

COVID-19 Knowledge of Frontliners in Cagayan: A Cross-Sectional Study

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Abstract

The CoViD-19 pandemic has undeniably paralyzed our health care system, where frontliners are the first group to be seriously impacted by the CoViD-19 pandemic as they are considered to be the key players in this battle. This research was undertaken in order to determine the knowledge of frontliners on CoViD-19. This descriptive-correlational research surveyed three hundred eighty-four (384) randomly selected hospital and community frontliners working in the government hospitals and local government units in the province of Cagayan, Philippines. Respondents, including Medical Doctors, Nurses, Medical Technologists, Respiratory Therapists, Radiologic Technologists, Midwives, Ambulance Crew, Janitors, Security Guard, members of the Barangay Health Emergency Response Team were interviewed through a phone-assisted survey. Results showed that frontliners have high knowledge on the CoViD-19 virus' modes of transmission as well as its prevention; oddly, they had a moderate level of knowledge in terms of the disease's clinical manifestations. Counterintuitively, results of Mann-Whitney U test showed that respondents' knowledge on clinical manifestations is significantly higher for non-allied health ($U = 14534.5$, $p = .001$) than allied health frontliner. Hence, it is strongly advised that ongoing research into the disease's clinical manifestations be pursued in order to gain clarity and a deeper understanding of the disease algorithm, which would strengthen the CoViD-19 protocols.

Keywords: Knowledge, COVID-19, Cagayan, Philippines, Community-based, Hospital-based

INTRODUCTION

A novel infection—new and previously unfronted—that spreads globally and results in a high incidence of morbidity (sickness) and mortality (death) has, for the past 300 years or more, been described as a “pandemic.” The word derives from pan — “across”—and demos, meaning “people” or “population.” Pandemic spreads across all people regardless of race, location, cultural belief system or social status (Doherty, 2013).

Pandemic is inherently unpredictable. This is shown currently by the outbreak of corona virus disease 2019 (CoViD-19). Since 31 December 2019 and as of 09 September 2020, 27 609 408 cases of CoViD-19 (in accordance with the applied case definitions and testing strategies in the affected countries) have been reported, including 898 087 deaths across 215 countries around the globe (European Center for Disease Control and Prevention [ECDC], 2020). To date, Philippines has recorded a total of 3, 170, 000 cases nationwide where 127,000 of which come from the Cagayan Valley Region (Department of Health [DOH], 2021).

This disease outbreak originated from the endemic pneumonia that was detected in Wuhan, China in 2019 and was declared a Public Health Emergency of International Concern on 30 January 2020 and was assessed and characterized to be pandemic on March 11, 2020 (World Health Organization [WHO], 2020). Some experts claimed that this CoViD-19 pandemic is more fatal compared to previously known pandemic, like SARS, since an infected person can be asymptomatic and thus could unknowingly transmit it to others. Rapid spread of unfamiliar and generally distressing symptoms ranges from asymptomatic or a mild to severe pneumonia (Zhu et al., 2020). Literatures showed that the most convincing mode of transmission of CoViD-19 is inhalation of infectious aerosols (Read, Bridgen, Cummings, Ho & Jewell, 2020).

It has been noted that the number of CoViD-19 infected individuals overwhelmingly rises in an exponential manner in each time being. For these reasons, the aforementioned disease has

conveyed dip rips in the social fabric considering that this is not only a public health crisis instead a pressing issue that concerns every sector in society. In matters like this, the “softer” social and behavioral sciences can be as important as “hard line” laboratory research when it comes to fighting pathogens, particularly when it is a matter of convincing those who have power and influence in societies where the overall level of public education is low. Culturally sensitive approaches are likely to work much better than rigid, “one-size-fits-all” directives (Doherty, 2013).

In response to this, the Philippine government has strictly enforced disease control prevention measures which include social distancing and enhanced community quarantine and lockdown in the entire archipelago. By virtue of Article II and VI of 1987 Philippine Constitution and RA 11332, Proclamation No. 922 series of 2020 has been made, declaring the entire Philippines under the state of Public Health Emergency and Proclamation No. 929 declaring State of Calamity throughout the Philippines Due to Corona Virus Disease 2019. All government sectors are working hard to arrest the rapid increase of CoViD-19 infected patients. Under this circumstance, health care workers are expected to work under more stressful, tedious and longer hours of labor compared to their usual duty.

With this, healthcare workers (HCWs) are at the front-line of the CoViD-19 outbreak, and their constant exposure to infected patients and contaminated surfaces can put them at risk for acquiring and transmitting the infection (Plan et al., 2019). The demands during a pandemic are very high. The scope of a pandemic is larger than the surge capacity of most healthcare facilities to manage. Healthcare workers (HCWs) will be at high risk of exposure and will likely become ill at rates similar to the general population. This will reduce the number of HCWs available to cope with the expected increase of patients requiring care (Stuart and Gillespie, 2008).

