



Original Article



Who Influences the Public Intention to Get a COVID-19 Vaccine and What are the Public References and Concerns? A Population Survey in Vietnam

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OPEN ACCESS

Received: Nov 4, 2021

Accepted: Dec 19, 2021

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Funding

This work was supported by the Australian Alumni Grants Fund [AAGF-R3-0008] to [MCD].

ABSTRACT

Background: Coronavirus disease 2019 (COVID-19) vaccine acceptance is influenced by the trusted recommenders. This survey examined the public references, concerns, and trust in seven groups of recommenders regarding COVID-19 vaccine in Vietnam.

Materials and Methods: A cross-sectional survey was conducted on 1,579 participants between April 16 and July 16, 2021. Participants' references, concerns, and responses to vaccination recommendations made by government officials, employers, physicians, nurses, pharmacists, senior family members, and religious leaders were captured using a self-administered questionnaire.

Results: Rates of trust ranged from 18.5% to 89.1%. The highest rates were attributable to government (89.1%) and physicians (85.9%). Less than half of participants would accept the vaccines if pharmacists (45.5%), nurses (44.7%), employers (42.4%), senior family members (28.1%), and religious leaders (18.4%) recommended it. Only 37.6% of participants thought that vaccines were safe for them, while 57% were unsure. Most participants would wait and see how people respond to the vaccines before getting vaccinated (91.5%), preferred to receive the vaccines at public hospitals (88.6%), and were concerned about vaccine effectiveness (86.9%) and side effects (76.4%), while 61.8% were concerned about vaccine cost.

Conclusion: Focusing on the personal benefit and relying on the government, physicians, and social role models would make the vaccine advertising campaigns more effective. If annual vaccinations were needed, providing the community with affordable vaccines would be an appropriate, long-term solution to ensure vaccination coverage in low-resource countries like Vietnam. Further studies are needed to examine reasons for the public reference of vaccination centers which may help in improving their confidence in getting the vaccine, regardless of the settings.

Keywords: COVID-19 vaccines; Vaccination; Intentions; Trust; Vietnam

INTRODUCTION

The coronavirus disease 2019 (COVID-19) pandemic caused by severe acute respiratory syndrome-coronavirus 2 (SARS-CoV-2) has resulted in massive damages to human health,

Conflict of Interest

No conflicts of interest.

Author Contributions

Conceptualization: MCD. Data curation: MCD, HTN, BTD. Formal analysis: MCD, BTD. Investigation: MCD, HTN. Methodology: MCD, HTN. Project administration: MCD, HTN. Software: MCD. Supervision: MCD. Validation: MCD, HTN. Visualization: MCD, HTN. Writing - original draft: MCD. Writing - review & editing: MCD, HTN, BTD.

wealth, and welfare [1]. COVID-19 vaccination is considered a critical component for ending the pandemic [2]. Several authorized vaccines have been used worldwide, and other vaccines are currently being tested or developed [1]. However, the success of any COVID-19 vaccination program depends on the public acceptance of the vaccine [3]. In 2019, the World Health Organization (WHO) identified 10 threats for global health including vaccine hesitancy and the risk for a pandemic, both of which the world is now facing [4]. Regarding vaccine hesitancy, it is often explained to be due to the lack of knowledge or a miscalculation of risk [5]. However, providing corrective vaccine information has been shown to be ineffective in combatting vaccine hesitancy [5]. Trust in information includes trust in the information itself and trust in those who produce and disseminate the information [6]. This suggests that vaccine hesitators mistrusted either the vaccine information or the information generators/communicators or both and thus, did not accept the vaccine [5, 7]. In respect of the latter, trust is conceptualized as a “relationship that exists between individuals, as well as between individuals and a system, in which one party accepts a vulnerable position, assuming the best interests and competence of the other, in exchange for a reduction in decision complexity” [6]. It has long been documented that trust places in the system that is responsible for vaccine delivery, in the healthcare professionals who recommend and administer the vaccines, and in the government officials who develop the vaccination programs [8]. Several studies have found that mistrust of information providers, such as healthcare professionals and government officials is the key determinant of vaccine hesitancy [5, 7].

