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RESEARCH ARTICLE

Association of knowledge and risk perceptions of Manila City school teachers with COVID-19 vaccine acceptance

Janel Carla D. Quinto[1], Anne Nirelle C. Balderrama[1], Frances Nadine Z. Hocson[1], Mikaela B. Salanguit[1], Maylin C. Palatino[2] , Ernesto R. Gregorio, Jr.[1]*

*Corresponding author's email address: ergregorio@up.edu.ph

[1]*Department of Health Promotion and Education, College of Public Health, University of the Philippines Manila, Manila, Philippines*
[2]*The Philippine Health Initiative for Research, Service, and Training, Brown University Global Health Initiative, Rhode Island, USA*

ABSTRACT

Background and Objective: In addressing vaccine acceptance, teachers may play a pivotal role as educators and models of behavior, as they serve as reliable sources of information. Thus, this study aimed to determine the association between knowledge and risk perception of teachers and their acceptance of the COVID-19 vaccine.

Methodology: This study utilized an analytic, cross-sectional design. Seven hundred and seven public secondary school teachers in Manila City, Philippines accomplished the online self-administered questionnaire. The study was guided by the Health Belief Model (HBM). Multiple logistic regression was used to determine the factors associated with acceptance of the COVID-19 vaccine.

Results: Respondents had a high knowledge on COVID-19 mode of transmission (95.2%), signs and symptoms (92.9%), diagnosis (57.6%), treatment (98.9%), and prevention (92.2%). They had a high risk perception (>69.2%) pertaining to four constructs (Perceived Susceptibility, Perceived Severity, Perceived Benefits, Cues to Action) of the HBM. Low risk perception of barriers was observed (66.1%). The majority (92.5%) are willing to accept the COVID-19 vaccine. Respondents who teach health-related subjects (94.4%) garnered more vaccine acceptors compared to teachers of non-health-related subjects (91.6%). After adjusting for sex, age, highest educational attainment, and subjects taught, Cues to Action remained to be associated with COVID-19 vaccine acceptance.

Conclusion: Although high levels of knowledge and risk perceptions were observed, only Cues to Action had a significant association with COVID-19 vaccine acceptance. Hence, they need external cues, from physicians or the Food and Drug Administration, to accept the COVID-19 vaccine.

Keywords: *COVID-19 vaccine, health belief model, school teachers, knowledge, risk perceptions, vaccine acceptance*

Introduction

A year since the first COVID-19 case was reported, various vaccines have been developed and administered in most countries around the world [1]. In the Philippines, there were more than 1,000,000 cases reported as of May 2021 [2]. As the Philippines commenced its vaccination program, assessing the country's COVID-19 vaccine acceptance will be vital to its success. To achieve herd immunity, the threshold for vaccinated individuals against COVID-19 has been set to 70.0% of the total population to decrease the rate of transmission in a community [3]. Thus, at least seventy million (70,000,000) Filipinos must be vaccinated in order to achieve herd immunity, though only around 10,300,000 individuals have been fully vaccinated as of August 2021 [4]. Previous reports regarding vaccine compliance in the Philippines indicate that vaccination uptake rates have plummeted over the past years [5]. Therefore, there is a need to improve current measures to address vaccine acceptance in the Philippines and help curb the growing vaccine hesitancy amongst its citizens. Globally, high vaccination rates must be observed in order to significantly reduce the effects of the COVID-19 pandemic [3, 6], and compared to high-income countries, the

Philippines as a lower-middle-income country may present different capacities in securing vaccine doses and dealing with vaccine hesitancy [6].

With teachers as role models [7], health educators, and sources of information [8], correct information dissemination is needed to reduce vaccine hesitancy. Teachers may influence the attitudes and behaviors of students who will eventually diffuse these learnings to their family and community members, to accept the COVID-19 vaccine. Thus, they play a pivotal role in the implementation of school-based health programs [9]. The teachers' role as educators is vital in reinforcing adolescents' assent towards vaccine acceptance, promoting their participation in decision-making about medical interventions that concern them, most especially vaccination.

