



Perceived Level of Knowledge and Acceptance of COVID-19 Vaccine Among Older Adults

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ABSTRACT

The appearance of COVID-19 made a significant change on how people live their daily lives by putting the world in a state of a pandemic. COVID-19 Pandemic affected the health of the people most especially the Older Adults who are more at risk of getting infected. This research aimed to discover the Perceived Level of Knowledge and Level of Acceptance of Older Adults about COVID-19 vaccines as inputs to quality improvement. A quantitative design was employed and a descriptive-correlational method was utilized to describe and correlate the relationship of demographic profile of the Older Adults and their perceived level of knowledge and level of acceptance regarding COVID-19 vaccination. This study determined that older adults are mostly in their 2nd dose of vaccine and with booster dose, they belong in the age group of 60-65 years old, female, married and are high school and college graduates. A total of one hundred and fifty-seven of older Adults participated in the study. Descriptive statistics were used to analyze the demographic profile of the respondents while Eta coefficient and Eta squared were used to determine the relationship of demographic profile and the perceived level of knowledge and acceptance in view of the findings of the study. The results of the study suggest that the perceived level of knowledge and level of acceptance on COVID-19 vaccines were significantly correlated, $r = .321$, $p < .05$. This means that there is a positive weak correlation between perceived level of knowledge and level of acceptance. That is, the higher a person's perceived level of knowledge about COVID-19 vaccines, the more likely they are to accept it. Appropriate health plan about convincing more older adults to get vaccinated with the COVID-19 vaccine particularly in the factors that address their common concerns. Also, to debunk myths that are known to many, and provide older adults with factual knowledge or information regarding the COVID-19 vaccines for them to accept in getting vaccinated.

KEYWORDS

Acceptance, COVID-19, Knowledge, Perceived knowledge, Older Adults, Vaccination

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1. BACKGROUND

The appearance of COVID-19 made a significant change on how people live their daily lives by putting the world in a state of a pandemic. The COVID-19 pandemic poses a threat to public health at an international level. A health threat of this scale requires the same scale of interventions in order for health sectors to fight back. Countries around the world are devising ways on how to combat the virus by having nationwide coordination of multiple sectors in formulating the right set of interventions to keep the public safe from the virus. Luckily, pharmaceutical companies were able to add vaccines to the repertoire of interventions, which gives the world a chance to fight against the virus. COVID-19 can cause hospitalization and even death in young and middle-aged individuals. It has been linked to the most serious health problems in persons over 60, with fatal outcomes in those aged 80 and over. This is attributable in large part to the prevalence of underlying health problems among older people. Their immune systems steadily deteriorate, making them more vulnerable to infection of any type, particularly novel infections like COVID-19.

Recent news showed that the World Health Organization (WHO) Philippines

expresses concern at the low COVID-19 vaccination rate among senior citizens in some local government units (LGUs) amid rising threat from new variants (WHO, 2021). It was reported that almost only 50% of the population of older adults are fully vaccinated. According to WHO Philippines representative, Rabindra Abeyasinghe, seven out of ten deaths related to COVID-19 in the Philippines are above 60 years old. As the number of COVID-19 cases arises again, the number of vaccinated in our country is relatively low. Since August 2021, COVID-19 cases have increased rapidly in our country. The worsening outbreak is affecting everyone and can cause mortality. People who are not fully vaccinated are catching the disease and worse, dying at much higher rates than the vaccinated population. Experts pointed out that one reason why the Philippines have low vaccination rate is because of the Dengvaxia controversy. The debacle involving the dengue fever vaccine manufactured by a French pharmaceutical company, Sanofi looms large in the minds of Filipinos. "Dengue fever is an endemic disease in the Philippines," explained Dr. Madeline Ong, an Ateneo School of Medicine and Public Health researcher. "So it was a big deal for the country in 2016 when the dengue vaccine, or more colloquially

known as DengVaxia, became a viable vaccine as recommended by the WHO.”

The news enraged and frightened the country. Given the high prevalence of dengue in the Philippines most of the citizens got involved in the vaccination yet the news enraged and frightened everyone and now became one of the reasons why Filipinos became hesitant on getting the COVID-19 vaccine. Another reason for people's hesitancy is the government's incompetence. Dr. Joshua San Pedro of the Manila-based nonprofit Coalition for People's Right to Health, which gave the Philippine government's response to the pandemic a “F” (failing grade) earlier this year, said he'd rather say the country is traumatized than hesitant. He stated that this is because a large portion of the public does not believe the government will have their back if something goes wrong with the COVID-19 vaccines as well (Favila, 2021).

The researchers thought that this concept is timely and relevant. According to Chen et al (2020), during the early stages of the COVID-19 pandemic, young adults were more vigilant compared to older adults. Having this knowledge can indicate that older adults need more understanding of the precautionary measures that are being implemented to protect themselves from

acquiring the virus. Being vaccinated is a form of precautionary measure that everyone should have. Knowing these factors is essential to understand what encourages and discourages older adults to get vaccinated.

COVID-19 vaccines have the potential to reduce population mortality rates, particularly among the elderly, who are a vulnerable and high-risk group. It is necessary to identify older persons' perceived level of knowledge, which impacts their decision to receive the COVID-19 vaccination. The purpose of the study is to determine older persons' perceived level of knowledge and acceptance of the COVID-19 vaccination. The researchers want to know how much knowledge elderly people have regarding immunization and if that information determines their willingness to be immunized. Several factors can affect older persons' perceptions of the COVID-19 vaccination.

COVID-19 vaccines brought hope and fear to the public. The development of COVID-19 vaccines has been a remarkable success, although, the initial challenge lies within gaining and maintaining the public trust in COVID-19 vaccines. Moreover, the experience with COVID-19 will likely shape confidence in other vaccines making it even

more important to build confidence at this time. An individual's perceptions play a significant effect in vaccination decisions. Exposure to misinformation amplified by the media, the community, and the health system shapes such perceptions. Depending on their perspectives on vaccinations, social networks may have a beneficial or negative influence on vaccination uptake (Amit, 2021).