With regard to COVID-19 vaccines, studies have found that trust in the vaccines is crucial in ensuring vaccine acceptability and is critically determined by the ability of the bodies that communicate the benefits of vaccination like the governments [2]. Trust is particularly important considering the increasing number of vaccines recommended, as well as the complexity of safety and efficacy data that form the basis of vaccine recommendations, all of which are happening in case of COVID-19 [6]. Hence, it is recommended that governments and health authorities should improve communication and increase trust to increase acceptability of the COVID-19 vaccine and decrease hesitancy [9]. Given that public trust in any vaccine and vaccination program is highly variable and country-specific [6], several studies have explored public trust in the COVID-19 vaccine in several countries worldwide [1, 2, 9-11]. However, information regarding this issue is scarce in Vietnam. We considered trust in the COVID-19 vaccine information as nested within the trust held in the information source as described previously [6]. Lessons learned from previous infectious disease-related public health emergencies, such as H1N1, SARS, and MERS, emphasized the importance of trusted sources of information and guidance in disease control and prevention [12]. Hence, to strengthen public trust as Vietnam rollouts COVID-19 vaccines, this study was conducted to examine the levels of public trust in seven common groups of people who produce and/or propagate the information related to COVID-19 vaccine and vaccination. The study also aimed to identify the public references and concerns regarding COVID-19 vaccine and vaccination.

MATERIALS AND METHODS

1. Study design and context

A cross-sectional survey was conducted in Vietnam between April 16, 2021 and July 16, 2021. During this time, Vietnam was hit hard by the fourth wave of COVID-19 which is considered the first real wave of COVID-19 in Vietnam with 40,609 cumulative incident cases being reported in 33 out of 63 cities across Vietnam as of the end of the study period [13].

The outbreak severely affected Ho Chi Minh City - one of the two research sites for the in-person survey with more than half of all cumulative incident cases (58.9%, 23,913/40,609) being documented in this city [13]. During the study period, COVID-19 vaccine was initially administered to priority groups including frontline healthcare staff and those working in COVID-19 prevention and control, and has been gradually available to the wider community since July 10, 2021 [14]. A few deaths related to COVID-19 vaccine were locally reported [15].

Eligibility criteria included being age 18 or older and able to read the Vietnamese language. The study was approved by the Phenikaa University Ethics Committee (reference 216/QĐ-ĐHP-KHCN). All respondents provided informed consent. They were informed that to protect their confidentiality the identifiable information (name, email address, phone number, and detailed residence address) was not collected, and only anonymously collected data were reported. After collecting data, information on the year of birth of respondents was used to cross-check their age. Data of those who reported to be vaccinated against COVID-19 before the study were excluded from the analysis and were published in another report.

Participants were recruited using two different data collection methods including online and in-person questionnaires. Hard copies of the participant information sheet, informed consent form, and the questionnaire were used for the in-person data collection method. With the online data collection method, the paid SurveyMonkey platform (www.surveymonkey.com, Momentive, Ballsbridge, Dublin 4, Ireland) was utilized. Participants were asked to read the online participant information sheet and consent form and answer a yes-no question to give voluntary informed consent to participate in study. Participants who completed this question were directed to the online questionnaire. This online informed consent procedure has been validated elsewhere [16]. To remove duplicate entries from the online survey, suspicious entries submitted from the same IP address were independently reviewed by two researchers (MCD and HTN). These entries were only included in the analysis once consensus was achieved.

Both online and in-person study participants were recruited using the snowball sampling and based on the authors' social networks, which were comprised of Vietnamese people with diverse backgrounds including healthcare workers, lecturers, students, and the general community. Regarding the online survey, a recruitment poster and the survey link were emailed to the authors' social networks and posted to the authors' LinkedIn, Zalo, and Facebook accounts. A request to continuously disseminate the poster and the link to the recipients' social networks was also included in the poster. Similar to the online survey, in-person survey invitations were delivered to the authors' networks. Existing participants of the in-person survey were asked to provide referrals to recruit future participants required for the study. They may also opt to complete the online survey, if they had an internet enabled device and/or internet connection. To increase the possibility that more study participants from different socioeconomic backgrounds and areas in Vietnam to be reached, the in-person survey was conducted in Ho Chi Minh City and Hanoi. The reason is that they are the two largest cities and the main destinations of internal migration in Vietnam [17].