Establishing the knowledge and risk perception of school teachers on the COVID-19 vaccine is vital in assessing their effect on vaccine acceptance, as it may help address vaccine hesitancy in the country and guide health authorities in determining the best approach for increasing vaccine acceptance. Results of the study may serve as a guide in strengthening school and community-based health promotion campaigns. Therefore, this study aimed to: (1) determine the proportion of the respondents with high and low knowledge on the signs and symptoms, mode of transmission, diagnosis, treatment, and prevention of COVID-19; (2) determine the proportion of respondents with high and low risk perceptions of COVID-19 and the COVID-19 vaccine based on the Health Belief Model (HBM) constructs; (3) determine the proportion of respondents' acceptance of the COVID-19 vaccine, and; (4) determine if the respondents' knowledge and risk perceptions of COVID-19 are associated with vaccine acceptance.

Methodology

Research Design

To attain the objectives of the study, an analytic cross-sectional design was utilized.

Study Site

The study purposively selected the Department of Education (DepEd) Schools Division Office (SDO) of Manila as the study site based on the following: (1) with high cases of COVID-19 [10], (2) with available funds to purchase COVID-19 vaccines [11], and; (3) receptiveness of the division to research endeavors.

Study Population

The target participants were public secondary school teachers of Manila City. Through coordination with the DepEd SDO Superintendent, the school teachers were invited to participate in the online survey. Those who met the following criteria were included in the study: (a) public secondary school teacher in any of the six school districts of Manila City, (b) actively teaching for the school year 2020-2021, and; (c) 18-64-year-old male or female. The number of teachers that fall within the criteria was estimated at 4,000.

Study Variables

The study outcome variable was COVID-19 vaccine acceptance, which was measured as a binary variable through the statement, “If a vaccine for COVID-19 will be proven safe, effective, and available to me, I will get vaccinated.” Moreover, there were ten (10) exposure variables, five of which were knowledge items, namely, knowledge on COVID-19 infection mode of transmission, signs and symptoms, diagnosis, treatment, and prevention. Respondents were rated with high knowledge if they correctly answered at least 66% of the questions per category. The remaining independent variables were HBM constructs, namely, perceived susceptibility, perceived severity, perceived benefits, perceived barriers, and cues to action [12]. Respondents were rated with high risk perception if they received a total score of at least 13 for the first three categories and 11 for the last two categories. Finally, the possible confounding effect of the following variables were controlled in the analysis: sex, age, highest educational attainment, and subjects taught.

Research Instrument

An online self-administered questionnaire (SAQ) was developed using the following domains: (1) socio-demographic information [13], (2) knowledge on COVID-19, (3) risk perceptions of COVID-19 and the COVID-19 vaccine, and; (4) COVID-19 vaccine acceptance. Knowledge on basic information about COVID-19 was assessed using “True or False” questions. Respondents' risk perceptions were also measured through a modified Likert scale ranging from strongly agree to strongly disagree.

The study adapted questions from previous knowledge, attitudes, and practices (KAP), risk perceptions [6, 14-20], and vaccine acceptance studies [6, 21-22]. Additionally,

COVID-19-related information from the World Health Organization (WHO) and the Philippine Department of Health (DOH) were utilized to improve questions for the COVID-19 knowledge portion [23-32]. Prior to data collection, the validity of the SAQ was assessed by the Technical Review Panel of the University of the Philippines Manila and was pre-tested with eighteen secondary school teachers outside the study area for clarity and reliability. The Cronbach's alpha for testing the reliability of the Likert items was 0.9184, while the value for Kuder-Richardson for knowledge items was 0.3260.

Data Collection and Management

Through a representative from DepEd SDO Manila, a Google Forms link was distributed to all public secondary school teachers in Manila City and was open from February 20, 2021 to March 23, 2021; responses were followed up periodically. Responses were stored in a Google Sheets file and then downloaded as a Microsoft Excel file, accessible only to the members of the research group. All data will be deleted from the study group's respective laptop units and file storage accounts after five (5) years from the beginning of data collection.