Data showed that 3.4 million senior citizens in the country have not yet received their COVID-19 vaccine. Also, the data depicted low COVID-19 vaccination rates among older adults in different regions of the country. Vaccines provide immunity, which is beneficial for older adults because they are a part of the high-risk population group. Increasing the vaccination rates for older adults may potentially decrease hospitalization rates. Having a high vaccination rate among older adults should be prioritized. The exclusion of older adults from getting the vaccine may have effects on several aspects. Encouraging older adults is a must to have them protected from morbidity and mortality. Doing this may help decrease the burnout being experienced by the hospital staff and the country's economy (WHO, Philippines 2021).

As attested by Paloyo et al (2021), the COVID-19 pandemic triggered a health disaster with far-reaching social and economic ramifications. Vaccination development has been accelerated in order to counteract the consequences. Several vaccinations have previously been deployed in countries worldwide, but due to limited supplies, these have been distributed selectively. Because of their obvious vulnerability, several allocation systems aimed at ensuring equitable distribution have prioritized the elderly. The COVID-19 pandemic resulted in a health disaster with far-reaching social and economic consequences. To counteract the consequences, vaccine development has been accelerated. Several vaccinations have previously been deployed in countries around the world, but due to limited supplies, they were distributed selectively. Several allocation systems aimed at ensuring equitable distribution have prioritized the elderly due to their obvious vulnerability. In the Philippines, and possibly other countries where supplies are severely limited, the elderly should not always be given first priority. The proposed method of distribution is meant to supplement concurrent public health efforts, which must

be maintained while becoming less stringent as the epidemic is brought under control.

The researchers described and correlated the relationship between the respondents and the variables to their perceived level of knowledge and acceptance of COVID-19 vaccines. This research study could be helpful not only in the Philippines but also in other countries since there is an occurrence of pandemic. In line with those aforementioned, the researchers conducted this research to know the perceived level of knowledge and level of acceptance of the older adult regarding COVID-19 Vaccines.

2. METHODS

Design

This research study utilized a descriptive-correlational approach. The study aimed to describe and correlate the relationship between the perceived level of knowledge and acceptance of COVID-19 vaccine among older adult. This research study has a quantitative research method as its research design, due to the design's "positivistic and a formal measuring instrument" that gave concrete data to be inferred using statistics and such (Polit & Beck, 2010).

Sample and setting

The data that was collected from the respondents was selected based on the inclusion criteria set for the study. The researchers gathered 157 target samples from Barangay 130 of Pasay City. In this study, the respondents are vaccinated older adults aged 60 to 84 (young old and middle old) living in Barangay 130 of Pasay City. The number of participants was determined using Slovin's formula.

The researchers utilized cluster sampling. According to Polit & Beck (2017), In Cluster sampling the researchers select a large grouping ("clusters") which are the older adults, typically with successive subsampling of smaller units which are specified in the inclusion criteria. The inclusion criteria that the researchers set to the respondents are the following: (1) must be aged 60 to 84 years old (young old and middle old) (2) with no neurocognitive disorder that is (3) vaccinated with any vaccine (4) lives in Barangay 130 of Pasay City.

Last August 9, 2021, Pasay City was placed under Alert Level 3 due to increased Covid-19 cases, including suspected infections, in hospitals. From just 92 active cases on July 30, infections jumped to 432 as of August 8, 2021. Alert Level 3 or Code Blue

means an area is under moderate to critical risk for Covid-19 and its healthcare or intensive care utilization rate has reached between 50 and 70 percent. (Kabagani, 2021). This time Pasay only has 134,551 or almost 30% of its population are fully vaccinated unlike the cities around it.

Pasay City is one of the liveliest cities in Metro Manila that is situated on the eastern shore of Manila Bay. It is the third smallest political subdivision in the National Capital Region. It is adjacent to the City of Manila and is bounded to the south Parañaque, to the northeast by Makati and Taguig and to the west in Manila Bay. The City is known for its entertainment, business-restaurants, coffee shops, and clubs, particularly those located along Roxas Boulevard, facing Manila Bay. Pasay is composed of two (2) districts, divided into twenty (20) Zones, with a total of 200 Barangays. The barangays do not have names but are only designated with sequential numbers. As of 2020, the total population is 440, 656.

Barangay 130 is one of the largest barangay in district 2 of Pasay city. Its population as determined by the 2020 Census was 4,042. There are 272 elderly people in this total population, with 258 of them being between the ages of 60 and 84 and the remaining being 85 and older. The

target respondents are 157 out of a total of 258 older adults. The researchers wanted to use Barangay 130 of Pasay City as a research locale because it is considered as one of the largest barangay in Pasay and the majority of the older adults population in this barangay is made up of young-old and middle-old aged people which are the researchers target respondents. Also, due to the present situation where the country is still facing a pandemic, researchers cannot conduct a study face to face that is why the researchers decided to focus on one barangay only in Pasay City.

Instruments

The questionnaire adapted from a study entitled “Knowledge, acceptance and perception on COVID-19 vaccine among Malaysians: A web-based survey”, which is a descriptive analysis study to collect data from respondents to provide the needed information for the quantitative research. The researchers used a questionnaire in a Google form type as it is more practical and is primarily used to gather large amounts of information in a short period of time. The modified questionnaire focuses on getting the desired information such as the demographic profile of the respondents, their perceived level of knowledge on

COVID-19 vaccine, and their level of acceptance on COVID-19 vaccine.

The research instrument was divided into three parts. First, is the demographic profile of the older adult respondents. Second, is the perceived level of knowledge of the older adults regarding the COVID-19 vaccine. The last part will tackle the level of acceptance of older adults regarding the COVID-19 vaccine.

Data collection

After gaining the ethical approval and certificate of data gathering from the research coordinator of the Manila Doctors College of Nursing. The researchers proceeded in gathering related information (literature and studies) regarding the approved research topic which is about the perceived level knowledge of older adults in accepting COVID-19 vaccine

A modified questionnaire was created by the researchers to gather data from the participants (older adults). The questionnaire was also translated into Filipino language by a Filipino major teacher. The researchers passed the modified questionnaire for it to be validated by the 3 panel of experts. Also, the researchers requested permission from the research coordinator of Manila Doctors College of

Nursing to conduct their study about older adults situated in Barangay 130 located in Pasay City.

