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RESEARCH ARTICLE

KNOWLEDGE, ATTITUDE AND PRACTICESAMONGPRIMARY CARE WORKERS ON INFECTION, PREVENTION AND CONTROL AMIDST THE COVID-19 PANDEMIC

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Abstract

Insufficient awareness of infectious diseases among primary care workers results in delayed detection of new cases, the spread of infection, and inadequate infection control methods. Therefore, primary care workers must be well-informed about infection, prevention, and control procedures and guidelines in order to wage an effective war against COVID-19. This study seeks to examine the knowledge, attitudes, and behaviors (KAP) of healthcare workers regarding infection, prevention, and control in the context of COVID-19 in several primary care facilities in Baguio City. Between March and April 2022, a descriptive, correlational online questionnaire-based study was conducted. Using ANOVA and Pearson r, differences in the degree of KAP among diverse subjects were evaluated. A total of 119 HCWs from primary facilities responded to the survey. Overall, respondents had general level of IPC knowledge (AWM of 3.69), had laid-back attitudes, and consistently used 9/10 indicators. Poor KAP performance was associated with inadequate training. The female employees were more knowledgeable and had a more positive attitude, but the male employees were more likely to practice appropriately on a regular basis. Notably, participants from the nursing profession exhibited a less positive attitude than those from other medical professions. Nevertheless, they had to be the best at employing appropriate techniques. The inadequacy of KAP among Primary care workers, coupled with the persistence of the pandemic, highlights the need for sustained COVID-19-specific infection control training, which should be incorporated into the annual operational planning.

Introduction:-

Background of the Study

Infections contracted in a primary healthcare facility that were not present orincubating at the time the client was admitted are referred to as healthcare-related infections. It is also known as an infection acquired in a hospital. It also covers infections among medical staff and infections that manifest symptoms after the patient is discharged. The majority of these diseases are spread by healthcare workers who do not wash their hands properly or change their gloves in between client interactions (Delaune, 2019).

All blood, bodily fluids, secretions, excretions (aside from perspiration), non-intact skin, and mucous membranes may contain transmissible infectious pathogens, according to the general precautionary principle. As it broadens the

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scope of universal precautions by acknowledging that any bodily fluid may include infectious and deadly germs, standard precautions have taken the position of "universal precautions." Hand washing, wearing the proper PPE, using an aseptic method to prevent patient exposure to pathogens, and managing sharps, blood spills, linen, and garbage to maintain a safe environment are all considered standard precautions (Abou El-Enien, 2018).

Standard precautions compliance by healthcare workers (HCWs), including nursing and medical students, has been acknowledged as an effective method of preventing and controlling healthcare-associated infections. These procedures safeguard the environment, HCWs, and patients. Hand washing is regarded as the most crucial precaution among the general ones recommended (Garcia-Zapata, 2019). The proper usage of gloves, which are meant to protect both the patient and the HCWs, is another crucial safeguard. Adopting appropriate procedures for handling needle sticks and other sharp objects is another preventive action that should be included due to the potential for outbreaks, particularly of Hepatitis B and C, which are commonly linked to the provision of healthcare (Eshetu, 2020).

The new Corona Virus, or COVID-19, triggered a pandemic that spread quickly from nation to nation with increasing infection rates and fatalities. All hospitals and healthcare facilities now prioritize responding to large numbers of infected patients while maintaining the safety of frontline staff. At the same time, non-essential employees were advised to stay at home in areas with high illness rates (Scerbo, 2020).

A significant cause of worry is how the COVID-19 epidemic may affect vital medical services. Humanitarian crises brought on by armed conflict or disease outbreaks like Ebola have proven that significant health advances made over the past 20 years can be reversed fast (1, 2). In particular, the most vulnerable populations, such as children, the elderly, those with chronic conditions or disabilities, and minority groups, are likely to suffer gravely from the collapse of essential health services, including health promotion, preventive services, diagnosis, treatment, and rehabilitative and palliative services (WHO, 2020).

Supply and demand considerations are essential. People may avoid using medical services because they will contract COVID-19. Closing health facilities or services or reallocating resources to combat the COVID-19 pandemic could impact how well health services are run. Commodity and medication supplies may be interrupted. Additionally, societal responses to the epidemic, such as a rigorous lockdown, may impact people's socioeconomic circumstances and capacity to access the required healthcare.

Tracking access to vital health services during the pandemic is critical to strike the right balance between combating the COVID-19 epidemic and maintaining these services. Countries must have identified the fundamental services that must continue to be provided during the pandemic as part of their response to monitor how these services are being impacted and to keep track of any changes as the epidemic progresses. Data on the pandemic's effects at the local, national, and worldwide levels are also required to argue for funding for the most impacted nations and people and help focus efforts on preserving health services for those who most need them.

Thus, the pandemic has drastically changed our lives on a personal and professional level. Sadly, we have witnessed all-time highs for infections, fatalities, shattered economies, and domestic and overseas unemployment. Even those not immediately impacted by the virus feel its tug on the thread of humanity. Restricting social gatherings affects the shared experiences we value most, such as attending concerts and athletic events, convocations, and times of worship with our community.

In terms of healthcare, maintaining a healthcare facility throughout this pandemic and controlling the spread of COVID-19 depend on the prevention, control, knowledge, attitudes, and practices of healthcare personnel against infectious diseases. If healthcare had not embraced simulation 15 to 20 years ago, the mortality rates would have been higher, according to international statistics on the spread of COVID-19. When this pandemic first appeared, the facilities and staff needed to quickly teach medical staff how to treat COVID-19 patients while also staying safe were already in place. Healthcare simulation is now necessary, as evidenced by the fact that so many simulation centers have experienced unprecedented demand during this pandemic. Additionally, the skillful manner in which simulationists have adopted distance simulation approaches in response to social distancing guidelines speaks powerfully to the resiliency of our community of practice.

To support these, the article "Knowledge, Attitude, and Practices Associated With COVID-19 Among Healthcare Workers in Hospitals: A Cross-Sectional Study in Saudi Arabia" by Almohammed et al. (2021) provides evidence. Discusses how a lack of knowledge about infectious illnesses among healthcare professionals (HCWs) results in delayed detection of new cases, infection transmission, and subpar infection control procedures. HCWs working in hospitals must therefore be well-versed in the disease and pathogen to combat the virus effectively. In numerous public and private hospitals in Riyadh, Saudi Arabia, this study sought to evaluate the knowledge, attitude, and practices (KAP) of HCWs on the coronavirus disease of 2019 (COVID-19). Between July and August 2020, a cross-sectional online questionnaire survey was carried out. Investigating variations in KAP levels among various participants was done using logistic regression.

In another self-developed piloted KAP questionnaire was given to the recruited healthcare workers involved in the COVID-19 response at the Universal College of Medical Sciences Teaching Hospital (UCMSTH) in Bhairahawa, Nepal. The study was titled "Healthcare Workers' Knowledge, Attitude and Practices during the COVID-19 pandemic response in a tertiary care hospital of Nepal" by Limbu et al. (2021). The knowledge questionnaire asked questions about COVID-19's clinical features, management, and prevention. Questions about behavior and practice change in response to COVID-19 were included in assessing attitudes and practices. In relation to COVID-19, knowledge scores were calculated and compared by demographic traits, attitudes, and practices. Bivariate statistics were applied to the data analysis.

The COVID-19 pandemic is a challenging clinical, organizational, and system-wide public health catastrophe. Many health research vantage points are required to handle and track this situation. Performance intelligence is a method that highlights the need for various research vantage points to assist decision-makers in health systems in making decisions based on sound information (Kingos et al., 2020).

High-income nations follow standard precautions to guard HCWs against occupational blood exposure and the ensuing risk of infection with blood-borne pathogens. Low-income nations see a different issue because standard safeguards are only partially followed there (Dante, 2018).

Assessing the necessary knowledge, attitude, practice, and skill on infection prevention and factors in healthcare facilities as early as possible can give way to managing the limited resource available in the sector for health providers and customers in the Philippines, where the healthcare service is primarily covered by low and midlevel health professionals (Eshetu, 2020).

Barangay Health Emergency Response Teams, or BHERTs, often link locals to healthcare institutions, but their role is crucial in times of emergency. These neighborhood-based teams spearhead initiatives to slow the spread of COVID-19 and locally limit the pandemic by educating the public about the risks, facilitating contact tracing, and tying together small communities with larger local health systems. Additionally, Local Government Units (LGUs) work to guarantee that BHERTs in hotspot communities are active, efficient, and trained on crucial components of the COVID-19 community response, such as necessary behaviors to stop the virus' spread, infection prevention and control, contact tracing, and quarantine and isolation (USAID, 2020).

In contrast, Baguio City in the Cordillera Administrative Region has received praise for its regional COVID-19 response and contact tracing strategy, spearheaded by Mayor Benjamin Magalong. A World Health Organization delegation headed by Dr. Takeshi Kasai, WHO Regional Director for the Western Pacific, Dr. Rabindra Abeyasinghe, WHO Representative in the Philippines, and Dr. Gerardo Bayugo, DOH Undersecretary for Health-Field Implementation and Coordination, visited Baguio City and the nearby provincial capital La Trinidad on July 10 to exchange knowledge and identify best practices in contact management.

The team visited COVID-19 response centers and facilities, including the La Trinidad Operations Center at Municipal Gym, the Provincial Temporary Treatment and Management Facility at Wangal, Benguet, and the Baguio City Community Isolation Unit at Sto. Nino Hospital, and the accredited subnational laboratory. Local chief executives and members of the Inter-Agency Task Force on Emerging Infectious Diseases (IATF) of Baguio City and Benguet briefed the team.

In order to share best practices and insights on enhancing preparedness and response to COVID-19, the WHO and DOH joint delegation met with the Department of Health Center for Health Development (DOH-CHD)-Cordillera

OIC Regional Director, Dr. Amelita M. Pangilinan, and her staff, local officials from Baguio City and Benguet, and members of the Regional IATF.

