A descriptive research design was used to determine the general statement of the problem. This employed method was ensured to answer the specific objectives stated in the study. The descriptive research design involves the description, recording, analysis, and interpretation of the data gathered on the knowledge, management, and difficulties of health care workers towards Covid 19. It seeks to determine differences between variables, test hypotheses, and formulate theories based on findings. It also deals with the application of appropriate statistical tools in the analysis and interpretation of data. The Descriptive research method used in the study is valuable to this present study in providing facts and scientific judgment based on assessing this study. The design is appropriate for the study to know the present situation and to determine the prevailing issues making adequate and accurate interpretation of the data. Since the study sought the level of knowledge, level of management, and level of difficulties towards COVID-19 response the researcher finds the descriptive research design as the most appropriate.



## Respondents

The respondents of the study were 175 hospital personnel from a total population of 320. Since the number of respondents was quite large to handle, stratified sampling and random sampling techniques were used, using the Cochran formula to find the sample size. The respondents were randomly selected by the researcher from each department using the lottery technique.

## Instruments

The level of knowledge, management, and difficulties of healthcare workers towards COVID-19 was assessed using a self-made questionnaire developed by the researcher of this study. It was subjected to validity and reliability. The validity index was 4.80 which is interpreted as "Excellent" making the instrument valid and the reliability index in the level of knowledge was 0.842, interpreted as "Excellent", 0.829 for the level of management interpreted as "Excellent", and 0.749 for difficulties which is interpreted as "Very Good". Thus, making the instrument reliable. The survey form was filled out and divided into two parts, wherein Part 1 deals with the profile of respondents in terms of age, gender, and length of service. Likewise 14-item statement for the level of knowledge, seven (7) for infection control, and seven (7) for the environment and waste control. On the other hand, a 14-item statement for the level of management, on infection control. Lastly, in determining the level of difficulties encountered by health workers towards Covid-19 response, a 10-item was formulated using a 5-point Likert scale rating with 5 as always, 4 as often, 3 as sometimes, 2 as rarely, and 1 as almost never.

## Data Gathering Procedure

After the validity and reliability of the instrument were established, the researcher wrote a letter to the Chief of Hospital, who oversees the operations of the organization, secure permission to conduct study and start distributing the questionnaire to the respondents. The researcher was identify the respondents, explain the purpose of the study, and give instructions on how to accomplish objectively and honestly the questionnaires. Upon approval, the researcher will administer the questionnaire to the respondents and carefully guided the respondents to answer the needed data. The retrieved questionnaires were gathered by the researcher. Then the data was categorized, tabulated, and prepared for statistical treatment. The respondents' responses served as a basis in determining the knowledge, management and difficulties of the healthcare workers towards covid 19 response in Cadiz District Hospital. The respondents were assured of the confidentiality of the data gathered. The SPSS was used in the processing of the encoded data.

## Data Analysis and Statistical Treatment

Objective No. 1 used descriptive analytical scheme and mean to determine the level of knowledge of Healthcare Workers in the Covid-19 Response in terms of infection control and environment and waste control.

Objective No. 2 used descriptive analytical scheme and mean to determine the level of management of Healthcare Workers in the Covid-19 Response according to the aforementioned areas.

Objective No. 3 used descriptive analytical scheme and mean to determine the level of difficulties of Healthcare Workers in the Covid-19 Response.

Objective No. 4 used comparative analytical scheme and Mann Whitney U Test to determine the significant difference in the level of knowledge of Healthcare Workers in the Covid-19 Response when grouped and compared according to the aforementioned variables.

Objective No. 5 used comparative analytical scheme and Mann Whitney U Test to determine the significant difference in the level of management of Healthcare Workers in the Covid-19 Response when grouped and compared according to the aforementioned variables.

Objective No. 6 used comparative analytical scheme and Mann Whitney U Test to determine the significant difference in the level of difficulties of Healthcare Workers in the Covid-19 Response when grouped and compared according to the aforementioned variables.

Objective No. 7 used the relational analytical scheme and Spearman Rho to determine the significant relationship in the level of knowledge and the level of management of Health Care Workers towards Covid-19 Response.

