Health Protocol Practices and Personal Preventive Measures among Fully Vaccinated Individuals with Comorbidities in the National Capital Region, Philippines during the COVID-19 Pandemic: A Mixed-Method Study

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ABSTRACT

Background and Objective. The Philippine Inter-Agency Task Force for the Management of Emerging Infectious Diseases implemented health protocol guidelines to reduce the risk of COVID-19 transmission. Individuals with comorbidities were advised to take precautionary measures due to their increased vulnerability. This study aimed to assess the relationship between knowledge, acceptance, and adherence to health protocols among fully vaccinated individuals with comorbidities in the National Capital Region, Philippines.

Methods. The study employed an explanatory-sequential mixed-method design. The quantitative phase involved an online survey with 384 respondents. The survey included questions on socio-demographic profile, COVID-19 knowledge, acceptability of health protocols, and adherence to preventive practices. Chi-square Test of Independence and Pearson's Correlation Test were used to analyze the data. Semi-structured interviews were conducted with 11 participants, providing rich insights into their personal experiences. The interview transcripts were analyzed using Colaizzi's descriptive method with the aid of qualitative analysis software (MAXQDA), ensuring a rigorous approach to thematic analysis. The integration of the two phases was achieved by connecting quantitative results with qualitative insights, creating a comprehensive understanding of the phenomena under study.

Results. Findings showed that the relationship of socio-demographic characteristics and level of knowledge (Gender $p<0.05$; Employment status $p<0.05$), and level of acceptability to minimum health protocols and personal preventive practices varies depending on the respective health protocol practice. The level of knowledge about COVID-19 was positively correlated with knowledge of minimum health protocols ($p<0.01$). Similarly, knowledge and acceptability were dependent on adherence to most health protocols. The qualitative analysis identified seven themes: Unmasking a collective mystery, Knowledge is part of weaponry, Safeguards for security, Tethered by a boundary, Individual cloaks of safety, The thread in the tapestry, and Towards the end of one story that described the participants' experiences, leading to the formulation of a Swiss Cheese Model of Health Protocol Practices.

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Conclusion. The study suggests that multiple factors contribute to non-adherence to health protocols. Recognizing these holes and weaknesses in the COVID-19 pandemic response stresses the need for national leaders to place urgency on properly implementing preventive measures and providing health education to the masses during public health situations. Collaboration from all sectors is crucial in addressing public health crises. This study can be a valuable resource for future researchers, local government units, and policymakers in prioritizing public health care and pandemic preparedness.

Keywords: comorbidity, COVID-19, public health practice, vaccine

INTRODUCTION

The COVID-19 pandemic has greatly affected millions of people throughout the world which impacted not only the health sector but also the economic, social, and mental aspects of people's lives.[1] The Philippines' Department of Health (DOH), with the help of the Inter-Agency Task Force (IATF) for the Management of Emerging Infectious Disease resorted to establishing the minimum health protocols. The implementation of minimum health standards such as face masks or face shields, hand washing, and physical distancing reduced the risk of infection.[2] These health protocols serve as preventive efforts to mitigate the spread of COVID-19, meaning that strict adherence to these can significantly reduce COVID-19 transmission.[3]

The major concern during the pandemic was the vulnerable sectors such as people with comorbidities, who had an increased risk of developing severe COVID-19.[4] With this, the DOH provided guidelines as to the priority A3 group which includes individuals with the following diseases such as but not limited to chronic respiratory disease and infection, cardiovascular disease, chronic kidney disease, cerebrovascular disease, cancer, and diabetes mellitus.[5] Hence, the implemented health protocols emphasized the containment of transmission and protection for high-risk populations.[4] Among the regions in the Philippines, the National Capital Region (NCR) holds second as the most populous and most densely populated region of the Philippines.[6] This strikes as an opportunity to understand the population's knowledge, behavior, and experiences.

This study was conducted to assess the relationship between the knowledge, acceptance, and adherence of fully vaccinated COVID-19 individuals with comorbidities to the health protocol practices in the National Capital Region, Philippines. In addition, the present study sought to study the following variables: level of knowledge (minimum health protocols and COVID-19), level of acceptance, level of adherence towards minimum health protocols, and personal preventive practices. Most studies have focused on the knowledge, attitude, and related practices of populations towards the virus itself, finding contrasting correlations. While others argue that although the population had a high degree of knowledge in COVID-19, there was limited knowledge in identifying and adopting other preventive practices.[8] Others found associations between knowledge and practices, as well as attitude and practices, but none with knowledge and attitude.[9] Furthermore, studies on acceptance and adherence to COVID-19 preventive measures appear limited and isolated, mostly centering on populations in other countries, and certain influences affected said variables i.e., politics, conspiracies, fear).[11,28] As such, this study aims to address the existing research gap characterized by a scarcity of literature comprehensively examining knowledge, acceptability, and adherence to minimum health protocols.[7-9] Previous studies discuss these factors in isolation[10-12], our research seeks to bridge this divide by exploring their interconnectedness. By doing so, the researchers strive to contribute valuable insights into understanding the holistic dynamics influencing individuals' responses to health protocols.

Moreover, the study meticulously identifies various factors and barriers influencing adherence to minimum health protocols, offering valuable insights for policymakers and relevant agencies. By extrapolating these findings, policymakers can formulate more effective preventive strategies tailored to the specific needs and circumstances of communities, thereby bolstering public health responses to future pandemics. In essence, this study serves as a crucial foundation for informed decision-making and proactive measures aimed at safeguarding public health and mitigating the impact of infectious diseases on society.

MATERIALS AND METHODS

Study Design and Participants

An explanatory-sequential mixed method design was applied to allow an in-depth understanding of both statistical description and phenomenon to fully describe the experiences of the study population towards the health protocol practices. This study design involves two-phase data collection in which phase I collects quantitative data and analyzes the results, which are used to plan the phase II (qualitative phase) to deepen the findings. With that said, phase I examines the level of knowledge, acceptance, and adherence towards the minimum health protocols and personal preventive practices, while phase II allows for a better understanding of the challenges and perspectives of the participants towards the health protocols and COVID-19 pandemic, and combines the two databases through integration or connecting quantitative results to the qualitative data.

An inclusion criterion was used as the basis for the selection of target participants through purposive and snowballing sampling, namely: belonging to the A3 vaccination priority group, living in the NCR, fully vaccinated i.e., have received two full doses of any COVID-19 vaccines offered by the government, and ages 18 to 59. Failure to meet

the said criteria excluded the participants from participating. For the computation of sample size, a sample size calculator was used with the total population of A3 fully vaccinated individuals during the time of the study (527,130–as of 2021 data[13]), with a 5% margin of error, at 95% confidence level. A total of 384 fully vaccinated COVID-19 individuals with comorbidities in NCR were purposely selected to participate in the online survey. In addition, a section of the survey asked whether or not the participant would like to participate in an online interview; among the 384 participants, only 58 participants agreed to participate and of the 58 participants, 11 participants were randomly selected and invited to participate in the semi-structured interview.