After acquiring an approval from the research coordinator, the researchers sent a letter of permission to the barangay captain of Barangay 130. Once approved by the barangay captain, the researchers will now make an informed consent to be distributed to the willing participants. It was given before conducting the survey, to ensure the freedom of choice of older adults or if they voluntarily consent or decline their participation. After obtaining the informed consent, the survey was handed to the corresponding respondents with the assistance of the gatekeeper. The participants can then complete the questionnaire while the researchers wait, depending on the time frame given. The collected data was uploaded to Google Forms for enhanced data presentation. After gaining enough information and data, the accomplished questionnaires with the answers given by the participants were subjected for tallying. Lastly, the questionnaire was submitted to a statistician for the preparation of data for analysis

Data analysis

To treat the data effectively, the researchers used tools to analyze the answers given from the specific questions given. The statistical treatments used are; the frequency distribution, percentage, weighted mean, Eta-coefficient, and Eta-squared.

The first problem which is described by the demographic profile of the respondents were analyzed using descriptive statistics, specifically the frequency distribution and percentage. These tallied results helped the researchers to know about the possible differences or similarities of the respondents based on their demographic profiles.

For the second and the third research problems which discuss the perceived level of knowledge and level of acceptance of older adults in getting COVID-19 vaccines, the researchers used a weighted mean to treat the given data. As per the questionnaire done by the researchers, the five-point Likert Scale was used and the weights on each data was classified based on whether the respondents strongly agree, agree, disagree or strongly disagree.

For the fourth and fifth research problem, was analyzed using Spearman's Rho for the inferential statistics to correlate

and test for the significant relationship between the demographic profile of older adults and their perceived level of knowledge and acceptance to Covid-19 vaccine. The Spearman's Rho is a non-parametric test used to measure the strength of association between two variables which is the Demographic of older adults and their perceived level of knowledge and acceptance to Covid-19 vaccine.

In order to determine the relationship between the demographic profile of the respondents and their knowledge and perception about the vaccine, the researchers utilized Eta-coefficient and Eta-squared. Categorical data by its nature cannot exist in a truly linear relationship with scale data; researchers cannot use the typical measure of linear association, Pearson's Correlation Coefficient. However, the Eta Coefficient can test for correlation in curvilinear or nonlinear relationships. Eta-coefficient is a coefficient of nonlinear association. This allows researchers to assess the strength of association between a categorical independent variable and a scale or interval level dependent variable. For linear relationships, eta equals the correlation coefficient (Pearson's r). For nonlinear relationships it is greater hence

the difference between eta and r is a measure of the extent of nonlinearity of relationship. While eta-squared reflects the strength or magnitude related demographic profile of the respondents and perceived level knowledge and level of acceptance of older adults.

Ethical consideration

In conducting this research, the participants were informed about all the steps that took place in the study. The participants were informed that they can withdraw their participation anytime during the process of data gathering procedure. Throughout the study process, the principles of privacy and confidentiality were strictly followed. Keeping everything private builds trust between the researcher and the research participant. Moreover, research participants' information is safeguarded, and the public is restricted to the respondents' personal information. Furthermore, any information supplied throughout the study was utilized and used for research purposes only. The researchers thought that it is important to keep the data gathered private and for confidentiality to be prioritized because it protects the respondent's freedom of speech and personal thoughts. Anonymity of the

participants kept their identity confidential and foremost, the participants' records were secured through the use of password protected files and only the main researchers have the access. Accountability was also taken into the ethical considerations. Researchers should take responsibility in handling personal data provided by the participants in the study.

One of the most fundamental ethical principles in research is Autonomy. The respondents should not feel any coercion to participate in a study. This includes any type of persuasion or deception in attempting to gain an individual's trust. Informed consent states that an individual must give their explicit consent to participate in the study. The consent form is an agreement of trust between the researcher and the participants. Beneficence, which imposes a duty on researchers to minimize harm and to maximize benefits. Human research should be intended to produce benefits for participants themselves or a situation that is more common for other individuals or society as a whole. Justice concerns the right to fair treatment and the right to privacy. The right to fair treatment ensures equal distribution of the benefits and burdens of research; this means that participants should not be selected based upon their

vulnerable status and that women and minorities should be included in research where applicable. This research has been

declared ethically feasible from Manila Tytana Colleges.

3. RESULTS AND DISCUSSION

1) Characteristic of Respondents

Table 1. Distribution of Frequency and percentage of respondent in terms of for gender, age, civil status, educational attainment, and vaccine status

Characteristic of Respondents	Frequency	Percentage (%)
Gender		
Male	63	40.1
Female	93	59.2
Prefer Not to Say	1	.6
Age		
60 - 84 years old	157	100%
Civil status		
Single	22	14.0
Married	76	48.4
Separated	9	5.7
Widowed	50	31.8
Educational Attainment		
Elementary Undergraduate	4	2.5
Elementary Graduate	12	7.6
Highschool Undergraduate	34	21.7
Highschool Graduate	58	36.9
College Degree Holder	47	29.9
Master's Degree Holder	2	1.3
Vaccination Status		
Fist Dose	12	7.6
Second Dose	76	48.4
Booster Dose	69	43.9

Table 1. shows the distribution of the demographic profile of the respondents in terms of gender, age, civil status, educational attainment, and vaccine status. Among the respondents, more than half of the total samples were female 93 (59.20%)

while there were only 63 (40.10%) male respondents. The least number of respondents were Prefer Not to Say with only 1 (0.6%) respondent. This is due to the fact that there are more female older adults than male older adults in Pasay city. This may

also indicate that female respondents are more numerous than the male respondents because the life expectancy of women is much longer compared to men. According to Reyes, Owen Jay (Barangay Captain) of Barangay 130, as of the year 2021 there are a total of 2312 older adults, comprising 1183 female older adults and 1129 male older adults in Pasay city. In barangay 130 alone there is a total population of 272 older adults which are 139 female older adults and 133 male older adults.