## Ethical Considerations



Participant's personal demographic information results were collected and were noted in the data capturing sheet. These data were important to established possible correlation of the present study. Each participant was given and assigned to a unique identifier code and the participant's anonymity confidential. The data and information obtained used in the study were treated with strict confidentiality. No information regarding the identity of the participant was disclosed unnecessarily in this study. After the data gathering, since there was no need, debriefing was not done by the researcher anymore as cited in the Data Privacy Act. Since this study is descriptive type, it poses no risk for the participants. All data that generated in this study benefit the future patients, clinicians and medical practitioners and hospital administration to formulate ways and anticipate the level of knowledge, management and difficulties of healthcare workers when emerging infectious disease arise.

### Results and Discussion:

This section presents the data gathered in connection with the objectives of the study and analyses of these data facilitated by the identified appropriate statistical tools. It interprets the results derived from the analyses.

**Table 1**

*Level of Knowledge, Management, and Difficulties of Healthcare Workers in the Covid-19 Response area of Infection Control*

Items	Mean	Interpretation
1. A face shield and face mask must be worn at all times.	4.82	Very High Level
2. Thorough hand washing must be observed before and after handling the patient or any procedure.	4.78	Very High Level
3. Staff should observe standard precautions and limit patient exposure.	4.42	High Level
4. NO PPE or incomplete PPE, NO DUTY. Therefore, appropriate endorsement, inventory, and completeness of the identified needs of the staff per station should be strictly observed.	4.25	High Level
5. Donning and Doffing of the PPEs should be done by a trained observer with the supervision of any available senior staff on duty.	4.45	High Level
6. Bending or recapping of the needle is not allowed; perform the scoop method.	4.38	High Level
7. Designated areas for covid suspect, probable, and positive to prevent cross-contamination.	4.42	High Level
<b>Overall Mean</b>	<b>4.50</b>	<b>Very High Level</b>

As gleaned in Table 1 the overall mean score of 4.50, is interpreted as a "Very High Level" of Knowledge, Management, and Difficulties of Healthcare Workers in the Covid-19 Response the area of Infection Control. The finding suggests that the majority of the respondent were more perceptive in the preventive measure in handling the virus in the hospital.

As shown in above Table 1, the Level of Knowledge, Management, and Difficulties of Healthcare Workers in the Covid-19 Response the area of Infection Control, when respondents were asked, two of the items were interpreted as Very High Level". Item No. 1, "A face shield and face mask must be worn at all times." Yielded the highest mean of 4.82, among the other items that received the same mean interpretation. This is because the hospital personnel was adherent to the Infection Prevention and Control protocol of the hospital, wherein the wearing of facemasks and face shields within the hospital premises is strictly implemented.

According to the Philippine Covid-19 Living Clinical Practice Guidelines, (2021), the World Health Organization recommends the use of masks in areas where the virus is circulating. Contracting the virus can happen, within at least a one-meter distance, with poor ventilation depending on the rate of air exchange, recirculation, and outdoor fresh air.

Lifted from the Interagency Task Force for the Management of Emerging Infectious Disease in December 2020, to prevent the spread of the virus, it was recommended that all persons are mandated to wear full coverage face shields together with face masks, or other facial protective equipment which can effectively lessen the transmission of COVID 19, ([Management of Emerging Diseases-IATF, 2021](#)).

On the other hand, G. George (2020) From the systemic in a hospital-based setting, it was concluded that there is a lower likelihood of Covid 19 infection among healthcare workers who use face shields on top of their standard PPE. It has been shown that there is a lower likelihood of COVID-19 infection among healthcare workers who used face shields or goggles on top of their PPE.

In the same table shown, Item No.4, "Appropriate endorsement, inventory, and completeness of the identified needs of the staff per station should be strictly observed ("NO PPE or incomplete PPE, NO DUTY)." Received the lowest computed mean of 4.25, interpreted as "High Level". Although, statistical findings belonged to a high level, however, most hospital staff during the Covid pandemic, experienced a scarcity of available PPE. Improvised PPE was utilized to continue their duty and render service to the admitted patients. Hence it was anticipated every duty that there will be a shortage in the staff due to the possibility of the unavailability of complete and appropriate size of PPE.

The study finding supported by the World Health Organization (2021), the disruption in the global supply chain of PPE due to surging global demand was driven not only by the number of COVID-19 cases but also by



misinformation, panic buying, and stockpiling shortages of PPE globally. The rational use of personal protective equipment (PPE) for coronavirus disease (COVID-19) correlates with the study.

