Demographic, Health and Pandemic-Related Determinants of COVID-19 Vaccination Intention Among Filipino Emerging Adults

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Abstract
Emerging adults have become more susceptible to COVID-19 because of the emergence of the Delta and Omicron variants. Vaccination can help protect them from contracting the virus. However, in the Philippines, vaccine acceptance rates are low. This cross-sectional study sought to determine the demographic, health, and pandemic-related determinants of COVID-19 vaccination intention among Filipino emerging adults. A total of 1692 Filipinos aged 18–24 years old participated in this study by answering an online survey. Findings reveal that 57.03% of the respondents do not intend to complete their COVID-19 vaccinations. Logistic regression analysis results suggest that less than “very good” self-reported health, lower life satisfaction, previous exposure to a COVID-19 patient, and lower pandemic fatigue were associated with greater odds of intending to vaccinate among Filipino emerging adults (p < 0.05).

Keywords
COVID-19, COVID-19 vaccines, cross-sectional studies, emerging adults, vaccination

Introduction
Emerging adults have become more susceptible to the 2019 coronavirus disease (COVID-19) virus because of the highly transmissible Delta and Omicron variants (McLaws, 2021; Segraves, 2021). Evidence suggests the importance of expanding vaccination rollouts to the young and emerging adult population, for there is a significant risk for infection for non-vaccinated and incompletely vaccinated persons (Lopez Bernal et al., 2021). However, in the Philippines, the age group of emerging adults were among the least priority to be vaccinated (Department of Health, 2021). Moreover, a nationwide study suggests that 6 out of 10 Filipinos are hesitant to get vaccinated (Pulse Asia Research Inc., 2021). The Philippines placed 50 out of 53 countries in the COVID-resilience ranking as it continues to struggle to address the pandemic, lift quarantine protocols, and achieve herd immunity (Chang et al., 2021).

Addressing vaccine hesitancy entails a multisectoral approach that understands the contextual factors of vaccine acceptance. More culturally and developmentally sensitive research is needed to enhance vaccination programs (World Health Organization, 2020). Informed by previous COVID-19 vaccine studies, our current investigation examined three general categories of determinants of vaccine intention: (1) demographic characteristics, which include age, gender, and socioeconomic status (Bono et al., 2021; Cahapay, 2021); (2) health-related determinants, which include measures of illness and wellbeing (Bono et al., 2021; Jabar et al., 2021; Robertson et al., 2021); and (3) pandemic-specific experiences, such as COVID-19 exposure and diagnosis, and pandemic fatigue (Bono et al., 2021; Lilleholt et al., 2020). Moreover, the World Health Organization (2020) asserts the importance of using a life-course perspective in understanding vaccine behaviors and implementing programs. We respond to this call by focusing this investigation among emerging adults.

Emerging adulthood is a period when persons are expected to make individualized decisions with little guidance for the new realities in their lives (Amett, 2010; Schwartz & Petrova, 2019). In the Philippines, emerging adulthood has been identified as a time of ambivalence and mixed emotions about their lives (Peñaflor et al., 2019). Schwartz and Petrova (2019) suggest that health-related risk-taking behavior during emerging adulthood is common. Thus, it is unsurprising that in the time of COVID-19, higher levels of vaccine hesitancy (Robertson et al., 2021) and...
susceptibility to misinformation (Bono et al., 2021; Superio et al., 2021) have been documented in this subset of the population. Specifically, we draw our focus on emerging adults who are university students, who are expected to be more knowledgeable and socially adherent compared to their out-of-school counterparts, often regarded as “Istambays”—young Filipinos who are socially perceived to lack formal education and labor productivity, and engage in socially problematic and risky health behaviors (Batan, 2012). We suspect that university students may have better vaccine acceptance, as evidence has shown less vaccine hesitancy among those with higher educational attainment (Jabar et al., 2021).