2. Data collection

A self-administered questionnaire was developed and included two parts: demographics and Covid-19 vaccine (Appendix 1). The demographic section included 10 questions about year of birth, gender, residential address, living arrangement, education levels, professions, income levels classified based on Gapminder, underlying diseases, and COVID-19 disease

experience. The COVID-19 vaccine section included 16 questions to assess participants' range of trust relationships related to COVID-19 vaccination, as well as references and concerns regarding the COVID-19 vaccine and vaccination.

1) COVID-19 vaccine questions

Seven Likert scale questions were used to examine the participants' range of trust relationships related to COVID-19 vaccine acceptance. A trust relationship was defined as an intention to vaccinate by listening to the recommendation made by seven common groups of people who produced and/or propagated the information related to COVID-19 vaccine and vaccination [6]. In the presenting study, these groups included government officials, employers, physicians, nurses, pharmacists, senior family members, and religious leaders. Each Likert scale question had five options corresponding to the levels of agreement/disagreement (strongly disagree, disagree, neutral/no opinion, agree, strongly disagree) with the provided statement regarding the acceptance of COVID-19 vaccine when it was recommended. Selecting option "Strongly agree" or "Agree" to accept the COVID-19 vaccine in each question meant participants trusted the corresponding recommender. In contrast, selecting option "Neutral/no opinion", "Disagree" or "Strongly disagree" meant they mistrusted the corresponding recommender.

Other six yes-no, one array (yes-no-uncertain), and two multiple-choice questions were used to assess the participants' references and concerns regarding the COVID-19 vaccine and vaccination. Participants could select more than one answer for each of the two multiple-choice questions, while they were able to select only one answer for all remaining 14 questions of the COVID-19 vaccine section. All questions were developed based on the European Centre for Disease Prevention and Control (ECDC)'s catalogue of interventions addressing vaccine hesitancy, World Health Organization Strategic Advisory Group of Experts (SAGE)'s Vaccine Hesitancy Survey Questions Related to SAGE Vaccine Hesitancy Matrix, and questions that have been used in the global survey of COVID-19 vaccine acceptance as well as information from the current literature about COVID-19 vaccines, the vaccine manufacturers and Vietnam Ministry of Health [14, 18-23].

Pilot online and in-person surveys were conducted and included 50 participants each from different backgrounds to refine the final survey and improve its validity and reliability. The Vietnamese questionnaire was used in both the online and in-person surveys to ensure that respondents fully understood the questionnaire. Contact details of the researchers (MCD and HTN) were also provided so that respondents could seek help with the surveys.

3. Data analysis

Data were managed and analyzed using the Statistical Package for the Social Sciences (SPSS) version 26 (IBM, Armonk, NY, USA). Continuous variables were displayed as mean \pm one standard deviation (SD), and range. Categorical variables were presented as an absolute count and percentage. The proportions of participants who trusted each of seven groups of recommenders together with 95% confidence intervals (95% CIs) were calculated.

4. Maintenance of study standard

To increase the transparency of the study and possibilities for interpreting the results, this paper was reported in accordance with preferred reporting items for online surveys (CHERRIES checklist) [24], and observational studies (STROBE checklist, EQUATOR Network, Oxford, United Kingdom) [25].

RESULTS

1. Baseline characteristics

A total of 1,872 people participated in the study and included 1,003 (53.6%) in-person and 869 (46.4%) online participants (Fig. 1). Of these 1,872 participants, 293 (15.7%) including 164 (8.8%) who did not complete the online survey and 129 (6.9%) other participants who had been vaccinated against COVID-19 before the study were removed from the analysis. The remaining 1,579 respondents with the mean age of 34 years (± 13.7) qualified for the analysis (Table 1). More than half of the respondents were female (54.5%, 860/1,579), from southern Vietnam (51.1%, 807/1,579), and employed (68.5%, 1,081/1,579). Most respondents had a bachelor's degree or higher (81.1%, 1,280/1,579). More than two-thirds of them had a Gapminder income of \leq level 3 (\leq US \$32 per day, 89.5%, 1,413/1,579), and lived with their family members (72.9%, 1,151/1,579). Among 1,579 participants, 203 (12.9%) had underlying diseases, and 41 (2.6%) experienced COVID-19 disease.