Effective pandemic management requires support from the population at risk for measures undertaken to mitigate the pandemic’s spread. It

is therefore important to perform behavioral studies in different populations to understand the determinants that influence behaviors.

The success of these measures is largely influenced by their knowledge, attitudes and practices on CoViD-19 (Zhong et al., 2020). As supported by KAP theory, changes of human behavior are divided into three successive processes: the acquisition of knowledge, the generation of attitudes and formation of behavior. It is based on the notion that increasing the knowledge will influence behavior change (WHO, 2012).

Different hospitals in the Philippines employ various strategies that would maximize the use of the known facts to positively impact the behavior of people including health care workers. In the province of Cagayan, the Cagayan Valley Medical Center (CVMC), which is considered to be the CoViD-19 pandemic center in the province, apply a rotational scheme for the duty of their frontliners to safeguard the wellness not only of their health care workers but also their respective families (Tuguegarao City Information Office, 2020). Whereas at the community health level, the Department of Interior and Local Government (DILG) enforced the Local Chief Executives (through DILG Memorandum Circular No. 2020-023) to create a Barangay Health Emergency Response Team (BHERT) to help implement prevention and mitigation, preparedness and response measures for the CoViD-19 pandemic.

Despite the efforts taken by government agencies, there are no research-based studies yet that have evaluated the level of knowledge of Cagayan frontliners on CoViD-19 (both those who are involved in direct and indirect care) in the community and hospital setting. With this, it is the aim of this study to evaluate the knowledge of frontliners on CoViD-19.

METHOD

Research Design

The principal purpose of this project is to evaluate the knowledge of frontliners on CoViD-19. This implies that a descriptive comparative research design was used in the study where

respondents' level of knowledge was compared when they are grouped according to their profile variables.

Research Environment

The study was conducted in the province of Cagayan. The researchers included all public health facilities both the Community Health Facilities and Public Hospitals in the study. The study was conducted in this area because of both active direct and indirect involvement of the frontliners during the CoViD-19 pandemic. Data gathering commenced immediately after the approval and release of Ethics Clearance by the Ethics Review Board.

Data Gathering Procedure

Respondents of the Study and Sampling Procedure

Respondents of this study were only delimited to community health workers and frontliners in hospitals during the CoViD-19 pandemic who were (a) either directly or indirectly involved in the assessment diagnosis, treatment and rehabilitation, (b) had either been contracted (and recovered) or not with CoViD-19 virus and (c) working in public health care agencies under any of the following levels of preventive care: primary, secondary and tertiary. Meanwhile, frontliners who have documented history of mental illness were given discretion not to participate in the study.

The researchers sourced out data from the Community Health Facilities and Public Hospitals in Cagayan. Respondents taken from Community Health Facilities included those under (a) direct care (like Municipal/City Health Officer, Medical Doctors, Nurses, Medical Technologists as well as the members of Barangay Health Emergency Response Team [BHERT]), (b) indirect care (patient transport vehicle driver, ambulance crew). Meanwhile, respondents taken from the hospitals are those who were involved in (a) direct care which includes Medical Doctors, Nurses, Nursing Aide, Medical Technologists, Respiratory Therapists and Radiologic Technologists, (b) indirect care specifically included Janitors and Security Guards.

From there, the researchers used the Cochran's formula to determine the sample size for the study with a confidence interval and margin of error of 95% and 5%; respectively. Researchers then used stratified random sampling in choosing the respondents of the study. The computed scientific sample size is three hundred eighty-four (384).

Those identified frontliners who were willing to be the respondents of the study were reached through their respective agencies to solicit their participation. The content of prior and informed consent form was discussed to them informing each participant of the purpose of the study. Only those who voluntarily participated were taken as the respondents of the study. Data gathered was handled based on the Data Privacy Act of 2012 and was treated with utmost confidentiality. The interview only advanced to the proper survey once the respondents signified the willingness to be respondents of the study.

With the unprecedented increase in the number of CoViD-19 cases, a phone-assisted survey was utilized as the mode of data collection. With this, responses from hospital frontliners and community health workers were gathered through a phone-assisted survey. The researchers read the content of the informed consent form to the respondents, after which, the researchers asked the permission of the frontliners to go on with the phone-assisted survey. Positive responses from the respondents would imply their willingness to participate voluntarily in this study and that responding to the questions being asked was their free and independent choice.

Contact details of the randomly selected respondents were obtained from the respective hospitals, RHUs, and barangays. The researchers also requested the concerned agencies to arrange the schedule with those who would be interviewed to ensure the identity of the target respondents.

The primary data gathering tool for this study was a survey questionnaire. The quantitative result of the data was validated through an in-depth interview with the respondents. To ensure that the instrument would not in any way impose psychological and mental-health related risks

and harm on the respondents, it has undergone validation by mental health experts and been found to be free from any form of the aforementioned harm and risks. Throughout the conduct of the study, there were no cases of respondents who had been negatively impacted by the content of the questionnaire.