During the pandemic, the mental health and life satisfaction has declined among emerging adults, especially among those experiencing limited peer interactions and constraints in finances (Egcas et al., 2021; Preetz, et al., 2021). Recent research among Filipino emerging adults have demonstrated how the societal impacts of the pandemic had greatly impacted the achievement of their developmental milestones, such as finishing college and entering the workforce (Cleofas, 2021). We argue that beyond protection from bodily harm caused by COVID-19, vaccinating emerging adults helps ensure their reintegration to the community after long periods of confinement, which will promote their active participation in society. Afterall, evidence suggests that Filipino emerging adults consider this period as an “age of possibilities” (Peñaflor et al., 2019, p.136). Hence, our present study aims to determine the demographic, health-, and pandemic-related determinants of vaccine intention among Filipino emerging adults.

Methods

Study procedure and participants

A convenient sample of 1692 emerging adults within the youth bracket (18–24 years old) enrolled in a university in the Visayas, Philippines, who have received zero doses of COVID-19 vaccine, participated in this online cross-sectional study. This selected age bracket is based on the emerging adulthood age range used by Hochberg and Konner (2020) and recent vaccine studies (e.g., Beleche et al., 2021). Computed statistical power is 1.0. Upon administrative clearance, the link to the survey form was distributed to the students via email during the first half of July 2021. Ethical principles of securing informed consent, respecting voluntary participation, and protecting data privacy and confidentiality were strictly observed.

Measures

Vaccination intention (VI). The outcome variable of this study is vaccination intention (VI). To measure this, respondents were asked the question, “do you intend to complete your COVID-19 vaccination?” answerable by “yes” or “no.”

Demographic determinants. The demographic characteristics that were measured in the study were age (two levels were considered: 18–20 and 21–24 years old), sex assigned at birth (male and female), self-reported income level (middle to high income and low income), and work status (working and not working). Marital status and educational level data were collected but were not included in the model because of the lack of variability (single=98.94%, undergraduates=97.75%).

Health-related determinants. We collected four health-related explanatory variables, which are based on the illness/wellness continuum of Travis (1972), and consider illness, health, and wellness statuses. First is known chronic illness, wherein we asked the yes-or-no question, “do you have any chronic illness?” Second, we measured their self-rated level of health by asking, “how would you rate your current health status?” The possible responses were “poor,” “fair,” “good,” “very good,” and “excellent.” Third is subjective wellbeing, measured using the 7-item Warwick-Edinburgh Mental Wellbeing Scale (SMEWMS) by Tennant et al. (2007). Each participant was assigned to a category based on SMEWMS scores (low=7 to 20, moderate=21 to 27 and high=28 to 35). Fourth is life satisfaction, measured using the 5-item Satisfaction with Life Scale (SWLS) by Diener et al. (1985). Each respondent was assigned to a category based on their SWLS average (low=1.00 to 3.00, moderate=3.01 to 5.00, and high=5.01 to 7.00). Both SMEWMS and SWLS demonstrated acceptable Cronbach alphas of 0.87 in a Filipino sample (Cleofas & Oducado, 2021).

Pandemic-related determinants. We selected three variables that characterized different facets of experiences related to COVID-19 and the pandemic. We asked if they were previously diagnosed with COVID-19, and if they had a previous contact with a patient with COVID-19 infection, both answerable by “yes” or “no.” Lastly, we measured their level of pandemic fatigue, using the 6-item Pandemic Fatigue Scale (PFS), which refers to demotivation and exhaustion in practicing COVID-19 protective behaviors (Lilleholt et al., 2020). PFS has a good reliability score of α=0.87 in a Filipino sample (Cleofas & Oducado, 2021). Each respondent was assigned to any of the three levels of PFS based on their mean score (low=1.00 to 3.00, moderate=3.01 to 5.00, and high=5.01 to 7.00).