2. Frequency of participants' trust relationships related to COVID-19 vaccination

The proportions of participants who trusted seven groups of recommenders ranged from 18.4% to 89.1% (Fig. 2). Most participants would accept the vaccine if the Vietnamese government (89.1%, 1,407/1,579, 95% CI: 87.5 - 90.6%) and physicians (85.9%, 1,356/1,579, 95% CI: 84.1 - 87.5%) recommended it. Less than half of them would accept the vaccine if pharmacists (45.5%, 718/1,579, 95% CI: 43.0 - 47.9%), nurses (44.7%, 706/1,579, 95% CI: 42.3 - 47.2%), and employers (42.4%, 670/1,579, 95% CI: 40.0 - 44.9%) recommended it. Only 28.1% (443/1,579, 95% CI: 25.9 - 30.3%) and 18.4% (291/1,579, 95% CI: 16.6 - 20.4%) would accept the vaccine if senior family members and religious leaders recommended it, respectively.

3. References and concerns regarding the COVID-19 vaccine and vaccination

Most participants would wait and see what other people do regarding the new vaccines before getting vaccinated (91.5%, 1,444/1,579), preferred to receive the vaccines at public

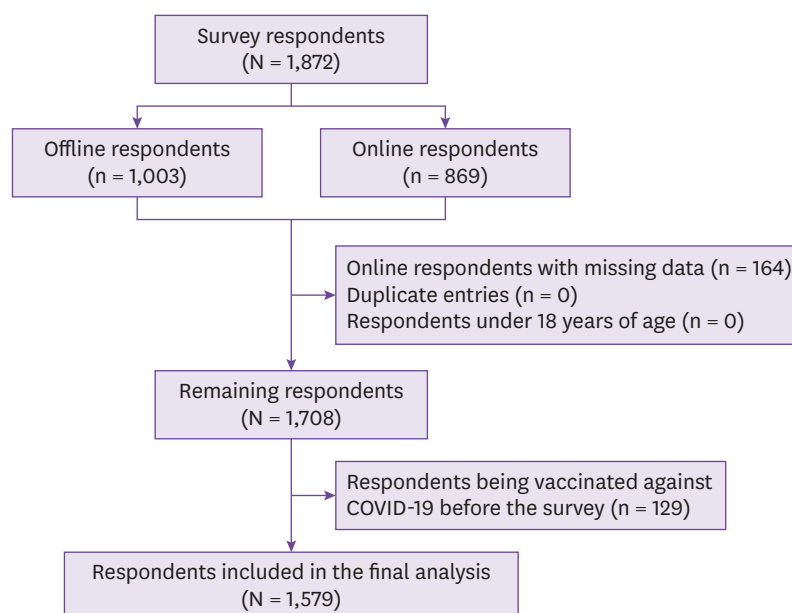


Figure 1. Flow diagram for study participants.

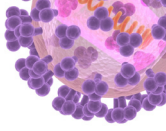


Table 1. Baseline characteristics of 1,579 respondents

Characteristics	Summary statistics ^a
Age (years)	34 ± 13.7 (18 - 80)
Male	719 (45.5)
Geographical location of residence	
Northern Vietnam	662 (41.9)
Southern Vietnam	807 (51.1)
Central Vietnam	110 (7.0)
Gapminder income levels (US \$ per day)	
<2	343 (21.7)
2 - <8	230 (14.6)
8 - <15	533 (33.8)
15 - 32	307 (19.4)
>32	166 (10.5)
Living arrangements	
Alone	130 (8.2)
With family	1,151 (72.9)
With friends	298 (18.9)
Educational levels	
Less than a high school degree	29 (1.8)
High school degree	138 (8.7)
Associate degree	132 (8.4)
Bachelor's degree or higher	1,280 (81.1)
Professions	
Health students	120 (7.6)
Non-health students	378 (23.9)
Working in non-health related fields	832 (52.7)
Working in other health related fields	128 (8.1)
Being clinical doctor and/or health lecturer	121 (7.7)
Having underlying diseases ^b	203 (12.9)
Experiencing COVID-19 disease ^c	41 (2.6)

^amean ± SD (min - max) for continuous variables and n (%) for categorical variables.