The delegation was also informed by Benjamin Magalong, mayor of Baguio City, of their contact tracing plan. Contact tracing, together with isolation, testing, and treatment, is one of the crucial pillars in our fight against COVID-19, and I cannot underscore its importance enough. Contact tracing must be completed fast and efficiently for the other pillars to function. According to Mayor Magalong, it is crucial to employ various analytical tools and cognitive interviewing techniques.We are implementing innovations, but they mainly depend on local chief executives' strong leadership and active participation. To build a robust and comprehensive response to this war, the health sector, law enforcement, the community, and local government must work seamlessly together. We will heal together if we work together.

Baguio General Hospital's efforts to implement the Universal Health Care Law and take part in the WHO Solidarity Trial to investigate potential COVID-19 treatments were praised by Dr. Abeyasinghe. He also emphasized the cooperation and diligence of the people in the province of Benguet, whose vital workers braved difficult terrain and steep mountains to transport supplies to isolated populations under quarantine.

Due to the collaboration between local and health officials, Baguio City is far ahead in its contact tracking. This needs to be done in additional LGUs in the Philippines, according to Dr. Abeyasinghe.

To handle and monitor this problem, many research perspectives on health are required, as Kingos et al. (2020) noted. This highlights the necessity of several research vantage points in aiding policymakers in health systems in making informed decisions.

Thus, it is suggested to conduct the study titled "Knowledge, Attitude, and Practices of Primary Care Workers on Infection, Prevention, and Control amidst the COVID-19 Pandemic."

Theoretical/ Conceptual Framework

The nursing theory of Patricia Benner, "The Novice to Expert Model," published in 1982, is derived from the Dreyfus Model of Skill Acquisition and focuses on how a person acquires new skills and knowledge from the novice stage to the expert stage (Davis & Maisano, 2016; Gentile, 2012). In addition, this model is based on how a nurse acquires nursing knowledge, skill, clinical competence, and an understanding of patient care through comprehensive theoretical training and experiential learning from the novice to the expert stage (Davis & Maisano, 2016; Homard, 2013; Walker-Reed). The progression through these phases is influenced by clinical experience and tenure in the profession (Blum, 2010).

At the novice level, health professionals have no practical experience and only theoretical knowledge. They lack information on transferring new knowledge and skills to their applications when confronted with distinct situations. (Brykczynski, 2017; Thomas & Kellgren, 2017) Novice practitioners can be termed honeymoon practitioners, and they progress to the advanced beginner level over time. For patient care, advanced novice employees still require the assistance of experienced nurses. They prioritize the completion of all prescribed treatments and procedures over personalized nursing care. The competent stage is characterized by the development of new procedures, new clinical knowledge, and the acquisition of procedures for managing patient care, as well as the acquisition of ethical behaviors. At the proficient level, healthcare professionals demonstrate the ability to adapt to new situations. (Benner, Tanner, & Chesla, 2009; Brykczynski, 2017) Skilled healthcare professionals are able to plan patient care in accordance with the patient's actual conditions, concerns, and requirements due to their critical thinking abilities.

In relation to the study, Benner explains that the theory-practice divide exists because nurses require additional training in practice to attain an exceptional level of professional knowledge. In addition, an understanding of the Infection, Prevention, and Control of COVID-19 will result in greater comprehension of the practice. It will aid the Infection, Prevention, and Control Officer or safety officer in planning and disseminating pertinent education and information to reduce the risk of infection.

The Knowledge-to-Action Framework (KTA)

This framework is recommended as a means of enhancing implementation efforts through the application of theory. Graham and colleagues devised the Knowledge to Action (KTA) Framework in Canada in the 2000s after reviewing

31 planned action theories. Each component of the framework, the knowledge creation and action cycle, consists of multiple phases. The framework is depicted in the figure below.

At the heart of problem-solving in health care is the identification of problems and the formulation of those problems into queries that can be answered using established scientific methods. For some problems, solutions may already exist in existing knowledge sources (published research literature, guidelines, etc.), whereas for others, novel solutions must be discovered through the conduct of relevant research.

On the other hand, experience has shown, however, that implementing research-based knowledge in the context of health care is difficult and fraught with obstacles. Prior to implementation, therefore, available research data must be synthesized and the resulting knowledge contextualized.

In addition, interventions to implement evidence-based knowledge in practice may need to be modified to surmount particular regional obstacles. A detailed cyclical process has been outlined for the generation of new knowledge and the implementation of existing and new solutions. (Graham et al. refer to this framework as "knowledge-to-action")

For the process to run smoothly, it is essential to remain vigilant for problems at each stage of knowledge generation, synthesis, and exchange and to document them in reports, discussion forums, clinical logs, or research papers so that researchers and other experts can identify them and devise a solution.

For instance, researchers can identify knowledge deficits during the research process itself. They can also be identified during knowledge synthesis and guideline development using evidence-grading systems to assess the reliability of available knowledge. Aware program managers are also able to identify barriers to the implementation of knowledge in their respective practice environments. The WHO/HRP*/RHR Department has made the dynamic, continuous integration of these stages in maternal and perinatal health a top priority.

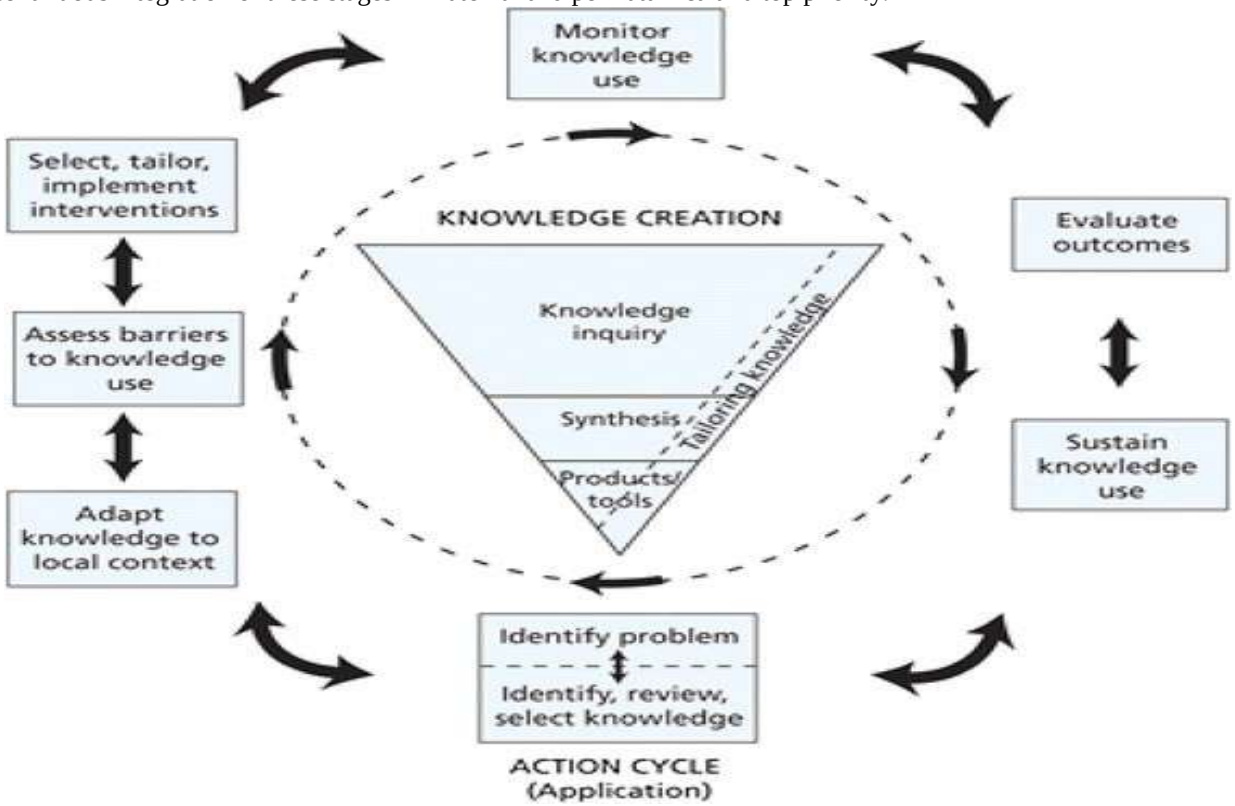

Figure 1:- The Knowledge to Action (KTA) Framework.

Due to the following factors, the KTA framework aligns with the present investigation. It consists of two distinct but interconnected elements: (i) Knowledge Creation (represented by the funnel) and (ii) the Action Cycle. Each component consists of multiple phases that overlap and can be iterative; Graham and his coworkers characterize the phases as "dynamic" and "able to influence one another." Action phases may be executed sequentially or

concurrently; knowledge phases may have an effect on action phases. In addition, the Action Cycle defines a process that represents the activities necessary for knowledge to be applied in practice; knowledge is adapted to the local context, and barriers and facilitators to its use are assessed explicitly. It is essential to involve stakeholders and tailor the knowledge to the requirements of those who will use it.

In addition, the KTA Framework was implemented with varying degrees of thoroughness. Frequent citations range from simple attribution via a reference to informing planning to making an intellectual contribution. When the framework was an integral part of knowledge transfer, it directed action in idiosyncratic ways, and there was theory fidelity. Although conventional wisdom encourages the use of theories, models, and conceptual frameworks, their practical application is less evident.