In addition, researchers strictly observed the Inter-Agency Task Force (IATF) guidelines during the collection of the data in order to protect both the researchers and respondents of the study from contracting the CoViD-19 virus.

Research Instruments

The study investigators used researcher-made questionnaire as a primary tool for data gathering.

The researchers strictly abided the ethical and legal standards in the conduct of this study. Research Ethics Clearance was sought from Region II Trauma and Medical Center (R2TMC) prior to the conduct of the study. Permission to conduct the study was sought from the Local Chief Executives, Heads of the RHU's and Hospitals before data collection commenced. Informed consent was voluntarily given by the respondents after an explanation was made by the researchers of the nature and purpose of the study, and confidentiality was ensured throughout the conduct of the study. In designing the survey questionnaire, researchers reviewed pool of literatures and the tool was validated by content experts as suggested by Ahmad et al., (2017); Zahid et al., (2016); WHO, (2008) where Content Validity Index (CVI) was computed. If the overall CVI is higher than 79 percent, the instrument is appropriate; if it is between 70 and 79 percent, it needs revision; if it is less than 70 percent, instrument is invalid, unclear and irrelevant. With this, the tool has been validated by the content experts and has a computed Content Validity Index (CVI) of 96.24 which implies that the instrument was appropriate.

The tool underwent pilot testing. After which the instrument's internal consistency was examined by determining the value of the Cronbach's alpha wherein the computed value was 0.74 which reflected the uni-dimensionality of the

tool. Prior to the use of the questionnaire, it was translated into local language (Tagalog and Ilocano) by the researchers to facilitate better understanding of the questions among the respondents.

The questionnaire was divided into two sections. The first section was about the demographic profile, socio-economic, employment and medical history of the respondents. Meanwhile, the second section contained items that evaluated the level of knowledge of the frontliners on CoViD-19 in terms of clinical manifestations, modes of transmission, and promotion/ prevention/curative or rehabilitation.

Treatment of Data

The data on respondents' profile and level of knowledge were described using descriptive statistics. 25th Quantile regression and Mann Whitney U Test were carried out to determine the difference on the respondents Knowledge when grouped according to profile variables. The hypotheses in the study were tested at .05 level of significance. All the analyses were conducted using Statistical Package for the Social Sciences (IBM SPSS Statistics v.20, 2011.).

Ethical Considerations

Prior to the conduct of this study, the researchers sought permission from the local chief executives, heads of rural health units and hospitals, and respondents through a letter. The letter briefly explained the background of the study and the manner in which the data would be collected and processed.

Before the respondents answered the survey questionnaire, the researchers explained to them the purpose of the study. The Informed Consent Form (ICF) was read during the preliminaries of data gathering. Once full consent was verbally secured, the researchers commenced the data gathering process. To note, only those respondents who had given their willingness to participate were included in the study. The respondents were not subjected to harm in any way. The anonymity and protection of the privacy of individuals were ensured, and the disclosure of the names of the respondents were made optional. The data were treated with the

utmost confidentiality. Apparently, they were secured and kept in the vault of the College of Allied Health Sciences for at least two (2) years, and for any purposes of utilization, improvement, program implementation, or future research, the data would be made readily available. Paper records were shredded and burned. All computer hard drive records were deleted. Any research-related communication was done with honesty and transparency.

The confidentiality clause on the part of the respondents was duly protected by RA 10173, or otherwise known as the Data Privacy Act of 2012, stating that all information given by the respondents were used solely for the purpose of this study, and it could never be used against him/her in any legal battles or avenue, and/or prejudice his/her personhood in his/her desire to participate in the data gathering for the success of this study.

Also, respondents were given the freedom to withdraw their participation in the study at any time without necessarily disclosing the reasons for the withdrawal and the penalty for such. No incentives were provided to respondents' participation in the study. However, compensation was given for their snacks, lunch, and travel expenses. The conduct of this study has not caused any form of distress among its respondents.

RESULT

Table 1.a shows the socio-demographic characteristics of the respondents. As a result, the majority are females, 253 (65.5%), and married 298 (77.2%). To note, most of them live with their children and spouses 190 (49.2%). In particular, the majority are Ilocano 282 (73.1%) and Roman Catholic 319 (82.6%). Indeed, the age range is 26–55 years old. Nonetheless, the mean age is 43 (+11.8) years old.

Meanwhile, 248 (64.2%) of them are at least college graduates. To date, 199 (51.6%) are employed as BHERT. Generally, the median monthly income is 7,000 pesos. Surprisingly, the Local Government Units has a frequency count of 255 (66.1%). Regarding their employment status, 151 (39.1%) are permanent employees, while 264 (68.4%) are involved in indirect

patient care during the CoViD-19 pandemic. Moreover, the median length of service is six (6) years. As to pieces of training and seminars on

CoViD-19, 237 (66.40%) attended, while 149 (38.60%) otherwise.

