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COVID-19 vaccine hesitancy: Prevalence and reasons of hesitation among the elderly in Bacolod City Philippines

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Abstract

Objectives: Vaccine hesitancy continues to be of long-standing issue because of its inherent consequences not just in health but also with socioeconomic systems. This situation has emerged and became one of the major barriers during the last COVID-19 pandemic and has persisted up to this time. This study aimed to determine the determinants of vaccine hesitancy among older adults in selected areas of Bacolod City, Philippines, to better prepare communities for future pandemics.

Materials and Methods: A cross-sectional study was conducted from April to May of 2023 in selected areas of Bacolod City, Philippines. A total of 919 older adults aged 60 years and above participated in the study. Data were collected on sociodemographic characteristics and factors influencing vaccine hesitancy.

Results: Among 919 participants, 55.28% were women and nearly half (48.86%) were aged 60-70 years. Most participants completed secondary education (37.32%) while 10.12% had obtained a bachelor's degree. The most common reasons for vaccine hesitancy were concerns about post-vaccination side effects (44.72%) and presence of comorbidities (36.34%). Information about vaccines was primarily obtained from local radio, television, and newspaper (53.30%), followed by family and friends (14.9%) and official government sources (12.30%). Despite regular contact with health professionals, many participants have remained hesitant, suggesting mistrust is influenced by misinformation, malinformation and disinformation.

Conclusions: Vaccine hesitancy among older adults in Bacolod City is largely driven by concerns about side effects, comorbidities, and the influence of inaccurate information. These findings underscore the need for more targeted and effective public health communication strategies to improve vaccine confidence among older populations in preparations for future pandemics.

Keywords: COVID-19 vaccine; Vaccine hesitancy; Older adults; Bacolod City

1. Introduction

Safe and effective vaccines against diseases that prevent substantial morbidity and mortality is one of the foremost scientific advances we have in the 21st century. The vaccine had its long history that started in 1500 AD, works of Pasteur in 1880 to 1885, BCG in 1927, DPT, MMRV, and a lot of other vaccine discoveries, up to the COVID-19 vaccine we have today[1]. Vaccines are being used for multiple reasons, that include, the reduction of infectious disease morbidity

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and mortality, eradication of infectious diseases, promote herd Immunity[2,3], reduction of secondary infections that complicate vaccine-preventable diseases, prevention of cancer, and preventing antibiotic resistance. Vaccines also benefit not just the people's health, but also the economy and social welfare of the community[4]. It can lead to higher cost savings[1,5], productivity gains, minimizing the impact in the family, preparedness for outbreaks and vaccine development, equity in healthcare, strengthening health infrastructure and improving life expectancy.

Although vaccination is widely promoted globally, there are also issues or situations wherein it is prohibited because of some medical reasons, like severe allergic reactions especially those related to vaccination, pericarditis/endocarditis, and chronic medical conditions leading to impaired immune system. Aside from medical reasons, there is also misinformation or disinformation that hinders the proliferation of vaccination. Misinformation or disinformation that is very much widespread through different forms of media, that even when corrected, the false belief still remains and is really difficult to change[6]. Vaccine hesitancy in the Philippines became widespread mainly because of the dengvaxia controversy that led to a number of parents refusing to vaccinate their children against vaccine preventable diseases[7].

Recently, the world has just experienced the COVID-19 pandemic, a highly virulent, highly contagious severe acute respiratory syndrome coronavirus 2, and one of the prime causes of morbidity and mortality rates[8]. To combat this threat, herd immunity is needed to be achieved through vaccination, as it is the safer way over than and not by exposing the people to the disease. With global efforts and cooperation, the World Health Organization has announced that it no longer constitutes as a public health emergency of international concern in half of 2023, though, the health agency still emphasized that COVID-19 remains a global health threat as new variants keep on appearing causing new surges and deaths[9]. In the Philippines, it was noted that 43% of COVID-19 deaths were unvaccinated. An isolated increase of COVID-19 cases (1,771 cases) was observed in December 4 – 10, 2023 alone, as compared to previous weeks with highest counts in National Capital Region, Region IV-A and Region VI. This is also noted that a good number of cases were of the elderly with moderate to severe symptoms and unvaccinated.

This scenario then brings to this current study to determine the local prevalence of vaccine hesitancy among the elderly and the reason for their hesitation in Bacolod City.