^bHaving chronic communicable and non-communicable diseases.

^cAcquiring COVID-19 and/or having family member (s) or friend/colleagues acquiring COVID-19. COVID-19, coronavirus disease 2019.

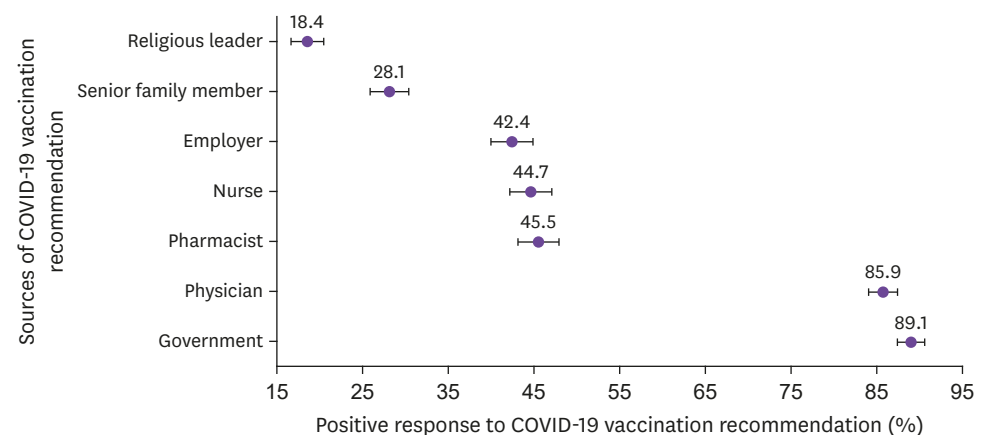


Figure 2. Percentage distribution of positive response to COVID-19 vaccination recommendation made by seven group of recommenders among 1,579 study participants. COVID-19, coronavirus disease 2019.

hospitals (88.6%, 1,399/1,579), and were concerned about the effectiveness (86.9%, 1,372/1,579) and side effects (76.4%, 1,207/1,579) of the new vaccines (Table 2). Less than one-fifth of participants whose intention to get vaccinated were influenced by distance from home to vaccination centers (13.2%, 209/1,579), waiting time in vaccination centers (17.6%,

Table 2. References and concerns regarding the COVID-19 vaccine and vaccination of 1,579 study participants

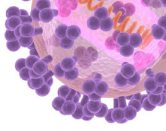
References and concerns	Responses N (%)
Preferred location to receive the vaccine ^a	
Public hospitals	1,399 (88.6)
Private hospitals	452 (28.6)
Health stations	263 (16.7)
Private practices	63 (4)
Most important concerns regarding new vaccines ^a	
Effectiveness	1,372 (86.9)
Side effects	1,207 (76.4)
Cost	864 (54.7)
Number of injections	453 (28.7)
Wait and see what other people do regarding the new vaccines before getting vaccinated	
Yes	1,444 (91.5)
No	135 (8.5)
Distance to the vaccination center influenced an intention to get vaccinated	
Yes	209 (13.2)
No	1,370 (86.8)
Waiting time in vaccination center influenced an intention to get vaccinated	
Yes	278 (17.6)
No	1,301 (82.4)
Travel cost influenced an intention to get vaccinated	
Yes	274 (17.4)
No	1,305 (82.6)
Vaccine cost influenced an intention to get vaccinated	
Yes	976 (61.8)
No	603 (38.2)
Number of injections influenced an intention to get vaccinated	
Yes	457 (28.9)
No	1,122 (71.1)
Available COVID-19 vaccines are safe	
Yes	593 (37.6)
No	86 (5.4)
Not sure	900 (57.0)

^aStudy participants could select more than one choice and thus, the total number of responses is larger than 1,579.