Data analysis procedure

For our statistical analyses, we used JASP (Jeffreys’ Amazing Statistics Program) version 0.14.1. Frequency and percentage were used to describe respondents when grouped according to the categories of the explanatory variables of the study. To determine the significant predictors of VI (yes=1, no=0), we used a multivariate binomial logistic regression analysis. Our data exhibited acceptable variance inflation factor and tolerance. Bootstrapping using 5000 replicates was done. We set our level of significance at p<0.05.
Results

Descriptive results

Table 1 shows that the majority of the respondents are 21–24 years old (62.71%), female (72.40%), from low-income households (69.27%), and are not working (75.71%). For health-related characteristics, most of the respondents have no known chronic illness (94.42%), self-rated “very good” to “excellent” health (86.17%), moderate subjective wellbeing (48.10%, Mean=25.18±5.53), and high life satisfaction (48.40%, Mean=4.92±1.27). As for pandemic-related determinants, the majority of the respondents have not yet been diagnosed with COVID-19 (99.35%), had no previous contact with a COVID patient (95.45%), and had moderate levels of pandemic fatigue (49.53%, Mean=3.79±1.44). Because of very low variability, COVID-19 diagnosis was no longer considered for the logistic regression model.

Table 1. Distribution of respondents according to determinants and vaccination intention.

| Variable                          | n   | %    |
|-----------------------------------|-----|------|
| **Demographic determinants**      |     |      |
| Age                               |     |      |
| 18–20 years old                   | 631 | 37.29|
| 21–24 years old                   | 1061| 62.71|
| Sex                               |     |      |
| Male                              | 467 | 27.60|
| Female                            | 1225| 72.40|
| Income level                      |     |      |
| Middle to high income             | 1172| 69.27|
| Low income                        | 520 | 30.73|
| Work status                       |     |      |
| Working                           | 411 | 24.29|
| Not working                       | 1281| 75.71|
| **Health-related determinants**   |     |      |
| Known chronic illnesses           |     |      |
| Yes                               | 86  | 5.08 |
| No                                | 1606| 94.42|
| Self-rated level of health        |     |      |
| Very good to excellent            | 1458| 86.17|
| Poor to good                      | 234 | 13.83|
| Subjective wellbeing              |     |      |
| High                              | 305 | 18.03|
| Moderate                          | 814 | 48.10|
| Low                               | 573 | 33.87|
| Life satisfaction                 |     |      |
| High                              | 819 | 48.40|
| Moderate                          | 717 | 42.38|
| Low                               | 156 | 9.22 |
| **Pandemic-related determinants** |     |      |
| Previously diagnosed with COVID-19?|     |      |
| Yes                               | 11  | 0.65 |
| No                                | 1681| 99.35|
| Exposure to COVID-19 patient?     |     |      |
| Yes                               | 77  | 4.55 |
| No                                | 1615| 95.45|
| Pandemic fatigue                  |     |      |
| High                              | 320 | 18.91|
| Moderate                          | 838 | 49.53|
| Low                               | 534 | 31.56|
| Vaccination intention             |     |      |
| Yes                               | 727 | 42.97|
| No                                | 965 | 57.03|

Note: N=1692.

Results

Descriptive results

Explanatory variables. Table 1 shows that the majority of the respondents are 21–24 years old (62.71%), female (72.40%), from low-income households (69.27%), and are not working (75.71%). For health-related characteristics, most of the respondents have no known chronic illness (94.42%),...
research (e.g., Jackson et al., 2021), our findings demonstrate the association between higher levels of self-reported health with vaccine hesitancy. Previous studies have noted low health risk perception (McErlean & Fekete, 2018) and high-risk behavior (Schwartz & Petrova, 2019) among emerging adults. With these developmental traits, combined with the Philippine cultural value of “Bahala na” (roughly translated as “whatever happens, happens”) and fatalism (Gripaldo, 2010), Filipino emerging adults may overestimate their health status, underestimate their COVID-19 risk and hesitate to vaccinate.

Moreover, our present study shows that lower life satisfaction was linked to vaccine acceptance. Filipinos consider the time of emerging adulthood as a period of possibilities and self-exploration (Peñaflor et al., 2019). However, due to COVID-19, Filipino emerging adults have felt restricted from pursuing their life goals and engaging in recreational activities, causing decreased life satisfaction (Cleofas, 2021). Individuals experiencing life dissatisfaction during the pandemic may see vaccination as a ticket to return to normalcy (Robertson et al., 2021).