Table 1.a
Socio-Demographic Profile of Respondents

Variables	Frequency	Percent
Sex		
Female	253	65.5
Male	133	34.5
Civil status		
Single	63	16.3
Married	298	77.2
Widow/er	20	5.2
Common Law Partner	5	1.3
Living status		
Alone	16	4.1
Living with Children, Spouse and Parents	64	16.6
Living with Children and Spouse	190	49.2
Living with Children Only	28	7.3
Living with Parents	40	10.4
Living with Other Family Members or Friends	45	11.7
Living with Spouse Only	2	0.5
Living with Common Law Partner	1	0.3
Ethnicity		
Ilocano	282	73.1
Ybanag	66	17.1
Tagalog	59	15.3
Ytawes	57	14.8
Others	10	2.8
Religion		
Non-Roman Catholic	67	17.4

	Roman Catholic	319	82.6
Highest educational attainment			
	Elementary	23	6.0
	High School	97	25.1
	Vocational/Technical	18	4.7
	College	190	49.2
	Graduate Studies	21	5.4
	Post Graduate Studies	37	9.6
Occupation			
	Doctor	32	8.3
	Nurse	60	15.5
	Medical Technologist	11	2.8
	Radiologic Technologist	6	1.6
	Respiratory Therapist	3	0.8
	Midwife	32	8.3
	Nursing Aide	22	5.7
	BHERT	199	51.6
	Ambulance Driver	4	1.0
	Janitor	5	1.3
	Security Guard	12	3.1
Employment status			
	Permanent	151	39.1
	Contract of Service	34	8.8
	Co Terminus	136	35.2
	Job Order	21	5.4
	Elected	44	11.4
Employment agency			
	Local Government Unit	255	66.1
	Government Hospital	131	33.9
Role during the pandemic			
	Indirect Patient Care	264	68.4

	Direct Patient Care	122	31.6
Age (in years)			
	20-25	12	3.1
	26-31	63	16.3
	32-37	63	16.3
	38-43	59	15.3
	44-49	61	15.8
	50-55	63	16.3
	56-61	38	9.8
	62-67	19	4.9
	68-73	7	1.8
	74-79	1	0.3
	Mean \pm SD	43.4 \pm 11.8	
	Median (Range)	43 (20-75)	
Income			
	Mean \pm SD	16,473.5 \pm 24469.4	
	Median (Range)	7,000 (0-200,000)	
Length of service			
	Mean \pm SD	8.9 \pm 8.7	
	Median (Range)	6 (0-41)	
CoViD-19 related seminars/trainings attended			
No	149	38.60	
Yes	237	66.40	
Total		386	100.0

Table 1.a.1 displays the respondents' attendance to trainings and seminars. It shows that majority of both Community-based (BHERTs) (60.67%) and Hospital-based frontliners (14.56%) attended seminars as regards CoViD-19 Symptoms, Protocols and Minimum Public

Health Standards. Based on the table, it can be seen that nearly half of the Hospital-based respondents (47.09%) has not attended trainings and seminars in contrast with members of BHERT where only one-fourth (25.24%) of them has not able to attend the said undertaking.

Table 1.a.1
Trainings and Seminars Attended by Respondents

Trainings and Seminars	Organization			
	Community-Based Frontliner (BHERT)		Hospital-Based Frontliner	
	Frequency	Percentage	Frequency	Percentage
CoViD-19 Symptoms, Protocols and Minimum Public Health Standards	125	60.67	30	14.56
Contact Tracing	13	6.31	3	1.67
Proper Donning and Doffing of PPE	4	1.94	16	7.77
CoViD-19 Management	8	3.88	22	12.22
Orientation about Vaccine	3	1.46	6	2.91
Infection Control/ Prevention of Transmission	1	0.49	6	3.33
None	52	25.24	97	47.09
Total	206	100.00	180	100.00

Table 1.b.1 shows the medical history of respondents. For the record, 245 (63.5%) have no known reports of comorbidities in the past two (2) years. However, data on comorbidities reveal that there are 101 (26.2%) cardiovascular diseases (e.g., hypertension, high cholesterol, mitral valve prolapsed), 24 (6.2%) respiratory diseases (e.g., asthma, lung disease, tuberculosis), and 20 (5.2%) endocrine diseases (e.g., diabetes mellitus, gallbladder polyps, gallbladder stone, goiter, hepatitis, hepatitis B), respectively. Alarming, for the past two (2) years, the topmost health-related illnesses present among the family members of the

respondents are 101 (26.2%) cardiovascular diseases (e.g., hypertension, high cholesterol, mitral valve prolapsed), followed by 20 (5.2%) endocrine diseases (e.g., diabetes mellitus, gallbladder polyps, gallbladder stone, goiter, hepatitis, hepatitis B).

At large, 223 (57.8%) claim no closed contact with the CoViD-19 patients. On the contrary, 163 (42.2%) have closed contact, yet 144 (88.63%) underwent a swab test. To imply, 19 (11.66%) did not undergo swab test despite known exposure. Unfortunately, 19 (9.02%) tested positive; conversely, the rest were negative.