Data Analysis

Stata/SE 16.0 for Windows was utilized for the data analysis. Descriptive statistics were used for knowledge, risk perceptions, and vaccine acceptance of the respondents on COVID-19 vaccine. Simple and multiple logistic regression were performed to determine the association of knowledge and risk perceptions and vaccine acceptance. To preserve the study's conceptual framework guided by the HBM, all covariates were included for the multivariate logistic regression regardless of their statistical significance in the simple logistic regression analysis. The odds ratios, 95% confidence intervals were obtained with the level of significance set at 0.05.

Ethical Considerations

All research activities were guided by the Philippine National Ethical Guidelines for Health and Health-Related Research (NEGHHR). The study also received ethical clearance from the University of the Philippines Manila Research Ethics Board (UPMREB).

Results

Socio-demographic Characteristics

There were 707 public secondary school teachers who participated in the study. The majority were females (76.8%), married (52.1%), college graduates (85.7%), and earn less than 40,000 pesos a month (78.9%). About one-third (32.81%) were 25-34 years old. Among the six (6) divisions of the school districts in Manila, Districts II and III contributed the highest number of respondents with 147 each. Moreover, 94.20% of the respondents taught at the Junior High Level, and 67.04% taught non-health-related subjects (Table 1).

Table 1. *Socio-demographic Characteristics of Public Secondary School Teachers in Manila City, Philippines, 2021 (n = 707).*

Sociodemographic Characteristics	Frequency	%
Sex		
Male	150	21.22
Female	543	76.80
Prefer not to say	14	1.98
Age Group		
18-24 years old	48	6.79
25-34 years old	232	32.81
35-44 years old	181	25.60
45-54 years old	146	20.65
55-64 years old	100	14.14
Civil Status		
Single	310	43.85
Married	368	52.05
Widowed	0	0.00
Separated	16	2.26
Divorced	13	1.84

Table 1. *Socio-demographic Characteristics of Public Secondary School Teachers in Manila City, Philippines, 2021 (n = 707). (continuation)*

Sociodemographic Characteristics	Frequency	%
Highest Educational Attainment		
College Graduate	605	85.57
Masters Graduate	97	13.72
PhD Graduate	5	0.71
Monthly Household Income (Php)		
<40,000	558	78.93
40,000 - 59,999	106	14.99
60,000 - 99,999	22	3.11
100,000 - 249,999	9	1.27
250,000 - 499,999	12	1.70
≥500,000	0	0.00
School District		
I	119	16.83
II	147	20.79
III	147	20.79
IV	109	15.42
V	126	17.82
VI	59	8.35
Grade Level Taught		
Senior High Levels	37	5.23
Junior High Levels	666	94.20
Both Senior and Junior High Levels	4	0.57
Subject Categories		
Health-Related Subjects	233	32.96
Non-Health-Related Subjects	474	67.04

Knowledge on COVID-19

Table 2 shows that 95.05% to 98.02% of the respondents had correct knowledge on the mode of transmission of COVID-19 except for the last statement. Regarding the asymptomaticity of COVID-19, 98.16% had correct knowledge and 94.20% knew about the main clinical symptoms of COVID-19. As for diagnosis, 91.09% of the respondents knew that RT-PCR swab test kits are the gold standard in diagnosing COVID-19, while 64.07% knew that rapid-antibody test kits are not a stand-alone confirmatory test in diagnosing COVID-19. The majority of the respondents also knew that people who had contact with COVID-19 virus positive individuals or suspects should be immediately isolated. Only 74.54% knew that vaccination trials will be conducted in the Philippines. However, 93.92% knew about the minimum distance of one meter for social distancing.

The majority have high levels of knowledge regarding COVID-19, with treatment having the highest number of respondents (98.87%) and diagnosis the lowest (57.57%) (Table 3).

Risk Perceptions of COVID-19

Questions per category were tabulated with the number of respondents who agree or disagree with the given statements. Options for strongly agree and strongly disagree were combined with agree and disagree, respectively. Table 4 shows that 84.44% perceived they will get infected if they are surrounded by infected individuals. The majority of the respondents believed that COVID-19 can lead to death and agreed that social distancing will help protect themselves from the COVID-19 virus. For cues to action, the majority agreed that they will get vaccinated if recommended by their physician (81.90%) and/or the Food and Drug Administration (FDA) (81.47%).

