



(RESEARCH ARTICLE)



## Determination of the factors affecting covid-19 vaccine acceptance among the university students of Centro Escolar University-Manila

Charis C. Capis \*, Kathleen Anne T. Bunquin, Genevie Diane T. Cardona, Dandy Joshua M. De Ramos, Ronia Mae M. Gadduang, Ma. Dionys Angelique E. Lañada, Mikaela B. Najera, Jen Bernadine W. Nava, Ella Joyce C. Reyes and Reilla Joy C. Valeña

*School of Pharmacy, Centro Escolar University, Mendiola Manila, Philippines.*

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### Abstract

The disease outbreak, Coronavirus 2019 (COVID-19), occurred in December 2019 in Wuhan, China and later spread throughout the world. As a result, community quarantines were implemented and school systems have undergone transition as mandated by the government. While the facts about the vaccines have expanded significantly across different demographics, there's still a significant amount of hesitancy among younger groups, and even more so due to conflicting views of the importance of vaccines and vaccination equity in general [1]. The researchers conducted this study to examine why there is hesitancy regarding Covid vaccines. The researcher chose respondents from Centro Escolar University-Manila campus because (a) they have first-hand knowledge of the resources and (b) they are still within the younger group of individuals who would give positive feedback on vaccine utilization. This survey seeks to determine if CEU-Manila students accept, support, or oppose the required distribution of vaccines, particularly since that face-to-face classes are being trialed in several regions, indicating that this may also occur in medical schools in Metro Manila. In addition, the outcome of this study could be beneficial to (a) Professional Health Workers and (b) Local Government and National Health Agency.

**Keywords:** Awareness; Social responsibility; Mandatory vaccine; Vaccine acceptance; COVID-19; COVID-19 vaccine

### 1. Introduction

Acute Respiratory Syndrome, Severe Coronavirus 2 (SARS-CoV-2) is a newly discovered Betacoronavirus that is presently infecting individuals globally. According to phylogenetic analyses of the SARS-CoV-2 genome, the virus is genetically different from Severe Acute Respiratory Syndrome Coronavirus (SARS-CoV) and Middle East Respiratory Syndrome Coronavirus (MERS-CoV). The virus is genetically different from SARS-CoV and MERS-CoV and is closely linked to two SARS-like coronaviruses isolated from bats in eastern China in 2018. Using the genomic sequences of SARS-CoV-2, RaTG13, and SARS-CoV, a bat coronavirus was identified [2]. Vaccines become accessible to the public about two years after the epidemic and are considered an effective method for preventing the spread of infectious diseases and disease-related deaths. The World Health Organization (WHO) is diligently working to discover, manufacture, and distribute vaccines that are safe and effective. Vaccines vary in their composition and the manner in which they stimulate an immunological response that leads in the production of antibodies. Vaccine hesitancy (VH), delay in acceptance, and/or refusal to vaccinate is still a problem in the Philippines, thus researchers conducted a study to determine the reasons why certain groups, particularly the youth, are reluctant to comply with it [3].

\*Corresponding author: Charis C. Capis  
School of Pharmacy, Centro Escolar University, Mendiola Manila, Philippines.

## 2. Material and method

This study employed quantitative research to obtain questionnaires. The study design aims to obtain accurate and concise data on the factors impacting Centro Escolar University-Manila students' acceptance of the COVID-19 vaccination. The research also employs a descriptive technique that requires researchers not to modify or control any dependent variables; they simply observe and assess data about the current conditions, including significant factors. The correlational study measures two variables and examines the statistical link between the acceptance rate and important factors affecting the COVID-19 vaccination of CEU-Manila students.

### 2.1. Procedure

Due to COVID-19 risk, data will be collected virtually. Respondents get survey links via school email. Respondents' names, ages, sexes, emails, phone numbers, addresses, and emails were not gathered to protect their identities. Respondents' participation is limited to the survey's timeframe. Researchers guarantee this strategy is the fastest and most convenient way to acquire data during the COVID-19 epidemic. When responders pressed the questionnaire's submit button, their responses were automatically collected. Researchers could only access the data saved in a Google Drive folder.