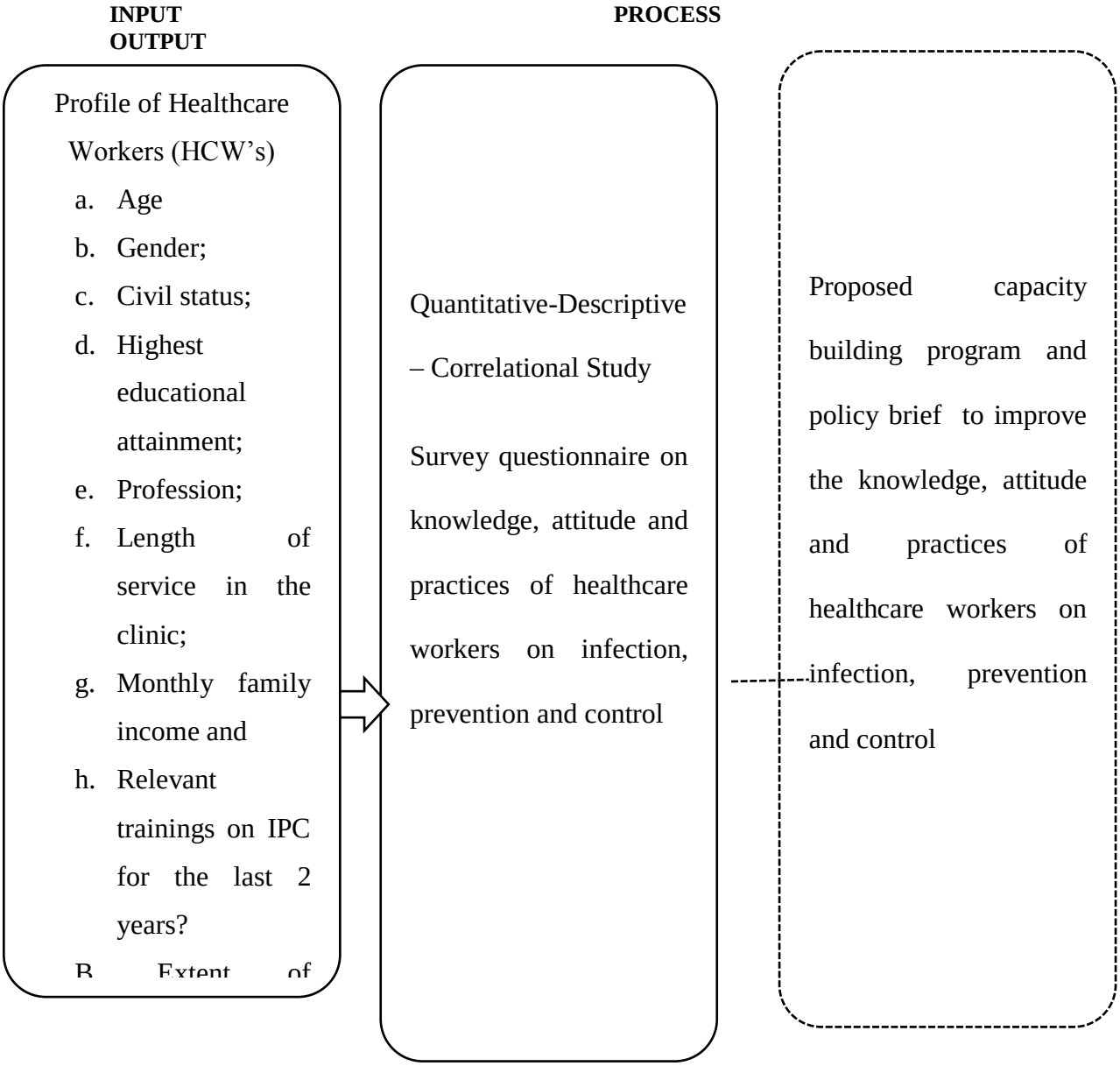

Figure 2:- Paradigm of the Study.

Statement of the Problem

This study aimed to determine the knowledge, attitudes and practices of health care workers on infection prevention and control in various primary clinics in Baguio City.

Specifically, this study sought to answer the following sub-problems:

1. What is the profile of the respondents in different primary clinics in terms of the following attributes?
a. age;
b. gender;
c. civil status;
d. highest educational attainment;
e. profession;
f. length of service in the clinic;
g. monthly family income and
h. relevant trainings on IPC for the last 2 years?
2. What is the extent of knowledge of the health care workers on infection prevention and control?
3. What are the attitudes of the health care workers infection prevention and control?
4. What are the practices of the health care workers on infection prevention and control?
5. Is there a significant difference between the perceived KAP of healthcare workers when grouped accordingly with their profile variables?
6. Is there any significant relationship between the perceived KAP of healthcare workers and their profile variables?
7. What propose capacity building program and policy brief can be formulated to improve the KAP of the respondents?

Null Hypotheses

The following null hypotheses, stated in their null form, will be tested at 0.05 level of significance

1. There was no significant difference between the perceived KAP of healthcare workers when grouped accordingly with their profile variables.
2. There was no significant relationship between the perceived KAP of healthcare workers and their variables.

Chapter 2

Methodology:-

Research Design

This study's primary objective is to describe healthcare employees' knowledge, attitudes, and practices (KAP). The Knowledge, Attitude, and Practices (KAP) survey is a quantitative method (predefined questions formatted in standard questionnaires) that provides quantitative and qualitative data. Consequently, the results of the KAP survey are correlated with certain profile variables of primary clinic healthcare employees. In effect is descriptive-correlational research.

This research is correlational in nature. Correlational research is a non-experimental method in which two variables are measured, and the statistical relationship between them is understood and evaluated without the influence of any extraneous variable. Thus, the correlation coefficient demonstrates the relationship between two variables. A correlation coefficient is a statistical measure that calculates the intensity of the relationship between two variables. When the correlation coefficient is near 1, the relationship between the two variables is positive. If the value is near -1, the correlation between the two variables is negative. There is no relationship between the two variables when the value is close to zero (Sausa et al., 2020).

Population and Locale of the Study

The study was conducted in Baguio City with respondents selected specifically from primary care facilities employing healthcare professionals. There were physicians, nurses, midwives, and sanitarian inspectors among the health employees.

In this study, the required sample size of 115 respondents was determined using G*Power 3.1.9.7 Software, a one-tail Correlation for the Bivariate normal model, and a significance level of = 0.05.
Consequently, using 119 samples yields five respondents for each of the sixteen district health centers and one health services office.Samples were collected from sixteen (16) district health centers and one (1) health services office in Baguio City, Benguet, Philippines, from which healthcare personnel were selected as study respondents.

Non-probability sampling was employed by the researcher. Convenience sampling (also known as Accidental Sampling or Haphazard Sampling) is a type of nonprobability sampling in which members of the target population meet certain practical criteria, such as easy accessibility, geographical proximity, availability at a given time, or willingness to participate. Convenience samples are sometimes referred to as "accidental samples" due to the fact that elements of the sample may be selected based solely on their spatial or administrative proximity to where the researcher is collecting data (Etikan, 2016).

Data Gathering Tools

In gathering relevant data, a questionnaire checklist was used. It had four (4) parts: Part I, on the profile of healthcare workers; Part II on the Knowledge of HCW's on IPC; Part III, on the attitude of HCW's on IPC and Part IV was the practices of healthcare workers on Infection Prevention and Control.

The survey questionnaire utilized was patterned from the study of Al-Ahmari, Ahmed. et al., 2021 entitled Knowledge, Attitude, and Practices about infection control among primary care professionals in Abha City, Kingdom of Saudi Arabia.

Data Gathering Procedure

During the conduct of the study, the researcher sought permission from the Dean of the Graduate School and Health Services Office.

In the surge of COVID-19 cases, the researcher was not able to personally float the questionnaire; a Google Form link was sent to the respondents. Constant follow-ups were done to update the respondents in answering the link provided.

Treatment of Data

The data gathered were tabulated, analyzed and presented in textual and tabular form.
For **sub-problem number 1**, Frequency counts and percentages were used.

Below is the formula:

$$P = \frac{F}{N} x\ 100$$

Where:
P = percentage of the response
F = frequency of the persons
N = total number of the populations

To answer **sub-problem number 2, 3** and **4**, Average Weighted Mean (AWM) was utilized. The obtained frequencies for each alternative response were multiplied by the assigned weights in the selected point, from the highest to lowest, the total number of frequencies will be divided by the number of respondents to find the average weighted mean. The obtained weighted averages or mean was the basis for the verbal description of the responses of the evaluators to a given item.

Below is the formula:

$$WM = \frac{\sum wf}{N}$$

Where:

WM = Weighted Mean
w = weight
f = frequency
∑wf = summation of weight times frequency
N = total number of respondents

In interpreting the datagathered on the KAP evaluation, the following matrix were utilized.

Mean interpretation

Description

Scale	Knowledge	Attitude	Practices
4.21-5.00	Highly Knowledgeable	Strongly Agree	Always
3.41-4.20	Very Knowledgeable	Agree	Often
2.61-3.40	Knowledgeable	Neutral	Sometimes
1.81-2.60	Slightly Knowledgeable	Disagree	Seldom
1.00-1.80	Not Knowledgeable	Strongly Disagree	Never

For **sub-problem number5,** on the significant difference and relationship between the perceived KAP of healthcare workers when grouped accordingly with their profile, Analysis of variance (ANOVA) was utilized.

ANOVA is also called the Fisher analysis of variance, and it is the extension of the t- and z-tests. The term became well-known in 1925, after appearing in Fisher's book, "Statistical Methods for Research Workers. It was employed in experimental psychology and later expanded to subjects that were more complex.The Formula for ANOVA is:

F = MST / MSE

Where:

F=ANOVA coefficient

MST=Mean sum of squares due to treatment

MSE=Mean sum of squares due to error

For **sub-problem number 6,** on the significant relationship between the perceived KAP of healthcare workers and profile of the healthcare clinics; profile of the healthcare workers. Pearson r Correlation Coefficient was utilized.