The majority had high risk perceptions regarding Perceived Susceptibility, Perceived Severity, Perceived Benefits, and Cues to Action. Two-thirds also had low perceived barriers (Table 5).

COVID-19 Vaccine Acceptance

When asked if they would accept a vaccine for COVID-19 so long as it is proven safe, effective, and available to them,

Table 2. *Knowledge on the COVID-19 Mode of Transmission of Public Secondary School Teachers in Manila City, Philippines, 2021 (n = 707).*

Statements	Correct Knowledge	
	Frequency	%
Knowledge on the Mode of Transmission		
The COVID-19 virus spreads via respiratory droplets from infected individuals.	693	98.02
Persons with COVID-19 can infect others if they do not have a fever.	673	95.19
It is possible to get COVID-19 from an infected person with mild cough but is not feeling ill.	672	95.05
Eating or touching wild animals would not result in the infection by the COVID-19 virus.	437	61.81
Knowledge on the Signs and Symptoms		
Some people become infected but don't develop any symptoms and don't feel unwell	694	98.16
The main clinical symptoms of COVID-19 are fever, fatigue, and dry cough.	666	94.20
Knowledge on the Diagnosis		
RT-PCR swab test kits remain to be the gold standard in determining whether a person is infected and infectious.	644	91.09
Rapid antibody-based test kits cannot be used as a stand-alone confirmatory test to definitively diagnose COVID-19.	453	64.07
Knowledge on the Treatment		
People who have contact with someone infected with the COVID-19 virus should be immediately isolated in a proper place.	696	98.44
Early symptomatic and supportive treatment can help most patients recover from the infection.	692	97.88
There is currently no effective cure for COVID-19.	517	73.13
Knowledge on the Prevention		
To prevent contracting COVID-19, individuals should observe a minimum distance of at least 1 meter.	664	93.92
There currently are vaccines for COVID-19	632	89.39
Wearing of face masks helps prevent one from being infected by the COVID-19 virus.	619	87.55
Trials of the COVID-19 vaccine will be conducted in the Philippines.	527	74.54

Table 3. *The proportion of High and Low Levels of Knowledge on COVID-19 of Public Secondary School Teachers in Manila City, Philippines, 2021 (n = 707).*

Categories of Knowledge on COVID-19	High Level of Knowledge	
	Frequency	%
Mode of Transmission	673	95.19
Signs and Symptoms	657	92.93
Diagnosis	407	57.57
Treatment	699	98.87
Prevention	652	92.22

Table 4. *Perceived Susceptibility on COVID-19 of Public Secondary School Teachers in Manila City, Philippines, 2021 (n = 707).*