Development of the Tool

For the quantitative phase, the survey tool consists of 67 questions to measure the participants' level of knowledge and acceptability towards the COVID-19, its vaccine, minimum health protocols, and personal preventive practices. The first part of the survey was about the socio-demographic characteristics, together with their vaccine information. In the second and third parts, the questions were adapted from three studies that focused on determining the participants' knowledge and acceptability towards COVID-19 vaccination and minimum health protocols.[11,14,15] The last two parts of the survey determined the extent of the participants' adherence to the health protocols and their personal preventive practices. Regarding the level of adherence on minimum health protocols and personal preventive practices, the frequency of following a health protocol or preventive practice during the COVID-19 pandemic was used as a basis to interpret the level of adherence to minimum health protocol and preventive practices. It is classified into two: good adherence and poor adherence. Responses corresponding to "always" and "often" are considered to have good adherence, while remaining responses such as "sometimes", "rarely", and "never" represent poor adherence. On the level of knowledge on COVID-19 and minimum health protocols, the percentage of the total correct answers was used to interpret the level of knowledge related to COVID-19 information and minimum health protocols. The four levels are high, average, low, and very low. The high level is 80 percent or above, while the average level is from 60 to 79 percent. A low level corresponds to a percentage between 40 and 59, and a percentage less than 40 refers to a very low level. Lastly, on the level of acceptability on protocols, the percentage of affirmative responses was used to interpret the level of acceptability regarding the COVID-19 information and minimum health protocols. Similar to the level of knowledge, there are four levels of acceptability - highly acceptable, almost acceptable, slightly acceptable, and not at all acceptable. The highly acceptable level is 80 and above, while the almost acceptable level is 60 to 90 percent. A slightly acceptable level corresponds to a percentage between 40 and 59, and a percentage less than 40 refers to a not at all acceptable level.

A validated Filipino translated version of the tool was also made available. For the qualitative phase, a semi-structured interview was done based from the results of the quantitative phase, specifically, on the adherence of the participants to the health protocol practices. This interview focused by asking four central questions with sub-questions: *What are the minimum health protocols that you follow? Why do you comply or do not comply with the protocols? Why do you believe or do not believe health protocols are important? What are your personal preventive practices?* Pilot testing was also conducted prior to actual data collection, from which the final adapted tool was modified based on Cronbach's alpha report (score of 0.881 for Likert scale questions; score of 0.705 for the rest of the questions).

Data Collection

Ethics approval was obtained prior to the recruitment of participants and data collection. The recruitment of respondents for the online survey took place from March to April 2022. A recruitment publication material was uploaded to various social media platforms such as but not limited to Facebook, Instagram, and Twitter. Included in the publication material or pubmat were the criteria for participants of the study, QR code for the questionnaire, and the contact information of the principal investigator. Google forms was used to distribute the survey questionnaire. The said form contained letter of invitation, consent letter, and the questionnaire. A copy of their responses had been sent to them for reference. Participants were informed of the purpose of the study and of their voluntary participation. The quantitative phase of the study employed a descriptive online survey which included demographics, dichotomous items, and Likert scales (Figure 1).

This survey was administered in both English and Filipino languages, and responses were tabulated and organized. Following the interpretation of the quantitative data, the researchers conducted a semi-structured interview to triangulate the quantitative findings. These semi-structured interviews usually lasted around 30 minutes to 1 hour and were conducted online via Messenger or Zoom, depending on the participants' availability. During the interview proper, participants were oriented and asked for their informed consent, permission to have the interviews recorded, and for them to turn on their cameras. Depending on the data collected, follow-up interviews were scheduled to gather further explanations on certain questions and to better understand the personal accounts of participants. To limit bias during interview, Husserl's transcendental phenomenology was utilized, which seeks to set aside prejudgments regarding the participants' experiences by practicing bracketing. This practice reduces judgment of the existence and pre-understanding of the things outside of the human mind.[16,17]

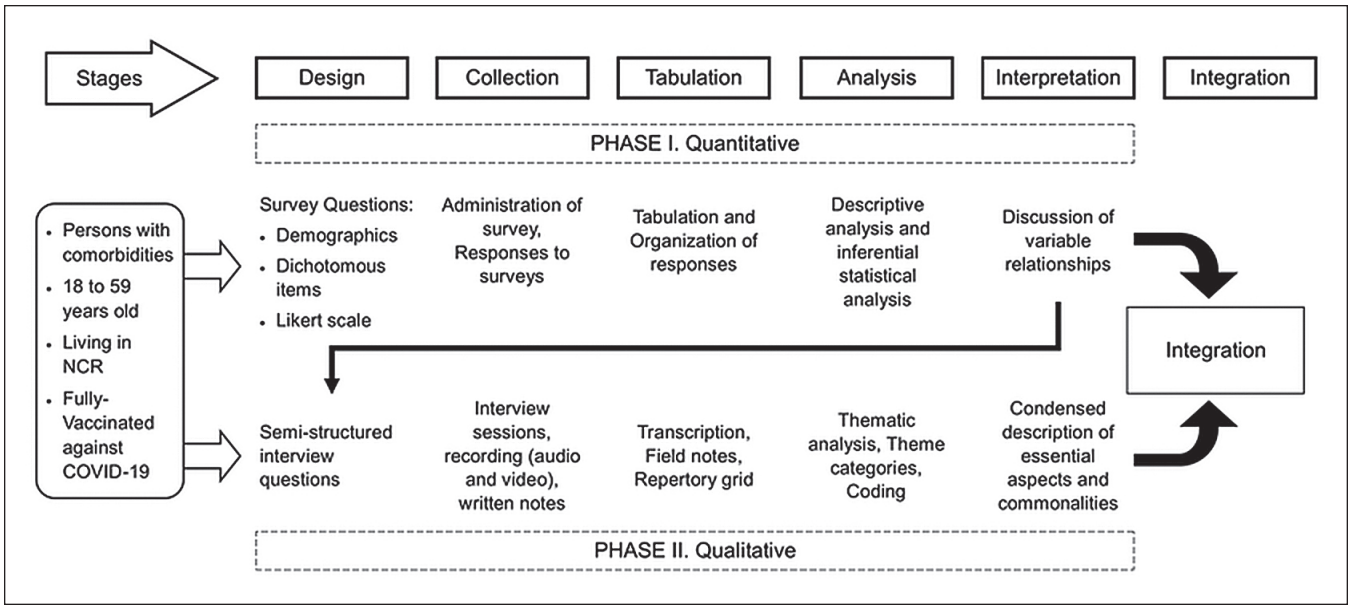

Figure 1. Data Gathering Procedure.

Data Handling and Analysis

Survey responses were organized and tabulated in an Excel spreadsheet. The quantitative data was analyzed by descriptive statistics on the frequencies of demographic characteristics, level of knowledge of the COVID-19 virus and vaccine, level of acceptability, and level of adherence to minimum health protocols and personal preventive practices (SPSS version 22). Additionally, inferential analysis was executed using the Chi-square Test of Independence and Pearson's Correlation Test. Audio/video recordings were transcribed verbatim, anonymized, and translated into English, which has been validated. These transcripts were arranged in a repertory grid and Colaizzi's descriptive method was used to analyze, describe, and interpret the data collected from the interviewees.[18] All transcripts derived from the recorded interviews were analyzed to examine the responses of the participants and reveal emergent and common themes within the provided data (MAXQDA 2020). Accuracy validation of the data was done through Creswell's data analysis method.[19] Data integration was done by understanding and connecting the findings from both phases of the study, and creating an understanding of the phenomena, which is represented by a figure.