Correlation is a bivariate analysis that measures the strength of association between two variables and the direction of the relationship. In terms of the strength of relationship, the value of the correlation coefficient varies between +1 and -1. A value of ± 1 indicates a perfect degree of association between the two variables. As the correlation coefficient value goes towards 0, the relationship between the two variables will be weaker. The direction of the relationship is indicated by the sign of the coefficient; a + sign indicates a positive relationship and a – sign indicates a negative relationship. Usually, in statistics, we measure four types of correlations: Pearson correlation, Kendall rank correlation, Spearman correlation, and the Point-Biserial correlation.

FOR Pearson Product Moment Correlation

Size of Correlation	**Interpretation**
±0.91 to ±1.00	Very High Positive / Negative Correlation
±0.71 to ±.90	High Positive / Negative Correlation
±0.51 to ±7.00	Moderate Positive / Negative Correlation
±0.31 to ±0.50	Low Positive / Negative Correlation
±0.00 to ±0.30	Negligible Correlation

Chapter 3

Results and Discussion:-

This chapter interprets, presents and analyzes the data of the study. It presents data according to the posted problems of the study.

Profile of the Respondents

Table 1 displays the respondent's age, gender, marital status, highest educational attainment, position, monthly family income, duration of service, and training on IPC received within the past two years.

In terms of age, the majority were between 41 and 45 years old (35.29%), followed by 36 to 40 years old (27.73%), and the youngest were between 31 and 350 years old (5.01%).

The majority of them were female (62 or 58.00%), while only 50% or 42.00% are male. In terms of civil status, most of them were married (59.60%), followed by unmarried (38.70%).

The majority of them had attained a bachelor's degree (92,43%), while a small percentage had completed graduate school (7,56%). The majority of respondents reported a monthly family income between $30,000 and $40,000 (39.50%), followed by $40,000 to $50,000 (32.80%) and $50,000 or more (3.40%).

The majority of respondents reported 6 to 10 years of service (44.60%), followed by 1 to 5 years (28.60%), and then 20 years or more (1.70%).

The majority of relevant IPC trainings over the past two years were rated as 1 to 2 (53.8%), followed by 3 to 4 (30.30%). And the lowest score was 0.80% for 6 above.

These findings parallel those of Iliyasu et al. (2016), who analyzed a total of 200 responses, of which 152 were nurses and 48 were physicians. The median age and years of professional experience of the respondents were 35 (IQR 31–39) and 7 (IQR 4–12), respectively. This entails that majority of the healthcare workforce who participated in the study were in the nursing and medical profesion.

Table 1:- Profile of the respondents.

Variable	Category	frequency	Percentage
Age	24-30 years old	18	15.13
	31- 35 years old	6	5.04
	36 -40 years old	33	27.73
	41- 45 years old	42	35.29
	46 to 50 years old	12	10.08
	51 to 55 years old	8	6.27
Gender	Male	50	42.00
	Female	69	58.00
Civil Status	Single	46	38.70
	Married	71	59.60
	Separated	1	0.84
	Cohabitated	1	0.84
Highest Educational Attainment	Bachelor's Degree	110	92.43
	Post Graduate Diploma	9	7.56
Profession	Physician	6	5.00
	Nurse	102	85.70
	Midwife	7	5.90
	Sanitary Inspector	4	3.40
Monthly Family Income	P20,000.00 - P30,000.00	29	24.40
	P30,000.00 - P40,000.00	47	39.50
	P40,000.00 - P50,000.00	39	32.80
	P50,000.00 and above	4	3.40
Length of Service	1-5 years	34	28.60
	6-10 years	53	44.60
	16-20 years	30	25.20
	20 years and more	2	1.70
Relevant Trainings on IPC for the last two years	1-2	64	53.80
	3-4	36	30.30
	5-6	18	15.10
	6 and above	1	0.80

Table 2 presents the extent of knowledge of the health care workers on infection prevention and control along ten indicators, rated through a 5-point Likert scale as 5 = highly knowledgeable, 4 = very knowledgeable, 3 = knowledgeable, 2 = slightly knowledgeable, and 1 = not knowledgeable.However, they revealed that they were very knowledgeable, being sensible that there is a written program for dissemination, implementation, and monitoring of infection control policies, guidelines, and procedures (3.456 AWM) and knowledgeable that there is a functional Infection Control Committee (3.25 AWM).

It demonstrates how well-informed and knowledgeable the respondents were overall. They had AWM means ranging from 4.24 to 4.52, which indicated that they were extremely knowledgeable across 5 of the 10 (5/10) factors. However, with AWM ratings ranging from 2.65 to 3.25 for 5 of the 10 (5/10) indications, knowledge. To

elaborate, the indicators of AWM knowledge include the following: the operation of the infection control committee, the presence of a full-time IPC officer, the existence of a written program for IPC implementation and monitoring, the goals and objectives of PCFs with regard to IPC, and finally the IPC procedure in the event that someone passes gas in a particular area.

In terms of healthcare, the prevention, control, knowledge, attitudes, and practices of healthcare workers against infectious diseases are vital in the control of the spread of COVID-19, as is keeping a healthcare unit essential during this time of the pandemic. Based on international statistics on the spread of COVID-19, the mortality rates would have been higher had healthcare not embraced simulation 15 to 20 years ago. The infrastructure and personnel to rapidly train healthcare providers to treat COVID-19 patients and to remain safe were already established when this pandemic emerged. That so many simulation centers have seen unprecedented demand during this pandemic underscores the reality that healthcare simulation is now essential, and the deftness with which simulationists have adopted distance simulation approaches in response to social distancing guidelines speaks powerfully of the resilience of our community of practice.

To support these, the study by Almohammed et al., titled "Knowledge, Attitude, and Practices Associated With COVID-19 Among Healthcare Workers in Hospitals: A Cross-Sectional Study in Saudi Arabia," explains that a lack of knowledge about infectious diseases among healthcare workers (HCWs) leads to delayed diagnosis of new cases, the spread of infection, and poor infection control practices. Therefore, hospital-based HCWs must be well-informed about the pathogen and disease in order to mount an effective defense against the virus. The purpose of this study was to evaluate the knowledge, attitude, and practices (KAP) of healthcare workers (HCWs) regarding coronavirus disease 2019 (COVID-19) in multiple public and private hospitals in Riyadh, Saudi Arabia. In July and August 2020, a cross-sectional online questionnaire-based study was conducted. Using logistic regression, discrepancies in KAP levels among participants were investigated.

In another study titled "Healthcare workers' knowledge, attitude, and practices during the COVID-19 pandemic response in a tertiary care hospital of Nepal" by Limbu et al. (2021) administered a self-developed piloted KAP questionnaire to the recruited healthcare workers involved in the COVID-19 response at the Universal College of Medical Teaching Hospital (UCMSTH), Bhairahawa, Nepal. The knowledge questionnaire asked about the clinical characteristics, prevention, and treatment of COVID-19. The assessment of attitudes and practices regarding COVID-19 included queries regarding behavior and practice modification in response to COVID-19. Knowledge scores were computed and contrasted according to demographic characteristics, attitudes, and practices regarding COVID-19. Using bivariate statistics, we analyzed the data.

Table 2:- Extent Knowledge of the Health care workers on Infection Prevention and Control.

Indicators	**Mean**	**Interpretation**
1. I am aware that there is a functional Infection Control Committee.	3.25	Knowledgeable
2. I am cognizant that there must be one (1) full time Infection Control officer or safety officer in the health facility.	3.33	Knowledgeable
3. I am sensible that there is a written program for dissemination, implementation and monitoring of infection control policies, guidelines and procedures.	2.65	Knowledgeable
4. I am mindful that the primary clinics must have defined goals, objectives, strategies and priorities to achieve an effective infection control program in the healthcare facility.	2.75	Knowledgeable
5. I am aware that dirty needle and sharp materials can transmit diseases.	4.24	Highly Knowledgeable
6. I am conscious of standard precautions should be observed on all patients irrespective of diagnosis.	4.52	Highly Knowledgeable
7. I am mindful that sharps should never be recapped.	4.45	Highly Knowledgeable
8. I am familiar that needles should be bent or broken after use.	4.27	Highly Knowledgeable
9. I am informed that when a patient vomits, the first step in infection control procedure is to isolate infected area.	2.90	Knowledgeable
10. I am aware that appropriate immediate action after pricking finger by IV-line needles is dressing wound and to inform the infection control supervisor.	4.58	Highly Knowledgeable

Total AWM		**3.69**	**Very Knowledgeable**
Legend:	Statistical range	Descriptive equivalent	
	4.21-5.00	highly knowledgeable	
	3.41-4.20	very knowledgeable	
	2.61-3.40	knowledgeable	
	1.81-2.60	slightly knowledgeable	
	1.00-1.80	not knowledgeable	

Table 3 presents the attitudes of the health care workers on infection prevention and control along 0 indicators, rated through a 5-point Likert scale as 5 = strongly agree, 4 = agree, 3 = undecided, 2 = disagree, and 1 = strongly disagree.

Their AWM ratings, which range from 3.28 to 4.95, show that the majority of respondents agree with all indicators. Thus, respondents strongly concur with six of the ten indicators. They strongly agree on observing standard precautions to prevent infection at the health care facility (4.21), being frightened when forgetting to wash or decontaminate my hands after touching things and the environment (4.21), being anxious when pricked with a used needle (4.28), panicking when I got splashed with infectious and hazardous waste (4.25), and being frightened when not wearing a well-fitted mask in enclosed areas (4.35).

However, they disclosed agreement on two indicators and disagreement on two indicators. They concur that they become agitated when I fail to properly don and doff my PPE (3.54 AWM). Moreover, they are alarmed that healthcare facilities can be the source of disease and infection epidemics (3.95 AWM). In addition, they were uncertain whether they would fear participating in the care and management of a patient with signs and symptoms of COVID-19 (3.28 AWM) and whether they would fear the high risk of occupational infection among healthcare workers (3.30 AWM).