An interview made in March of 2015 with PopCom executive director Juan Antonio Perez III said older Filipinos are expected to account for 10 percent of the population by 2025, up from the current six to seven percent. According to Perez, the lifespan of Filipinos is now longer at 67 for males and 72 for females due to modern technology (Crisostomo, 2015). All of the respondents belong to age 60–84 years of age with 157 (100%) responses. A better understanding of age differences in decision-making is becoming more important now that aging is affecting both developing and developed countries. Older adults are taking their medical health decisions more seriously than ever before. Furthermore, as active life spans increase, traditional retirement models are becoming

obsolete, and older adults must make critical decisions about phased retirement and late-life career changes (Löckenhoff, 2017).

For the civil status showed that 76 (48.4%) of the respondents are Married, followed by 50 (31.8%) that are widowed. Next would be single with 22 (14.0%), and lastly separated with 9 (5.7%). The table shows that the majority of the respondents are married. Married couples' decisions tend to be influenced by their family members like spouses and children. It has been largely focused on the influence of children on parents' decision making. Family communication and learning are not unidirectional, a more realistic research perspective will be a reciprocal view of family decision making and consumer socialization. That is, studying children's influences on parents as well as parents' influences on children will result in a better understanding of these family phenomena (Fiese and Winter, 2019).

The demographic profile of respondents in terms of educational attainment indicates the highest educational attainment of the respondents. Majority of the respondents are Highschool graduates with 58 (36.9%). Followed by college degree holders with 47 (29.9%) responses. Next would be 34 (21.7%)

responses which are High School Undergraduates. This is followed by Elementary Graduate with 12 (7.6%) responses and the two least responses are the Elementary Undergraduate with 4 (2.5%) responses and Master's degree Holder with 2 (1.3%) responses. According to the Center for Economic and Social Research (CESR), Education is a bigger factor than race in desire for COVID-19 vaccine. Results show that U.S. adults with higher education are significantly more likely to get a COVID-19 vaccination and to believe in the vaccine's safety and effectiveness. New findings from the Understanding Coronavirus in America survey reveal that when it comes to attitudes and beliefs about the COVID-19 vaccine. From willingness to get the vaccine to knowing someone who has been vaccinated to the perceived risks of side effects there is a substantial gap between more- and less-educated U.S. residents. They found that more than 3 out of 4 (76%) U.S. adults with at least a bachelor's degree have already been vaccinated or plan to be, compared to just over half (53%) of those without a college degree. That's a change from earlier in the pandemic, when level of education played less of a role in people's willingness to get a COVID-19 vaccine (CESR, 2021).

Educational attainment is a significant factor on how an individual may perceive vaccine safety and efficacy. The degree of education has a role in underestimating the effectiveness and overestimating the hazards of the COVID-19 vaccination. Education teaches individuals the distinction between good and bad, how to pick or make your own decisions, and how to keep out of dangerous circumstances. The degree of education has a role in underestimating the effectiveness and overestimating the hazards of the COVID-19 vaccination.

The distribution of the demographic profile of the respondents in terms of vaccination status, where the majority have their second dose already or are called fully vaccinated with 76 (48.4%) responses. It is followed by booster doses with 69 (43.9%) responses. And lastly, first dose with 12 (7.6%) responses.

In a study conducted by Malani et al (2020), older adults are considered to be in the priority group because they are at high risk for contracting severe symptoms of COVID-19 virus because of their underlying medical conditions. In the study, it was concluded that the basis of older adults in getting the COVID-19 vaccines are the following: effectiveness, own research, recommended by their family physician, and

their friends and family. Also, there was a high percentage of older adults that were likely to get the vaccine (58%).

As seen in the data gathered by the researchers, the highest percentage was second dose or fully vaccinated older adults. Most of the older adults' reason for getting the vaccine was because they wanted it without the recommendation of others. While some, got the vaccine because it was

recommended by their families and friends or their physician. With regards to the booster shot, it was because some of the older adults at Barangay 130, Pasay City believed that they didn't need an additional booster dose of COVID-19 vaccine. However, during the data gathering, some were waiting for the Barangay's announcement regarding the mass booster shot vaccination.

2) Perceived Level of Knowledge of Older Adults on COVID-19 Vaccines

Transmission of disease

Table 2. Perceived Level of Knowledge of Older Adults on COVID-19 Vaccines in terms of Transmission of Disease

Transmission of Disease	Mean	Std. Deviation	Adjectival Interpretation	Interpretation
I can spread the virus to other people.	4.35	1.02	Strongly agree	Highly Knowledgeable
Even If I am vaccinated, I am still at risk of contracting COVID-19 virus but with mild symptoms.	4.45	.94	Strongly agree	Highly Knowledgeable
Overall Mean	4.40	.87	Strongly Agree	Highly Knowledgeable

Legend: Interpreted as Follows: 5 as Strongly agree; highly knowledgeable. 4 as Agree; knowledgeable. 3 as Neutral; Not Sure. 2 is interpreted as Disagree; Not Knowledgeable. 1 as Strongly Disagree; Not Highly Knowledgeable.

Table 2 shows the majority of the respondents are knowledgeable about the transmission of the disease which can be interpreted with the Overall mean of 4.40 with interpretation of Strongly Agree. The results showed that the respondents believe that they can still acquire the virus even if they are vaccinated (4.45, Strongly Agree).

With the mean 4.35 (Strongly agree) the respondents think that they can spread the virus to other people.

According to Gallè (2021) The older adults demonstrated a high level of knowledge about COVID-19 characteristics However, effective public health communicators' warnings and messages

appear to be necessary. Participants reported an increase in unhealthy habits, which may have long-term health consequences. This is another negative consequence of the pandemic that should be addressed through public health interventions aimed at older people. In this context, both healthcare and social institutions can play critical roles in implementing health promotion initiatives aimed at educating individuals to adopt healthy lifestyles during the pandemic. At the same time, healthcare professionals, particularly physicians, play a critical role in

increasing their patients' participation and compliance with these interventions (Gallè 2021)

According to Chen (2020) Most older adults had adequate knowledge of COVID-19 and engaged in disease prevention behaviors. Knowledge was found to be significantly related to behavioral responses. Our findings have important implications for improving the efficacy of COVID-19 prevention programs aimed at the elderly; these programs must be maintained and strengthened as the epidemic continues (Chen, 2020).