Statements	Agree		Disagree	
	Freq.	%	Freq.	%
Perceived Susceptibility				
I feel that there is a chance that I will get infected if the people around me are infected.	597	84.44	110	15.56
I feel my neighborhood is vulnerable to COVID-19.	487	68.88	220	31.12
I feel that there is a chance that my family will be infected by COVID-19.	481	68.03	226	31.97
I feel that I am vulnerable to COVID-19.	443	62.66	264	37.34
If I don't get vaccinated for COVID-19, I feel that I'll contract COVID-19 in the future.	392	55.45	315	44.55
Perceived Severity				
I believe that COVID-19 can lead to death.	647	91.51	60	8.49
I believe COVID-19 is a serious disease.	641	90.66	66	9.34
I believe that being infected with COVID-19 would have major consequences on my life.	612	86.56	95	13.44
I believe that COVID-19 is more severe than any other viral, respiratory diseases.	601	85.01	106	14.99
I believe COVID-19 is a severe disease because there are currently no available drugs that can completely cure its infection.	590	83.45	117	16.55
Perceived Benefits				
I believe observing social distancing will help protect me from acquiring the COVID-19 virus.	679	96.04	28	3.96
I believe wearing a face mask will help protect me from acquiring the COVID-19 virus.	669	94.63	38	5.37
I believe getting vaccinated for COVID-19 will help prevent the spread of the COVID-19 virus.	588	83.17	119	16.83
I believe getting vaccinated for COVID-19 will help protect me from the COVID-19 virus.	571	80.76	136	19.24
I believe getting vaccinated for COVID-19 will help protect the people around me from the COVID-19 virus.	571	80.76	136	19.24
Perceived Barriers (Cost)				
If the vaccine costs too much, I will not get vaccinated.	285	40.31	422	59.69
If the vaccine cost is not covered by health insurance, I will not get vaccinated.	310	43.85	397	56.15
Perceived Barriers (Safety Concerns)				
If I am concerned with its effectiveness to protect me from getting COVID-19, I will not get vaccinated.	296	41.87	411	58.13
If the vaccine has minor side effects, I will not get vaccinated.	319	45.12	388	54.88
Cues to Action				
I will get vaccinated for COVID-19 if my physician will recommend it.	579	81.90	128	18.10
I will get vaccinated for COVID-19 if the Food and Drug Administration (FDA) will recommend it.	576	81.47	131	18.53
When a vaccine for COVID-19 will be available, I will recommend it to my family members.	552	78.08	155	21.92
When a vaccine for COVID-19 becomes available, I will advise my students to get vaccinated.	509	71.99	198	28.01

92.5% said that they would accept the vaccine. The reasons given for vaccine acceptance were the following: (1) the vaccine's safety and efficacy (41.59%), (2) to protect themselves and those around them (33.49%), and; (3) to stop the spread of the virus (14.68%). However, 15 respondents said that they are more afraid of the side effects that may occur, thus, they would not accept the vaccine.

Respondents were also asked if they would still receive the vaccine if it had to be administered in two doses. Fewer

Table 5. *The proportion of High and Low Levels of Risk Perception of Public Secondary School Teachers in Manila City, Philippines, 2021 (n = 707).*

Health Belief Model Constructs	Low Risk Perception		High Risk Perception	
	Frequency	%	Frequency	%
Perceived Susceptibility	218	30.83	489	69.17
Perceived Severity	67	9.48	640	90.52
Perceived Benefits	83	11.74	624	88.26
Perceived Barriers	467	66.05	240	33.95
Cues to Action	171	24.19	536	75.81

Table 6. *Proportion of Vaccine Acceptance according to sociodemographic characteristics of participating Public Secondary School Teachers in Manila City, Philippines, 2021.*

Sociodemographic Characteristics	
Sex	**Acceptance**
Male (n = 150)	92.00%
Female (n = 543)	92.63%
Prefer not to say (n = 14)	92.86%
Age Group	**Acceptance**
18-24 years old (n = 48)	87.50%
25-34 years old (n = 232)	92.24%
35-44 years old (n = 181)	91.16%
45-54 years old (n = 146)	95.21%
55-64 years old (n = 100)	94.00%
Highest Educational Attainment	**Acceptance**
College Graduate (n = 605)	92.73%
Masters Graduate (n = 97)	91.75%
PhD Graduate (n = 5)	80.00%
Subject Taught	**Acceptance**
Health-Related Subjects (n = 233)	94.42%
Non-Health-Related Subjects (n = 474)	91.56%

respondents (70.16%) said 'Yes', wherein some said that having two doses may increase the vaccine's efficacy (31.05%). Meanwhile, more than one-third were uncomfortable with getting vaccinated (36.97%), and 16.11% were not well-informed regarding the vaccination process.

Table 6 shows vaccine acceptance and nonacceptance stratified by the confounding variables [33,34]. Both female and male participants had a high proportion of vaccine acceptance, with the females (92.6%) having a higher rate. Moreover, the highest proportion of vaccine acceptance was observed in the 45-54-year-old (95.2%) age group, although the vaccine acceptance rates were high regardless of age. College graduates (92.7%) had the highest vaccine acceptance rate, and those who teach health-related subjects (94.42%) had a higher proportion of vaccine acceptance than those who teach non-health-related subjects.