278/1,579), and cost associated with traveling from home to vaccination centers (17.4%, 274/1,579). Vaccine cost and number of injections influenced an intention to get vaccinated of 61.8% (976/1,579) and 28.9% (457/1,579) of participants, respectively. Only 37.6% (593/1,579) thought that the available vaccines were safe for them, while 57% (900/1,579) were unsure.

DISCUSSION

We conducted our study on 1,579 selected individuals across Vietnam, including large cities and those with a high COVID-19 burden. The distribution of age and gender in our study was comparable to those in Vietnam [26]. We observed a high level of heterogeneity in our study participants' responses to seven sources of COVID-19 vaccine recommendation. Less than half of study participants would accept the vaccine if it was recommended by senior family members, employers, and religious leaders. Although religious leaders and family members have been identified as important sources of promoting the COVID-19 vaccine [27, 28], they have a mixed influence on the public intention to get vaccinated including COVID-19 vaccine [28]. It has been found that younger respondents were more likely to accept an employer's vaccine recommendation compared with elderly respondents, reflecting the influence of participants' employment status on an intention to get a COVID-19 vaccine [12]. Considering this, despite 68.5% of our participants were being employed, we believe that employers had



a minimal role in recommending COVID-19 vaccination among our study participants. We found that the highest positive response rates were 89.1% and 85.9%, which were attributable to recommendations made by government and physicians, respectively. It has been documented that trust in governmental policymakers is an important dimension of trust that affects the public perception of a COVID-19 vaccine [2]. Several studies found an association between higher trust in government and likelihood of willingness to receive a COVID-19 vaccine [1]. Another global survey on an intention to accept COVID-19 vaccines found that countries where acceptance exceeded 80% were Asian nations with a strong trust in central governments, such as China and South Korea [12]. The study also observed a relatively high tendency toward acceptance in middle-income countries, such as Brazil, India, and South Africa [12]. Our findings are in accordance with all these studies provided that Vietnam is also a middle-income country with a central government. Similarly, studies have found a positive impact of health professionals including physicians, nurses, and pharmacists on public trust regarding COVID-19 vaccines [2, 11, 28]. Of these sources of vaccine recommendation, physicians are the most important influencers of vaccine decision-making [29]. Although we found a high positive response rate to physicians' recommendation, less than half of our participants intended to get a COVID-19 vaccine if it was recommended by nurses and pharmacists. Indeed, a variation in public trust in different healthcare professionals with regard to COVID-19 vaccination has been raised in the Philippine which is a comparable country [10]. Filipinos look up to physicians and consider them the most appropriate people to recommend the vaccines compared with other healthcare professionals, such as nurses [10]. Perhaps, like Filipinos, Vietnamese people have a high sense of trust and respect for physicians. Although addressing vaccine hesitancy is a multifactorial endeavor that requires more than building trust [12], our study found a high public trust in government and physicians which can contribute to public compliance with recommended actions regarding vaccine acceptance.

Most of our participants (91.5%) would wait and see what other people respond to the new vaccines before getting vaccinated. Indeed, the social acceptance of a new vaccine among peers and social network members has been identified as a dimension of trust in COVID-19 vaccines [2]. This reflects the importance of social role models in promoting COVID-19 vaccines in the community [30]. However, it has been found that the time element plays a significant role in the decision to get vaccinated among public [31]. As the public waits for a longer time period to be vaccinated, the risks of acquiring COVID-19 remains unchanged but the newly mutated virus may be more deadly, resistant, and contagious [31]. Given that it is better to have a protection than not to have one at all [31], it is pivotal to educate the public regarding the importance of having an additional protection against COVID-19 through early vaccination when the vaccine is available to them.

We found that distance from home to the vaccination centers, waiting time in vaccination centers, and travel cost influenced the intention to get a COVID-19 vaccine of only less than one-fifth of our participants. However, the nature of vaccination centers was their major concern. Most participants (88.6%) preferred to receive the vaccine at public hospitals, while less than one-third selected private hospitals, health stations, and private practices as their preferred vaccination locations. The Vietnam healthcare system has a mixture of public and private provision, in which public hospitals play a crucial role in providing health care services to the community [32]. This may explain our participants' references regarding the vaccination centers. However, given the increasing number of private hospitals, they are an important component of the national healthcare system that provides more than 60% of

outpatient services in Vietnam [33]. A rapid nationwide COVID-19 vaccine rollout cannot rely solely on public hospitals. Indeed, based on our observation, the current vaccine rollout is based on a combination of both public hospitals and field vaccination centers in Vietnam. Hence, it is crucial to examine the reason for the public preference of vaccination centers which may help in improving the public confidence in receiving the COVID-19 vaccine, regardless of the settings.