On the other hand, Cohen (2020), identified that the contributing factors to the depleted supply of PPE were dysfunctional costing in hospital operating systems triggered by the acute need in healthcare and panicked marketplace behavior from the domestic PPE inventories. Other amplified problems were the lack of effective action from the federal government to maintain and distribute domestic inventories, as well as severe disruptions to the PPE global supply chain.

**Table 2**

*Level of Knowledge of Healthcare Workers towards Covid-19 Response in area of Environment and Waste Control*

Items	Mean	Interpretation
1. Rooms used by patients with mild to moderate symptoms suggested of Covid 19 must undergo thorough mechanical cleaning and disinfection	4.40	High Level
2. Environmental measures must be followed, including cleaning frequently-touched surfaces and objects, cellphones, gadgets, tables, doorknobs, and desks.	4.60	Very High Level
3. Maintaining the environment clean, especially common-use areas and those with touchpoints such as railings, staircases, light switches, and the like.	4.57	Very High Level
4. Proper waste segregation is strictly observed (Hazardous waste and general waste must not be mixed)	4.98	Very High Level
5. Disposable needles and sharps should be discarded in puncture-resistant containers	4.83	Very High Level
6. Safe handling and disposal of clinical waste using proper PPE	4.49	Very High Level
7. Strict hygiene protocol among utility workers from segregation of waste to disposal	4.58	Very High Level
<b>Overall Mean</b>	<b>4.64</b>	<b>Very High Level</b>

Table 2 shows the overall mean score of 4.64 interpreted as "Very High Level" of knowledge of Healthcare Workers towards Covid-19 Response in area of Environment and Waste Control. This would imply that there was little gap in the knowledge of hospital frontline health workers when environment and waste control were concerns.

The data revealed that Item No. 10, "Proper waste segregation is strictly observed (hazardous waste and general waste must not be mixed)", yielded the highest mean of 4.98 which interprets a "Very High Level". The result of the above data correlates with the strict implication of the Infection Prevention and Control program protocol of the institution. The proper maintenance and waste segregation in the background of the Covid 19 pandemic, built an impact on the waste segregation protocol of the hospital.

According to Matthews (2020), extra precaution on general PPE disposal can be done by proper bagging rather than loosely tight bag placed in trash receptacles. The Centers for Disease Control and Prevention (CDC), stated that generated infectious wastes should continue to use standard precautions to prevent the transmission of disease. Facilities that generate infectious wastes should be aware of their generation of wastes with appropriate packaging, labeling, transportation, or treatment requirements. The standard protocols of such facilities must be utilized to determine the special handling requirements of the used PPE and dispose of it in the regular solid waste stream. Disposal of Single Use Personal Protective Equipment and COVID-19 affirmed to study found.

In the same table shown, all the other items yielded the same interpretation of "Very High Level", however, Item No. 1 "Rooms used by patients with mild to moderate symptoms suggested of Covid-19 must undergo thorough mechanical cleaning and disinfection" revealed the lowest mean score of 4.40. This result may explain the certain limitations that have been experienced by healthcare workers during the pandemic. These limitations include a shortage of available rooms to accommodate the increase in several patients, and longer time spent on cleaning the room that will delay patient transfer resulting in a decreased number of manpower, and this will result in exhaustion of the staff. Therefore, modification of the steps of disinfecting the rooms utilized by asymptomatic mild or moderate cases of covid 19, results in a faster transition of available rooms, even distribution of workload, and lessens physical fatigue.

The above result is correlated to the stated best practices of the CDC for environmental cleaning in healthcare facilities, the probability of contamination with a pathogen, the vulnerability of the population to infection, and the potential for exposure. The scoring system was utilized wherein a risk stratification score for mild or moderate infectious disease requires a fixed schedule and at least one daily cleaning. An additional requirement can be considered for areas or units that were grossly soiled, (PIDAC, 2018)

Furthermore, similarly stated by the Infection control of the Australian government in 2022, the environmental cleaning principles for COVID-19, rely on the disinfection process readily available in a certain institution. The process of cleaning and frequency should be scheduled, as well as the appropriate materials and disinfection procedures must be easily available.