Ethics Approval

This study was approved by the University of Santo Tomas–Faculty of Pharmacy Research Ethics Committee (Reference Code: FOPREC-2122-072). The present study observed the protocol stipulated in Republic Act 10173, otherwise known as "Data Privacy Act of 2012". Informed consent and recorded verbal consent were obtained from participants before the survey and semi-structured interview. Pseudonyms were assigned to participants to observe anonymity. Participation in the study was completely voluntary. To establish rapport and give initial information of the study, the participants were guided through the following aspects: the purpose of the study, and protocols to assure confidentiality of data gathered from the interviews.

RESULTS

Participant Characteristics

A total of 384 fully vaccinated COVID-19 individuals with comorbidities from NCR were recruited (Table 1).

75.5% (n = 290) are aged at most 39 years old. The proportion of female respondents is 64.1% (n = 246) and approximately 76% (n = 293) of the respondents are single. Furthermore, at least 60% (n = 236) are degree holders. However, due to the pandemic, almost 70% (n = 258) are currently unemployed. Most of the respondents, 65.3% (n = 251) were residing either in the Western or Eastern Manila District at the time the study was conducted.

Level of Adherence on Minimum Health Protocols and Personal Preventive Practices

Among the 384 participants in the study, at least 85% were considered to have 'good adherence' to almost all the minimum health protocols except for wearing face shields (Table 2).

Wearing masks outside the residence, sanitizing oneself, and following quarantine guidelines (98.2%) are the most dominant minimum health protocols that the majority of the participants religiously practiced. However, poor adherence was seen with the wearing of face shields as it had a frequency of only 48.4% (Table 2).

Personal preventive practices refer to the measures done by an individual or group not included in the mandated minimum health protocols to lessen the risks of being infected with COVID-19. In terms of personal preventive practices, at least three-fourths of the respondents consistently performed all these. The three topmost performed practices are keeping informed with how the spread of the coronavirus can be prevented (95.8%), cleaning and disinfecting frequently touched surfaces or objects (95.3%), and coughing and sneezing into the elbow or tissue (94.8%). Meanwhile, the least adhered to personal preventive practice was avoiding eating outdoors (75.5%) (Table 2).

Table 1. Socio-demographic Characteristics of the Participants

Characteristic	Frequency	%
Age		
18-24	243	63
25-39	48	12.5
40-49	32	8.3
50-59	61	15.9
Sex		
Male	138	35.9
Female	246	64.1
Civil Status		
Unmarried	293	76.3
Married	82	21.4
Divorced/Separated	3	0.8
Widowed	6	1.6
Highest Educational Attainment		
Elementary	2	0.5
High School	142	37.0
College Undergraduate	4	1.0
College Graduate	216	56.3
Post-Graduate	20	5.2
Monthly Income in Philippine Pesos		
Below 9,520	198	51.6
Between 9,520-19,040	42	10.9
Between 19,040-38,080	50	13.0
Between 38,080-66,640	41	10.7
Between 66,640-114,240	33	8.6
At least 114,240	20	5.2
Employment Status		
Employed: Public	29	7.6
Employed: Private	97	25.3
Unemployed	258	67.2
Place of Residence		
Western Manila District	103	26.8
Eastern Manila District	148	38.5
Northern Manila District	39	10.2
Southern Manila District	94	24.5

Level of Knowledge on COVID-19 and Minimum Health Protocols

The mean score of respondents on a 16-item test regarding the knowledge on COVID-19 virus and vaccine is 13.73 (SD=150), while the mean score is 3.94 (SD=0.31) for a 4-item test assessing the knowledge of minimum health protocols (Table 3).

Most respondents are highly knowledgeable on COVID-19 (83.1%) and minimum health protocols (95.85%). In addition, the level of knowledge on minimum health protocols in relation to socio-demographics, specifically gender and employment status, are significantly associated.

Table 2. Level of Adherence on Minimum Health Protocol Practices and Personal Preventive Practices

	Level	Frequency	%
Minimum Health Protocols			
Social distancing	Good	341	88.8
	Poor	43	11.2
Wearing of face shield	Good	186	48.4
	Poor	198	51.6
Wearing of mask	Good	377	98.2
	Poor	7	1.8
Washing hands with soap	Good	373	97.1
	Poor	11	2.9
Sanitizing the hands (e.g., alcohol, hand sanitizer)	Good	377	98.2
	Poor	7	1.8
Following curfews	Good	328	85.4
	Poor	56	14.6
Following quarantine guidelines/ protocols (if applicable)	Good	377	98.2
	Poor	7	1.8
Avoiding mass gatherings	Good	331	86.2
	Poor	53	13.8
Personal Preventive Practices			
Avoiding social contacts in person	Good	341	88.8
	Poor	43	11.2
Keeping informed on how the spread of the coronavirus can be prevented	Good	368	95.8
	Poor	16	4.2
Refraining from non-essential travel	Good	326	84.9
	Poor	58	15.1
Coughing and sneezing into the elbow or a tissue	Good	364	94.8
	Poor	20	5.2
Avoiding touching eyes, nose, and mouth	Good	350	91.1
	Poor	34	8.9
Avoiding leisure activities	Good	322	83.9
	Poor	62	16.1
Avoiding eating outdoors	Good	290	75.5
	Poor	94	24.5
Cleaning and disinfecting frequently touched surfaces or objects	Good	366	95.3
	Poor	18	4.7

Table 3. Level of Knowledge on COVID-9 Virus, Vaccines, and Minimum Health Protocols

Area	Mean (SD)	Level	Frequency	%
COVID-19 Virus and Vaccine	13.73 (1.50)	High	319	83.1
		Average	59	15.4
		Low	6	1.5
Minimum Health Protocols	3.94 (0.31)	High	368	95.8
		Average	12	3.1
		Low	2	0.05
		Very Low	2	0.05

Table 4. Association of Socio-demographic Characteristics and Level of Knowledge on Minimum Health Protocols

Characteristic	Chi-square Value	*df*	*P*-value
Age	3.809	6	0.703
Gender	7.989*	2	0.018
Civil Status	2.598	6	0.857
Highest Educational Attainment	7.356	8	0.499
Monthly Income	9.209	10	0.512
Employment Status	10.764*	4	0.029
Place of Residence	6.700	6	0.350

**Significant < 0.05, **Highly Significant < 0.01*

Female respondents (p=0.018) and employed individuals (p=0.029) are considerably more knowledgeable than their counterparts, as seen in Table 4.

Remarkably, the level of knowledge and level of adherence to minimum health protocols exhibited a significant association. As shown in Table 5, participants who are more knowledgeable about minimum health protocols are more likely to be adherent, except for wearing face shields and following curfews (p>0.05).

However, wearing face shields and following curfews may have been affected by the time of data collection, when face shields were no longer compulsory, and curfews were slowly being lifted. Similarly, the level of knowledge is also significantly dependent on the level of adherence to personal preventive practices except for refraining from non-essential travel and avoiding eating outdoors (p>0.05). This implies that avoiding eating outdoors and refraining from non-essential travel demonstrated no significant relationship to the level of knowledge because of ease in alert level restrictions which allowed the individuals to go out.