More than half of participants (57%) were unsure if the available vaccines were safe for them. Similarly, although the number of injections would influence an intention to get vaccinated of only 28.9% of participants, most participants were concerned about effectiveness (86.9%) and side effects (76.4%) of the new COVID-19 vaccines which will be available in the future. The likelihood of taking a COVID-19 vaccine has been found to be positively associated with the levels of vaccine effectiveness, demonstrating the public concern regarding vaccine effectiveness [34]. However, a study conducted in 10 low-middle-income countries in Asia (Vietnam was not included), Africa, and South America found that concern about the side effects of COVID-19 vaccine was the most common reason for hesitancy, while less than 50% of participants reported their concern regarding vaccine effectiveness [28]. It is also found that the side effects and benefits of COVID-19 vaccines are considered independently by the public [34]. Since perception of risks associated with COVID-19 vaccination is most salient among our participants, decision making is likely to be centered on the personal [35]. Therefore, it is highly likely that the COVID-19 vaccine advertising campaign in Vietnam that stresses the personal benefit would reduce hesitancy to a greater extent than collective benefits [35]. Also, since the COVID-19 vaccine effectiveness and side effects are the most important concerns, transparently informing the public of the limitations of vaccination is crucial and would not decrease their intention to get the vaccine [36].

Vaccine cost has been found to be linked to hesitancy in lower-middle income countries and may reflect lower socioeconomic status individuals [37]. Unsurprisingly, with a sizeable proportion of study participants having a Gapminder income of \leq level 3, 61.8% of all participants reported vaccine cost as their concern. At this stage, COVID-19 vaccines are provided free of charge in Vietnam by the government. However, private hospitals in Vietnam have proposed that the vaccines could be additionally distributed through these hospitals as a paid service to those who are not in the priority groups, do not want to wait for their free COVID-19 vaccination and are willing to pay for a vaccine [38]. This may explain the public concern of the vaccine cost. In addition, it is thought that follow-up booster shots, possibly annually, may be required given the unclear duration of immunity after vaccination and viral evolution and new variants [39]. If this scenario became true, providing the community with affordable vaccines would be an appropriate, long-term solution for low-resource countries like Vietnam. Hence, it is necessary to consider the vaccine cost in relation to ensuring the vaccination coverage.

Our study has some limitations. The snowball sampling technique could induce selection bias. Also, the ability to participate in an online survey of potential participants was influenced by their online reachability. However, an in-person data collection method was additionally utilized in two largest cities in Vietnam to recruit those who could not be reached online including the elderly and people without internet-enabled devices and/or internet access. These two complementary data collection methods would help expand the diversity of our study population. Our data collection methods may explain a high proportion of study participants who had a bachelor's degree or higher, although the distribution of age and

gender in our study was comparable to those in Vietnam [26]. It should be noted that there are places across Vietnam in which the communities have comparable education levels, such as urban areas [26], which we predict will have similar references, concerns, and levels of trust in recommenders regarding COVID-19 vaccines.

We identified a high public trust in government and physicians regarding COVID-19 vaccine acceptance. Vaccines perceived safety and effectiveness as well as the nature of vaccination centers were the public main concerns. Hence, an effective vaccine promotion campaign should focus on the personal benefit and rely on the government and physicians. Social role models would also help reduce vaccine hesitancy. If annual vaccinations were needed, providing the community with affordable vaccines would be an appropriate, long-term solution to ensure vaccination coverage in low-resource countries like Vietnam. Further studies are needed to examine the reason for the public references of vaccination locations which may help in improving their confidence in receiving the COVID-19 vaccine, regardless of the settings.