## 3. Results and discussion

The following gathered data are results from the questionnaire which delivered sufficient evidences:

**Table 1** Frequency and Percentage of Respondents' Demographic Profile

Demographic Profile	N542	Percentage
<b>Gender</b>		
Male	106	19.6%
Female	436	80.4%
<b>Age</b>		
18	31	5.7%
19	108	19.9%
20	117	21.6%
21	144	26.6%
22	142	26.2%
<b>Year Level</b>		
1st-year	143	26.4%
2nd-year	113	20.8%
3rd-year	170	31.4%
4th-year	116	21.4%
<b>Course</b>		
BS Pharmacy	211	38.9%
BS Nursing	137	25.3%
<b>Are you fully vaccinated?</b>		
Yes	534	98.5%
No	8	1.5%

The profile distribution of the respondents in terms of the highest frequency of vaccine acceptance. Among the respondents from both different groups, medical courses have the majority of 89.7% and non-medical courses have the minority 10.3% implying their corresponding level of willingness to be inoculated with vaccines. Furthermore, full vaccination requires a first and second dose shot of COVID-19 vaccine. The gathered demographic profile has data categories stipulated between (1) gender, (2) age, (3) year level, and (4) courses. The majority of total respondents among university students comes from females due to the school's historical background, aligning with the claim that females have a higher interest in participating in health research than male [4]. Most active participants come from the age group of 21 years of age wherein it falls under the age range of 19 to 22 years old since 18-25 years old are more likely to accept the COVID-19 vaccine [5]. In addition, third year level demonstrated the highest respondents rate, which expectedly has matched 50% the age group of 21 years old. BS Pharmacy also had the highest percentage of respondents, a majority of 38.9%, suggesting that the medical students are considering the COVID-19 vaccine as a preventive measure against the virus. However, there are some students who showed hesitancy to get vaccinated but it did not affect the percentage of COVID-19 acceptance in both groups. This positive attitude and perception of both medical and nonmedical students regarding COVID-19 vaccines provides a positive drive of bandwagoning wherein others would be encouraged to get vaccinated.

**Table 2** Summary of Results of Influential Factors of Students to get vaccinated

<b>Influential Factors</b>	<b>Scale</b>	<b>Medical</b>	<b>Non Medical</b>
Discouragement from peers	Strongly Disagree	69.80%	53.60%
Religious Objections	Strongly Disagree	76.70%	66.10%
Comorbidity (other illness)	Strongly Disagree	76.10%	58.90%
Recommendation from Doctor to get vaccinated	Strongly Agree	29.40%	26.80%
Influence of social personality	Disagree	25.50%	33.90%
Convinced by TV News and Radio	Agree	43.20%	26.80%
Trust in Pharmaceutical Companies	Strongly Agree	46.70%	41.10%
Information from Social Media	Agree	47.10%	53.60%

Based on the result, the majority of medical and nonmedical students strongly disagreed that they were discouraged by their peers and family members to get the COVID-19 vaccine. To align with this study, younger populations were not influenced by peers and relatives thus, getting vaccinated is an individual decision or choice [6][7]. However, there is still a need to facilitate more health promotion and sensitization programs to encourage them to vaccinate. Moreover, medical and nonmedical students strongly disagreed that they have religious concerns in obtaining the COVID-19 vaccine. It means that the religious affiliations of the students have not been promoting recoil to their vaccine acceptance. The medical and nonmedical students have no other illnesses preventing them from accepting the COVID-19 vaccine, therefore, the university students of Centro Escolar University-Manila were healthy enough to receive the vaccine. Most university students agreed that they had recommendations from their physicians to get vaccinated. They got check-ups before acquiring the COVID-19 vaccine to ensure their safety and the effectiveness of the vaccine to the body. In direct claims stated that healthcare vaccinations influenced the acceptance of the general populations of COVID-19 vaccine [8]. Furthermore, most medical and nonmedical students were encouraged by influential people on social media platforms to be vaccinated. This can be attributed to the trend there was in the duration of the pandemic that was binging vlogs, watching TV, listening to the radio, and doing household chores. The results also demonstrate that both the majority of medical and nonmedical students believe that social media provides enough information about the COVID-19 vaccine's safety and effectiveness. Additionally, university students were considered social media influencers and ambassadors in promoting vaccine literacy [9]. This can be paralleled after this study's findings that medical and nonmedical students agree that Pharmaceutical companies can be trusted in developing COVID-19 vaccines.

