

COVID-19 Vaccine Confidence and Hesitancy Among Schools' Stakeholders: A Philippine Survey

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**ABSTRACT**

The aim of the study was to determine the perception of schools' stakeholders on the COVID-19 vaccination towards readiness to opening schools after prohibiting the face-to-face classes last March 2020. The campaigns were done online using social media platforms. A total of 2034 participants has participated in the survey. Results revealed that participants were dominated by teachers; most of them came from Luzon; ages ranged from 13-19 years old; and female participants. The highest percentage of the reason for vaccine confidence is –They believed that the vaccine would give them immunity from the virus COVID-19| while the highest percentage of the reason for COVID-19 hesitancy was –The vaccine might have a possible effect on genetic make-up|. Furthermore, when participants are grouped according to profile, region, sex, and age, the confidence still a little higher than those who hesitate to get vaccinated by the COVID-19 vaccines. Among the demographics of the participants, only their sex has a significant association with their COVID-19 vaccine confidence and hesitancy ( $\chi^2 = 42.43$ ,  $p=0.000$ ). This study recommends that health services at school should be strengthened and vaccination among school children should be part of the school-based management system hand in hand with the health practitioners.

**Keywords:** COVID-19 vaccines, Philippine School Stakeholders, School reopening, Vaccine confidence, Vaccine hesitancy

**Introduction**

The COVID-19 pandemic has created a severe disruption to global education systems. According to UNESCO Education Response Monitoring, more than 100 countries have implemented nationwide lockdown and temporary closures of schools and universities, which resulted in major disruption of face-to-face classes and affected more than half of the world's student population<sup>1</sup>. On March 9, 2020, Philippine government ordered the closure of schools which ended the school year prematurely and postponed the usual start of the next academic year from June to the end of August<sup>2</sup>. The importance of having an informed decision how to ensure the safety of students, teachers, and school employees against the virus without sacrificing the quality of education is the

major dilemma that schools' stakeholders are currently facing<sup>2,3,4,5</sup>. In addition, schools should open safely and as early as possible to achieve the benefits of in-person learning<sup>6</sup>.

With this, schools' stakeholders and policy makers consider the COVID-19 vaccine as the key component in decision-making as they strategize their policies on school reopening, resumption of face-to-face classes and scheduling of their academic calendars. To achieve this, the vaccine should be distributed nationwide, and a significant portion of the population should be inoculated to attain herd immunity and to stop wider spread of the disease<sup>7,8,9</sup>. COVID-19 vaccine can also increase immunity or lessen the risk of having severe respiratory disease<sup>10</sup>.

Vaccine, as one of the greatest achievements in medicine, has proven its efficacy for saving thousands of lives for the last five decades<sup>11</sup>. However, there is an increasing number of citizens who refuse to be vaccinated and parents who delay or opt not to vaccinate their children thus, increases the risk of spreading the virus and prolongs the closure of schools and universities<sup>12,13</sup>. These give emphasis on vaccine confidence and hesitancy as the major determinant to the demand, distribution, and success of vaccination programs<sup>14</sup>.

Vaccine confidence and hesitancy provide a dichotomous perspective on the perception, confidence, beliefs and behaviors associated with vaccines<sup>15,16</sup>. Furthermore, the World Health Organization expanded the definition of vaccine hesitancy as the "delay in confidence or refusal of vaccines despite availability of vaccine services"<sup>17</sup>. There are several factors that affect vaccine-associated behaviors of the recipient such as socioeconomic status and demography, age, geographical region, level of education, gender, or ethnicity, and other myths or misconceptions on vaccination<sup>18,19,20,21</sup>. In the systematic review of Farmer et al.,<sup>22</sup>, they concluded that the high level of vaccine hesitancy in a population was not due to being misinformed or uninformed but reflected general distrust and doubt on implementing bodies such as the government and other health agencies<sup>23</sup>. They also added that credibility of the agency that delivers vaccination information mattered more than the information itself. In the Philippines, a significant decrease of public trust in vaccines and in the immunization program in general was reported by the Department of Health and believed that this was brought about by the Dengvaxia controversy<sup>24</sup>.

As the country acquires and distributes doses of COVID-19 vaccines, schools' stakeholders and policy makers are now gearing towards the gradual opening of schools and resumption of in-person classes. Consequently, this study was conducted to determine the perception of schools' stakeholders regarding the COVID-19 vaccines and provide recommendations for policymakers to come up with an informed decision on policies and regulations for school reopening.