Again, these results corroborate the findings of Iliyasu et al. (2016), who found that the majority of respondents correctly identified hand cleansing as the most effective method for preventing healthcare-associated infections (HCAI), with nurses having superior knowledge 139/152 (91%) (P = 0.001). The majority agreed that avoiding sharps-related injuries (172/200 (86%), barrier precautions (182/200 (90%), and hand hygiene (182/200) effectively prevent HCAI. Only 88/198 (44.4%), 122/198 (61.6%), and 84/198 (42.4%), respectively, of the respondents were aware of the hazards of infection following exposure to human immunodeficiency virus, hepatitis B virus, and hepatitis C virus-infected blood. About 52% of physicians and 76% of nurses (P = 0.002) always practice hand hygiene in between patient care.

These findings also parallel the theory that health worker attitudes play an important role in translating knowledge into attitudes and practices in infection prevention and control. Nightingale acted out prevention and control practices through her knowledge and attitude regarding infection prevention and control, which placed the patient in the best possible position for healing (Hegge, 2013; Gurler, 2014). In terms of environment, knowledge, attitudes, and practices affect the clinical environment. Nightingale stressed that cleanliness (sanitation, hygiene) and infection prevention and control measures in the clinical environment improve health care (Hegge, 2013; Gurler, 2014). On the patient's part, the health workers' knowledge, attitudes, and practices in infection prevention and control affect the clinical environment, which in turn impacts the patient's exposure to infection-related diseases. Nightingale focused on caring for the sick and emphasized the importance of hygiene and patient care in infection prevention and control (Hegge, 2013; Gurler, 2014).

Table 3:- Attitudes of the Health care workers on Infection Prevention and Control.

Indicators	**Mean**	**Interpretation**
1. I observe standard precautions to prevent infection at the health care facility.	4.21	Strongly Agree
2. I am frightened when I forgot to wash or decontaminate my hands after touching things and the surroundings.	4.21	Strongly Agree
3. I amanxious when pricked with a used needle.	4.28	Strongly Agree
4. I feel guilty when I break sterile technique in a certain procedure.	4.44	Strongly Agree
5. I got agitated when I break proper donning and doffing of PPE.	3.54	Agree

6. I panic when I got splashed with an infectious and hazardous waste.	4.25	Strongly Agree
7. I feel scared when not wearing a well fitted maskin closed areas.	4.35	Strongly Agree
8. I fear participating in the care and management of a patient who has signs and symptoms of Covid-19.	3.28	Neutral
9. I am alarm that health care facilities can be the source of infection and disease epidemics	3.95	Agree
10. I feel anxious due to the high risk of occupational infection among health workers.	3.30	Neutral
Total AWM	**3.98**	**AGREE**

Legend:

Statistical range	Descriptive equivalent
4.21-5.00	Strongly agree
3.41-4.20	Agree
2.61-3.40	Neutral
1.81-2.60	Disagree
1.00-1.80	Strongly disagree

Table 4 presents the practices of the health care workers on infection prevention and control along 0 indicators, rated through a 5-point Likert scale as 5 = always, 4 = often, 3 = sometimes, 2 = rarely, and 1 = never.

It reveals that respondents consistently practice nine out of ten (4.17 to 4.94) indicators. Therefore, they always practice not leaving the hospital unless absolutely necessary (4.94 AWM), sanitizing hands with alcohol-based solutions before attending to each patient (4.65 AWM), and using an alcohol-based hand sanitizer containing at least 60% alcohol if water and soap are not readily available (4.64 AWM). Nonetheless, they frequently practiced the two-meter distance for physical distance (4.17 AWM).

This study agrees the study of Almohammed et.al. (2021) stating that the lack of practices among healthcare workers (HCWs) about infectious diseases leads to delayed diagnosis of new cases, spread of infection, and poor infection control practices.

Table 4:- Practices of the Health care workers on Infection Prevention and Control.

Indicators	**Mean**	**Interpretation**
1. If I or anyone close to me develop any COVID-19 symptoms, I will seek or recommend others to seek medical attention.	4.36	Always
2. When I am putting on the personal protective equipment (PPE), I follow the following order: Suit-mask-googles-gloves.	4.31	Always
3. I have been careful not to carry my mobile phone/pen, etc… inside a COVID area.	4.21	Always
4. I don't go out unless it's necessary.	4.94	Always
5. When I finish my shift, I dispose the PPE and scrub thoroughly before entering home / quarters.	4.92	Always
6. I sanitize my hands with alcohol-based solutions before attending to each patient.	4.65	Always
7. I triage each and every patient entering the health facility.	4.57	Always
8. I practice frequent hand washing with soap and water.	4.63	Always
9. If water and soap is not readily available, I use alcohol-based hand-sanitizer that contains at least 60% alcohol.	4.64	Always
10. I follow the two meters distance for physical distancing	4.17	Often
Total AWM	**4.54**	**ALWAYS**

Legend:

Statistical range	Descriptive equivalent	Interpretation
4.21-5.00	Always	Highly Practice
3.41-4.20	Often	Very Practice
2.61-3.40	Sometimes	Fair Practice
1.81-2.60	Seldom	Poor Practice
1.00-1.80	Never	Never Practice

Table 5.1:- Analysis of Variance on the Perceived Knowledge of Healthcare Workers along their Profile.

SUMMARY					
Groups	*Count*	*Sum*	*Average*	*Variance*	
AGE	119	4731	39.7563	50.06723	
GENDER	119	188	1.579832	0.245691	
CS	119	194	1.630252	0.302806	
HEA	119	136	1.142857	0.25908	
PROF	119	247	2.07563	0.239994	
MFI	119	375	3.151261	0.688791	
LOS	119	241	2.02521	0.6858	
RTS	119	222	1.865546	0.473294	
Knowledge (K1 to K10)	119	229	1.92437	0.578977	
ANOVA					
Source of Variation	*SS*	*df*	*MS*	*P-value*	*F crit*
Between Groups	161137.7	17	9478.691	0	1.627582
Within Groups	6932.79	2124	3.264025		
Total	168070.5	2141			
AGE	*GENDER*	*CS*	*HEA*	*PROF*	*RTS*
0.880729	0.102394	0.37458	0.027611	0.00572	0.040251
0.880729	0.102394	0.47458	0.027611	0.00572	0.040251
0.880729	0.010239	0.37459	0.027611	0.00572	0.040251
0.880729	0.010239	0.27458	0.027611	0.00572	0.040251
0.880729	0.102394	0.17458	0.027611	0.00572	0.040251
0.880729	0.010239	0.07458	0.027611	0.00572	0.040251
0.880729	0.010239	0.47458	0.027611	0.00572	0.040251
0.880729	0.102394	0.07458	0.027611	0.00572	0.040251
0.880729	0.102394	0.45812	0.027611	0.00572	0.040251
0.880729	0.102394	0.74585	0.027611	0.00572	0.040251
0.880729	**0.065532**	**0.350062**	**0.027611**	**0.00572**	**0.040251**

Table 5. 1 a p-value of 0, which is less than 0.05, indicates a significant difference in the level of knowledge of the healthcare workers when grouped according to their profile. Furthermore, a significant difference lies between the extent of knowledge and highest educational attainment (0.027611), knowledge and profession (0.00572), and knowledge and relevant training on IPC for the last two years (0.040251).

Thus these convey the study of Hossain et al. (2021), as results revealed that being a healthcare worker significantly differs from their perceptions (knowledge), such that being a non-physician, having a lower education, working in private hospitals, and using office transport were associated with good practice regarding infection prevention and control.

These results convey the results of the study of Hossain et al. (2021), as results revealed that being a physician and living at home were significantly associated with a positive attitude. While being a non-physician, having a lower education, working in private hospitals, and using office transport were associated with good practices regarding PPE.

Furthermore, extremely high transmission risk is associated with close contact with COVID-19 patients during the symptomatic phase. Healthcare personnel who manage patients and collect, extract, and prepare samples for RT-PCR testing are frequently exposed to symptomatic cases, which increases their risk of contracting the virus. However, the transmission risk can be reduced with the appropriate use of personal protective equipment (PPE). At the onset of the pandemic, the primary concerns were inadequate supplies of personal protective equipment for healthcare personnel and a lack of training in its use. During the onset of the COVID-19 outbreak, Bangladesh had to be well-equipped with adequate healthcare facilities, personal protective equipment, and testing instruments to

combat the virus. As a result, healthcare professionals may have required more systematic training and practice with PPE.

Table 5.2:- Analysis of Variance on the Perceived Attitudes of Healthcare Workers along their Profile.

Summary						
Groups	*Count*	*Sum*	*Average*	*Variance*		
AGE	119	4731	39.7563	50.06723		
GENDER	119	188	1.579832	0.245691		
CS	119	194	1.630252	0.302806		
HEA	119	136	1.142857	0.25908		
PROF	119	247	2.07563	0.239994		
MFI	119	375	3.151261	0.688791		
LOS	119	241	2.02521	0.6858		
RTS	119	222	1.865546	0.473294		
Attitude (A1 to A10	119	229	1.92437	0.578977		
ANOVA						
Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	161100.3	17	9476.486	2899.138	0	1.627582
Within Groups	6942.773	2124	3.268726			
Total	168043	2141				
AGE	*GENDER*	*CS*	*HEA*	*PROF*	*MFI*	*LOS*
0.008807	0.010239	0.036367	0.027611	0.00572	0.08707	0.08594
0.007288	0.010239	0.036367	0.027611	0.00572	0.08707	0.08594
0.006966	0.031424	0.017725	0.020408	0.001907	0.029023	0.034249
0.001242	-0.00438	0.027046	0.02401	0.003813	0.108467	0.060095
0.006209	0.010239	0.048817	0.027611	0.00572	0.08707	0.08594
0.003073	0.010239	0.034882	0.027611	0.00572	0.08707	0.08594
0.002876	0.010239	0.036367	0.027611	0.00572	0.08707	0.08594
0.028762	0.010239	0.036367	0.027611	0.00572	0.08707	0.08594
0.03073	0.010239	0.036367	0.027611	0.00572	0.08707	0.08594
0.020931	0.010239	0.036367	0.027611	0.00572	0.08707	0.08594
0.011688	**0.010896**	**0.034667**	**0.026531**	**0.005148**	**0.083405**	**0.078187**

Table 5.2 reveals a significant difference in the attitudes of the healthcare workers when grouped according to their profile, as depicted by a p-value of 0, which is less than 0.05. Furthermore, the significant difference lies between attitudes and gender (0.010896); and attitudes and civil status (0.0.4667).