**Table 3** Summary of Results of the acceptability of the COVID-19 vaccine and the role of awareness

<b>Awareness</b>			
Concern in effectiveness	Agree	40.70%	41.10%
Vaccine is unsafe	Disagree	45.10%	57.10%
Don't trust synthetic products (vaccine)	Strongly Disagree	52.30%	39.30%
Beneficial for my health	Strongly Agree	67.70%	55.40%
Vaccine has side effects	Disagree	48.60%	44.60%
Vaccine has longterm effects	Disagree	59.50%	48.20%
I think covid 19 vaccines were not tested	Disagree	49.40%	62.50%
I don't mind the side effects, its temporary	Agree	27.60%	30.40%

The medical students and nonmedical students have the same perspectives when it comes to accepting COVID-19 vaccines. When it comes to negative perceptions regarding the said vaccine such as the side effects that might be serious or long-term, the majority disagreed that they do not view it as so; this shows that both medical and non medical students are aware with the COVID-19 vaccines through this situation or pandemic, specifically in that of side effects, brand of vaccine and the overall effectiveness of vaccinations itself. In parallel to the study from the United Kingdom, factors including perceptions, trust in vaccines, and trust in vaccine providers have been found to affect the acceptability of the COVID-19 vaccine [10][11]. One of the reasons why medical students accept the COVID-19 vaccine is their knowledge of clinical trials on how medicines are processed to be used with safety. Meanwhile, a plausible reason why non-medical students also accept the COVID-19 vaccine is attributed to the positive information regarding the said vaccine, like how the university disseminates information from previous forums or online handouts posted in mails or the university pages. Also, the influence of social media from friends who disseminate reliable information regarding the vaccines (like its type which gives less side effects) are also a factor to the willingness of vaccine acceptance. Social media was the main source of health behavior information and an important way for university students to access the knowledge related to the COVID-19 vaccine [12]. This implies that their perspective regarding the role of vaccines is in a positive point of view rather than relying on negative information such as giving side effects. It can be said that at least in CEU Manila, medical and non medical students are well-informed about the role of vaccines and which vaccine of choice they are going to take that has lesser side effects. In contrast, both medical students and non medical students in accepting the COVID-19 vaccine due to the harmful side effects brought about by the COVID-19 vaccine [13].

**Table 4** Summary of Results of the student's confidence

<b>Confidence</b>			
Prevents transmission on COVID-19	Strongly Agree	64.20%	55.40%
Confident to get the vaccine	Strongly Agree	70%	55.40%
Want to take the vaccine immediatly	Strongly Agree	68.10%	51.80%
Helps to stop COVID-19	Strongly Agree	64.60%	44.60%
Effectiveness and safety of the vaccine	Strongly Agree	67.10%	42.90%
Willing to get vaccinated	Strongly Agree	75.70%	57.10%
Protection rate is 100%	Agree	38.10%	41.10%