## **Methodology**

### *Ethics Approval and Consent Form*

This study was a large-scale cross-sectional study conducted using a validated online survey questionnaire as the main data gathering instrument. As an independent study, the protocol for data gathering was patterned on the provisions of Republic Act 10173 or the Data Privacy Act of 2012. The research ethics and technical aspects of the protocol were reviewed and approved by external evaluators comprised of 3 experts from different institutions on November 2020, a month prior to the administration of survey questionnaires. The protocol includes online informed consent form, data privacy form and data storage and management policies. Invitation to accomplish this survey were communicated through email, messenger, and Facebook campaigns. Before starting the survey, researchers explained explicitly the objectives of survey to the participants. An online informed consent form was accomplished before doing the survey. The data collected were treated with high confidentiality and anonymity. The participants voluntarily answered each question carefully in the survey; likewise, they can renounce or withdraw their answers in the survey anytime.

### *Participants of the study*

In a period of 30 days from December 25, 2020 to January 25, 2021 during the COVID-19 emergency in the Philippines, the total number of participants collected is 2034. A protocol on the cleaning process was done by the researchers by sorting out all meaningless data collected in the survey<sup>25</sup>.

### *Survey Questionnaire*

The Part 1 of the survey questionnaire includes written informed consent, data privacy agreement and the demographic profile of the participating respondents such as age, gender, type of participant, residence, etc. The Part 2 includes questions about their perceptions on COVID-19 vaccines as this issue was very important for schools as a requirement for opening. These instruments are researcher-made and validated by experts

### *Statistical Analyses*

Primarily, the collected data were analyzed using descriptive statistics such as frequency and mean. Moreover, all nominal and ordinal data were treated as non-parametric data and was analyzed using Chi Square Test of Association<sup>26</sup>.

## Results and Analysis

The aim of the study was to get the perception of the schools' stakeholders on the COVID-19 vaccination towards readiness to opening schools after prohibiting the face to face classes last March 2020. The stakeholders who participated in the survey are teachers, school administrators, students, and parents of the students in the basic education curriculum and higher education institutions. From the one-month campaign of the google form in various online platforms such as Facebook, Messenger, Emails, Twitter, etc., the total number of schools' stakeholders who participated in this cross-sectional survey is 2034.

### *Demographics of Respondents*

As it shows in Supplementary table 1, the participants of the study were dominated university students (36.9%) followed by the teachers both in basic education curriculum and higher education institutions (34.9%), parents of the students (20.4%), basic education students (5.9%) and schools' administrators (1.8%). When participants are grouped per region, the Luzon area dominated the survey (97.6%). Likewise, when participants are grouped according to their age 13-19-years old dominated the survey (36.9). On the other hand, ages from 70-years old and above are the least number of participants (0.2%). Moreover, when grouped according to sex the female participants have the greatest number (68.4%)

### *Vaccine Confidence and Hesitancy*

Most of the participants in the survey affirmed that they would avail the COVID-19 vaccines once available in the Philippines (53.91%). Further, the participants were also given a chance to explain why they will avail the COVID-19 vaccine. Table 1 shows the major reasons why they said YES to the COVID-19 vaccine: Believed that the vaccine will give them immunity from the virus COVID-19 (33.86%); Believed that it is a need to be vaccinated in order not to get sick (15.31); A free of charge program of the government (14.09); an adult family member convinced me to get vaccinated (13.76); Our employer like school administrator required us to get vaccinated (11.10); the COVID-19 vaccination is required by the government (10.66%).

**Table 1.** Reasons for COVID-19 Vaccine Confidence and Refusal

Reasons for Vaccine Confidence	Percentage
1. Believed that the vaccine will give them immunity from the virus COVID-19	49.17
2. A free of charge program of the government.	14.09
3. An adult family member convinced other family members to get vaccinated.	13.76
4. Employer required employees to get vaccinated	11.10
5. The COVID-19 vaccination is required by the government;	10.66

  

Reasons for Vaccine Refusal	Percentage
1. Not confident with the vaccine efficiency.	23.12
2. Influenced by the vaccine issues from the media.	19.34
3. Might have a possible effect on genetic make-up.	57.54

On the other hand, the table above also shows the reasons why some of the participants noted that they will refuse to get vaccinated: Might have a possible effect on my genetic make-up (57.54); not confident with the vaccine efficiency (23.12%); and might have harmful effects on the body (19.34%).