For pandemic-related determinants, our current study demonstrates that being previously exposed to a COVID-19 patient increases the odds of vaccinating. This confirms Bono et al. (2021) which posited that COVID scares in the family or community can indirectly increase acceptance of the vaccine. Social influence from family and peers remains to be strong during emerging adulthood in Asian societies (Arnett, 2010). We suspect that being exposed to loved ones who had the disease could have served as a vicarious form of social influence, which consequently improved their risk perception, as seen in previous research among emerging adults (McErlean & Fekete, 2018). In the Philippines where family- and community-orientedness are tied to one’s wellbeing (Gripaldo, 2010; Samaco-Zamora & Fernandez, 2016), witnessing the effect of COVID-19 in the salient people in their lives may have increased their intent to vaccinate.

Finally, our findings suggest that emerging adults who exhibit higher levels of pandemic fatigue are less likely to complete COVID-19 vaccination. Lilholt et al. (2020) defines pandemic fatigue as the exhaustion and demotivation to comply with pandemic protocols, which at this point of the

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**Table 2.** Multivariate logistic regression model results for predicting vaccination intention among Filipino emerging adults.

| Variable (Ref)                        | B     | SE   | p-value | OR (95% CI) |
|---------------------------------------|-------|------|---------|-------------|
| **Demographic Determinants**          |       |      |         |             |
| Age (21–24 years old)                 |       |      |         |             |
| 18–20 years old                       | -0.165| 0.106| 0.113   | 0.848       |
| 18–20 years old                       |       |      |         |             |
| Sex (female)                          | 0.054 | 0.115| 0.646   | 1.056       |
| Middle to high income                 | 0.204 | 0.110| 0.065   | 1.226       |
| Working status (not working)          | -0.175| 0.123| 0.152   | 0.840       |
| Income (low income)                   |       |      |         |             |
| Middle to high income                 | 0.204 | 0.110| 0.065   | 1.226       |
| Working status (not working)          | -0.175| 0.123| 0.152   | 0.840       |
| **Health-related determinants**       |       |      |         |             |
| Known chronic illness (no)            |       |      |         |             |
| Yes                                   | 0.008 | 0.238| 0.966   | 1.008       |
| Self-rated health (poor to good)      |       |      |         |             |
| Very good to excellent                | -0.446**| 0.154| 0.004   | 0.640       |
| Subjective wellbeing (high)           |       |      |         |             |
| Low                                   | 0.008 | 0.172| 0.978   | 1.008       |
| Moderate                              | -0.114| 0.124| 0.349   | 0.892       |
| Life satisfaction (high)              |       |      |         |             |
| Low                                   | 0.526*| 0.205| 0.010   | 1.692       |
| Moderate                              | 0.059 | 0.120| 0.584   | 1.061       |
| **Pandemic-related determinants**     |       |      |         |             |
| Exposure to COVID-19 patient? (No)    |       |      |         |             |
| Yes                                   | 0.751***| 0.253| 0.002   | 2.120       |
| Pandemic fatigue (high)               |       |      |         |             |
| Low                                   | 0.450***| 0.151| 0.003   | 1.568       |
| Moderate                              | 0.015 | 0.140| 0.915   | 1.015       |

Note: VI (yes=1), Nagelkerke $R^2=0.035$, $X^2=59.806$; *$p<0.05$; **$p<0.01$; ***$p<0.001$; bootstrap (n=5000).
pandemic includes getting vaccinated. Pandemic fatigue among Filipinos could be facilitated by the cultural norm “Ningas Kugon” or the tendency to easily lose focus and motivation towards a goal (Gripaldo, 2010). The prolonged unresolved adversities due to the pandemic in the Philippines (Chang et al., 2021), combined with the trait of ambivalence among Filipino emerging adults (Peñaflor et al., 2019), may have intensified their Ningas Kugon towards engaging in protective behaviors, and consequently getting vaccinated. Moreover, pandemic fatigue also includes avoiding information about COVID-19 (Lilleholt et al., 2020). This lack of intent to actively access COVID-related information may also contribute to vaccine hesitancy.