The results summary of the student's confidence regarding COVID-19 vaccine. From the collected data mentioned in the table above, the majority of responses from both medical and non-medical students strongly agreed that being vaccinated is the best way to prevent COVID-19 transmission which was also a statement by the World Health Organization (WHO) [14]. Based on the data, full confidence can also be shown with the willingness to have it as much as possible. Back in 2021, the vaccines were already made available in the Philippines and proceeded to the

government's implementation of national vaccination. But despite the significant strong agreement between the two groups, some decisions have fluctuations that probably may be because of knowledge exposure, considering the fact that medical students have more knowledge regarding the subject itself, the vaccine. This was evident by their responses. Medical students strongly agree that vaccination will help to stop the virus spread and fully believe in its effectiveness and safety. However, the non-medical students only agreed, for both responses. According to WHO, vaccines may function in a great way, however, there's still no 100% protection [14]. The university students are considered as an insightful community to be investigated about their attitudes towards vaccination [15]. In conclusion, both the medical and nonmedical students are on the same page of having the confidence regarding COVID-19 vaccination despite their doubt for the level of its protection.

**Table 5** Summary of Results of the university curriculum on the choice to vaccinate

<b>Influence of the university curriculum</b>			
Mandatory vaccination	Agree	38.90%	51.80%
University discussed advantage of vaccine	Strongly Agree	47.50%	26.80%
Non-vaccinated are not allowed	Agree	49.20%	44.60%
Implements Health Restrictions	Strongly Agree	59.10%	42.90%

This is in line with CEU-Manila's stipulated mandatory vaccination aiming to promote safety and prevent the spread of the virus across the school premises, including laboratories, offices, classrooms, and used or operated by CEU-Manila. On the contrary, nonmedical students were against mandatory vaccination whereas, medical students had fewer responses in resistance to mandatory vaccination implemented by the school [13]. Moreover, it was found out that medical students strongly agreed that the school had deliberately discussed the advantages of getting vaccinated, and nonmedical students agreed as well. This is aligned with the claim that medical students have more knowledge since they have obtained basic courses in clinical chemistry, microbiology, pharmacology, and immunology [12]. Therefore, they understood the mechanism of action and are more aware of the benefits of the COVID-19 vaccine. In a way to measure the student reflex or reaction to the policies implemented, it was reemphasized in the survey employed that a majority of both nonmedical and medical students are certain in all likelihood that the school prohibits non-vaccinated students from entering the school campus to prevent the transmission of the COVID-19 infection. In direct contrast to the supposition that medical students would have a relatively more positive response to vaccine acceptance than nonmedical students, the results of this study demonstrate otherwise, that regardless of their university curriculum, students from the Centro Escolar University - Manila still find to be largely inclined and strong-willed to be inoculated with the COVID-19 vaccines. The reason was due to the restrictions of Centro Escolar University-Manila to prevent unvaccinated students from entering the campus, medical and nonmedical students were encouraged to accept the COVID-19 vaccine.

**Table 6** Summary of Results of the level of the student's sense of social responsibility

<b>Sense of Social Responsibility</b>			
Satisfied with Government's vaccination program	Agree	44.70%	55.40%
Trusts public health agencies	Agree	58.20%	62.50%
Mass vaccination prevents transmission	Strongly Agree	61.90%	44.60%
To protect other citizens	Strongly Agree	69.50%	51.80%
Will encourage everyone to be vaccinated	Strongly Agree	64.80%	50%

It is evident in the above-shown table that both the medical and nonmedical students are satisfied with the government's vaccination program. One of the reasons behind the positive response of the medical students is the pronouncement of the DOH to prioritize medical and allied professionals. As for the nonmedical student's reason behind their overall positive response, they are accustomed to the government's policies which clearly shows that they are well aware of the approach of the government in mitigating the COVID-19 pandemic through mass vaccination efforts. Both medical and nonmedical students are simultaneously in terms of agreeing to trust the public health agencies in implementing the vaccination program primarily due to the medical professionals working in the various public health