The vaccines confidence of the participants was grouped according to their profile, region, age, and sex as shown in Table 2. This was done to explain how the participants' demographics may affect their decision on their level of acceptability towards the COVID-19 vaccines. As shown in table , the higher education students have the greatest number of participants who affirmed that they will get vaccinated once the COVID-19 vaccine is available in the Philippines (20.50%); followed by the teachers (18.39%); Parents of the students (10.22%); basic education students (3.0%); and schools' administrators (1.13%). These results can be gleaned that most of the participants when grouped according to profile noted that they will avail the COVID-19 vaccines.

When the participants are grouped according to their region or location of their addresses, most of the participants in Luzon area (52.42%), Visayas (0.59%) agreed that they will avail the COVID-19 vaccine; however, most of the participants in Mindanao area (0.64%) will refuse to get vaccinated but the difference between who said YES (0.59%) and NO (0.64%) to COVID-19 vaccine is very minimal as compared to the overall data as shown in Table 2.

When the participants are grouped according to their age, ages 13-19-years old (20.56%) have the greatest number of participants who agreed to get vaccinated. The difference in number of the participants in this age bracket who said YES (20.56%) and NO (16.37%) to COVID-19 vaccine is also significant in number.

Further, other age brackets have negligible difference in the number who said YES and NO to COVID-19 vaccines.

When participants are grouped according to their sex, most of the male participants agreed to get vaccinated; likewise, male participants have significant difference in number between who said YES (20.32%) and NO (11.34%) to COVID-19 vaccine. Although, most of the female participants also affirmed to get vaccinated, the difference of the number who said YES (33.28%) and NO (46.4%) to COVID-19 vaccine is negligible.

**Table 2.** Vaccine Confidence and Hesitancy According to Demographics

Demographics	Confident (YES)		Hesitant (NO)	
	Frequency	%	Frequency	%
<b>1. Profile</b>				
Basic Education Students	61	3.0	60	2.94
Higher Education Students	417	20.50	334	16.42
Teachers	374	18.39	336	16.52
Parents	208	10.22	207	10.18
Administrators	23	1.13	14	0.69
<b>Total</b>	<b>1083</b>	<b>53.6%</b>	<b>951</b>	<b>46.4%</b>
<b>2. Region</b>				
Luzon	1063	52.42	917	45.22
Visayas	12	0.59	11	0.54
Mindanao	12	0.59	13	0.64
<b>Total</b>	<b>1087</b>	<b>53.6%</b>	<b>947</b>	<b>46.4%</b>
<b>3. Age</b>				
<12 years old	67	3.30%	54	2.66%
13-19 years old	417	20.56%	332	16.37
20-29 years old	162	7.99%	140	6.90%
30-39 years old	212	10.45%	195	9.62%
40-49 years old	150	7.40%	151	7.45%
50-59 years old	58	2.86%	53	2.61%
60-69 years old	20	0.99%	13	0.64%
70+ years old	1	0.05%	3	0.13%
<b>Total</b>	<b>1087</b>	<b>53.6%</b>	<b>947</b>	<b>46.4%</b>
<b>4. Gender</b>				
Male	412	20.32%	230	11.34%
Female	675	33.28%	711	35.06%
<b>Total</b>	<b>1087</b>	<b>53.6%</b>	<b>947</b>	<b>46.4%</b>

The statistical relationships among the demographic profiles and vaccine perception were determined using Chi square test of independence as shown in Table 3. Among the demographics of the participants, only their sex has the significant association to their COVID-19 vaccine confidence ( $\chi^2 = 42.43$ ,  $p=0.000$ ). These results can be gleaned that the profile, region, and age are not associated with the vaccine confidence and hesitancy of the participants.