Vaccination breakthrough infection

Table 3. Perceived Level of Knowledge of Older Adults on COVID-19 Vaccines in terms of Vaccination breakthrough Infection

Vaccination Status	Mean	Std. Deviation	Adjectival Interpretation	Interpretation
COVID-19 vaccine may cause infection.	1.84	.99	Disagree	Not Knowledgeable
Overall Mean	4.16	.99	Agree	Knowledgeable

Legend: Interpreted as Follows: 5 as Strongly agree; highly knowledgeable. 4 as Agree; knowledgeable. 3 as Neutral; Not Sure. 2 is interpreted as Disagree; Not Knowledgeable. 1 as Strongly Disagree; Not Highly Knowledgeable.

Table 3 The results showed that the respondents believe that the COVID-19 vaccine does not cause infection (1.84, disagree) with an overall mean of 4.16 (agree). Vaccine information is important because it allows individuals to understand its purpose. Apart from that, it can help stop the spread of misinformation that can make an individual mistrust newly developed

vaccines. COVID-19 vaccine is a newly introduced vaccine, that's why there are a lot of assumptions about it, one of which is that it can produce infection in the body. According to the Centers of Disease Control and Prevention (2021), COVID-19 vaccines can cause a more predictable immune response than the infection brought by the COVID-19 virus. The newly developed

vaccines can give individuals a high level of protection against COVID-19. Also, COVID-19 vaccines cannot make an individual sick

because it helps the body's immune system recognize the virus.

Effectiveness

Table 4. Perceived Level of Knowledge of Older Adults on COVID-19 Vaccines in terms of Effectiveness

Vaccination Status	Mean	Std. Deviation	Adjectival Interpretation	Interpretation
COVID-19 vaccine may not be effective.	1.41	.78	Strongly Disagree	Not Highly Knowledgeable
Overall Mean	1.41	.78	Strongly Agree	Highly Knowledgeable

Legend: Interpreted as Follows: 5 as Strongly agree; highly knowledgeable. 4 as Agree; knowledgeable. 3 as Neutral; Not Sure. 2 is interpreted as Disagree; Not Knowledgeable. 1 as Strongly Disagree; Not Highly Knowledgeable.

Table 4 result showed that the respondents does not perceive that the COVID-19 vaccine may not be effective (1.41, Strongly disagree) with an overall mean that was reverse scored of (1.41, Strongly agree)

A study by Azmawati Mohamed provides early insight into the Malaysian population's knowledge, acceptability and perception regarding COVID-19 vaccines. The majority perceived that vaccination

could protect them and others from COVID-19 infection. This is consistent with other findings from other countries. Moreover, the respondents believed that the vaccine is beneficial due to recommendations by the MOH and the fact that they can lead a normal life after vaccination. Conversely, more studies have to be done to assess the ability of vaccines to prevent disease transmissibility.

Adverse Effects

Table 5. Perceived Level of Knowledge of Older Adults on COVID-19 Vaccines in terms of Adverse Effects

Vaccination Status	Mean	Std. Deviation	Adjectival Interpretation	Interpretation
I am aware that vaccines have adverse effects.	3.63	1.25	Agree	Knowledgeable
Overall Mean	2.37	1.25	Disagree	Not Knowledgeable

Legend: Interpreted as Follows: 5 as Strongly agree; highly knowledgeable. 4 as Agree; knowledgeable. 3 as Neutral; Not Sure. 2 is interpreted as Disagree; Not Knowledgeable. 1 as Strongly Disagree; Not Highly Knowledgeable.

Table 5 results showed that the respondents are aware that vaccines have adverse effects (3.63, Agree) with an overall mean of 2.37 (Disagree). According to Meo (2021) The FDA has granted emergency use authorization for the Pfizer/BioNTech and Moderna COVID-19 vaccines. These vaccines can protect recipients from a SARS-CoV- 2 infection by formation of antibodies and

provide immunity against a SARS-CoV-2 infection. Both vaccines can cause various adverse effects, but these reactions are reported to be less frequent in the Pfizer/BioNTech vaccine compared to the Moderna COVID-19 vaccine; however, the Moderna vaccine compared to the Pfizer vaccine is easier to transport and store because it is less temperature sensitive.

Protection

Table 6. Perceived Level of Knowledge of Older Adults on COVID-19 Vaccines in terms of Protection

Protection	Mean	Std. deviation	Adjectival Interpretation	Interpretation
I need to receive the COVID-19 vaccine because it serves as a protection.	4.82	.58	Strongly Agree	Highly Knowledgeable
There is a lot of COVID-19 vaccine misinformation in social media.	3.52	1.37	Agree	Knowledgeable
COVID-19 Vaccine protects me from getting infected.	4.62	.67	Strongly Agree	Highly Knowledgeable
COVID-19 Vaccine also protects other people who are not vaccinated	4.20	1.10	Agree	Knowledgeable
COVID-19 vaccine is safe for older adults.	4.66	.64	Strongly Agree	Highly Knowledgeable
After vaccination I can live a normal life	3.93	1.27	Agree	Knowledgeable
Overall Mean	3.59	.35	Agree	Knowledgeable

Legend: Interpreted as Follows: 5 as Strongly agree; Highly Acceptable. 4 as Agree; Acceptable 3 as Neutral; Not Sure. 2 is interpreted as Disagree; Not Acceptable 1 as Strongly Disagree; Not Highly Knowledgeable.

Table 6 shows that the majority of the respondents believed that, based on their knowledge, vaccines provide protection for the people in acquiring COVID-19 virus with an overall mean of 3.59, which is interpreted

as Agree. The respondents believe that they need to receive the COVID-19 vaccine because it serves as a protection (4.82, Strongly Agree). They believe the COVID-19 vaccination is safe for older persons, with a

mean of 4.66 (Strongly Agree). With a mean of 4.62 (Strongly Agree), they believe the COVID-19 Vaccine protects them from infection. The respondents feel that the COVID-19 Vaccine also protects unvaccinated persons, with a mean of 4.20, which is interpreted as Neutral. Respondents agreed they can live a normal life after vaccination, with a mean of 3.93 (Agree). There is a lot of COVID-19 vaccination disinformation in social media, which respondents believe, according to a mean of 3.52 as interpreted as Agree.