From the systemic review of Shimabukuro, (2020), the Covid virus was easily inactivated using common disinfectants. There is a reduced risk of infection after five minutes from contact with contaminated droplets.

**Table 3**



*Level of Management of Health Care Workers towards Covid-19 Response in the area of Infection Control*

Items	Mean	Interpretation
1. A face shield and face mask must be worn at all times.	4.35	High Level
2. Thorough hand washing must be observed before and after handling the patient or any procedure.	4.35	High Level
3. Staff should observe standard precautions and limit patient exposure.	4.31	High Level
4. NO PPE or incomplete PPE, NO DUTY. Therefore, appropriate endorsement, inventory, and completeness of the identified needs of the staff per station should be strictly observed.	4.49	Very High Level
5. Donning and Doffing of the PPEs should be done by a trained observer with the supervision of any available senior staff on duty.	4.86	Very High Level
6. Bending or recapping of the needle is not allowed; perform the scoop method.	4.99	Very High Level
7. Designated areas for covid suspect, probable, and positive to prevent cross-contamination.	4.71	Very High Level
<b>Overall Mean</b>	<b>4.58</b>	<b>Very High Level</b>

The illustrated result of table 3 shows the overall mean of the Level of management of Health Care Workers towards Covid-19 Response in terms of the following areas of Infection Control and Environment and Waste Control was 4.58, interpreted as a "Very High Level". Whereas, item no.6, "Bending or recapping of the needle is not allowed; perform the scoop method" garnered the highest mean of 4.99, interpreted as "Very High Level". The result adheres to the existing protocol of the Covid 19 Infection control protocol of Cadiz District Hospital, wherein appropriate handling of sharps used in patients should be practiced correctly.

According to Jahangiri (2016), infectious facilities must be provided with an adequate number of safety types of equipment such as puncture-resistant disposal containers and engineered safe devices, that are essential for the effective prevention of needle stick injuries among healthcare workers, (Jabangiri, 2020). In addition to Bekele (2016), the main cause of injuries in a healthcare facility was needle syringe puncture. Healthcare workers who practiced needle recapping had higher odds of needle sticks and sharp injuries.

In the same table shown, item no.3, "Staff should observe standard precautions and limit patient exposure." Garnered the lowest mean score of 4.31, interpreted as "High level". The result of the data explains the least executed practice in the institution due to an unexpected surge in the number of patients brought in for admission. Mitigations that were strategized were the use of multiple layers of PPE and discarding each layer immediately when exposing or attending to a different patient.

A study conducted by Florendo (2020), states that there are inadequate protective measures when having many people in a covid 19 room. It is recommended to limit the number of Covid-19 patient encounter per duration of shift. Shorter work shift duration or exposure time reduces the risk faced by healthcare workers. Increased protection against virus transmission must be practiced if a shorter work shift duration is not feasible. Therefore, the use of PPE plays a vital role in decreasing the risk of infection but can be overwhelmed by the increased in the number of covid 19 patients.

**Table 4**

*Level of management of Health Care Workers towards Covid-19 Response in the area of Environment and Waste Control*

Items	Mean	Interpretation
1. Rooms used by patients with mild to moderate symptoms suggested of Covid 19 must undergo thorough mechanical cleaning and disinfection	4.76	Very High Level
2. Environmental measures must be followed, including cleaning frequently-touched surfaces and objects, cellphones, gadgets, tables, doorknobs, and desks.	4.75	Very High Level
3. Maintaining the environment clean, especially common-use areas and those with touchpoints such as railings, staircases, light switches, and the like.	4.75	Very High Level
4. Proper waste segregation is strictly observed (Hazardous waste and general waste must not be mixed)	4.86	Very High Level
5. Disposable needles and sharps should be discarded in puncture-resistant containers	5.00	Very High Level
6. Safe handling and disposal of clinical waste using proper PPE	5.00	Very High Level
7. Strict hygiene protocol among utility workers from segregation of waste to disposal	5.00	Very High Level
<b>Overall Mean</b>	<b>4.88</b>	<b>Very High Level</b>

As shown in table 4, the overall mean in the Level of management of Health Care Workers towards Covid-19 Response in the area of Environment and Waste Control garnered 4.88, interpreted as a "Very High Level." Moreover, Item No. No. 5, "Disposable needles and sharps should be discarded in puncture-resistant containers,"



item No. 6, "Safe handling and disposal of clinical waste using proper PPE" and item No. 7 "Strict hygiene protocol among utility workers from segregation of waste to disposal." Garnered the highest mean score of 5.00 interpreted as "Very High Level."