**Table 3.** Chi Square Test of Vaccine Confidence and Hesitancy to Demographics

Demographics	Vaccine Confidence and Hesitancy		
	Pearson Chi Square	Asymptotic Sig. (2-sided)	Cramer's V
<b>Profile</b>	3.409	0.492	0.41
<b>Region</b>	0.340	0.844	0.13
<b>Age</b>	5.587	0.589	0.52
<b>Sex</b>	42.43	0.000*	0.14

\*statistically significant

## Discussion

Determining the perception of the schools' stakeholders towards the COVID-19 vaccine's confidence is very important since it is one of the major keys to open face to face classes here in the Philippines. This study focused on determining the stakeholders' perception towards COVID-19 vaccines as well as their major reasons why they agreed or refused to get vaccinated once the vaccines are already available in the Philippines. Likewise,

basic demographic profiles were also determined to know if there is/ are significant relationship between their demographic profiles and perception towards confidence of COVID-19 vaccines.

From the one-month campaign of the google form survey, students from higher education dominated the participants of the study as to compare to the students from the basic education curriculum. This data is expected since the researcher had to ask teachers to facilitate their students in accomplishing the survey; likewise, young students tend to lose interest in accomplishing the survey. On the other hand, students from higher education institutions are already 18 years old and above, making them more mature and putting more interest in accomplishing the survey. In addition, female participants are more than the male participants; however, the number between both sexes who accomplished the survey are not so significant or somewhat negligible.

The survey revealed that 54% of the total participants agreed to get vaccinated once the COVID-19 vaccine is available in the Philippines. On the other hand, 46% percent noted that they will not avail the COVID-19 vaccines and since the difference between who said YES and NO to COVID-19 vaccines are almost equal, major reasons were also determined. For those who agreed to get vaccinated, most of them believed that the vaccine would give them immunity from the virus COVID-19. Some participants said that they are willing to get vaccinated because it is a free and required program of the government. likewise, some said that an adult family member convinced them to get vaccinated or their employer required them to have one. Younger parental age is perceived as a factor in positive attitude towards vaccination however, the negative attitude and behavior in terms of vaccine confidence is perceived due to decrease of parental involvement, family size and increasing workload among family members<sup>27,28</sup>. On the other hand, three major reasons were noted by the respondents who refused to get vaccinated. Most of them are hesitant because the COVID-19 vaccine might have a possible effect on genetic make-up. Likewise, some participants are not confident with the vaccine's efficiency and some participants are influenced by the vaccine issues from the media. Countries with high vaccination rates related to mass vaccination are the increase of allergy, ear infection and neurodevelopmental disorders (NDDs)<sup>29</sup>. Furthermore, when participants are grouped according to profile, region, sex and age, the confidence still a little higher than those who hesitate to get vaccinated by the COVID-19 vaccines. And lastly, among the participants demographic profile, only their sex has a significant relationship to their vaccine perception. This may be associated with the number of female participants who consisted of a total of 68 percent of the whole population.

### **Conclusion**

Based on the results of the study, the following conclusions were made: The participants were dominated by teachers; most of them came from the Luzon area; ages ranged from 13-19 years old; and female participants. The highest percentage of reason for COVID-19 vaccine confidence is -They believed that the vaccine will give them immunity from the virus COVID-19! while the highest percentage for COVID-19 hesitancy was -The vaccine might have a possible effect on genetic make-up! furthermore, when participants are grouped according to profile, regions and age, the confidence still a little higher than those who hesitate to get vaccinated by the COVID-19 vaccines. Among the participants demographic profile, only their sex has a significant relationship to their vaccine perception. This may be associated with the number of female participants who consisted of a total of 68 percent of the whole population.

### **Recommendation**

While waiting for the full implementation of vaccination in the Philippines, it is suggested that maintaining current basic guidelines like SMS (sanitizer, mask and social distancing) are important. Education with the use of vaccines like virtual reality games, cartoons, smartphones apps and as part of school curriculum across age groups to inform the public to strengthen the COVID-19 campaign on the positive effects of vaccines<sup>30</sup>.

One pillar of a successful vaccination program is integrating the pros and cons of vaccination in educating the public which can be part of teaching and learning. The study in vaccination among seniors suggested it should be part of the roadmap starting from health workers<sup>30</sup>. Health services at school should be strengthened where vaccination among parents, teachers, non-teaching personnel and students, if required, should be part of the school-based management system hand in hand with the health practitioners. Lastly, schools in cooperation with the parents should create a safe and conducive learning space at home while remote learning is going on.

### **Declaration of Conflicting Interest**

The authors declare that there is no conflict of interest.

### **Authors' Contributions**

All authors discussed the results and contributed equally to the final manuscript.

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