According to the World Health Organization (WHO), vaccines offer strong protection, but that protection takes time to build. People must take all the required doses of a vaccine to build full immunity. For two-dose vaccines, vaccines only give partial protection after the first dose, and the

second dose increases that protection. It takes time before protection reaches its maximum level a few weeks after the second dose. For a one-dose vaccine, people will have built maximum immunity against COVID-19 a few weeks after getting vaccinated. Vaccines provide protection from infection and transmission, but not as much as the protection they provide against serious illness and death. According to the United States Agency International Development (USAID), vaccines indirectly protect loved ones and communities. For many diseases, immunizing a significant portion of a population can break the chain of transmission and actually protect unvaccinated people, a bonus effect called herd immunity. The trick is immunizing enough people to ensure that transmission can't gather momentum (USAID, 2021).

3) Perceived Level of Acceptance of Older Adults on COVID-19 Vaccines

Availability

Table 7. Perceived Level of Acceptance of Older Adults on COVID-19 Vaccines in terms of Availability

Availability	Mean	Std. Deviation	Adjectival Interpretation	Interpretation
I will accept the COVID-19 vaccine if it's available.	4.68	0.72	Strongly Agree	Highly Accepted
Overall Mean	4.68	0.72	Strongly Agree	Highly Accepted

Legend: Interpreted as Follows: 5 as Strongly agree; Highly Acceptable. 4 as Agree; Acceptable 3 as Neutral; Not Sure. 2 is interpreted as Disagree; Not Acceptable 1 as Strongly Disagree; Not Highly Knowledgeable.

Table 7 shows the perceived level of acceptance of older adults on COVID-19 Vaccines in terms of availability with an overall mean of 4.68 (strongly agree). There are factors that were determined in affecting the individual's perspective on accepting the vaccine namely confidence, convenience, and complacency. During the early stages of the implementation of COVID-19 vaccine, there was a lot of speculation and misinformation that was happening causing a challenge to healthcare providers, policymakers, and the government. In a study conducted by El-Elimat et al (2021), older adults were less likely to accept the vaccine because of the mentioned factors. Also, another reason for this may be because the survey was conducted online, which older adults are less likely to engage in (El-Elimat et al, 2021). However, in a recent study conducted by

Marzo et al (2022), it was mentioned that participants would accept the vaccine if it is available. However, due to convenience, it compromises the acceptance of individuals in accepting the COVID-19 vaccine (Marzo et al, 2022).

Based on the results that were gathered by the researchers, most of the older adults would accept the vaccine if it is available. In relation to their vaccination status, most of them have the second dose or were fully vaccinated, while some had booster shots. During the interview, some participants mentioned that they are waiting for their booster shot schedule while some declined it because they think that the second dose is enough. Going back to the related study, convenience plays a role in affecting the acceptability of getting the COVID-19 vaccine.

Influence

Table 8. Perceived Level of Acceptance of Older Adults on COVID-19 Vaccines in terms of Influence. (continue to page 163)

Influence	Mean	Std. Deviation	Adjectival Interpretation	Interpretation
I will accept the COVID - 19 vaccine because it was suggested by my doctor.	4.08	1.30	Agree	Accepted
I will accept the COVID - 19 vaccine because it was suggested by my family and friends.	3.95	1.26	Agree	Accepted
I will accept the COVID-19 vaccine because it is trendy.	3.27	1.60	Neutral	Not Sure

Influence	Mean	Std. Deviation	Adjectival Interpretation	Interpretation
I accept the information released regarding COVID-19 vaccines using the television.	4.63	.88	Strongly Agree	Highly Accepted
I accept the information released regarding COVID-19 vaccines using social media.	3.35	1.57	Neutral	Not Sure
I accept the Information released regarding COVID-19 vaccines using news paper.	2.47	1.55	Disagree	Not Accepted
Overall Mean	3.63	.78	Agree	Accepted

Legend: Interpreted as Follows: 5 as Strongly agree; Highly Acceptable. 4 as Agree; Acceptable 3 as neutral; Not Sure. 2 is interpreted as Disagree; Not Acceptable 1 as Strongly Disagree; Not Highly Knowledgeable.

Table 8 show the Perceived Level of Acceptance of Older Adults on COVID-19 Vaccines In terms of Influence with an overall mean of 3.36 (Agree). Majority of the respondents got their information about covid - 19 in television (4.63 Strongly agree). The respondents also thought that they will accept the vaccine if their doctor will be the one to recommend it (4.08 Agree) and if it will be recommended by their family and friends (3.97 Agree). The respondents are hesitating about the information they got on social media (3.27 Neutral). And lastly, they are hesitant to accept the vaccine just because it is trendy (3.27 Neutral)

According to Callow (2021) Older adults are at higher risk of severe illness from the disease. They prefer to get information from physicians making their perceived risk of the pandemic, general vaccine beliefs, and political affiliation influence respondents' acceptance toward the vaccine. The physician's recommendation helps shape the older adults' acceptance in getting vaccinated.

According to Bowers (2021), Among those aged 65 or more years, 68% said they "often" get their news from the television, and 48% said they often get it via a smartphone, computer or tablet computer.

Efficacy

Table 9 Perceived Level of Acceptance of Older Adults on COVID-19 Vaccines in terms of Efficacy.

Efficacy	Mean	Std. Deviation	Adjectival Interpretation	Interpretation
I will accept the COVID-19 vaccine even if it has side effects.	4.31	1.08	Strongly Agree	Highly Accepted
I will accept the COVID - 19 because it is effective.	4.75	.63	Strongly Agree	Highly Accepted
I will accept the COVID-19 vaccine because it will help me prevent COVID-19 infection.	4.76	.59	Strongly Agree	Highly Accepted
I will accept the COVID-19 vaccine because it is not dangerous for me.	4.55	.78	Strongly Agree	Highly Accepted
I will accept the COVID-19 vaccine because of its duration of protection	4.58	.76	Strongly Agree	Highly Accepted
I will get vaccinated because it can affect my health positively.	4.69	.65	Strongly Agree	Highly Accepted
Overall Mean	4.61	.62	Strongly Agree	Highly Accepted

Legend: Interpreted as Follows: 5 as Strongly agree; Highly Acceptable. 4 as Agree; Acceptable 3 as Neutral; Not Sure. 2 is interpreted as Disagree; Not Acceptable 1 as Strongly Disagree; Not Highly Knowledgeable.