This coincides with the Infection prevention and control protocol of the hospital that emphasizes proper waste segregation and the use of appropriate PPE in segregating infectious wastes. This is also similar to the Division of research safety of Illinois, which sights that needles should not be recapped before placing them in a sharp container for disposal. To prevent injuries, needle recapping should be avoided.

Findings showed in the study conducted by Hussain (2020), a significant improvement in compliance with sharps bin containers was achieved by increasing healthcare worker awareness. Hence, in preventing the transmission of infectious diseases, it is necessary to have a regular assessment and practice in the management of sharps.

In addition, the mini-review of Das (2021), emphasized that healthcare solid waste is hazardous to health and the environment. Therefore, a good healthcare waste management system requires a regular assessment of waste streams and existing environmental practices. There should be waste management development plans and promulgation of institutional policies and guidelines. It was sighted that the proper handling of PPE waste includes hand sanitation before and after appropriate disposal of soiled PPE, and must be put in a sealed bag for safe cleaning.

In contrary to the above, Item No. 2, "Environmental measures must be followed, including cleaning frequently-touched surfaces and objects, cellphones, gadgets, tables, doorknobs, and desks" and Item No. 3, "Maintaining the environment clean, especially common-use areas and those with touchpoints such as railings, staircases, light switches, and the like" garnered a numerical mean score of 4.75 interpreted as "Very High Level" management. This would imply that the healthcare workers were discipline in managing the infectious disease hospital protocols particularly they were observe the cleanliness and possible mode of transmission of the disease.

More so, from the study of Mekonnen (2021), a reduction in treatment, disposal costs, and risk of infection among HCWs can be achieved with proper segregation of waste. The improper use of PPE might be due to the lack of awareness and strategies such as training that could guide on proper COVID-19 waste handling.

**Table 5**

*Level of difficulties encountered of Healthcare Workers towards Covid-19 Response*

Items	Mean	Interpretation
1. Shortages of Testing Supplies and Extended Waits for Results	3.86	High Level
2. Inadequate/shortages supplies of PPEs	3.95	High Level
3. Difficulty Maintaining Adequate Staffing and Supporting Staff	4.90	Very High Level
4. Difficulty Maintaining and Expanding Hospital Capacity to Treat Patients	4.52	Very High Level
5. Shortages of Critical Supplies, Materials, and Logistic Support	4.47	High Level
6. Anticipated Shortages of Ventilators	4.54	Very High Level
7. Increased Costs and Decreased Revenue	4.55	Very High Level
8. Increase workloads by the medical workforce and other services.	4.67	Very High Level
9. Experiencing physical and mental stress	4.80	Very High Level
10. Changing and Sometimes Inconsistent Guidelines	4.61	Very High Level
<b>Overall Mean</b>	<b>4.49</b>	<b>High Level</b>

Table 5 shows the result of the overall mean for the Level of awareness on contact management in the area of Personal when grouped according to Sex, has garnered a 4.49 which is interpreted as "High Level." The data revealed that Item No.3 "Difficulty maintaining adequate staffing and supporting staff," garnered the highest mean of 4.90 interpreted as "Very High Level." This is due to the increase in number of admitted patients, wherein there is in proportionate ratio between patient and health care worker.

In a study by Jeleff (2021), during the COVID 19, the identified difficulties encountered among healthcare workers were lack of preparedness, structural conditions, mental and physical preparations. Therefore, it is essential that a timely training and education in IPC for all HCW must be provided. Early preparedness and anticipation of the emerging health care threats should be carefully planned and appropriate recognition by higher level management and the public.

In the same table, the data that revealed "High Level" with a mean score of 3.86 was the Item No.1 "Shortages of Testing Supplies and Extended Waits for Results," this coincides with the turn around time of the testing kits and results that has been improved as the Covid pandemic continues and the issues was slowly resolved by the government agencies.