Table 1.b.1
Medical History of Respondents

Items	Frequency	Percent
Comorbidities or illnesses for the past 2 years		
Respiratory	24	6.2

Cardiovascular	101	26.2
Gastro-Intestinal	1	0.3
Genito-Urinary	6	1.6
Musculoskeletal	2	0.5
Endocrine	20	5.2
Immune Disorders	5	1.3
Blood Disorders	1	0.3
No Reported Comorbidity	245	63.5
Family Illnesses for the past 2 years		
Respiratory	41	10.6
Cardiovascular	197	51.0
Gastro-Intestinal	1	0.3
Genito-Urinary	6	1.6
Musculoskeletal	2	0.5
Endocrine	50	13.0
Immune Disorders	22	5.7
Blood Disorders	1	0.3
No Reported Comorbidity	146	37.8
Closed contact with a CoViD-19 patient		
Yes	163	42.2
No	223	57.8
Total	386	100.0
Undergo swab test with closed contact		
Yes	144	88.34
No	19	11.66
Total	163.	100.0
CoViD-19 positive		
Yes	13	9.02
No	131	90.08
Total	144	100.0



- Cardiovascular Diseases (hypertension, high cholesterol, mitral valve prolapsed)



- Respiratory Diseases (asthma, lung disease, tuberculosis)



- Endocrine Diseases (diabetes mellitus, gall bladder polyps, gall bladder stone, goiter, hepatitis, hepatitis B)

Table 1.b.2 indicates responses when tested positive for CoViD-19. Essentially, 12 (92.3%) of the frontliners felt anxious upon learning that the test result was positive. Thus far, 9 (69.2%)

use phone calls to communicate to update their families/housemates. To sum, the families/housemates' initial reaction was worried 11 (84.6%).

Table 1.b.2

Response When Tested Positive for CoViD-19

Items	Frequency	Percent
Respondents' Initial reaction		
Anxious	3	23.1
Worried	12	92.3
Guilty	1	7.7
Frustrated	2	15.4
Angry	2	15.4
In Denial	1	7.7
Fear of Rejection	2	15.4
Manner of informing family/housemates		
Thru Phone Call	9	69.2
Others	4	30.8
Family's initial reaction		
Stressed	3	23.1
Anxious	1	7.7
Angry	1	7.7
Depressed	2	15.4
Worried	11	84.6

Table 1.b.3 presents the agency's compliance with CoViD-19 quarantine procedures. To emphasize, 374 (96.9%) have "properly isolated all suspected, probable and confirmed CoViD-19 patients depending on the severity of symptoms". In comparison, 372 (96.6%) "adhere to stringent Minimum Public Health Standards

on CoViD-19 Management System through the implementation of the following: physical distancing, hand hygiene, cough etiquette, and proper wearing of a mask". In contrast, non-compliance to "psychosocial counseling on CoViD-19" 26 (6.7%), and "adequate room for quarantine" 25 (6.5%) is observed.

Table 1.b.3*Agency's Compliance on CoViD-19 Quarantine Procedures*

Items	NO		YES	
	Freq	%	Freq	%
Provided adequate room for quarantine	25	6.5	361	93.5
Adhered to stringent Minimum Public Health Standards on CoViD-19 Management System through the implementation of the following:				
a. Physical distancing	13	3.4	373	96.6
b. Hand hygiene	13	3.4	373	96.6
c. Cough etiquette	13	3.4	373	96.6
d. Proper wearing of mask	13	3.4	373	96.6
Properly isolated all suspected, probable and confirmed CoViD-19 patients depending on the severity of symptoms	12	3.1	374	96.9
Followed the desired number of days for quarantine prior to discharge	14	3.6	372	96.4
Provided psychosocial counselling on CoViD-19 quarantine	26	6.7	360	93.3

Table 2.a shows respondents' knowledge of the COVID-19 virus. As a piece of evidence relative to clinical manifestations, 384 (99.5%) accurately answer that "RT-PCR and Antigen Swab Tests are used to help determine exposure to CoViD-19 infection". On the contrary, items such as loss of speech 114 (29.5%), loss of movement 107 (27.7%), and rash on skin 74 (19.2%) are incorrectly answered.

For its modes of transmission, 383 (99.2%) accurately answer that "CoViD-19 virus can

Table 2.a*Respondents' Knowledge on COVID-19 Virus*

Items	Incorrect		Do not know		Correct	
	Freq	%	Freq	%	Freq	%
Clinical Manifestations						
1. Older adults and people who have underlying severe medical conditions such as heart and lung disease or diabetes are at higher risk of developing more serious complications from	3	0.8	3	0.8	380	98.4

spread from person to person through droplets when an infected individual coughs, sneezes and talks". In comparison, items like "CoViD-19 patients with no SYMPTOMS may help in the spread of infection" 6 (1.6%) and "The CoViD-19 virus can be transmitted to your body through fomites" 5 (1.3%) are answered incorrectly.