agencies whereas the nonmedical students believe it is a public health issue that should be taken into consideration. As for the efficacy of the vaccine, both medical and nonmedical students strongly agreed that mass vaccination will help prevent the transmission of the COVID-19 disease. This is due to medical students who already gained knowledge about mass vaccination while the non-medical students only derive information from the various social networking sites and news platforms. This indicates that medical students were taught about how this vaccine works while nonmedical students were only taught that this will help them to fight and prevent the worst symptoms of COVID-19 disease. The majority are strongly in favor of being vaccinated for the sake of protecting other citizens from being infected. Medical students know that we need to prioritize another citizens' health. The vaccine will protect their family's health from being infected by those who are yet to be vaccinated. is also thinking of their family getting infected by one another who is not yet vaccinated. Lastly, both medical and nonmedical students strongly agreed to encourage everyone to be vaccinated to stop or prevent the spread of COVID-19 virus infection. They are hopeful that we can go back to normal once we reach the target vaccination threshold. From the table shown above, it can be concluded that most of the students from the school of Centro Escolar University Manila — whether medical or nonmedical students — agreed to get vaccinated and have enough knowledge when it comes to vaccines for COVID-19 disease.

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#### 4. Conclusion

In conclusion, university students are confident enough regarding the COVID-19 vaccination despite some doubt about its efficacy due to the side effects and rapid development of the COVID-19 vaccine. Several factors affect the acceptability of the students in a manner of receiving the COVID-19 vaccine. Mainly this includes the influence of social media platforms in disseminating public awareness programs to provide more pellucid information towards vaccination and physician's recommendations. The students are self-assured, unaffected by others, and possess a social responsibility toward the COVID-19 infection, which caused them to be immune to the COVID-19 infection. Moreover, medical and non-medical students have a solid will to accept the COVID-19 vaccine despite their curriculum. They are satisfied with the implemented rules and regulations by the university regarding COVID-19 vaccinations.

The Centro Escolar University students are satisfied with implementing a COVID-19 vaccination program. Students believed that public health agencies are enforced in implementing the vaccination program, primarily due to the medical experts in various public health agencies. Most responses overtly show that vaccination is the best way to obviate the rampancy of COVID-19 transmission.

#### *Recommendations*

With the result, the researchers recommend the following:

- To enhance the study, other researchers may conduct additional experiments utilizing a different sample of respondents, most commonly faculty members or employees of a company with direct vaccination experience.
- For future researchers, to involve the Centro Escolar University Makati and Malolos Campus as the study setting in gathering respondents.
- According to the findings of the study, it is recommended that questionnaires in the style of surveys be implemented into paper surveys, in-call or telephone interviews, one-on-one interviews, and focus group interviews with multiple respondents.
- As per objectives and two groups of respondents, it is also good to consider the ANOVA hypothesis testing to determine the difference statistically.

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#### **Compliance with ethical standards**

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#### *Disclosure of conflict of interest*

The authors have no conflict of interest associated with other organizations in conducting this study.

*Statement of informed consent*

Informed consent was obtained from all the students of Centro Escolar University-Manila who participated in the study.