Further it is reiterated by Jeleff that the lack of preparedness involves the delay in the infection prevention and control guidelines, shortages in the personal protective equipments, and overworked personnel. As reported from the Urban news in 2020, the Clinical Laboratory Improvement Amendments (CLIA) for Covid 19 testing kits had a more than 50% shortage from the registered laboratories globally with at least average 40% testing capacity for the COVID-19.

**Table 6**





*Difference in the level of Knowledge, Management, and Difficulties of Healthcare Workers in the Covid-19 Response in the area of Infection Control when grouped and compared according to variables*

Variable	Category	N	Mean Rank	Mann Whitney U	p-value	Sig. level	Interpretation
Age	Younger	90	89.81	3662.500	0.617		Not Significant
	Older	85	86.09				
Sex	Male	86	77.63	2935.000	0.006	0.05	Significant
	Female	89	98.02				
Length of Service	Shorter	77	89.27	3675.000	0.761		Not Significant
	Longer	98	87.00				

The eighth objective is the Comparative analysis of the level of knowledge of Health Care Workers regarding Covid-19 Response in the areas of Infection Control and Environment and Waste Control when grouped and compared according to variables Age, Sex, and Length of Service.

As shown on table 6, illustrates the Difference in the level of Knowledge, Management, and Difficulties of Healthcare Workers in the Covid-19 Response the area of Infection Control when grouped and compared to sex [U(86,89)=2935.000; p=0.006], shows a significant difference. Hence, the null hypothesis in this variable is rejected. On the other hand, when the data is grouped as to age, [U (90,85)= 3663.500; p=0.617], and length of service [U (77,98)=3675.000; p=0.761] showed no significant difference found in the level of knowledge of Health care workers towards Covid 19 response, and hence the null hypothesis at this time is accepted.

Data suggests that females were more perceptive than the male group in measuring the level of knowledge of frontline health workers amid the COVID-19 pandemic. The nature of females in any healthcare facility contributes a crucial role in the successful execution of policies, monitoring, and implementation of infection control guidelines. More so, considering the characteristics of females as a woman, a mother, and as a symbol of cleanliness and discipline to any organization.

Imasuen (2021), among female HCWs, there is a higher number compared to males that had a significant willingness to treat COVID-19 patients and fear of being infected. The majority of the HCWs were in middle age and had adequate knowledge regarding the covid 19 virus.

Similar to the study of Almohammed (2021), the female HCW participants covered the majority of the population compared to their males counterparts. The median age and work experience showed no difference in their knowledge about the covid 19. Initially, most of them relied on multiple resources in obtaining information about covid 19, others received at least one infection control training, and the remaining had adequate knowledge about the virus. Furthermore, most of the female HCWs were aware of the causative microbe for Covid-19 and the effectiveness of hand hygiene in eliminating the virus. They were also aware of the frequent symptoms, and the method of transmission of the disease. They were also knowledgeable regarding treatment and duration of the virus.

**Table 7**

*Difference in the level of Knowledge, Management, and Difficulties of Healthcare Workers in the Covid-19 Response the area of Environment and Waste Control when grouped and compared according to variables*

Variable	Category	N	Mean Rank	Mann Whitney U	p-value	Sig. level	Interpretation
Age	Younger	90	87.91	3816.500	0.979		Not Significant
	Older	85	88.10				
Sex	Male	86	79.19	3069.500	0.020	0.05	Significant
	Female	89	96.51				
Length of Service	Shorter	77	85.71	3597.000	0.585		Not Significant
	Longer	98	89.80				

In the level of Knowledge, Management, and Difficulties of Healthcare Workers in the Covid-19 Response the area of Environment and Waste Control the prevention of SARS-CoV-2 infections in healthcare workers requires a multi-pronged integrated approach of IPC and occupational health and safety (OHS) measures. Female group stood the high level of knowledge in the area of environment and waste control. They dominate as a person that are more sustainable and equitable environmental hygiene, sanitation and disposal of waste using appropriate method in the hospitals.



Important determinants of HCW shortages include long shifts without adequate rest periods and inadequate supply of PPE, leads to fatigue, and inadequate adherence to IPC practices. It is highlighted in the WHO guidelines, that adequate staffing and IPC training are strongly recommended as a core component of effective IPC programs to prevent health care associated infections. It is also recommended that adequate social health protection measures such as health monitoring, sick leave for quarantine and other policies for health care workers must be established.