Interestingly, for its promotion, prevention, curative, or rehabilitation, the percentage of correct answers ranges from 99.5 % to 100%.

	CoViD-19 illness.						
2.	Symptoms of CoViD-19 illness are:						
a.	Fever	4	1.0	5	1.3	377	97.7
b.	dry cough	6	1.6	15	3.9	365	94.6
c.	Tiredness	36	9.3	59	15.3	291	75.4
d.	aches and pains	17	4.4	27	7.0	342	88.6
e.	sore throat	3	0.8	7	1.8	376	97.4
f.	Diarrhoea	18	4.7	45	11.7	323	83.7
g.	conjunctivitis (eye redness)	64	16.6	118	30.6	204	52.8
h.	Headache	21	5.4	28	7.3	337	87.3
i.	loss of smell	7	1.8	6	1.6	373	96.6
j.	loss of taste	13	3.4	17	4.4	356	92.2
k.	rash on skin	74	19.2	107	27.7	205	53.1
l.	difficulty of breathing	4	1.0	13	3.4	369	95.6
m.	chest pain	26	6.7	24	6.2	336	87.0
n.	loss of speech	114	29.5	139	36.0	133	34.5
o.	loss of movement	107	27.7	139	36.0	140	36.3
3.	Symptoms may appear within 2-14 days after exposure to CoViD-19 virus.	5	1.3	11	2.8	370	95.9
4.	RT-PCR and Antigen Swab Tests are used to help determine exposure to CoViD-19 infection.	2	0.5	0	0.0	384	99.5
	Modes of transmission						
5.	Children, elderly, pregnant and immunocompromised individuals are at higher risk of acquiring CoViD-19 virus.	3	0.8	3	0.8	380	98.4
6.	The CoViD-19 virus can be transmitted to your body through fomites (mobile phones, clothes, and doorknobs).	5	1.3	17	4.4	364	94.3
7.	CoViD-19 virus can spread from person to person through droplets when an infected individual coughs, sneezes and talks.	0	0.0	3	0.8	383	99.2
8.	CoViD-19 patients with no SYMPTOMS may help in the spread of infection.	6	1.6	13	3.4	367	95.1
9.	Exposure to crowded places contributes to the	1	0.3	4	1.0	381	98.7

spread of CoViD-19 infection.

Promotion/Prevention/Curative or Rehabilitation

10.	The following help boost immune system during CoViD-19 Pandemic:						
a.	maintaining healthy lifestyle	0	0.0	1	0.3	385	99.7
b.	taking vitamins	0	0.0	0	0.0	386	100.0
c.	eating nutritious foods	0	0.0	0	0.0	386	100.0
11.	Environmental cleaning and disinfection procedures must be observed at all times to prevent CoViD-19 transmission.	1	0.3	0	0.0	385	99.7
12.	The following are effective ways of preventing CoViD-19 infection:						
a.	proper handwashing	0	0.0	0	0.0	386	100.0
b.	wearing of mask	0	0.0	0	0.0	386	100.0
13.	Isolation and treatment of CoViD-19 patients are necessary in order to reduce the spread of infection.	0	0.0	0	0.0	386	100.0
14.	Avoiding social gatherings and observing physical distancing can help combat the spread of CoViD-19 infection.	0	0.0	2	0.5	384	99.5

Table 2.b describes the respondents' level of knowledge with regard to the nature of CoViD-19 virus. When rank accordingly, "promotion, prevention, curative, or rehabilitation" shows the highest frequency counts of respondents with high level of knowledge 385 (99.7%), seconded

by its "modes of transmission" 370 (95.5%), and the lowest is on "clinical manifestations" 163 (42.2%) where majority have a moderate level of knowledge.

Table 2.b

Respondents' Level of Knowledge on the Nature of COVID-19 Virus

Knowledge Dimensions	Frequency	Percent
Clinical Manifestations		
Low	52	13.5
Moderate	171	44.3
High	163	42.2
Modes of Transmission		
Low	3	0.8
Moderate	13	3.4
High	370	95.5

Promotion/Prevention/Curative or Rehabilitation

Low	0	0.0
Moderate	1	0.3
High	385	99.7
Total	386	100.0

It is worth emphasizing that Quantile Regression was used to determine the relationship between the profile variables and low score of knowledge of frontliners, as shown in Table 3. a.