Thus, these results further convey the results of the study of Hossain et al. (2021), which revealed that healthcare workers significantly differ in their attitudes. In this study, nine questions were posed to the participants to assess their attitudes toward infection prevention. The responses or findings are depicted and showed that 140 (46.7%) of the workers had a positive attitude towards infection prevention, while 160 (53.3%) of the workers did not have a good attitude. Overall, they responded negatively (70%) to attitude-related questions. As per the socio-demographic variables, this study showed no significant difference between gender and civil status with attitude ($p<0.05$). However, there was no significant difference between ethnicity and work experience with attitude ($p>0.05$).

Table 5.3:- Analysis of Variance on the Perceived Practices of Healthcare Workers along their Profile.

Anova: Single Factor

SUMMARY

Groups	*Count*	*Sum*	*Average*	*Variance*
AGE	119	4731	39.7563	50.06723
GENDER	119	188	1.579832	0.245691
CS	119	194	1.630252	0.302806
HEA	119	136	1.142857	0.25908
PROF	119	247	2.07563	0.239994
MFI	119	375	3.151261	0.688791
LOS	119	241	2.02521	0.6858
RTS	119	222	1.865546	0.473294
Practices (P1 to P10)	119	229	1.92437	0.578977

ANOVA

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	160964.5	17	9468.498	2884.12	0	1.627582
Within Groups	6973.042	2124	3.282976			
Total	167937.5	2141				

AGE	*GENDER*	*CS*	*HEA*	*PROF*	*MFI*	*LOS*	*RTS*
0.00572	0.010239	0.08594	0.027611	0.880729	0.08707	0.036367	0.040251
0.029023	-0.00438	0.085305	0.02401	0.836452	0.083257	0.027046	0.043641
0.00572	0.010239	0.08594	0.027611	0.880729	0.08707	0.036367	0.040251
0.004449	0.000494	0.085517	0.02521	0.968858	0.101335	0.032378	0.042511
0.00572	0.010239	0.08594	0.027611	0.880729	0.08707	0.006749	0.040251
0.00572	0.010239	0.08594	0.027611	0.880729	0.08707	0.036367	0.040251
0.001453	0.042017	0.058824	0.016807	0.890756	0.05042	0.008403	0.05042
0.021397	0.037992	0.032342	0.009604	0.734976	0.017584	0.010239	0.057199
-0.00254	0.05614	0.108396	0.012005	1.411553	0.129369	0.046395	0.05494
0.00572	0.010239	0.08594	0.027611	0.880729	0.08707	0.036367	0.040251
0.008238	**0.018346**	**0.080008**	**0.022569**	**0.924624**	**0.081732**	**0.027668**	**0.044997**

As indicated by the p-value of 0, which is less than 0.05, Table 5.3 reveals a significant difference in the practices of the healthcare employees when grouped according to their profiles. In addition, variables such as age (0.008238), gender (0.018346), highest educational attainment (0.022569), length of service (0.027668), and IPC training within the last two years (0.044997) account for the significant difference.

These results validate Unakal et al.'s (2017) findings. In this investigation, 12 questions were used to assess the infection prevention practices of healthcare workers. The findings revealed that 132 workers (44%) had excellent practices, while 168 workers (56%) did not. Overall, they negatively respond (<70%) to practice-related queries. There was a significant difference between sociodemographic variables (age, gender), educational attainment, and tenure of service (p0.05).

Table 6.1:- Significant Relationship between the perceived Knowledge of Health workers and their Profile.

	AGE	GENDER	CS	HEA	PROF.	MFI	LOS	RTS
K1	.165	***.768***	-.088	.072	***.867***	.139	.138	.078
	(.073)	***(.027)***	(.344)	(.437)	***(.015)***	(.132)	(.136)	(.402)
K2	.165	***.768***	-.088	.072	***.867***	.139	.138	.078
	(.073)	***(.027)***	(.344)	(.437)	***(.015)***	(.132)	(.136)	(.402)

K3	.165	***.768***	-.088	.072	***.867***	.139	.138	.078
	(.073)	***(.027)***	(.344)	(.437)	***(.015)***	(.132)	(.136)	(.402)
K4	.165	***.768***	-.088	.072	***.867***	.139	.138	.078
	(.073)	***(.027)***	(.344)	(.437)	***(.015)***	(.132)	(.136)	(.402)
K5	.165	***.768***	-.088	.072	***.867***	.139	.138	.078
	(.073)	***(.027)***	(.344)	(.437)	***(.015)***	(.132)	(.136)	(.402)
K6	.165	***.768***	-.088	.072	***.867***	.139	.138	.078
	(.073)	***(.027)***	(.344)	(.437)	***(.015)***	(.132)	(.136)	(.402)
K7	.165	***.768***	-.088	.072	***.867***	.139	.138	.078
	(.073)	***(.027)***	(.344)	(.437)	***(.015)***	(.132)	(.136)	(.402)
K8	.165	***.768***	-.088	.072	***.867***	.139	.138	.078
	(.073)	***(.027)***	(.344)	(.437)	***(.015)***	(.132)	(.136)	(.402)
K9	.165	***.768***	-.088	.072	***.867***	.139	.138	.078
	(.073)	***(.027)***	(.344)	(.437)	***(.015)***	(.132)	(.136)	(.402)
K10	.165	***.768***	-.088	.072	***.867***	.139	.138	.078
	(.073)	***(.027)***	(.344)	(.437)	***(.015)***	(.132)	(.136)	(.402)

Table 6.1 presents the Pearson r for the extent of healthcare workers' knowledge according to their profiles. There is insufficient evidence to conclude that there is a statistically significant relationship between gender and level of knowledge (X2 = 0.76, p =.027). In addition, there is sufficient evidence to conclude that there is a statistically significant relationship between occupation and knowledge (X2 =.867, p = 0.015).

Hossain et al. (2021) discovered that a positive outlook was significantly associated with becoming a physician and leading a home-based lifestyle, and these results corroborate their findings. Effective IPC practices were associated with working in private hospitals, not being a doctor, having a lower level of education, and using office transportation.

Close contact with patients, while they are symptomatic, is associated with a significant risk of transmission. HCWs who care for patients and collect, extract, and prepare samples for RT-PCR testing are frequently exposed to symptomatic cases, raising their risk of contracting the virus. Using personal protective equipment (PPE) as directed can reduce the risk of transmission. At the onset of the epidemic, inadequate training and a lack of personal protective equipment for healthcare employees posed the greatest challenges. At the onset of the epidemic, Bangladesh lacked adequate healthcare facilities, personal protective equipment, and testing supplies to combat COVID-19.

Table 6.2:- Significant Relationship between the perceived Attitudes of Health workers and Their Profile

	AGE	GENDER	CS	HEA	PROF.	MFI	LOS	RTS
A1	.165	**.768**	-.088	**.072**	**.867**	.139	.138	.078
	(.073)	**(.027)**	(.344)	**(.043)**	**(.015)**	(.132)	(.136)	(.402)
A2	.165	**.768**	-.088	**.072**	**.867**	.139	.138	.078
	(.073)	**(.027)**	(.344)	**(.043)**	**(.015)**	(.132)	(.136)	(.402)
A3	.165	**.768**	-.088	**.072**	**.867**	.139	.138	.078
	(.073)	**(.027)***	(.344)	**(.043)**	**(.015)**	(.132)	(.136)	(.402)
A4	.165	**.768**	-.088	**.072**	**.867**	.139	.138	.078
	(.073)	**(.027)**	(.344)	**(.043)**	**(.015)**	(.132)	(.136)	(.402)
A5	.165	**.768**	-.088	**.072**	**.867**	.139	.138	.078
	(.073)	**(.027)**	(.344)	**(.043)**	**(.015)**	(.132)	(.136)	(.402)
A6	.165	**.768**	-.088	**.072**	**.867**	.139	.138	.078
	(.073)	**(.027)**	(.344)	**(.043)**	**(.015)**	(.132)	(.136)	(.402)
A7	.165	**.768**	-.088	**.072**	**.867**	.139	.138	.078
	(.073)	**(.027)**	(.344)	**(.043)**	**(.015)**	(.132)	(.136)	(.402)
A8	.165	**.768**	-.088	**.072**	**.867**	.139	.138	.078
	(.073)	**(.027)**	(.344)	**(.043)**	**(.015)**	(.132)	(.136)	(.402)
A9	.165	**.768**	-.088	**.072**	**.867**	.139	.138	.078
	(.073)	**(.027)**	(.344)	**(.043)**	**(.015)**	(.132)	(.136)	(.402)
A10	.165	**.768**	-.088	**.072**	**.867**	.139	.138	.078
	(.073)	**(.027)**	(.344)	**(.043)**	**(.015)**	(.132)	(.136)	(.402)

Table 6.2 presents the Pearson r on the attitudes of the health care workers toward their profiles. There is a shred of sufficient evidence to say that there is a highly statistically significant association between gender and attitudes (X2 = 0.768, p =.027). Then, there is also sufficient evidence to say that there is a statistically significant association between the highest educational attainment and attitudes (X2 = .072, p = .043); and profession and attitudes (X2 = .867, p = .015)

As a result, our findings coincide with those of Hossain et al.'s research (2021), wherein findings showed that the opinions of healthcare personnel differed greatly depending on their occupation. Nine questions were posed to the participants in this study to gauge their views on infection prevention as HCWs. According to the replies or findings, 140 (46.7%) workers had a favorable attitude toward infection prevention, whereas 160 (53.3%) did not. They responded poorly (70%) to questions about attitudes overall. This study revealed no statistically significant association between gender, educational attainment, and profession concerning attitudes toward IPC. However, there was no discernible correlation between attitude, job experience, or race.