Association of Knowledge and Risk Perceptions to Vaccine Acceptance

Without controlling for confounders, those with high knowledge on prevention had higher odds of COVID-19 vaccine acceptance compared to those with poor knowledge. Moreover, knowledge on signs and symptoms were marginally associated with vaccine acceptance. For the risk perception constructs, without adjusting for any other variable, all of the HBM constructs were statistically significant (Table 7). Controlling for the confounding variables and all the other variables in the model, those with good knowledge on treatment had six times the odds of having vaccine acceptance compared to those with poor knowledge (aOR = 6.08, 95% CI: 1.00 - 36.87). Having high risk perception of the benefits of vaccination was likewise marginally associated with vaccine acceptance (aOR = 2.09, 95% CI: 0.99

Table 7. *Results of Simple and Multivariate Logistic Regression on the Factors Associated with COVID-19 Vaccine Acceptance of Public Secondary School Teachers in Manila City, Philippines, 2021*

Covariates	uOR	Confidence Interval (95%)		p-value	aOR	Confidence Interval (95%)		p-value
Mode of Transmission	0.76	0.18	3.27	0.715	0.43	0.07	2.71	0.371
Signs and Symptoms	2.16	0.92	5.08	0.076	2.14	0.8	5.73	0.132
Diagnosis	1.45	0.83	2.54	0.194	1.15	0.62	2.14	0.651
Treatment	7.78	1.81	33.53	0.006	6.08	1.00	36.87	0.050
Prevention	1.26	0.48	3.3	0.641	1.04	0.36	2.96	0.947
Perceived Susceptibility	2.52	1.43	4.43	0.001	1.42	0.74	2.75	0.294
Perceived Severity	2.80	1.36	5.74	0.005	1.30	0.55	3.07	0.553
Perceived Benefits	5.15	2.78	9.56	<0.001	2.09	0.99	4.41	0.054
Perceived Barriers	2.06	1.04	4.07	0.038	1.92	0.89	4.10	0.095
Cues to Action	6.75	3.74	12.21	<0.001	4.05	2.02	8.12	<0.001

- 4.41). Ultimately, those with high risk perceptions of cues to action are four times more likely to accept the COVID-19 vaccine than those who have low risk perceptions (aOR = 4.05, 95% CI: 2.02 - 8.12) (Table 7).

Discussion

Regardless of their socio-demographic characteristics, the majority of the teachers from each category still choose to accept the vaccine. Compared to a study conducted with school teachers in Ethiopia [35], about 90% of the teachers in Manila City were willing to get vaccinated once a vaccine becomes available. Thus, health communication efforts made by the DOH [36] and DepEd [37] could have contributed to this high acceptance rate. Moreover, in Manila City, public school teachers are prioritized to be vaccinated along with senior citizens and other medical frontliners [38]. Since the resumption of face-to-face classes is currently being assessed, getting vaccinated will help teachers return to the normal teaching setting without having to worry about the detrimental effects of COVID-19.

A study that measured the perception and preparedness for the COVID-19 pandemic using the HBM showed that to overcome barriers regarding government activities and control measures of the disease, an overall good knowledge about how the disease spreads is needed [39]. This study revealed that more than 50% of the respondents had high levels of knowledge regarding COVID-19 wherein 98.9% had high knowledge on treatment and 92.5% would accept a vaccine for COVID-19 if it is proven safe, effective, and available to them. According to Racey et al. [40], teachers who had higher levels of knowledge regarding vaccines and perceived COVID-19 as a serious illness were most likely to accept the vaccine. This study did not find the COVID-19-related knowledge covariates to be associated with vaccine acceptance. While most participants had high levels of knowledge regarding COVID-19, the study found that it does not necessarily imply that they will accept the vaccine. High levels of mistrust of vaccine benefit and concerns about future unforeseen side effects are the most important determinants of both uncertainty and unwillingness to vaccinate against COVID-19 [41]. Misinformation can be damaging to the scientific knowledge dissemination during the pandemic, and there is mistrust in leaders without scientific expertise who talk about issues in the pandemic [42].