In this regard, strong evidence declares that sex ($p=0.001$), occupation ($p=0.022$), and

comorbidity are significantly associated with the knowledge scores. Remarkably, the knowledge scores of female frontliners are significantly higher compared to males. Meanwhile, between non-allied and allied health, the latter significantly claims lower knowledge scores in clinical manifestations. (see table 3.b)

Table 3.a*Quantile Regression Results for KAP and Profile Variables*

Parameter	Knowledge	
	Coefficient	Std. Error
Age	0.040	0.036
Education	0.217	0.345
Length of service	-0.058	0.047
Income	-8.774E-06	1.8909E-05
Comorbidity	1.148*	0.571
Family illness	-0.254	0.428
Sex (female)	2.252**	0.697
Civil Status (w/o partner)	-0.242	0.821
Living status (with someone)	1.056	1.633
Ethnicity (Ilocano & Tagalog)	0.460	0.808
Religion (Roman Catholic)	0.127	0.843
Occupation (allied health)	-2.954*	1.280
Employment status (permanent)	1.554	-1.045
Employment agency (local government unit)	0.262	-0.965
Role (indirect patient care)	-1.440	1.019
Seminar attended	0.255	0.675

* $p<0.05$, ** $p<0.01$

Mann-Whitney U test was performed to compare the knowledge between allied and non-allied health on the various dimensions: clinical manifestations, modes of transmission, and levels of prevention, respectively. Results show that respondents' knowledge on clinical

manifestations is significantly higher in non-allied health ($U = 14534.5$, $p = .001$). However, both professions reveal no significant difference in their knowledge on modes of transmission and levels of prevention.

Table 2.b Comparison on the knowledge of respondents between occupations

Dimension	Occupation	Percentiles			Mean Rank		Mann-Whitney U	p-value
		25th	Median	75th				
Clinical Manifestations	Non allied health	48.00	51.00	52.00	210.43	A	14534.50	0.001
	Allied health	47.00	49.00	51.00	171.06	B		
Modes of Transmission	Non allied health	15.00	15.00	15.00	192.97	A	18143.50	0.844
	Allied health	15.00	15.00	15.00	194.20	A		
Prevention	Non allied health	24.00	24.00	24.00	191.99	A	17928.00	0.081
	Allied health	24.00	24.00	24.00	195.50	A		

Mean ranks of the same letter are not significantly different at 0.05 level

DISCUSSION

Following our genuine understanding, this study pioneered the optimal assessment of the knowledge, attitudes, beliefs, practices, and challenges of frontliners during the CoViD-19 pandemic in the Province of Cagayan.

Overwhelmingly, 99.5% of the respondents accurately answered that "RT-PCR and Antigen Swab Tests are used to help determine exposure to CoViD-19 infection". In like manner, this is attributed to the fact that testing is the widely-known practical step for disease prevention that helps identify and isolate suspected, probable, or confirmed CoViD-19 cases. As expounded by El Hage et al. (2021), testing is a valuable strategy for detecting and isolating cases during the pandemic, thus preventing further transmission among the people in the community. From a medical viewpoint, the reverse transcription-polymerase chain reaction (RT-PCR) resembles a definitive interpretation, exclusively for SARS-CoV-2. Drawing things close, it detects

the set of nucleic acids in the specimen samples collected from the respiratory tract (Yi et al., 2020; Feng et al., 2020).

Contrastingly, clinical manifestations revealed that loss of speech 114 (29.5%), loss of movement 107 (27.7%), and rash on skin 74 (19.2%) were erroneously answered. To corroborate the findings, the less common symptoms of CoViD-19 include aches and pains, sore throat, diarrhea, conjunctivitis, headache, loss of taste or smell, a rash on the skin, or discoloration of fingers or toes as stipulated on WHO (2021) guideline in terms of novelty on pathological clinical presentation. However, it could be argued that another case study reported that fear of being contracted with the disease and isolation subsequently resulted in tremor and movement disorders. Comprehensively, the aforesaid clinical indicators should be carefully considered when caring for CoViD-19 patients (Piscitelli et al., 2020).

Based on the survey conducted, the respondents were highly knowledgeable about modes of transmission, highlighting promotive, preventive, and rehabilitative as magnitudes of care. Worthy to note, there is a strong association between knowledge and personal safety among the frontliners. In this sense, knowing about the disease while performing direct patient care provides instant protection against the CoViD-19 virus.

Now, more than ever, the prominence of success lies in the depth of knowledge. In this time of CoViD-19 struggle, health care workers are primarily reckoned as the reservoir of scientific information. Responsibility-wise, they should closely monitor all the corresponding risks linked with this highly transmissible disease (Hussain et al., 2020).

Unfortunately, results on clinical manifestations showed that the respondents exhibited a moderate level of knowledge. To support this finding, the researchers went back to the participants and asked their narratives on CoViD-19 clinical manifestations. To quote, “...minsan kahit mga doctor talaga ay litung-lito ka...kahit sa triaging namin namomorolema kami kung ano ba ang uunahin, ano ba yung dapat na tinitignan kung ito ba ay dapat na irefer sa command center ng CoViD... ewan ko din kung ano yung major problem...” [“...sometimes even doctors really confuse you... even in our triaging we have a problem as to what to prioritize, what should be looked at if it should be referred to the command center of CoViD... I also don't know what the major problem is...”] [SP01S02.1], “...bawat society may algorithm...ang isa pa diyan sa dami ng algorithm na ikinikonsider din ng mga doctors...ako mismo kung minsan talagang binabalikan ko din ang algorithm...” [“... every society has an algorithm... brought about by the number of algorithms that doctors also consider... myself sometimes I actually go back to the algorithm...”] [SP01S02.2], “...yung clinical practice guidelines, yun kasi ang final-follow naming mga doctors sa pagmanage ng cases.” [“... the clinical practice guidelines are the ones we follow as doctors in managing the cases.”] [SP03S02], “Ang mga doctors