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Appendix 1. Questionnaire

I. General information

1. Year of birth (please specify):
2. Gender:	<input type="checkbox"/> Male <input type="checkbox"/> Female
3. City of residence:
4. Region of residence:	<input type="checkbox"/> Northern Vietnam <input type="checkbox"/> Central Vietnam <input type="checkbox"/> Southern Vietnam
5. Gapminder income levels (US\$ per day)*:	<input type="checkbox"/> <2 <input type="checkbox"/> 2 - <8 <input type="checkbox"/> 8 - ≤15 <input type="checkbox"/> 15 - <32 <input type="checkbox"/> ≥32
6. Living arrangements:	<input type="checkbox"/> Living alone <input type="checkbox"/> Living with family <input type="checkbox"/> Living with friends
7. Educational levels:	<input type="checkbox"/> Less than high school <input type="checkbox"/> High school <input type="checkbox"/> College <input type="checkbox"/> Undergraduate level or above
8. Professions:	<input type="checkbox"/> Health students <input type="checkbox"/> Non-health students <input type="checkbox"/> Working in non-health related fields <input type="checkbox"/> Being clinical doctor and/or health lecturer <input type="checkbox"/> Working in other health related fields
9. Underlying diseases:	<input type="checkbox"/> Do not have chronic conditions <input type="checkbox"/> Having chronic, noncommunicable diseases <input type="checkbox"/> Having chronic, communicable diseases
10. COVID-19 disease experience:	<input type="checkbox"/> Having COVID-19 or acquired COVID-19 previously <input type="checkbox"/> Having a family member who has COVID-19 or acquired COVID-19 previously <input type="checkbox"/> Having a friend/colleague who has COVID-19 or acquired COVID-19 previously <input type="checkbox"/> Never acquire COVID-19, or know anyone who has COVID-19 or acquired COVID-19 previously

*To assist study participants in completing the questionnaire easily, the currency was converted to VND and the unit was VND per month in the Vietnamese version of the questionnaire.

II. Range of trust relationships related to COVID-19 vaccination

1. Accept COVID-19 vaccine if the government recommended it

Strongly agree	Agree	Neutral/no opinion	Disagree	Strongly disagree

Intention to get a COVID-19 vaccine in Vietnam

2. Accept COVID-19 vaccine if employer recommended it

Strongly agree	Agree	Neutral/no opinion	Disagree	Strongly disagree

3. Accept COVID-19 vaccine if physician recommended it

Strongly agree	Agree	Neutral/no opinion	Disagree	Strongly disagree

4. Accept COVID-19 vaccine if nurse recommended it

Strongly agree	Agree	Neutral/no opinion	Disagree	Strongly disagree

5. Accept COVID-19 vaccine if pharmacist recommended it

Strongly agree	Agree	Neutral/no opinion	Disagree	Strongly disagree

6. Accept COVID-19 vaccine if the senior family member recommended it

Strongly agree	Agree	Neutral/no opinion	Disagree	Strongly disagree

7. Accept COVID-19 vaccine if the religious leader recommended it

Strongly agree	Agree	Neutral/no opinion	Disagree	Strongly disagree

III. References and concerns regarding the COVID-19 vaccine and vaccination

1. Where do you prefer to get vaccinated for COVID-19? (check all if appropriate)

Public hospitals Private practices Private hospitals Health stations

2. Several COVID-19 vaccines are expected to be available. What are your most important concerns regarding these new vaccines (check all if appropriate)?

Cost Number of injections Effectiveness Side effects

3. Several COVID-19 vaccines are expected to be available. Would you rather wait and see what other people do regarding these new vaccines?

Yes No

4. Has distance to the vaccination center influenced your intention to get vaccinated for COVID-19?

Yes No

5. Has waiting time in vaccination center influenced your intention to get vaccinated for COVID-19?

Yes No

6. Has travel cost influenced your intention to get vaccinated for COVID-19?

Yes No

7. Has vaccine cost influenced your intention to get vaccinated for COVID-19?

Yes No

8. Has number of injections influenced your intention to get vaccinated for COVID-19?

Yes No

9. Did you believe that the available COVID-19 vaccines are safe for yourself?

Yes No Not sure