Findings were supported in the study conducted by Al-Khalidi (2022), the Prevalence of NSIs among HCWs was higher in nurses and laboratory technicians followed by surgeon doctors, assistant surgeons, and dentists. There was a highly significant association among knowledge, attitude, and practice scores of the HCWs ( $P < 0.001$ ). A considerable percentage of the participants (80.2%) were in demographic characteristics specifically the female gender of study participants.

**Table 8**

*Difference in the level of management of Health Care Workers towards Covid-19 Response in the area of Infection Control when grouped and compared according to variables*

Variable	Category	N	Mean Rank	Mann Whitney U	p-value	Sig. level	Interpretation
<b>Age</b>	Younger	90	87.89	3815.500	0.977		Not Significant
	Older	85	88.11				
<b>Sex</b>	Male	86	91.60	3517.500	0.342	0.05	Not Significant
	Female	89	84.52				
<b>Length of Service</b>	Shorter	77	89.42	3663.500	0.735		Not Significant
	Longer	98	86.88				

Tables 8 shows that there was no significant difference in the level of management of Health Care Workers towards Covid-19 Response in the area of Infection Control when grouped and compared according to variables of age, sex, and length of service. Participation in public reporting has not been regulated by the hospital staff during the COVID-19 pandemic was significantly the same approach. This was due to the national state guidelines for generating confidential reports that are returned to each facility for their internal quality improvement efforts. Other intentions to utilize public reporting may be comparing rates of Healthcare Associated Infection (HAI) and subsequent morbidity and mortality outcomes among different hospital personnel. Moreover, key lessons that might have been learned from previous infectious outbreaks had not been translated well into organizational policy. Hence, strong policy implementations were obtained by the HCW. Reflecting on this deficiency, nurses and midwives in this study called for cleaning and hygiene knowledge and evidence-based practice to be more deeply embedded into organizational cultures and accreditation.

The workload responsibilities of the ICP have significantly increased over time to include additional administrative tasks and reporting on regulatory compliance, occasionally covering infection prevention activities in other facilities that are a part of the healthcare system (e.g., long-term care, home care, and outpatient settings). Only essential functions are regularly completed on a regular basis, and fewer essential functions are completed when time permits due to the expanding scope of ICP responsibilities being carried out with constrained time and resources. (Collen, 2019).

**Table 9**

*Difference in the level of management of Health Care Workers towards Covid-19 Response in the area of Environment and Waste Control when grouped and compared according to variables*

Variable	Category	N	Mean Rank	Mann Whitney U	p-value	Sig. level	Interpretation
<b>Age</b>	Younger	90	89.75	3667.500	0.950		Not Significant
	Older	85	86.15				
<b>Sex</b>	Male	86	88.22	3808.500	0.949	0.05	Not Significant
	Female	89	87.79				
<b>Length of Service</b>	Shorter	77	91.69	3489.000	0.326		Not Significant
	Longer	98	85.10				



The findings show no significant difference in the variable of age, sex, and length of service. This would mean that females regardless of positions assigned in different areas in the hospital were responsible for prepared to several strategies to handle environmental and preventive measures to limit transmissions through waste control and monitoring. All of which shaped HCWs' experiences. Leadership differed among female and male HCWs, but there was consensus over the qualities that constitute strong management among female groups: early preparation, transparency, a sense of reciprocity, trust, and open communication with all levels of female HCWs visible to them.

This also implies that the higher level of compliance was also significantly associated with working in a designated team and having chronic conditions among the respondents among high-risk and inpatient groups. The standard precautions are the most important elements to reduce cross-transmission among HCWs and patients while the management to handle infection control and prevention policy would increase compliance among the group. Overall suboptimal compliance and poor views on the infection prevention and control guidelines a warning signals to the healthcare system especially during pandemics in gender characteristics.

Findings confirmed by Wong, (2021), the respondents were dissatisfied with workplace infection and prevention policy in terms of comprehensiveness, clarity, timeliness, and transparency. For the protective behavior, the respondents did not fully comply with the standard precautions when they were involved in medical care. Their compliance was relatively low when having proper patient handling and performing invasive procedures.