2. Material and methods

2.1. Study Design and Selection of Participants

The study was conducted from April 19, 2023 to May 03, 2023. Anyone who is aged 60 years old and above, eligible for vaccine, residing in either Barangay Singcang, Banago or Taculing, can either understand English or Hiligaynon, unvaccinated and gave their consent were considered eligible to participate. For those who wish to participate yet dependent on a guardian, consent from a legally authorized representative on behalf of the prospective participant were also acquired. The study focused on these three (3) barangays as these are the areas where high census of unvaccinated elders is found within Bacolod City. The sample size was calculated using Cochran based on a 95% confidence level that resulted in 919 participants. Non-eligible groups are automatically excluded from the study. The presence of any of the researchers for this study was also made available to answer any inquiry from the participants for a clear and better understanding.

2.2. Data Gathering Instruments and Data Gathering Procedures

The survey questionnaire was a modified survey from UNICEF[10]. It is composed of basic demographics such as age, sex, highest educational attainment, and place of residence. The questionnaire is a close-ended questionnaire with 19 survey questions that might have led to their hesitancy for COVID-19 vaccination. Validation was also made by 5 (five) panelists comprising medical doctors and nurses specializing in immunization and vaccination.

The research instrument was subjected to Validity using Lawshe content validity ratio (CVR), given (5) five subject matter experts who evaluated the instrument, a CVR of 0.99 is needed for the item to be included in the questionnaire. Nineteen out of thirty items garnered a CVR within the cut-off, thus were included in the questionnaire.

Small group discussions were scheduled by researchers to assist the participants on how to answer the survey questionnaires that were distributed personally. Only one (1) survey or response is allowed per participant.

2.3. Data Analysis

Collected data were checked for completeness and consistencies and encoded onto Microsoft Excel version 12.0. Descriptive statistical analyses were computed in terms of frequencies, mean and percentage for all variables.

2.4. Ethical Consideration

A letter for approval was sent to the local government unit of Bacolod City, that included the Barangay Captain and the senior citizen association of each barangay or study site. Individual consent was also acquired from each participant prior to filling out the survey questionnaire. Considering that the participants are older persons and classified as one of the vulnerable groups, thorough understanding of the study process was ensured. This included withdrawing anytime if a participant was no longer comfortable in the study, and the possible risks and benefits. While for those needing some assistance, a legal representative was required to protect their interest. This paper was also approved by the Research Ethics Committee of Colegio San Agustin – Bacolod last April 18, 2023, with protocol code 2 023-01-STU-Pullicar-RPA3-Covid-19 Vaccination Hesitancy Among the Senior Citizens in Certain Areas of Bacolod City.

3. Results

There were 919 participants in this study, dominated by women (508, 55.28%) and those aged 60 – 70 years old (449, 48.86%). The oldest participant was noted to be 84 years old, while the youngest was 60. The majority of them completed secondary education (343, 37.32%), while (93, 10.12%) completed a bachelor's degree. Summary of participants' demographics is shown in table 1 below.

Table 1 Demographics of Participants

	Age Range		
	60 – 70 years old	**71 – 80 years old**	**81 – 90 years old**
Total Number of Participants	449 (48.86%)	397 (43.20%)	73 (7.94%)
Sex			
Male	159 (17.30%)	225 (24.48%)	27 (2.94%)
Female	290 (31.56%)	172 (18.72%)	46 (5.00%)
Highest Educational Attainment			
Primary	202 (21.98%)	106 (11.53%)	10 (1.09%)
Secondary	135 (14.69%)	169 (18.39%)	39 (4.24%)
Tertiary	47 (5.11%)	38 (4.13%)	8 (0.87%)
Vocational	18 (1.96%)	50 (5.44%)	5 (0.54%)
No proper education	47 (5.11%)	34 (3.70%)	11 (1.20%)

Table 2 presents the reasons for vaccine hesitancy among participants. The most frequent reasons are the common side effects of the vaccine (44.72%) that consist of fever, headache, body ache, tiredness, sore arm, and flu-like illness that usually last for 1-2 days. Next in line are those with comorbidities (36.34%) and fear of serious side effects (28.62%) that include severe allergic reaction, myocarditis and pericarditis, while religious beliefs remain the least frequent reason for not taking the vaccine.