Level of Acceptability on Protocols

The mean score of the participants on their acceptability on the minimum health protocols during the COVID-19 pandemic is 14.28, as reflected in Table 6. At least 90% of these participants have a positive outlook regarding the implementation of minimum health protocols. Accordingly, the target sample shows favorable regard towards the protocols, meaning they were willing to follow the said health protocols. Interestingly, around 6% (Table 6) have shown low and very low acceptance of the minimum health protocols.

Table 5. Association of Level of Knowledge to the Level of Adherence on Minimum Health Protocols and Personal Preventive Practices

	Chi-square	*df*	*P*-value
Minimum Health Protocols			
Social distancing	32.566**	4	<0.001
Wearing of face shield	3.494	4	0.479
Wearing of mask	29.260**	3	<0.001
Washing hands with soap	138.941**	3	<0.001
Sanitizing the hands	221.637**	3	<0.001
Following curfews	2.407	4	0.661
Following quarantine guidelines/protocols	138.582**	4	<0.001
Avoiding mass gatherings	15.068**	4	0.004
Personal Preventive Practices			
Avoiding social contacts in person	21.671**	4	<0.001
Keeping informed on how the spread of the coronavirus can be prevented	15.675**	4	0.003
Refraining from non-essential travel	5.506	4	0.239
Coughing and sneezing into the elbow or a tissue	11.687*	4	0.020
Avoiding touching eyes, nose, and mouth	30.400**	4	<0.001
Avoiding leisure activities	13.009*	4	0.011
Avoiding eating outdoors	1.982	4	0.739
Cleaning and disinfecting frequently touched surfaces or objects	30.563**	4	<0.001

**Significant <0.05, **Highly Significant <0.01*

Table 6. Levels of Acceptability on Minimum Health Protocols

Area	Mean (SD)	Level	Frequency	%
Minimum Health Protocols	14.28 (3.03)	High	182	47.4
		Average	167	43.5
		Low	24	6.25
		Very Low	11	0.03

However, the data suggest that the level of acceptability shows no significant relationship with regard to the socio-demographic characteristics (p>0), as reflected in Table 7. This signifies that regardless of the characteristics, the participants agreed wholeheartedly to whatever health protocols, as established by the national or local government.

On the relationship between the level of acceptability and level of adherence, Table 8 suggests that there is indeed a highly significant relationship between the level of adherence to minimum health protocols and personal preventive practices.

Hence, participants who find the minimum health protocols and personal preventive practices acceptable are generally more adherent. However, the association is not

Table 7. Association of Socio-demographic Characteristics on Level of Acceptability on Minimum Health Protocols

Characteristic	Chi-square Value	*df*	*P*-value
Age	4.493	9	0.876
Gender	6.478	3	0.091
Civil Status	4.769	9	0.854
Highest Educational Attainment	9.688	12	0.643
Monthly Income	12.651	15	0.629
Employment Status	0.964	6	0.987
Place of Residence	4.557	9	0.871

**Significant <0.05, **Highly Significant <0.01*

Table 8. Association of Level of Acceptability to the Level of Adherence on Minimum Health Protocols and Personal Preventive Practices

	Chi-square value	*df*	*P*-value
Minimum Health Protocols			
Social distancing	34.392**	4	<0.001
Wearing of face shield	26.911**	4	<0.001
Wearing of mask	16.315**	3	<0.001
Washing hands with soap	38.778*	3	<0.001
Sanitizing the hands	55.162**	3	<0.001
Following curfews	20.577**	4	<0.001
Following quarantine guidelines/protocols	71.233**	4	<0.001
Avoiding mass gatherings	45.080**	4	<0.001
Personal Preventive Practices			
Avoiding social contacts in person	51.741**	4	<0.001
Keeping informed on how the spread of the coronavirus can be prevented	52.290**	4	<0.001
Refraining from non-essential travel	33.458**	4	<0.001
Coughing and sneezing into the elbow or a tissue	3.983	4	0.263
Avoiding touching eyes, nose, and mouth	19.136**	4	0.001
Avoiding leisure activities	25.189**	4	<0.001
Avoiding eating outdoors	30.756**	4	<0.001
Cleaning and disinfecting frequently touched surfaces or objects	23.059**	4	<0.001

**Significant <0.05, **Highly Significant <0.01*

revealed on coughing and sneezing into the elbow or tissue (p=0.263), warranting participants to simply adhere to the said practice without accepting this particular practice. Overall, these findings suggest that the level of acceptability predicts how participants practice and adhere to the protocols and practices (Table 8).

Between the level of knowledge and acceptance, there is a highly significant moderate and positive correlation between the knowledge on COVID-19 virus and vaccine and on the minimum health protocols (Table 9). However, the level of acceptance on the minimum health protocols has nothing to do with their knowledge on the COVID-19 as a whole (p-value >0.09).

Emerging Themes

The findings from the qualitative phase revealed the participants' experiences with the minimum health protocols, personal preventive practices, and challenges during the pandemic. Through the richness and thickness of the data gathered, seven major themes have emerged (Table 10).

Theme 1: Unmasking a Collective Mystery

Unmasking a Collective Mystery encapsulates the start of the participants' COVID-19 journey. The abrupt onset of disease transmissibility brought challenges and fear to the public. Similarly, the COVID-19 pandemic was a mystery and throughout the journey, a series of events transpired that impacted the participants' experiences.

Theme 2: Safeguards for Security

Safeguards for Security refer to the minimum health protocols that the participants considered as their protective and security measures against COVID-19. While participants agreed that these protocols do not guarantee complete safety from the virus, they do serve as one of the fundamental preventive measures.

Theme 3: Individual Cloaks of Safety

Individual Cloaks of Safety presents the personal preventive practices of participants. This theme banks on the notion that despite the mandated minimum protocols, participants continued to look for alternative preventive

Table 9. Correlation between Level of Knowledge and Level of Acceptance

		Knowledge on COVID-19 Virus and Vaccine	Knowledge on Minimum Health Protocols	
Knowledge on COVID-19 Virus and Vaccines				
Knowledge on Minimum Health Protocols	Correlation coefficient	0.349**		
	P-value	<0.001		
Level of Acceptance on Minimum Health Protocols	Correlation coefficient	0.074	Correlation coefficient	0.098
	P-value	0.148	*P*-value	0.055