Table 6.3:- Significant Relationship between the perceived Practices of Health workers and Their Profile.

	AGE	GENDER	CS	HEA	PROF.	MFI	LOS	RTS
P1	.165 (.073)	.027 (.768)	-.088 (.344)	.072 (.437)	.015 (.867)	.139 (.132)	.138 (.005)	.078 (.030)
P2	.165 (.073)	.027 (.768)	-.088 (.344)	.072 (.437)	.015 (.867)	.139 (.132)	.138 (.005)	.078 (.030)
P3	.165 (.073)	.027 (.768)	-.088 (.344)	.072 (.437)	.015 (.867)	.139 (.132)	.138 (.005)	.078 (.030)
P4	.165 (.073)	.027 (.768)	-.088 (.344)	.072 (.437)	.015 (.867)	.139 (.132)	.138 (.005)	.078 (.030)
P5	.165 (.073)	.027 (.768)	-.088 (.344)	.072 (.437)	.015 (.867)	.139 (.132)	.138 (.005)	.078 (.030)
P6	.165 (.073)	.027 (.768)	-.088 (.344)	.072 (.437)	.015 (.867)	.139 (.132)	.138 (.005)	.078 (.030)
P7	.165 (.073)	.027 (.768)	-.088 (.344)	.072 (.437)	.015 (.867)	.139 (.132)	.138 (.005)	.078 (.030)
P8	.165 (.073)	.027 (.768)	-.088 (.344)	.072 (.437)	.015 (.867)	.139 (.132)	.138 (.005)	.078 (.030)
P9	.165 (.073)	.027 (.768)	-.088 (.344)	.072 (.437)	.015 (.867)	.139 (.132)	.138 (.005)	.078 (.030)
P10	.165 (.073)	.027 (.768)	-.088 (.344)	.072 (.437)	.015 (.867)	.139 (.132)	.138 (.005)	.078 (.030)

Table 6.3 presents the Pearson r on the practices of the health care workers according to their profiles. There is a shred of sufficient evidence to say that there is a highly statistically significant association between length of service and practices (X2 = .138, p =.005). Then, there is also sufficient evidence to say that there is a statistically significant association between Relevant Training on IPC for the last two years of profession and practices (X2 = .078, p = .030).

These results corroborate the findings of Unakal et al. (2017). In this study, 12 questions were asked to assess practices among HCWs about infection prevention. The findings showed that 132 (44% of workers) had good practices, while 168 (56%) did not). Overall, they negatively respond (<70%) to practice-related questions. There was a significantdifference between socio-demographic variables (length of service and relevant training) and their practices ($p<0.05$).

Output For The Study

Knowledge, Attitude, and Practices of Primary Care Workers on Infection, Prevention, and Control amidst the COVID-19 Pandemic

I. Rationale

This output is a proposed building capacity program and a policy brief for the improvement of knowledge, attitudes, and practices of healthcare workers on infection prevention and control, based on the results of the study "KNOWLEDGE, ATTITUDES, AND PRACTICES OF HEALTHCARE WORKERS ON INFECTION PREVENTION AND CONTROL IN PRIMARY CARE FACILITIES AMIDST THE COVID-19 PANDEMIC", conducted at various primary care facilities in Baguio City for the years 2022, where the pandemic caused by COVID-19 took place.

1) Project Title	Infection, Prevention and Control in Primary Care Facilities
2) Project Year	2023
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9) Project Summary	Infections acquired in a healthcare setting are the most common adverse events and affect both patients and healthcare workers. HCAIs receive the most attention during epidemics, but they are also a persistent issue in peacetime, affecting both developed and less-developed economies. This training proposal seeks to increase the capacity of primary care frontline healthcare employees. It intends to impart skills and knowledge regarding infection prevention, control, and outbreak management. These would enable healthcare professionals to carry out their duties more effectively and safeguard them and their patients from HCAIs. Using simulation technology, participants will engage in experiential learning by reenacting real-world scenarios. They will also gain knowledge from sharing with epidemiological experts about how to navigate the pandemic and prepare for emergent HCAIs.
10) Relevance	With the persistence of other nosocomially transmissible infectious diseases, such as COVID-19, it is imperative that we equip frontline healthcare workers with expertise in infection prevention and control, outbreak management, and healthcare epidemiology. The objective is to equip them with the skills necessary to carry out their duties effectively and safeguard themselves and their patients from HCAIs. This is anticipated to result in a decrease in the incidence of HCAIs and, consequently, a decrease in mortality and financial losses to health systems in the region. Due to the aforementioned context, a researcher proposes a three-day workshop to develop the capacity of primary care employees in Baguio City. A multidisciplinary team of experts including infectious disease doctors, public health doctors, infection prevention and control nurses, epidemiologists, and biostatisticians will be in charge of the workshop. Using simulation technology, participants will engage in experiential learning by reenacting real-world scenarios. They will also learn about the team's management experience with COVID-19.
11) Objectives	1. To conduct training and educational activities on the importance of infection control and prevention in the primary setting 2. To recognize and initiate modifications in the work environment that would promote the health and safety of patients, healthcare workers, and other stakeholders 3. To develop an effective feedback mechanism in reporting unusual occurrences of communicable diseases 4. To advocate hand hygiene and proper cough etiquette as a way of life 5. To observe the proper use of personal protective equipment (PPE) 6. To observe appropriate isolation precautions for different communicable disease

<table>
<tr><td></td><td>7. To encourage strict compliance with proper waste segregation</td></tr>
<tr><td>12) Justification</td><td>The initiative will provide primary care employees with training opportunities in infection control and outbreak containment. The proposed workshop will directly engage and train a cohort of frontline healthcare employees involved in the primary care management of infectious patients. In addition, implementing the "train-the-trainers" paradigm, as mentioned previously, would enable trained healthcare workers to impart the relevant knowledge and skills to other healthcare professionals back home, thereby facilitating capacity development.</td></tr>
<tr><td>13) Beneficiaries and Outputs</td><td>Outcomes: The project will design and construct a training curriculum in Infection Control and Outbreak Containment in primary care settings and execute a hands-on course based on simulation training and experiential learning.
The initiative will result in an increase in the number of trained healthcare professionals who can respond to and manage emergent infectious hazards like COVID-19. The knowledge and abilities of primary healthcare personnel in infection prevention and control will be improved, enabling them to safeguard themselves, patients, and caregivers from healthcare-associated infections.
Beneficiaries: Frontline healthcare employees (doctors, nurses, epidemiologists, allied health professionals) in the primary care setting are the intended recipients.</td></tr>
<tr><td>14) Training Content</td><td>
<table>
<tr><th>Title
- Domains</th><th>Methodology</th><th>Duration</th><th>Resource Speakers</th></tr>
<tr><td>Knowledge
● Functional infection Control Committee
● Infection Control Policies and Guidelines</td><td>Interactive Sessions
Open Forum</td><td>1/2 Day</td><td>City Epideomeological Surveillance unit</td></tr>
<tr><td>Attitude
● Precautions in the Facility
● Care and Management of Patients
● Understanding Anxiety</td><td>Interactive Sessions
Open Forum</td><td>1/2 day</td><td>CESU and Mental Health Unit</td></tr>
<tr><td>Practices
● Infection Control Procedures
● Standard Precautions
● Utilization of PPE’s</td><td>Interactive Sessions
Open Forum</td><td>1 Day</td><td>CESU</td></tr>
<tr><td>● Simulation training and experiential learning.
● - Best practices on IPC</td><td>Simulation and return demonstrations
Open Forum</td><td>1 day</td><td>CESU/ RESU</td></tr>
</table>
</td></tr>
<tr><td>15) Monitoring and Evaluation</td><td>A pre- and post-workshop survey will be used to identify the information and competences obtained, as well as specific evaluation. In addition, a pre-workshop questionnaire will be used to identify and assess baseline infection control and outbreak containment procedures, allowing the training program to be better tailored to address individual requirements.</td></tr>
</table>

	Participants will be assisted in developing health center specific training programs based on best practices learned at the workshop that can be translated and implemented in their respective district health facilities to avoid HCAIs. Participants will also be invited to offer specific indicators for tracking progress in infection control and outbreak containment capacities, as well as HCAI reduction in their particular healthcare facilities.
16) Sustainability	The project's healthcare workers will be able to utilize the training resources to teach other healthcare professionals in local district health centers, who will subsequently train more colleagues, by using the "train-the-trainers" strategy. This promotes an ongoing cycle of knowledge exchange across and within economies.
17) Project Overseers	Dr Donabel Panes, Medical Officer IV and head of City Epidemiological and Surveillance Unit of City Health Services Offices in Baguio City will oversee the project

Policy Brief:
Infection, Prevention and Control in PCF's amidst the COVID-19 Pandemic

Executive Summary
This policy brief outlines some guidelines and protocols for infection, prevention, and control. Primary care facilities continue to pose a risk for SARS-CoV-2 transmission because they admit and treat patients with a risk of illness. COVID-19. Infection prevention and control (IPC) measures must be maintained and improved for the safety of patients, personnel, and visitors.

Current essential infection prevention and control (IPC) strategies and measures for the management of COVID-19 in healthcare settings include:
A. an IPC program or, at the very least, a trained and dedicated IPC focal point
B. screening and triage for early community and healthcare facility detection.
C. Identification-based cases and swift source control measures utilizing standard and transmission-based precautions.
D. Isolation and grouping of patients, universal masking with medical masks, and administrative controls
E. Environmental and engineering controls implementation, with a concentration on ventilation COVID-19 vaccination of medical personnel
F. Prevention, detection, and management of COVID-19 by medical professionals

Maintain IPC accomplishments and prioritize critical gaps in IPC programs in health care settings; maintain operational readiness for COVID-19 and other emerging and re-emerging pathogens; scale up IPC capacity with substantial investments in implementing IPC minimum requirements; and ensure resilience and sustainability.