Table 2 General Preliminary Reasons of Participants Not Taking the Vaccine

General Reasons	**Yes**	**No**	**Irrelevant to my case**
Common side effects of vaccine	411 (44.72%)	508 (55.28%)	0
Efficacy of vaccine	147 (16.00%)	772 (84.00%)	0
Serious Adverse Effects of vaccine	263 (28.62%)	565 (61.48%)	0
Availability and brand of vaccine	47 (5.11%)	872 (94.89%)	0
Location of Vaccination Site	37 (4.03%)	882 (95.97%)	0

Religious Beliefs	14 (1.52%)	905 (98.48%)	0
Medical Advice	87 (9.47%)	767 (83.46%)	65 (7.07%)
Comorbidities	334 (36.34%)	585 (63.66%)	0

On the other hand, table 3 shows that out of the 334 participants who reasoned out comorbidities as basis for vaccine hesitancy indicates hypertension, as the most frequent followed by arthritis.

Table 3 Medical Conditions or Comorbidities that Renders Participants to Hesitate COVID-19 Vaccines

Medical Condition/Comorbidities	**Frequency**	**Percentage**
Hypertension	129	38.62
Diabetes	45	13.47
Arthritis	38	11.38
Stroke	35	10.48
Cardiac Problems	22	6.59
Asthma	19	5.69
Allergies	11	3.29
Tuberculosis (all forms)	10	2.99
Eye Problems	9	2.69
Pneumonia	6	1.80
Others	10	2.99
TOTAL	334	100.00

The distribution of sources where information about COVID-19 vaccine reached the participants is shown in table 4. As observed, the majority of them had it from Local Radio / TV / Newspaper (53.30%), followed by family and friends (14.90%) and from Official Government Sources (12.90%).

Table 4 Distribution of Source of Information Leading to Not Taking the Vaccine

Source of Information	**Frequency**	**Percentage**
Official Government Sources (DOH, IATF)	119	12.90
Private/Medical Sources	30	3.30
Social media	110	12.00
Personal Research	33	3.60
Local Radio / TV / Newspaper	490	53.30
Information from family and friends	137	14.90
Total	919	100.00%

Although there were some organizers from local health units that came into the community to educate the residents about the available COVID-19 vaccine, the majority of the participants (70.30%) are still not taking the vaccine as shown in Table 5. The basis of vaccine hesitancy is shown in table 6 and majority of the participants reasoned out that it is because of the mild illness as side effects (82.05%), not confident with the current available vaccine (60.72%), and because of quick vaccine production (58%). Not mandatory for work is the least of the reasons why they still don't want to be vaccinated.

Table 5 Current Perspective of Taking the COVID-19 Vaccine

	Frequency	**Percentage**
Still not taking it	646	70.30
More inclined to take it	215	23.40
Less inclined to take it	58	6.30
Total	919	100%

The lack of effective public health messaging, concern about vaccine safety, and the lack of trust and concerns about side effects may be reasons why they remained hesitant. Though there are health professionals who visit them frequently, they still opted not to be vaccinated. Truly, the false belief the participants have is difficult to change. The specific reasons why they remained unvaccinated are enumerated in table 6-8.

Table 6 Specific Reasons Vaccine Hesitancy

The person is not qualified	49	1.80
Health Perception	444	16.34
Thinks it causes COVID-19	457	16.81
Nation's Healthcare System	337	12.40
Vaccine Brands	294	10.82
Does not trust the government to handle unexpected risks	500	18.40
Household members as reasons	434	15.97
No time or lines are too long	153	5.63
Non mandatory for work	50	1.84

Table 7 Specific Health Perception Reasons

Health Perception	**No.**	**Percentage (%)**
Reluctant to have mild illness as side effects	754	88.92
Long term side effects	94	11.08
Total	848	100.00

Table 8 Specific Reasons for Vaccine Hesitancy due to Vaccine Brands

	No.	**Percentage (%)**
Not confident to current available vaccine	558	33.68
Does not like the brand available	64	3.86
Quick Vaccine Production	533	32.17
Part of mass Experimentation	502	30.30