**Significant <0.05, **Highly Significant <0.01*

Table 10. Emerging Themes

Themes	Categories	
Theme 1: Unmasking a Collective Mystery	1. Challenges Encountered with the Pandemic	Financial burdens were one of the major consequences of this pandemic. In addition, seeking medical attention was difficult due to the surge of COVID-19 cases in hospitals. Interestingly, participants who tested positive for COVID-19 experienced stigma, making people feel reluctant to get tested. • *"There was a stigma during that time, like it had a different connotation maybe because we were the first cases." [F, 45, Quezon City]*
	2. Experience with the Virus	Majority of the participants who were infected with COVID experienced physiological complications such as sore throat and difficulty in breathing, and some continued to struggle after recovery. • *"I used to be able to climb the LRT (Light Rail Transit) stairs quickly. I can't do that anymore. Like it will take me 10 minutes before I can continuously climb the stairs." [M, 25, Taguig]*
	3. Fear of COVID	Due to the comorbidities, participants have expressed fear of being in a more vulnerable state. This led to an increase in their anxiety for the fear of the unknown. • *"Perhaps because I have a comorbidity, I felt scared… That's why I became more paranoid because I know that I have a weak resistance due to my comorbidity." [F, 45, Quezon City]*
	4. Coping Mechanism	Even in the advent of uncertainty, participants remained resilient, and shared their coping strategies such as prayers, support from family and friends, and social support systems. • *"Nobody really knows how to be cured and it's a scary experience in your life where you would really just resort to praying, whatever happens to you is up to God, if you would be able to survive or not…" [M, 43, Pasig]*
Theme 2: Safeguards for Security	1. Challenges Encountered with the Minimum Health Protocols	It was revealed that following these protocols was not an easy task for the participants. Some of the revealed challenges include: difficulties in mass testing, practicing social distancing, and contact tracing. However, the primary challenge was revealed to be the wearing of face shields. • *"We have contact tracers here who are lazy, like when the called number doesn't ring, they would no longer call it again. And, they would still indicate that person as having been contacted even if the person has not answered the call." [M, 25, Taguig]* • *"Uhm, I must say, the face shield was a bit uncomfortable before and it's already proven not to be effective." [M, 19, Quezon City]*
	2. Maintaining Adherence	Even as COVID-19 cases begin to decline and low alert levels are imposed, participants have expressed that they will still follow these minimum health protocols. • *"I'll still practice (minimum health protocols) because there's still a pandemic and even if they do lift it, oh… I still do not want to be relaxed because there's still a pandemic and there's still a virus infecting people and I don't want to get it." [F, 20, Marikina]*
	3. Perception on Protocol Effectiveness	These protocols are effective as barriers to the disease only when strictly observed; however, it does not completely guarantee individual immunity or protection from the virus at all times. • *"So, it's also not guaranteed that following the minimum health protocols would exempt you from being exposed." [M, 43, Pasig]*
Theme 3: Individual Cloaks of Safety	1. Significance of the Personal Preventive Practices	Participants prefer to incorporate their own personal preventive practices to reduce the cost of adhering to the minimum health protocols e.g., face mask, face shield. Remarkably, participants also deemed these practices as effective for prevention and control with added protection, making participants feel safe and reassured. • *"One, for security. For example, pretend that you've just been sprayed with alcohol when you entered the house. Maybe many people would feel that they aren't sterilized enough so… that's for us, you have to take a bath. We do it for security and then for assurance, it's just to, to be very very sure because it doesn't really put you at any loss. There's even greater damage if we aren't cautious." [M, 21, Manila]*
	2. Personal Preventive Practices	The following are identified as personal preventive practices: eating healthy, taking baths before entering their houses, *Suob* (steam inhalation), fogging/misting, washing clothes, drinking herbal supplements, acquiring antibacterial sprays, floor mats, air purifiers, UV light technologies. The most frequently described practices were eating healthy, taking baths before entering their houses, and *Suob* (steam inhalation).
Theme 4: Knowledge is Part of Weaponry	1. Knowledge of COVID-19 and Minimum Health Protocols	It was revealed that participants had adequate information regarding the virus and mandated protocols for COVID-19 virus and minimum health protocols.
	2. Sources of Information on COVID-19	The following are identified as sources of information for COVID-19: workplace, school, family and friends, social media, news outlets, health agencies, experts, and journal articles.

Table 10. Emerging Themes *(continued)*

Themes	Categories	
Theme 5: Tethered by a Boundary	1. Disinformation	The widespread use of fake news has a negative effect on progress against COVID-19 prevention. This highlights the importance of community's knowledge of COVID to increase adherence to the protocols, with the goal to limit the spread of disinformation. • *"That's why I suggested that maybe if they were properly educated, or informed, maybe they can better follow it (minimum health protocols)." [F, 50, Quezon City]*
	2. Cost and Expense	Participants saw financial constraints as a barrier to adherence, as people who do not have the financial means have limited access to Personal Preventive Equipment which is essential for practicing the minimum health protocols such as face masks, alcohol, face shields, and others. • *"A lot of people don't have the monetary funds in order to practice the minimum health protocols; I don't expect everyone to have a bar of soap in their houses. Maybe for baths but not for washing their hands. I think it's more of a luxury for most people because they would have to think about feeding themselves instead of getting a bar of soap or getting this new hand sanitizer or face mask. I think a lot of people really are underprivileged and I think that they need more monetary aid in order for our country to combat the virus." [M, 19, Quezon City]*
	3. Social Influence	Influence from social groups had a negative impact towards participants. It was revealed that these protocols were disregarded when other friends or social groups do not necessarily follow the protocols, influencing the participants to socially conform to the group. • *"For instance, let's say you go out with friends, none of them are wearing masks, you may have the tendency to also not wear masks as well. You also conform, so that you would not look out of place." [M, 27, Quezon City]*
	4. Becoming Lax	As the government eased the alert levels, participants have experienced becoming complacent or lax in practicing their protocols. Also, as more people got vaccinated, the participants felt that this is enough to protect them from infection. However, one of the main observations from the participants was the poor enforcement of the minimum health protocols which also influenced the leniency in the public's adherence. • *"So, since (cases) keep dropping, everyone thinks that the virus is going away and it's okay to stop wearing masks or to go into crowded spaces. So, I think relaxing the alert levels, it's also a factor." [F, 20, Marikina]* • *"They (government) don't implement it properly or it's not strict enough. Like, now they're relaxed. They are focusing on something other than COVID already… So, their decision should be to wholeheartedly implement those minimum health protocols." [M, 38, Manila]*
Theme 6: The Thread in the Tapestry	1. Social Responsibility	Participants viewed it as their responsibility and duty to protect the welfare of the community. In addition, some participants had negative feelings and felt frustrated, since other people were noncompliant with the minimum health protocols. • *"So, yes. Wearing of masks, following the protocols, it's our social responsibility and obligation not only for ourselves but for other people." [M, 21, Manila]* • *"Of course, it's frustrating. Isn't it? You're doing your part so that you won't get infected and won't infect others, but for others, it's like they don't really care." [F, 45, Quezon City]*
	2. Safety	The primary reason for the participants' adherence to the minimum health protocols was protection from the virus. • *"I want to live… that's really all there is to it. I want to live. The COVID-19 is proven to be lethal. I want to protect myself, and that's why I'll wear a face mask, disinfect, get myself vaccinated because I don't want to get myself infected and, at the same time, I also don't want to infect others." [M, 21, Manila]*
	3. Comorbidity	Since participants with comorbidities or underlying health conditions have a higher risk of severe COVID-19, they felt the need to be safer and more protected which influenced their behavior to strictly adhere to the health protocols. • *"The only concern is that if you have comorbidity, the effect will be worse for you. That's all. So, that's why you would surely think to really adhere to the minimum health protocols because of your comorbidity." [M, 52, Quezon City]*
	4. Heightened Alert Level and Increased in COVID-19 Cases	A heightened alert level and increase in COVID-19 cases urged the public to be more careful and adhere to the health protocols. • *"I mean, when they see that the cases are high, they seem to be more careful." [F, 45, Quezon City]*
	5. Penalty	Due to growing noncompliance, the government sanctioned individuals who did not comply with the health protocols. As a result, participants feared being apprehended by the authorities. • *"In the market, there are people who don't wear masks, then when they see a barangay public safety officer, they would be like, 'Oh, there's an officer, wear your mask, wear your mask.' So, there, I think the fear of COVID, and fear of apprehension." [M, 21, Manila]*