Table 9 shows that the majority of the respondents will accept the COVID-19 vaccines in terms of its efficacy with an overall mean of 4.61, which is interpreted as Strongly Agree. The respondents will accept the COVID-19 vaccine because it will help me from preventing COVID-19 infection (4.76, Strongly Agree). They will accept the COVID - 19 vaccine because it is Coeffective, with a mean of 4.75 (Strongly Agree). With a mean of 4.69 (Strongly Agree), they will get vaccinated because it can affect their health positively. The respondents will accept the COVID-19 vaccine because of its duration of protection, with a mean of 4.58, which is interpreted as Strongly Agree. Respondents

will accept the COVID-19 vaccine because it is not dangerous for them, with a mean of 4.55 (Strongly Agree). The respondents will accept the COVID-19 vaccine even if it has side effects, according to a mean of 4.31 as interpreted as Strongly Agree.

The effectiveness of the vaccine in the face of mutated versions was a significant worry regarding the vaccine. The likelihood, but not the expected severity, of side effects was significantly associated with both the vaccination intake and the intention to be vaccinated. The respondents mainly based their risk estimations on the likelihood rather than the severity of the side effects (Malesza, 2021).

Azmawati Mohamed's research gives an early look at the Malaysian public's understanding, acceptance, and perception of COVID-19 vaccines. The vast majority believed that immunization would protect them and others from infection with COVID-19. This is in line with previous studies from throughout the world. Furthermore, the

respondents thought the vaccine was advantageous because of the MOH's recommendations and the fact that they could live a regular life following inoculation. In contrast, additional research is needed to assess vaccinations' efficacy to prevent disease transmission.

4) Relationship of Demographic Profile and Perceived Level of Knowledge on COVID-19 Vaccines

Perceived Level of Knowledge

Table 10. Relationship of Demographic Profile and Perceived Level of Knowledge on COVID-19 Vaccines

	ETA-coefficient	ETA squared	Decision on H ₀	Interpretation
Gender Perceived Level of Knowledge	.134	.0180	Accepted	Very Low Correlation
Age Perceived Level of Knowledge	.252	.0635	Rejected	Slight Correlation
Civil Status Perceived Level of Knowledge	.133	.0177	Accepted	Very Low Correlation
Educational Attainment Perceived Level of Knowledge	.305	.0930	Accepted	Slight Correlation
Vaccination Status Perceived Level of Knowledge	.296	.0876	Accepted	Slight Correlation

At <0.05 Level of Significance

Table 10 shows Relationship of Demographic Profile and Perceived Level of Knowledge on COVID-19 Vaccines. For the Gender. The results suggest that association between gender and perceived level of knowledge was not significant $\eta = .134, \eta^2 = .0180$. This means that we failed to reject the null hypothesis. That is, gender and perceived level of knowledge have no

significant relationship. Next would be Age. The results suggest that age and perceived level of knowledge have a weak significant association, $\eta = .252, \eta^2 = .0635$. This leads us to reject the null hypothesis of no association between the variables; age contributes to 6.35% of the variance in perceived level of knowledge. For the Civil Status, the results suggest that association

between civil status and perceived level of knowledge was not significant, $\eta = .133, \eta^2 = .0177$. This means that we failed to reject the null hypothesis. That is, civil status and perceived level of knowledge have significant relationships. And the Educational Attainment. The results suggest that educational attainment and perceived level of knowledge have a weak significant association, $\eta = .305, \eta^2 = .0930$. This leads us to reject the null hypothesis of no association between the variables; educational attainment attributes to 9.30% of the variance in perceived level of knowledge. And lastly Vaccination Status, the results suggest that vaccination status and perceived level of knowledge have a weak significant association, $\eta = .296, \eta^2 = .0876$. This leads us to reject the null hypothesis of no association between the variables; vaccination status attributes to 8.76% of the variance in perceived level of knowledge.

According to Mohamed et al (2021) Knowledge about vaccines was relatively poor, specifically with those low education levels. Education level of bachelor's degree and higher was associated with better acceptance towards COVID-19 vaccine. This finding can help the Ministry of Health to

plan for future efforts to increase vaccine uptake that may eventually lead to herd immunity against SARS-CoV-2. The efforts should focus on those with insufficient knowledge and low acceptance, particularly those with chronic diseases and less financially fortunate people.

According to Siddique A. B (2021) More than half of the population had little knowledge of COVID-19 vaccinations. Knowledge was found to be significantly related to education, family type, monthly family income, and previous vaccine uptake experience in this study. The gender of participants had no effect on their knowledge of COVID-19 vaccinations. This finding is consistent with other studies in Bangladesh that found no significant gender differences in COVID-19 knowledge. This finding is similar to findings from studies on COVID-19 knowledge (not vaccinations) conducted in Bangladesh, which found that males had marginally higher scores on COVID-19 knowledge than females. This finding, however, contradicts studies on knowledge of COVID-19 (not vaccinations) conducted in Bangladesh, which found that males had marginally higher scores in knowledge of COVID-19 than females. These knowledge gaps discovered in our study on COVID-19 vaccinations may be due to limited

government exposure to information or publicity on COVID-19 vaccinations since the vaccine rollout began. Furthermore, potential under-reporting or misinformation of data on the seriousness of COVID-19

incidence and mortality may reduce concerns about vaccine safety or make Bangladesh residents reluctant to seek information on COVID-19 or related vaccinations.