The HBM can be utilized to predict actual behavior such as intention for future vaccine uptake [43]. The premise of the HBM [44] is that individuals will take action towards a health problem if they perceive any of the following: (a) their susceptibility to the problem (perceived susceptibility); (b) severity of the problem in nature and consequence (perceived severity); (c) the action will benefit them and produce a desirable outcome (perceived benefits); (d) there are few barriers to taking that action (perceived barriers), and; (e) there are strategies that can trigger actions (cues to action). Studies show that the use of HBM constructs during a pandemic event helps to identify and engage in health-promoting behavior in the population [39].

This study found that the respondents in Manila City believed that they have a high risk of contracting COVID-19, high risk perception on the serious clinical effects of the COVID-19, high risk perception of the efficacy and reliability of proper action to reduce the impact of COVID-19, low risk perception regarding tangible and intangible barriers such as cost and safety concerns, and high risk perception of people who may influence their decision to enact the advised action, which is vaccine acceptability. Risk perception is

essential to many health behaviors [45]. Other studies found that participants with a higher risk perception are more likely to get vaccinated [46]. The higher the perceived risk regarding COVID-19, the more likely people practice protective behaviors [47]. High risk perception can be attributed to the fear of teachers that students may transmit COVID-19 even if asymptomatic, as schools and students are perceived as contributors to the spread of COVID-19 [48]. With some already reporting physically to schools, they are more at risk of contracting the virus and may be inclined to accept the vaccine for protection.

When other variables are held constant, Cues to Action was the only covariate to be significantly associated with acceptance of the COVID-19 vaccine. The results from this study resonate with the findings from related studies [49,50] wherein the presence and reception of cues to action drive participants to accept the COVID-19 vaccine. Along with this, the results of this study showed that the majority will get vaccinated if it is recommended by a physician and/or if it is recommended by the FDA. This shows that participants are highly receptive to cues from healthcare providers and government stakeholders. This indicates that recommendations from government entities and medical professionals influence vaccine acceptance [49-51]. Another study [42] has also explored the importance of reinforcing external cues to action with comprehensive health information about vaccination to motivate vaccine acceptance.

The results of the study must be assessed in light of the following limitations. Since DepEd SDO Manila was purposively selected and the data were collected using an online survey, results are only generalizable to those who share the same study participants. The study also focused on vaccine acceptability itself and did not look into its components (vaccine confidence, complacency, and convenience) and vaccine compliance and uptake due to the absence of an approved COVID-19 vaccine at the time of the study.

Conclusion

The associations established in the study were contrary to previous studies, wherein higher knowledge was said to contribute to higher vaccine acceptance. While the participants had high COVID-19-related knowledge, this was not statistically associated with vaccine acceptance. However, since knowledge on treatment was originally deemed significant based on an unadjusted odds ratio, this could be due to the fact that there is still no known cure for COVID-19 wherein people should avoid getting infected in the first place through vaccination. Lastly, respondents who taught health-related subjects were found to have higher COVID-19 vaccine acceptance rates compared to those who taught non-health-related subjects.

Cues to Action was significantly associated with COVID-19 vaccine acceptance. Respondents still need a driving force to accept the COVID-19 vaccine, even if the respondents are aware of the severity, susceptibility, benefits, and barriers of COVID-19 and its vaccines. Since it was found that recommendations from physicians and the FDA are associated with vaccine acceptance, vaccination campaigns may highlight the important role of physicians and the FDA approval of vaccines to promote vaccine acceptance by the public.

The role of teachers as possible triggers for cues to action can be explored, especially those who are teaching health-related subjects. Teachers must be provided with proper skills in order to amplify their role and participation in vaccines and other health campaigns. Ultimately, the goal is for teachers to have a more active role in school-based health programs that may improve and contribute to the betterment of students' health and be beneficial in increasing the community's vaccine uptake. Along with this, providing basic health education and promotion programs to teachers may aid in fostering evidence-based school health programs to improve the participation and education of students.

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