Table 10. Emerging Themes *(continued)*

Themes	Categories	
Theme 7: Towards the End of One Story	1. Realizations	Participants realized that the minimum health protocols were already a habit incorporated in their daily lives and that it was not that difficult to follow them. Interestingly, participants became more health conscious, changing their diets and lifestyle, being more conscious of nutrient intake, and by allocating more budget for healthcare. • *"For now, it's like a routine already. Since you always do it, it becomes a habit that you wash your hands or you spray alcohol when you go out or if you touch something before eating, things like that…" [F, 45, Quezon City]* • *"Before, it's like okay that you're not drinking vitamins. But now, you really, like you really allot a budget for your health." [F, 45, Quezon City]*
	2. Facing the New Normal	COVID-19 has changed the general norms of society, participants shared their sentiments and how they longed for how things previously were. Some of the participants expressed that they plan to continue adhering to these health protocols and personal preventive practices as a new way of life. • *"Everybody wants [the situation] to be normal, no one wants to wear the face masks and do the other protocols for life." [M, 43, Pasig]* • *"Well, I think we've almost seen the light at the end of the tunnel, so to speak. I think the cases are really low and we just have to really continue vaccination, washing of hands, and practicing the minimum health standards." [M, 19, Quezon City]*

practices which they have applied to protect themselves. Through these practices, participants felt more confident and safer.

Theme 4: Knowledge is Part of Weaponry

This theme refers to 'knowledge' as a weapon against COVID-19, specifically, knowledge of minimum health protocols and COVID virus. It showed that highly knowledgeable participants understand the reason and importance of following the protocols.

Theme 5: Tethered by a Boundary

Tethered by a Boundary refers to the different barriers to adherence to the minimum health protocols. These significant factors restrict individuals from consistently and properly observing the mandated guidelines.

Theme 6: The Thread in the Tapestry

The Thread in the Tapestry presents the reasons for adherence to the minimum health protocols. Each factor is deemed necessary by the participants to be a solid influence for their adherence.

Theme 7: Towards the End of One Story

Towards the End of One Story portrays the yearning of the participants towards the new normal. The participants reminisce about the old days when there were no pandemic restrictions and have expressed their thoughts and solutions regarding the new normal.

Integration

Employing the explanatory-sequential mixed-method research design, this study has culminated in the development of the Swiss Cheese Model of Health Protocol Practices (Figure 2). This model serves as a comprehensive framework delineating the intricate factors influencing the challenges and barriers encountered within each fundamental layer of preventive strategies. By meticulously integrating qualitative and quantitative approaches, our research has not only elucidated these dynamics but also provided a robust foundation for understanding the complexities inherent in adherence to health protocols. Thus, the Swiss Cheese Model offers a visual representation of the multifaceted nature of preventive measures, empowering stakeholders with actionable insights to enhance public health responses and mitigate the impact of infectious diseases.

Quantitatively, it was revealed that the participants had a strong foundation on the following variables: adherence to minimum health protocols and personal preventive practices, knowledge of COVID and minimum health protocols, and acceptability of the minimum health protocols. Hence, the variables are placed on the top portion of each layer of cheese, signifying that these variables shape up the foundation of each layer of cheese. Five layers of cheese slices are seen to be barriers that prevent the virus from traversing easily through. However, the Swiss Cheese Model of James Reason (2005) emphasizes that no single cheese slice or layer of defense is enough to provide absolute protection since each slice has its own weakness or limitation.[20] Hence, the model shows the importance of the additive effect of multiple preventive interventions to reduce the risk of infection.

As such, the emergent themes were placed on the bottom of the slices of cheese to signify that despite the foundation of the layers of cheese, there were reasons found in the themes that contributed to either the weakening of each layer of cheese (as represented by molds and holes) or further strengthening the foundation of cheese (as represented by thicker slices of cheese). 'Unmasking a Collective Mystery' was placed close to the virus as this signifies that some participants were infected with the virus and had a lot of challenges encountered with the disease. As evident, the first layer of cheese from the left had more holes and molds

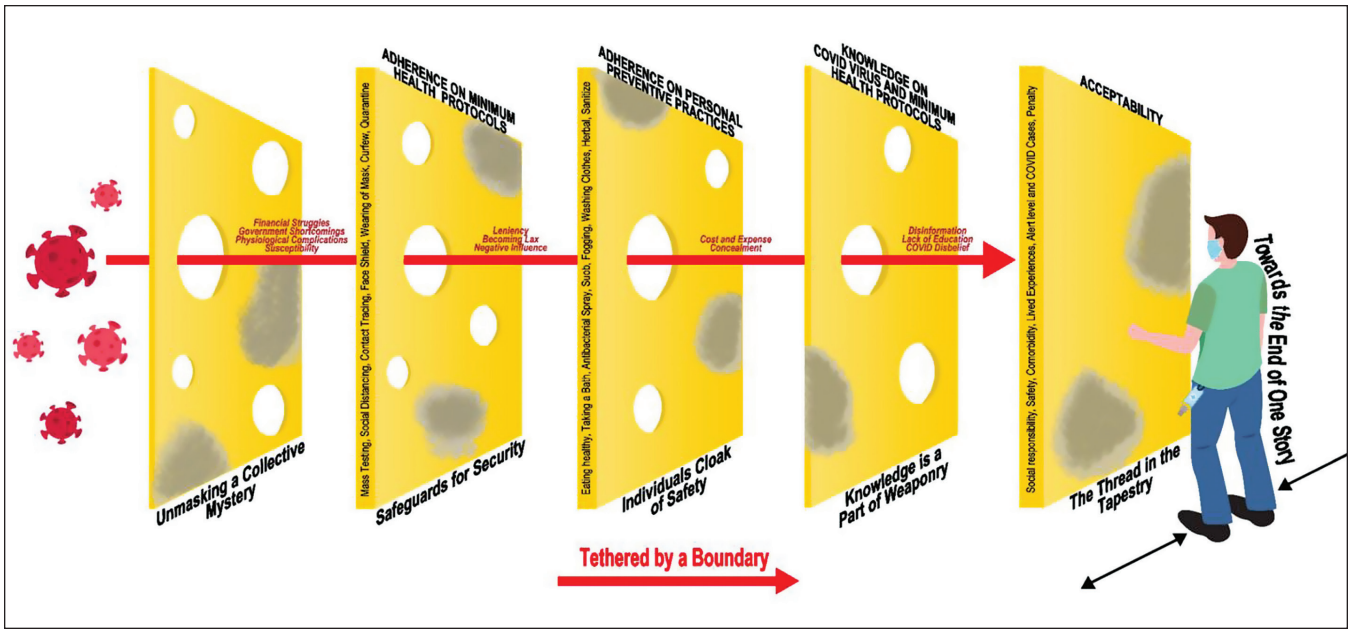

Figure 2. Swiss Cheese Model of Health Protocol Practices.

than others, making it weaker; hence, it is unsurprising that participants became easily infected. Because of the holes present on the majority of the slices of cheese, an arrow was able to penetrate, representing the consequences of 'Tethered by a Boundary'. To be specific, holes were present to signify that there are different barriers to attaining the full potential of prevention strategies. Hence, these holes represent a clear pathway for the virus, making it much easier for it to pass through each slice; however, molds only contribute to the weakening of the layer

Lastly, it is evident that the last layer of cheese has no holes; however, molds are present to reiterate the fundamental concept of the Swiss Cheese Model that no prevention strategy is perfect and somewhere along the way, there will be factors that has not been revealed in this present study which may weaken the last layer of cheese. The last theme, 'Towards the End of One Story', is found to be surrounded around the fully vaccinated COVID-19 individual to signify that the participants are found to be more resilient and prepared to face the new normal. As evident, the individual is seen to be wearing a face mask, practicing social distancing (as represented by the double headed arrows) and has an alcohol bottle to represent that these fully vaccinated COVID-19 individuals adhere to the minimum health protocols and personal preventive practices to protect themselves from the virus.