**Table 10**

*Difference in the level of difficulties encountered of Health Care Workers towards Covid-19 Response when grouped and compared according to variables*

Variable	Category	N	Mean Rank	Mann Whitney U	p-value	Sig. level	Interpretation
<b>Age</b>	Younger	90	84.58	3517.000	0.355		Not Significant
	Older	85	91.62				
<b>Sex</b>	Male	86	90.22	3636.000	0.566	0.05	Not Significant
	Female	89	85.85				
<b>Length of Service</b>	Shorter	77	81.92	3304.500	0.156		Not Significant
	Longer	98	92.78				

The finding shows no significant difference in demographic characteristics in the level of difficulties encountered by Health Care Workers toward Covid-19 Response. The results showed that HCWs in a primary hospital in northern Negros had the same issues or challenges with COVID-19. However; some areas need to consider and practices that need to adopt. It also implies continuous public health education of HCWs on SARS-COV-2 infection control and prevention.

Ocon et al., (2020), shared on the difficulties with target audiences were reported by 20.2 % of participants, with the primary HCW being the worst. Psychological distress was reported by 48.8 % of participants, with no significant differences among institutions. Shortages of supplies, staffing capacities, and psychological distress were the most serious problem in the prevention and control of COVID-19. Resources shortages among frontline workers, difficulties in communication and coordination in non-primary, and difficulties with target audiences deserve attention. This study will provide scientific shreds of evidence for improving the national public health emergency management system, especially for reducing the urban-rural differences in emergency response capacity.

**Table 11**

*Relationship between the level of knowledge and the level of management of Health Care Workers towards Covid-19 Response*

Variable	rho	p-value	Sig. level	Interpretation
<b>Level of Knowledge Level of Management</b>	0.370	0.000	0.01	Significant

Table 11, showed that HCW thought that wearing PPE will reduce the chances of getting Covid 19, majority of the respondents had high level of knowledge about the virus. The level of knowledge and proper attitude was significantly associated towards covid 19 in the prevention management to control of the virus. The HCW are knowledgeable about the Covid-19 and are proactively practicing the preventive measures to minimize the spread of infection. Optimistic attitude must be enhanced, educational programs related to covid must be constantly updated that will highly contribute to improving the healthcare workers knowledge and attitudes towards Covid 19.

This study finding supported by Almohammed et al., (2021), entitled, "Knowledge, Attitude, and Practices Associated With COVID-19 Among Healthcare Workers in Hospitals: A Cross-Sectional Study in Saudi Arabia." The medical staff were more likely to have adequate knowledge and comply with appropriate infection prevention and control practices most of the time. This comes in the light of the fact that improvement in knowledge positively influences attitudes and practice. The authors recommend continuous professional development programs for all



HCWs in hospitals targeting heightened awareness and supporting programs to maintain the emotional well-being for HCWs with the continuation of the pandemic.

### Conclusion:

The research paper revolved in level of knowledge, management (Infection control, Environment and Waste control) and difficulties of HCW towards the Covid 19 pandemic in Cadiz District Hospital. With the data gathered, it is likely to conclude that the level of knowledge of the health care workers towards Covid 19 showed reasonable grasps in the area of Infection control, environment and waste control. Almost all of the participants had adequate knowledge about the dreadful virus and the preventive measures they require keeping themselves safe and protected. The use of face masks and face shields at all times, proper waste segregation and bending of needles are not allowed were among the religiously practiced by most of the participants. With regard to the level of management, the participants played a critical role in making strategic decisions in preventing contracting the virus, and mitigating the staff members. Further, the use of appropriate and proper usage of PPE, must be devotedly executed in every exposure to Covid 19 patients. The results that were frequently mentioned indicate that the HCWs have their fears to transmit the infection to their families as well as belief that the disease is highly transmissible. The No PPE no duty and the delay in testing kits and turn-around time of the result, were perceived as difficulties encountered by the HCW. The HCWs are the frontline defense in our war against Covid 19. The result garnered a constructive feedback and develops strategized plans in the area of Infection control, environment and waste control. Difficulties identified, opens the room for improvement, trainings, and education campaigns needed by the HCW as well as support from the chief and administration of the institution. Results of this study calls for the healthcare workers and administrators to continuously support the adaptation of the repeated revisions of the newly created protocol in the management of the dreadful virus, provide an appropriate and comfortable PPE, and enough number of staff must be increased to support in the workplace for the HCW to function properly.

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