**References**

- [1] Robertson, E., Reeve, K.S., Niedzwiedz, C.L. Moore, J., Blake, M., Green, M., Katikireddi, S.V., & Benzeval, M.J. (2021). Predictors of COVID-19 vaccine hesitancy in the UK household longitudinal study. *Brain, Behavior, and Immunity*, 94. 41-50, 0889-1591. <https://doi.org/10.1016/j.bbi.2021.03.008>.
- [2] Harapan, H., Itoh, N., Yufika, A., Winardi, W., Keam, S., Te, H., Megawati, D., Hayati, Z., Wagner, A. L., & Mudatsir, M. (2020). Coronavirus disease 2019 (COVID-19): A literature review. *Journal of infection and public health*, 13(5), 667–673. <https://doi.org/10.1016/j.jiph.2020.03.019>
- [3] Coronavirus disease 2019 (covid-19) - who. (n.d.). Retrieved July 21, 2022, from <https://www.who.int/docs/default-source/coronaviruse/situation-reports/20200423-sitrep-94-covid-19.pdf>
- [4] Otufowora, A., Liu, Y., Young, H., Egan, K. L., Varma, D. S., Striley, C. W., & Cottler, L. B. (2021, February). Sex differences in willingness to participate in research based on study risk level among a community sample of African Americans in North Central florida. *Journal of immigrant and minority health*. Retrieved June 12, 2022, from <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7714285/#:~:text=More%20females%20had%20ever%20participated,male%20counterparts%20>
- [5] Pagador, P., Pacleb, A., Ormita, M. J., Valencia, F. E., Velasco, D. H., & Josue-Dominguez, R.(2022). Acceptance of COVID-19 Vaccine among Unvaccinated Filipinos. *International Journal of Medical Students*. <https://doi.org/10.5195/ijms.2022.1192>.
- [6] Walker, A. N., Zhang, T., Peng, X. Q., Ge, J. J., Gu, H., & You, H. (2021). Vaccine Acceptance and Its Influencing Factors: An Online Cross-Sectional Study among International College Students Studying in China. *Vaccines*, 9(6), 585.<https://doi.org/10.3390/vaccines9060585>.
- [7] Jiang N, Wei B, Lin H, Wang Y, Chai S, Liu W. Nursing students' attitudes, knowledge and willingness of to receive the coronavirus disease vaccine: a cross-sectional study. *Nurse Educ Pract*. (2021) 55:103148. doi: 10.1016/j.nepr.2021.103148.
- [8] Jain, L., Vij, J., Satapathy, P., et. al. (2021). Factors Influencing COVID-19 Vaccination Intentions Among College Students: A Cross-Sectional Study in India. *Front in Public Health*, 9: 735902. <https://doi.org/10.3389/fpubh.2021.735902>
- [9] Paterson P, Meurice F, Stanberry LR, Glismann S, Rosenthal SL, Larson HJ. Vaccine hesitancy and healthcare providers. *Vaccine*. (2016) 34:6700–6. doi: 10.1016/j.vaccine.2016.10.042.
- [10] Dube E, MacDonald NE. Managing the risks of vaccine hesitancy and refusals. *Lancet Infect Dis*. (2016) 16:518–9. doi: 10.1016/S1473-3099(16)00028-1.
- [11] Ogundele OA, Ogundele T, Beloved O. Vaccine hesitancy in Nigeria: contributing factors–way forward. *Niger J Gen Pract*. (2020) 18:1–4. doi: 10.4103/NJGP.NJGP\_28\_19.
- [12] Gao, L., Su, S., Du, N., Han, Y., Wei, J., Cao, M.& Wang, X. (2022). Medical and nonmedical students’ knowledge, attitude and willingness towards the COVID-19 vaccine in China: a cross-sectional online survey. *Human Vaccines & Immunotherapeutics*, 2073757. Retrieved from:<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7923859/>.
- [13] Lindner-Pawłowicz, K., Mydlikowska-Śmigórska, A., Łampika, K., & Sobieszcańska, M. COVID-19 Vaccination Acceptance among Healthcare Workers and General Population at the Very Beginning of the National Vaccination Program in Poland: A Cross-Sectional, Exploratory Study. *Vaccines*, 2021, 10(1), 66.<https://doi.org/10.3390/vaccines10010066>
- [14] World Health Organization. (n.d.). Vaccine efficacy, effectiveness and protection. World Health Organization. Retrieved July 21, 2022, from <https://www.who.int/news-room/feature-stories/detail/vaccine-efficacy-effectiveness-and-protection>
- [15] Barello, S., Nania, T., Dellafiore, F. et al (2020). Vaccine hesitancy among university students in Italy during the COVID-19 pandemic. *European Journal of Epidemiology*, 35, 781–783. <https://doi.org/10.1007/s10654-020-00670-z>