DISCUSSION

The findings of this study provide a general understanding of the health protocol practices of fully vaccinated COVID-19 individuals with comorbidities in the National Capital Region, Philippines and revealed some challenges faced by the participants and stakeholders during the height of the pandemic. Wearing of face masks remained to be the most practiced minimum health protocol as it has been proven to be effective in preventing the spread of infection between individuals.[21] Nevertheless, their adherence to this may suggest conformity to the government's public health standards, as officials made the face mask mandatory to be worn when leaving the house. Face shields, on the other hand, were the least adhered protocol due to difficulties such as discomfort and fogging, and the lack of evidence on its effectiveness.[22-25] Hence, when the government lifted the alert level restrictions, people began to dismiss wearing face shields as protection from the virus. Regarding the personal preventive practices, the most performed was keeping informed about the virus. During the onset of the pandemic, it was revealed that respondents remained to be educated on the prevention of the virus' transmission in order to consider other measures to which they applied their own preventive measures. This is related to a study which reported that this information-seeking behavior is attributed to the increased number of COVID-19 cases back then.[26] Meanwhile, the least adhered to was avoiding eating outdoors. With the mental health consequences linked to the pandemic, eating outdoors is observably done by some of the respondents to interact with their peers and feel a sense of community, thereby alleviating their loneliness.[27] In terms of acceptability, most of the respondents were supportive of the implementation of minimum health protocols. Moral considerations, such as welfare, justice, and avoiding harm may contribute to this higher acceptance of society-level preventive measures.[28] Accepting these protocols is essential as comprehensive management is

critical for comorbid individuals.[29] However, few still showed low acceptance of minimum health protocols. It is worth considering that health status i.e., comorbid status, perceived risks towards infection, and susceptibility were associated with the acceptance of the protocols.[11] Therefore, health literacy is a significant approach for aiding these people in correcting misperception on health risks and reflecting on the potential consequences of their actions.[30] While the findings regarding the level of knowledge and acceptance were unremarkable, it was shown that the knowledge of the COVID-19 virus and vaccine showed a high significant moderate positive correlation with knowledge on minimum health protocol. This implies that respondents who are informed of the virus's existence are also aware of the minimal health protocols. The correlation is further supported by another study which found that media channels report information regarding the virus, vaccines, as well as minimum health protocols.[31] Aside from the availability of information, their enhanced awareness and knowledge regarding COVID-19 and minimum health protocols can also be ascribed to their comorbidity status. This finding is consistent with the other study that people with comorbidities knew more about COVID-19 than people without comorbidities.[32,33] Hence, individuals with comorbidities recognize that they are at higher risk of infection, which made them more adherent to the minimum health protocols. With regard to socio-demographics, the participants' level of knowledge on minimum health protocols was found to be associated with sex (female) and employment status (employed). This may be attributed to women utilizing social media more than men as a primary source of information to learn about COVID-19.[34] In addition, employed participants seem to be aware that they are more vulnerable and likely to contract the COVID-19 virus as they leave the house to go to their respective workplaces.[35] Findings also show that an increased understanding of the minimum health protocols have higher adherence to preventive behaviors.[36] Although the participants deemed the protocols to be effective, the majority have expressed the need for the government to properly implement these protocols. Similarly, their behaviors may also been affected by the time of data collection, since wearing of face shields were no longer compulsory and curfews were slowly being lifted.

The quantitative findings were qualitatively confirmed to be correct, as they had shown sufficient knowledge on COVID-19 and minimum health protocols. This is attributed to the widespread sources of information the participants had gathered from their workplace, schools, family, friends, and social media. While social media has played a pivotal role in information dissemination, there is presence of disinformation in these outlets which was found to be a significant barrier towards the adherence of the minimum health protocols. This suggests that misinformation and fake news have detrimental effects on public health.[37] Aside from this, our findings come in congruence with adherence to the minimum health protocols as influenced from social groups.[38] In addition, our findings confirm the reported gradual non-adherence, as it was revealed that the majority have become laxed due to the lowering of the alert levels and COVID-19 positive cases, increase in vaccination rate, and poor enforcement of the protocols. The findings suggest that alert levels not only serve as an indicator of transmission rate, but can serve to influence the participants' belief regarding the COVID-19 situation. In doing so, participants agreed that alert levels somewhat served as a basis on to what extent they will follow the protocols. It may be attributed to their perceived efficacy on the restrictions imposed by a specific alert level. This comes in congruence with other studies which observed the same phenomenon, suggesting that adherence to health measures is influenced by how beneficial these are deemed with regard to self-protection and safeguarding the public.[39,40]

Nevertheless, it was revealed that the participants continued to adhere to the protocols despite the cases being lowered and other barriers mentioned. It was mentioned that the primary reason for this phenomenon is attributed to a sense of responsibility for others, and safety. The Filipino spirit of *Bayanihan* was seen to be of significant value in influencing adherence, as it was seen to give a sense of responsibility, i.e., to hold responsible for others' safety. That is why participants feel frustrated when they have to strictly comply with the protocols, while other non-compliant individuals freely go around exposing others to the virus. Participants believed that everyone should hold responsible for the health and safety of others. On some occasions, participants have also observed that enforcers themselves disregard the protocols, which became more common during the easing of the alert levels. As part of their social responsibility, participants usually ask these non-compliant individuals to also adhere to the minimum health protocols as prevention of transmitting the virus.

Financial constraints were found to be a significant challenge for these individuals in their daily lives and is more evident with the additional cost they were burdened with by following the minimum health protocols such as COVID-19 test swabs, face masks, and face shields. To be specific, the majority of the participants have expressed the burden of shouldering the cost for swab testing. With that said, cost and expense were also found to be a barrier towards adherence, especially for those who do not have the financial means. This puts individuals with low socioeconomic status at a disadvantage during the pandemic.[41] It is worth noting that participants observed that people who did not have the resources often improvised medical grade protective gear, such as face masks, face shields, and other equipment in order to comply with the implemented minimum health protocols. For example, using thin cloth as a face mask, and X-ray film as a face shield. Nonetheless, the quality of the improvised protective equipment is questionable.