evidenced-based kasi yan...” [“Doctors are evidenced-based] [SP02S01.4], and finally “...hindi talaga nila ineexpect na coming from research institutions yung nagbibigay ng talagang definition ng like for example symptoms.” [“... they don't really expect those coming from research institutions to give a real definition of like for example symptoms.”] [SP02S01.6]. Currently, it can be inferred that this dimension of knowledge requires further scientific investigation to gain clarity and formulate algorithms that deepen understanding of the disease. As a motivational springboard, this is to establish precision and accuracy regarding patient assessment, and in the end, fortify CoViD-19 Management and Protocols. Up to now, CoViD-19 pressing signs and symptoms remains unclear (Adhikari et al., 2020).

REFERENCES

- Adhikari, S. P., Meng, S., Wu, Y. J., Mao, Y. P., Ye, R. X., Wang, Q. Z., Sun, C., Sylvia, S., Rozelle, S., Raat, H., & Zhou, H. (2020). Epidemiology, causes, clinical manifestation and diagnosis, prevention and control of coronavirus disease (COVID-19) during the early outbreak period: a scoping review. *Infectious Diseases of Poverty*, 9(1). <https://doi.org/10.1186/s40249-020-00646-x>
- Coronavirus from Patients with Pneumonia in China, 2019. *New England Journal of Medicine*, 382(8), 727-733. doi: 10.1056/nejmoa2001017
- Doherty, P. (2013). *Pandemics: What Everyone Needs to Know*. Oxford University Press,
- El Hage, J., Gravitt, P., Ravel, J., Lahrichi, N., & Gralla, E. (2021). Supporting scale-up of COVID-19 RT-PCR testing processes with discrete event simulation. *PLOS ONE*, 16(7), e0255214. <https://doi.org/10.1371/journal.pone.0255214>
- European Center for Disease Control and Prevention. (2020)

- Feng, H., Liu, Y., Lv, M., & Zhong, J. (2020). A case report of COVID-19 with false negative RT-PCR test: necessity of chest CT. *Japanese Journal of Radiology*, 38(5), 409–410. <https://doi.org/10.1007/s11604-020-00967-9>
- Feng, H., Liu, Y., Lv, M., & Zhong, J. (2020). A case report of COVID-19 with false negative RT-PCR test: necessity of chest CT. *Japanese Journal of Radiology*, 38(5), 409–410. <https://doi.org/10.1007/s11604-020-00967-9>
- Hussain, I., Majeed, A., Imran, I., Ullah, M., Hashmi, F. K., Saeed, H., Chaudhry, M. O., & Rasool, M. F. (2020). Knowledge, Attitude, and Practices Toward COVID-19 in Primary Healthcare Providers: A Cross-Sectional Study from Three Tertiary Care Hospitals of Peshawar, Pakistan. *Journal of Community Health*, 46(3), 441–449. <https://doi.org/10.1007/s10900-020-00879-9>
- Lotfinejad, N., Peters, A., & Pittet, D. (2020). Hand hygiene and the novel coronavirus pandemic: the role of healthcare workers. *The Journal of hospital infection*, 105(4), 776.
- Piscitelli, D., Perin, C., Tremolizzo, L., Peroni, F., Cerri, C. G., & Cornaggia, C. M. (2020). Functional movement disorders in a patient with COVID-19. *Neurological Sciences*, 41(9), 2343–2344. <https://doi.org/10.1007/s10072-020-04593-1>
- Read, J. M., Bridgen, J. R., Cummings, D. A., Ho, A., & Jewell, C. P. (2020). Novel coronavirus 2019-nCoV: early estimation of epidemiological parameters and epidemic predictions. *MedRxiv*.
- Stuart, R. L., & Gillespie, E. E. (2008). Preparing for an influenza pandemic: healthcare workers' opinions on working during a pandemic. *Healthcare infection*, 13(3), 95–99.
- USA.
- World Health Organization (2020). Protecting health workers from COVID-19.WHO. <https://www.who.int/westernpacific/news/feature-stories/detail/protecting-health-workers-from-covid-19>
- World Health Organization (2021). Frontline workers and COVID-19: coping with stress.WHO. <http://www.emro.who.int/mnh/news/frontline-workers-and-covid-19-coping-with-stress.html>
- Yi, Y., Lagniton, P. N., Ye, S., Li, E., & Xu, R. H. (2020). COVID-19: what has been learned and to be learned about the novel coronavirus disease. *International Journal of Biological Sciences*, 16(10), 1753–1766. <https://doi.org/10.7150/ijbs.45134>
- Zhu, N., Zhang, D., Wang, W., Li, X., Yang, B., & Song, J. et al. (2020). A Novel