**Strengths and limitations of the study**

The novelty and strength of this study is the inclusion of many variables, some of which have not yet been examined by earlier vaccine-related behavioral research. Also, our specific focus on emergent adults provides new insights on the dynamics of vaccine intentions in the younger subpopulation. However, our findings must be viewed in the light of its limitations. Despite having a large sample size, this research is a single-site cross-sectional study; thus, the generalizability of results may be limited. Also, this study focuses only on emerging adults enrolled in a university. Moreover, we note that our sample is female-dominated (over 70%), and some of the explanatory variables such as self-reported health and COVID-19 exposure had limited variability, which may have introduced sampling bias in the model. Future research can expand the study by involving a randomized sample from more areas of the country and include other geopolitical and sociological predictors. Mediating variables (such as social influence and risk perception) that were not included in this study, which may explain the pathways of the relationships established, can be considered in future vaccine research.

**Conclusions**

Our findings provide evidence on the persisting prevalence of vaccine hesitancy among Filipino emerging adults, especially those who rate their health as “very good” or “excellent,” report higher life satisfaction and higher pandemic fatigue, and have no exposure to persons with COVID-19. This Philippine-based study contributes to the larger emerging adulthood literature by highlighting salient social, cultural and health factors that may influence emerging adults’ perceptions, decisions, and actions towards protecting their wellbeing and engaging in risky behaviors.

**Recommendations**

We reiterate the important role of vaccination in decreasing the vulnerability of emerging adults to the disastrous effects of COVID-19, and ensuring a safe return to in-campus learning in universities when the pandemic becomes more controlled. Vaccination campaigns that target emerging adults may make use of narratives that focus on the need for herd immunity for them to enjoy the possibilities afforded by their developmental stage. Identity exploration, social integration, and career pursuits that are common aspects of this period are better experienced in a post-COVID world when more people are vaccinated and lesser societal restrictions are necessary. We also recommend university administrators and school health personnel to continuously emphasize the health risks of the virus and its detrimental effect to emerging adults’ personal and social lives to help address potential pandemic fatigue and ensure adherence to COVID-19 protective protocols, including vaccination. Allowing family, friends, and community members who recovered from the disease to share their stories may help convince emerging adults who have not experienced nor witnessed COVID-19 to vaccinate.

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**References**

Arnett, J. J. (2010). Emerging adulthood (s). In L. A. Jensen (Ed.), Bridging cultural and developmental approaches to psychology: New syntheses in theory, research, and policy, (pp.255–275).

Batan, C. M. (2012). A conceptual exploration of the istambay phenomenon in the Philippines. Philippine Sociological Review, 60, 101-130. https://www.jstor.org/stable/43486342

Beleche, T., Ruhter, J., Kolbe, A., Marus, J., Bush, L., & Sommers, B. (2021). COVID-19 vaccine hesitancy: Demographic factors, geographic patterns, and changes over time [Internet]. Assistant Secretary for Planning and Evaluation

Bono, S. A., Faria de Moura Villela, E., Siau, C. S., Chen, W. S., Pengpid, S., Hasan, M. T., Sessou, P., Ditekemena, J. D., Amodan, B. O., Hosseinipour, M. C., Dolo, H., Siewe Fodjo, J. N., Low, W. Y., & Colebunders, R. (2021). Factors affecting COVID-19 vaccine acceptance: An international survey among low- and middle-income countries. Vaccines, 9(5), 515. https://doi.org/10.3390/vaccines9050515

Cahapay, M. B. (2021). To get or not to get: Examining the intentions of Philippine teachers to vaccinate against COVID-19. Journal of Human Behavior in the Social Environment, Ahead of Print, 1-11. https://doi.org/10.1080/10911359.2021.1896409

Chang, R., Varley, K., Tam, F., Munoz, M., & Tan, A. (2021 December 22). The best and worst places to Be as winter meets