Interestingly, Filipinos are resourceful, as they adapted their own personal preventive practices as means of added

protection. Although these are not scientifically proven, the majority of the participants believed that these additional practices enhanced their safety. As such, participants stated that as they went home, the first thing that they did was to take a bath. Perhaps this feeling of cleanliness was associated with how participants feel that whenever they go outside of their homes, they may potentially carry the virus; hence, needing to clean themselves up. One of the unprecedented practices that had emerged during the pandemic was *Suob* which is commonly known as steam inhalation. Steam inhalation was used as a home remedy for common colds and infections involving the upper respiratory tract, and was suggested by sources and social media to be effective for COVID-19.[42] However, this emerged as a result of shortfalls on preventive measures to combat the virus during the early phase of the pandemic; hence, alternative therapies such as *Suob* were introduced as it has shown effectiveness in the case of influenza.[43] Nevertheless, participants have expressed that this practice had helped them manage their COVID-19 symptoms such as removing mucus clogged in their nasal passages. More often than not, participants were left to try this practice as it was recommended by COVID-19 survivors who got well after practicing *Suob*.

Due to their comorbid status, they are left to add extra preventive actions to keep them safe from the disease. This finding supports studies that explained when fear of COVID is put into reality, they have the tendency to increase their compliance.[44] Aside from this, they have become more accustomed to practicing the minimum health protocols, and have integrated this into their lifestyle practice. Accounting all these experiences have taught fully vaccinated individuals with comorbidities to be more health-conscious, resilient, knowledgeable, and prepared to face the new normal.

The Swiss Cheese Model originated by James Reason shows the importance of employing multiple layered controls that is commonly utilized in risk management.[20] As such, it remains relevant in the application of COVID-19 pandemic, which demonstrates the significance of a multiple-layered intervention against COVID-19.[20] In essence, this model is composed of layers of cheese that serve as barriers or interventions while the flaws of each layer are characterized by holes within the slices of cheese.[45] Of note, no single cheese slice or layer of defense is enough to give absolute protection since each layer has its own weakness or limitation.[46,47] This implies that simultaneous implementation of multiple independent layers aids in reducing the risk of infection.[48] The development of COVID-19 vaccines has reduced people's anxieties; however, previous studies suggest that it would influence people's compliance frequency and is anticipated to weaken their adherence to minimum health protocols.[49,50] Hence, the use of the Swiss Cheese approach in this study is to integrate the several deciding factors that influence the health protocol practices of the fully vaccinated COVID-19 individuals with comorbidities which is critical to establish an improved response to the COVID-19 pandemic and possible future health outbreaks. In addition, this model exhibits that although an individual has esteemed knowledge, acceptability, and adherence to the COVID-19 preventive measures, it is not sufficient to ensure safety due to innate limitations and external hindrances. This allowed the study to determine the flaws of each layer of protection that would require improvement. Identifying these limitations is imperative to address such shortcomings, which consequently enable people to employ changes in their practices and behavior that would further strengthen their protection against infection. Most studies utilizing the Swiss Cheese Model highlighted the importance of multiple-layered controls in the context of medical errors, reducing accidents in the workplace, and the COVID-19 pandemic.[51] However, limited studies emphasize the flaws or holes in each layer and how people could manage them without dependence on the combined layer of protection. The present study gives critical attention to the factors that weaken one's adherence and strongly suggests that narrowing the size of holes in each cheese layer effectively minimizes the risk of infection. In view of these, individuals with comorbidities at greater risk are given the foundation to address personal limitations to protect themselves. In addition, this study reveals that the Swiss Cheese Model shows how one barrier is not enough to reduce virus transmission.[20,21] This reinforces the concept that no single approach is effective in protecting oneself from COVID-19 infection. However, multiple barriers result in a cumulative effect of public health measures. As such, the different minimum health protocols, and personal preventive practices, as well as the knowledge and acceptance to the minimum health protocols discussed in the study can effectively decrease the risk of transmission. The Swiss Cheese Model of Health Protocol Practices of the study highlights the limitation of the COVID-19 health protocols and will serve as a reference for future pandemic response. Understanding this is the utmost priority to safeguard the health of the most vulnerable population.

The study features its comprehensive approach through focusing on the complex interplay between participants' knowledge, acceptance, and adherence levels; shedding light on their lived experiences amidst the challenges posed by the COVID-19 pandemic. While many studies focus solely on individual variables[10-12], this research not only delved into understanding each variable in isolation but also endeavored to establish correlations among them, thus providing a more holistic perspective. However, one limitation of the present study is the numerous changes in the implementation of the health protocol practices. This hinders the study to capture the overall acceptance, adherence, and experiences of the implementation of the said practices. Also, since the participants are only from the high-risk population, this study did not take into account the adherence and experiences of other population group which may differ accordingly. Hence, this cannot be generalized to the whole Filipino population. Another limitation is the relatively short duration

of data collection; any changes in the implementation of the minimum health protocols beyond the time frame was not taken into account. While the DOH and IATF are the primary source for overseeing the implementation and providing the guidelines of the minimum health protocols, inconsistencies and variability exist as LGUs of different cities implement ordinances based on the status of their community on their own discretion, e.g., one community may include additional protocol practices. Lastly, the present study did not consider to differentiate the experiences of those individuals with comorbidities who were infected with COVID-19 to those who were not infected.

CONCLUSION

This study describes the relationship between the knowledge, acceptance, and adherence of fully vaccinated COVID-19 individuals with comorbidities. It was revealed that most participants have a high level of knowledge regarding COVID-19 and minimum health protocols, and good adherence to the majority of the protocols and personal preventive practices. With that, a high level of knowledge of COVID-19 is correlated to a high level of adherence to the protocols. From the interviews, participants shared experiences regarding adherence to the protocols, and personal preventive practices. Findings suggest that multiple factors ultimately led to the increase in non-adherence to the minimum health protocols, and recognizing these holes and weaknesses in the COVID-19 pandemic response stresses the need for national leaders to place urgency on properly implementing preventive measures and providing health education to the masses during public health situations. The strength of the integrated Swiss Cheese Model of Health Protocol Practices emphasizes that despite a strong foundation, there will always be holes and molds which could weaken the protection. In essence, it reiterates the need for multiple preventive measures to increase safety. Non-adherence is revealed to be the biggest flaw in the pandemic response. With non-adherence, fewer lines of defense are used, and the faults from each protective layer increase the risk of obtaining the disease. Future research should involve a wider scope of participants to take into consideration the different guidelines set by local government units. It should also include lived experiences of other priority groups besides the A3 population. This study acknowledges that there are other factors influencing the adherence of the minimum health protocols, which was beyond the scope of the study. Ultimately, this study is an eye opener for government bodies and policymakers to revisit the implementation of the protocols to create a more secure and systematic intervention in dealing with similar health situations in the future. It is essential to harness scientific evidence in the development of policies, especially in addressing how the general population may collaborate with the government to mitigate the spread of diseases. In this study, the lawmakers and infectious disease specialists can utilize the results, such as lived experiences and high knowledge, acceptability, and adherence to the minimum health protocols, to draft and scale up health-related policies that will serve as an excellent means to remind the public about the value of taking preventive measures not merely for individual health, but as well as that of others.

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All authors certified fulfillment of ICMJE authorship criteria.

Author Disclosure

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