4. Discussion

Vaccines were one of the major turning points in the COVID-19 pandemic, with approximately 13.3 billion doses given worldwide[6,11], However, vaccine coverage among priority groups varied widely around the world. This research has recognized two (2) main reasons why the majority of the respondents opted not to receive the COVID – 19 vaccines: concerns about vaccine-related side effects and a lack of trust in vaccine effectiveness, reflecting low perceived benefits. These perceptions may have been influenced by the rapid development of the vaccines and by sources of health information that were widely available, accessible, and affordable particularly during critical periods of the pandemic. Vital health information including vaccination messages, was disseminated through radio, television, newspaper, as well as friends and family. A common recommendation to address these misconceptions is effective information dissemination. Adequate and accurate information should be provided, including the nature of the vaccines, the number of participants included in clinical trials, and access to pertinent scientific evidence from trusted sources, rather than relying primarily on various media or vaccine manufacturers.

The usual fears reported by individuals include concerns about unknown side effects or adverse effects that were heard from non-medical sources[12]. Several studies have indicated that many people are exposed to conspiratorial misinformation suggesting that vaccines are harmful and dangerous[13]. Such myths include beliefs that natural immunity is superior to vaccine-induced immunity, that vaccines were developed too quickly without proper research and therefore unsafe, and that vaccines contain toxic ingredients including COVID-19 virus itself that could cause harm or even compromise fertility. Other claims suggest that vaccine side effects are severe and may lead to transverse myelitis and acute disseminated encephalomyelitis[14]. Additionally, myocarditis and pericarditis are linked to those who had mRNA vaccines especially after succeeding doses, while Gillian-Barre syndrome and cerebral venous sinus thrombosis to the viral vector vaccines. Some misinformation even claim that vaccines might contain microchips[10]. Lower vaccine acceptance rates have been observed primarily among individuals with lower educational attainment, lack of health insurance, and lower income levels, findings which are consistent with the results of this study.

The presence of anti-vaccine activists is another contributing factor and may be one of the prime movers in the dissemination of false information, amplifying the mistruths thus building distrust toward available vaccines. They have leveraged social media to shape public opinion, gain allies and even influence policy[13], not to mention records of these anti-vaccine activists harassing and threatening health professionals.

Vaccine hesitancy may also partly stem from systemic mistrust - Mistrust of authorities, political stakeholders, and representatives of the pharmaceutical industries. There were already doubts about the reliability and integrity of information and intentions of some groups in promoting vaccinations[14]. Users were convinced that COVID-19 is just one of the series of diseases that are man-made to promote vaccination that leads to financial interests for most pharmaceutical businesses. In the Philippines, even prior to COVID-19, vaccine confidence is already declining because of the controversy of Dengvaxia[15], a public health issue that evolved into a political crisis that led to a steep decrease in vaccine confidence among Filipinos.

Similar findings have been reported by Tumalian[16], Wang[17] and Adebusoya[18], which indicated that education level, misinformation and nuanced aspects of vaccine literacy contributed to vaccine hesitancy. These findings emphasized the critical role of health education in health-related decision-making. Such factors could also contribute to varying levels of trust in health systems and authorities across different populations and cultural contexts. System-level interventions should integrate proactive vaccine counseling into routine care and develop mis-information-resilient vaccine literacy programs specifically for these vulnerable population groups.

5. Conclusion

The COVID-19 vaccine hesitancy was fueled by media infodemic on misinformation and distrust that affected various health behaviors such as the decision to receive vaccinations. Based on the current data and analysis gathered, COVID-19 vaccination hesitancy among the senior citizens in certain areas of Bacolod City is prevalent. The study revealed that a significant proportion of the participants expressed reservations and concerns regarding the safety and efficacy of COVID-19 vaccines. Identified factors contributing to vaccine hesitancy included fear of adverse effects, lack of trust in the healthcare system, and misinformation or myths surrounding the vaccines. Addressing vaccine hesitancy among older adults to ensure that they are protected from COVID-19 and its complications, and to achieve herd immunity within the community. Public health campaigns that provide accurate, transparent, and age-appropriate information while directly addressing their concerns may help improve vaccine acceptance, and ultimately compliance.

Furthermore, healthcare providers play a critical role in educating and encouraging seniors to get vaccinated and get protected.

Compliance with ethical standards

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Disclosure of conflict of interest

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Statement of informed consent

Informed consent was obtained from all individual participants included in the study.

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