Perceived Level of Acceptance

Table 11. Relationship of Demographic Profile and Level of Acceptance on COVID-19 Vaccines

	ETA-coefficient	ETA squared	Decision on H ₀	Interpretation
Gender				
Level of Acceptance	.085	.0072	Accepted	Very Low Correlation
Age				
Level of Acceptance	.192	.0369	Accepted	Very Low Correlation
Civil Status				
Level of Acceptance	.135	.0182	Accepted	Very Low Correlation
Educational Attainment				
Level of Acceptance	.404	.1632	Rejected	Moderate Correlation
Vaccination Status				
Level of Acceptance	.159	.0253	Rejected	Very Low Correlation

At <0.05 Level of Significance

Table 11 shows Relationship of Demographic Profile and Level of Acceptance on COVID-19 Vaccines. Gender. The results suggest that the association between gender and level of acceptance was not significant, $\eta = .085, \eta^2 = .0072$. This means that we failed to reject the null hypothesis. That is, gender and level of acceptance have no significant relationship. in terms of Age. The results suggest that the association between age and level of acceptance was not significant, $\eta = .192, \eta^2 = .0369$. This means that we failed to reject the null hypothesis. That is, age and level of acceptance have no significant

relationship. Civil Status. The results suggest that the association between civil status and level of acceptance was not significant, $\eta = .135, \eta^2 = .0182$. This means that we failed to reject the null hypothesis. That is, civil status and level of acceptance have no significant relationship. Educational Attainment. The results suggest that educational attainment and level of acceptance have a moderate significant association, $\eta = .404, \eta^2 = .1632$. This leads us to reject the null hypothesis of no association between the variables; educational attainment attributes to 16.32% of the variance in level of acceptance.

Vaccination Status. The results suggest that the association between vaccination status and level of acceptance was insignificant, $\eta = .159, \eta^2 = .0253$. This means that we failed to reject the null hypothesis. That is, vaccination status and level of acceptance have no significant relationship.

As a result, there is a weak insignificant association between demographic profile and level of acceptance on COVID-19 vaccines. According to Al-Mohaithef (2021) with their study entitled Socio-Demographics Correlate of COVID-19 Vaccine Hesitancy During the Second Wave of COVID-19 Pandemic: A Cross-Sectional Web-Based Survey in Saudi Arabia. The first section of the studies questionnaire includes information on sociodemographic characteristics of study participants such as age, gender, marital status, education level, place of residency, occupation sector, and socioeconomic status. The cross-tabulation

analysis using the chi-square test for binary or categorical variables showed that a statistically significant number of married respondents (53.85%) declared a strong intention to receive the COVID-19 vaccine when compared to the unmarried respondents (46.55 %) ($p = 0.02$). Moreover, by education levels, a significantly higher proportion of respondents who expressed an absolute intent to vaccinate included respondents with undergraduate education (45.30%) or postgraduate respondents (24.22%) ($p = 0.01$). The study did not record any adverse events including the psychological factors, which may be one of the causes for poor response in acceptance of the COVID-19 vaccination. Hence, the study only determined socio-demographic factors, such as being married and higher educational level, were found to be associated with vaccine acceptance (Al-Mohaithef, 2021).

Table 12. Relationship of Perceived Level of Knowledge and Level of Acceptance on COVID-19 Vaccine

	Correlation Coefficient	P-value	Interpretation
Perceived Level of Knowledge	.321	.0001	Significant Relationship
Level of Acceptance			

At <0.05 Level of Significance

The results of the study suggest that the perceived level of knowledge and level

of acceptance on COVID-19 vaccines were significantly correlated, $r = .321, p < .05$.

This means that there is a positive weak correlation between perceived level of knowledge and level of acceptance. That is, the higher a person's perceived level of knowledge about COVID-19 vaccines, the more likely they are to accept it.

There are a lot of factors that can influence an individual's decision in accepting the COVID-19 vaccines, some are namely an individual's risk perception, and social and cultural values. In the study, they conducted a cross-sectional online survey to determine the predicting factors and reasons for hesitancy of older adults. In the results of their study, it was noted that higher education levels were predictors of an individual's willingness in accepting the COVID-19 vaccine. According to data gathered, lower educational attainment is linked to lower health literacy. It means that the individuals may have a misinformation with regards to the COVID-19 vaccine. Apart from that, risk perception also affects an individual's decision in accepting the vaccine (Al-Hanawi et al, 2021). Similarly, in a study conducted by Li et al (2021), the data that were gathered showed that having good knowledge can increase an older adult's acceptability when it comes to the COVID-19 vaccine. Individuals who have poor

knowledge are more unwilling in accepting the vaccine.

4. Conclusions

According to the study's findings, the perceived level of knowledge and acceptance of COVID-19 vaccinations are highly associated. The greater an older adult's perceived degree of knowledge regarding COVID-19 vaccinations, the greater their acceptance of COVID-19 vaccines. This suggests that older persons' understanding about the COVID-19 vaccinations has a significant impact on whether or not they will receive the vaccine.

Majority of the older adults received their second dose or were fully vaccinated, while some had their booster dose. Based on the data that the researchers gathered, most respondents believed that COVID-19 vaccines would control and prevent the spread of the virus. Older adults have good and positive knowledge about the transmission of disease. Their knowledge also attributes on how they behave and how they perceive the COVID-19 Vaccine. This study also shows that most older adults perceived that the vaccine does not produce infections, but rather it provides them immunity against the COVID-19 virus. It was also evident in the study that there are a lot

of myths and misconceptions about the newly developed COVID-19 vaccines that may affect the knowledge of these older adults.

The factors that lead to the acceptance of older adults when it comes to COVID-19 vaccines are: side effects, efficacy, vaccine availability, and influence from other people were found in the study. Researchers believed that these should be considered as essential elements in developing COVID-19 vaccination campaigns to boost vaccination uptake in older adults.

Findings may be utilized to encourage more older adults to be more active in their community regarding the activities about COVID 19 vaccines for them to gain more knowledge about the vaccines. Findings may be utilized for quality improvement of health protocols particularly during this crucial time of COVID-19 pandemic. Need to collaborate with healthcare workers in enhancing the older adult's knowledge and acceptance on COVID-19 vaccines as this will help them have better community management regarding the disease.

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CONFLICT OF INTEREST

The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

DATA AVAILABILITY STATEMENT

The data are not publicly available due to privacy or ethical restrictions.

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