Background
In the Philippines, as of November 6, 2021, there were already 2,800,621 confirmed COVID-19 cases, of which 44,239 died and 2,721,516 had recovered. In Baguio City, from September 1–30, 2021, the city recorded 7603 cases. That was 28.74% of all cases since the pandemic started in March 2020. Furthermore, it recorded 146 cases of death due to COVID-19 in the same month. From March 2020 on, there were 491 deaths in the city; hence, last month's figure accounted for 29.73% of all deaths in over a year and a half that COVID-19 devastated the city.

Since the first SARS-CoV-2 infections were reported more than two and a half years ago, the COVID-19 pandemic has remained an urgent global emergency. With access to and proper utilization of the available life-saving instruments, COVID-19 can become a manageable disease with significantly reduced morbidity and mortality, thereby saving lives. Nonetheless, additional work is required to attain this locally. The Department of Health and the Health Services Office are aware of the difficulties in responding to COVID-19 while addressing additional issues with public health, political unrest, climate change, and financial crises. It will continue to support countries in adjusting COVID-19 strategies to reflect and leverage the successes.

Understanding Infection, Prevention and Control

According to WHO, infection prevention and control (IPC) is a scientific and practical approach to protecting patients and healthcare workers from infection-related injuries. It has a foundation in infectious diseases, epidemiology, social science, and health system strengthening. IPC occupies a unique position in patient safety and quality universal health coverage, as it applies to every healthcare encounter between healthcare professionals and patients.

Inadequate WASH and IPC contribute to community-transmitted diseases, hospital-acquired infections, and increased antibiotic use, exacerbating the outbreak and spread of infections like COVID-19. WHO (2016) reports that effective IPC reduces at least 30% of hospital-acquired infections.

In the context of HCFs, we also distinguish between IPC and WASH services: IPC cannot be met without WASH services, which provide the foundation for IPC (water, sanitation, and hygiene services).
It is essential to observe that with a potential increase in patient influx, the demand for water and sanitation services may exceed the supply, and it will be necessary to fill the gap to prevent disruptions to health services.

Components

Water

Includes hand cleansing with soap as a key preventative measure. Water must be readily available for routine washing and disinfection. Water is used for disinfection, laundry, and other activities, but sufficient potable water is essential.

Important note:

- ✓ Ensure that safe and adequate running water is available in PCFs
- ✓ Ensure the water is safely treated.
- ✓ When possible, provide water stations with pedal-operated taps and devices or water dispensers with sensors to minimize hand contact and reduce the risk of unicef | for every child infection

Hygiene

Hand sanitation and safe behaviors are essential IPC measures for preventing COVID-19 transmission in PCFs. Hand hygiene must be conducted constantly and immediately after touching. surfaces made of copper, cardboard, plastic, and stainless steel; touching door handles, elevator doors, and buttons after removing masks; going to the bathroom, before eating, and after blowing your nose, coughing, and sneezing. In every critical PCF's room (entrance, screening and observation, care, near restrooms, and exit), hand sanitizers or handwashing facilities must be positioned.

Important Note:

- ✓ Hand rubbing with an alcohol-based formulation makes hand hygiene disinfection at the point of care possible, is quicker, more effective, and better tolerated; alternatively, regular hand washing with soap and water, or a 0.05 percent chlorine solution, is required to prevent the spread of pathogens infection.
- ✓ Also essential are the proper technique and duration of handwashing (20-30 seconds for alcohol rub and 40-60 seconds for handwashing with clean water and detergent).
- ✓ Hand hygiene facilities, including products (e.g., alcohol-based hand rub if available, water, soap, sinks), should be in place, readily accessible, and as close as possible (e.g., within arm's reach) to the point of care in order to meet the requirements for hand hygiene. Correct hand hygiene timing for patient and healthcare worker safety.
- ✓ As part of quality of care and patient safety, encourage health workers, patients, and caregivers to adopt hand hygiene practices that are effective.
- ✓ Avoid close contact with other individuals; no embracing, kissing/pecking cheeks, or hand-shaking.

Environmental Cleaning

Environmental sanitation is an essential IPC measure for preventing the spread of COVID-19. Existing recommended cleansing and disinfection procedures in PCF's (at least once per day and when a patient is discharged). Numerous disinfectants are effective against COVID-19. Current WHO recommendations include:

A. 70% Ethyl alcohol to disinfect small areas e.g. reusable dedicated equipment (e.g., thermometers) between uses.
B. Sodium hypochlorite at 0.1% (equivalent 1000ppm) for disinfection of surfaces and 0.5% (5000ppm) for large spills of blood and body fluids.

Important note:

- ✓ Using a common household cleaning solution or wipe, clean and disinfect frequently touched objects. Wipe down frequently touched surfaces such as door and window knobs, doors, and handles.
- ✓ Handles, handrails, chairs, and elevator buttons should be cleaned to remove grime, and then disinfected thoroughly with hand sprayers.
- ✓ Ensure adequate and regular cleaning of facility floors with warm water, detergent, or soapy water, followed by appropriate disinfection.

Waste Management

Personal protective equipment (PPE) such as gloves, face and nose masks, waterproof protective gowns, rubber boots, a rubber apron, and other contaminated materials, such as paper tissues, will lead to an increase in the generation of solid waste, as well as the amount of infectious waste generated by PCFs. To reduce waste volumes, it is recommended to use reusable PPE made of plastic that can be cleansed and disinfected with a 0.5% chlorine solution . The collection, storage, transfer, treatment, and eventual disposal of infectious waste from healthcare facilities and COVID-19 treatment units must be performed correctly.

Important note:

- ✓ The refuse separation bins are color-coded according to the 3-bin system (infectious waste, sharps, and general waste). Waste container coding and labeling is essential for identifying infectious unicef | for every child.
- ✓ To prevent infection, healthcare refuse and household materials must be discarded. Additionally, waste receptacle liners should be acquired.
- ✓ It is essential to maintain records of refuse in order to determine how much waste is generated daily.
- ✓ It is necessary to plan in advance for a storage location that can accommodate large volumes, transport in decontaminated trucks, and ultimate disposal through incineration and autoclaves.
- ✓ Educate waste handlers and sanitation staff on PPE donning and doffing, decontamination, and Infection Prevention and Control (IPC) measures.

Sanitation

COVID-19 is less likely to be transmitted via fecal-oral routes; the respiratory route continues to be the most common mode of transmission. Nevertheless, precautionary principles apply, and all fecal material generated by HCFs must be disposed of appropriately.

The COVID-19 emergency response efforts require the availability of securely managed sanitation systems, such as improved latrines or toilets connected to a septic tank or sewer lines, in order to safely contain and treat feces. Due to the influx of patients into PCFs, there may be an increased demand for toilets and a volume of fecal sludge and effluent to collect and dispose of.

Important Note:

- ✓ Ensure the availability of toilets or latrines that are sanitary, adequate, and designated for suspected and confirmed cases of COVID-19, in accordance with standards.
- ✓ Advise and encourage the proper use of restrooms to prevent splashing droplets.
- ✓ Utilize a chlorine solution to pre-treat wastewater from hand washing, cleaning, laundry, bathing, and tooth hygiene.
- ✓ While the disinfection power of chlorine kills viruses in wastewater, viruses in feacal materials must be inactivated by elevating the pH of the feacal materials to a higher level (>12) for 30 minutes.
- ✓ Ensure that disinfection supplies (chlorine, lime, detergents) and cleaning equipment (backpack and hand sprayers, mops and buckets) are readily available, as well as protective equipment for employees.
- ✓ Coordinate with Health teams to ensure that Sanitation personnel are trained in the WHO-recomme procedures for donning/doffing PPEs

Chapter 4

Conclusions and Recommendations:-

This chapter shows the conclusions and recommendations that were derived from the analysis and interpretations of the findings of the study.

Conclusions:-

The study reveals that health professionals had a general high level of awareness of 5/10 indications and were knowledgeable about 5/10 signs.In terms of their attitudes towards IPC, the vast majority of respondents concur with all indicators. Consequently, respondents agree strongly with six of the ten indicators. .With regards to their practices on IPC, it reveals that respondents adhere to nine out of ten indicators on a consistent basis.

The degree of knowledge and greatest level of educational attainment, knowledge and occupation, knowledge and recent relevant training on IPC were shown to differ significantly from one another. The opinions of the healthcare personnel when categorized in accordance with their profile, particularly on the basis of gender and civil status, were also shown to differ significantly. When the healthcare personnel were categorized according to their profile, notably age, gender, greatest educational attainment, duration of employment, and relevant training on IPC for the previous two years, there were also notable differences in their practices. Significant links also exist between healthcare employees' KAP and their profile, notably in regard to their level of education, occupation, duration of service, and attendance at related training sessions and seminars. .

Recommendations:-

The study urges policymakers to allocate funds for a budget line specifically for infection, prevention and control trainings at all levels of health care delivery, as this will improve compliance and emergency preparedness. It also suggests additional trainings and seminars on infection prevention and control to further improve and continuously update health workers with regard to various IPC guidelines and protocols. The recommended policy brief and workplan ought to be used and put into practice. Since there were found to be variances in the KAP of healthcare professionals along different profiles, trainings and seminars would level up the KAP of the healthcare employees regardless of their socio-demographic profiles. Additionally, it is advised that this study be extended to additional healthcare professionals who are considered to be on the ground, such as barangay nutrition workers and barangay health workers. These individuals are the ones delivering crucial services on the ground, despite the fact that they are not experts.

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