VACCINE ACCEPTANCE AMONG LATE RECIPIENTS OF COVID-19 VACCINATION IN KEDAH, MALAYSIA: AN EXPLORATORY STUDY

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ABSTRACT

COVID-19 vaccine availability has helped many countries around the world in alleviating the health and economic crisis caused by the pandemic. However, the smoothness of its implementation was slightly affected due to several issues such as hesitancy and even total refusal, due to several specific factors. To establish herd immunity, an adequate amount of immunization is necessary, and this issue needs to be addressed appropriately to avoid failure in efforts to curb the spread of the disease. In identifying appropriate and effective strategies to deal with this, it is important to know the factors that can influence such individuals to change their minds and eventually agree to be vaccinated. This study explores the reasons behind COVID-19 vaccine acceptance among nineteen (n=19) late vaccine recipients who initially delay or refuse to be vaccinated, using an in-depth interview method and thematic analysis. Four themes and eight subthemes were identified, emphasizing the significant role of real evidence, health risk-related perceptions, peer recommendations, and higher authority enforcement in influencing the participants to finally make a U-turn. The findings of this study can be used to formulate strategies to increase vaccine acceptance rates, especially among individuals who are still reluctant.

Keywords: COVID-19, Vaccine, Vaccination, Acceptance, Malaysia, Qualitative

INTRODUCTION

The emergence of the coronavirus disease 2019 (COVID-19) pandemic has greatly impacted the healthcare system, society, economy, and education globally. In the earlier stage of the pandemic, lockdowns, quarantines, facemask wearing, the practice of social distancing, promotion of personal hygiene, and even shutting down of the country's border to foreigners were among the immediate public health measures implemented around the world to contain the spread of the virus (1). The outbreak has lifted normal life and forced people around the world to adapt to a new norm, which brings the urge for vaccine development (2). The development of various types of COVID-19 vaccines has been initiated involving collaboration from the pharmaceutical industry, clinical research institutes, and scientists funded by the government (3,4). In November 2020, the Comirnaty COVID-19 vaccine of mRNA type by Pfizer and BioNTech was the first to announce 90 percent of effectiveness, which was then authorized for emergency use in humans by the United Kingdom followed by the United States and later on by the World Health Organization (5,6). To date, nine COVID-19 vaccines have been given Emergency Use Listing (EUL) by World Health Organization (WHO) (7).

For decades, vaccination has been proven to reduce the number of infectious diseases (8). Nevertheless, the issues revolving around the vaccine uptakes such as hesitancy and refusal have caused a burden on the effort to contain the infections and it has been identified as one of the threats to global health and contributed by numerous factors (9). The acceptance of the COVID-19 vaccine across the world was varied, with a rate of more than 90 percent seen in Ecuador, Malaysia, Indonesia, and China, while in contrast, lower acceptance was seen in Middle Eastern, Europe, and the United States with a rate between 22 to 59 percent (10-12). Previous studies reported that multiple factors influence the acceptance of the COVID-19 vaccine which include the perception of the disease risk, vaccine safety and efficacy, and vaccination attitudes in general. It is also linked with sociodemographic characteristics, experiences from past vaccination history, vaccination cost, and convenience (12-14).

In Malaysia, several studies addressed the COVID-19 vaccine acceptance among its general public, conducted via online surveys on various social media platforms (15-17). A study conducted in the early year of 2020, when the vaccine is still under development found that Malaysian showed 94.3 percent of COVID-19 vaccine acceptance (18). While a similar public survey done by the Ministry of Health later on in December of the same year
found that the rate somehow dropped to 67 percent (19). In July 2021, five months after the launch of the National Immunisation Programme, Malaysia recorded a steep increment in the daily administration of COVID-19 vaccines, which then lasted for only 3 months where the number began to drop in October 2021 (20,21). This dynamic pattern of acceptance rate, which is seen even before the release of the vaccines itself amidst the pandemic’s worsening situation, is noteworthy. By some means it must be driven by certain factors that have a great influence on the public. To have a better understanding of the underlying factors that influence the acceptance of the COVID-19 vaccine, this study applied a different approach using in-depth interviews among COVID-19 vaccine recipients who were initially hesitant to take up the vaccine, which could be useful in facilitating the relevant authorities in formulating a better vaccination plan in future.

METHODS

Study Design, Setting, and Participants

This is a qualitative study that applied an in-depth interview method, conducted at Hospital Sultanah Bahiyah (HSB), a government-based tertiary hospital that was selected as one of Malaysia’s vaccination administration centres, located in Alor Setar the capital city of Kedah. The interviews took place from the 3rd until the 31st of March 2022 among delayed COVID-19 vaccine recipients, who received the first dose of the vaccine after December 2021. Eligible participants were 18 years old and above and able to communicate in Bahasa Melayu (Malaysia’s national language) or English. All participants were recruited using purposive sampling, based on HSB’s vaccination record. All of the participants are physically and mentally competent with low risk who walk-in into the HSB vaccination centre. Vaccine receiver who is foreigner, in-patient, and below 18 years old are excluded. Considering the risk of infection transmission to the participants, as well as observing the disease prevention rules by the government, the authors have decided to conduct the interviews via a telephone call. Eligible candidates were approached by phone call and briefed on the objectives and methods of the study. All queries and concerns were attended to appropriately, and verbal consent was taken upon the agreement to participate. The personal data, audio records received from the telephone call session, and transcripts were saved on a password-protected database that can be accessed only by the investigators. The confidentiality of the participants was ensured by removing names and all identifiers by replaced them with numbers in the interview’s transcripts.

Content of the interview and data collection

A semi-structured interview guide was developed based on a rigorous review of previous studies by all authors(22-26). Then discussion and input from an expert for the related area were considered in content validation and reliability of the interview guides. In final, we highlighted three important elements to be discussed in the interview guide:

- To assess the understanding and perceptions of the participants toward COVID-19 vaccination.
- To assess the factors that influence participants in delayed COVID-19 vaccination.
- To assess the factors that assure participants in COVID-19 vaccine uptake.

The first author (medical & research officer) and second author (research officer) are working in the clinical research department and have experience in conducting qualitative research. The third author is a nurse in the vaccination centre at HSB. The first author has been involved in phase-4 of the COVID-19 vaccine development clinical trial. The second author is a certified translator of Bahasa Melayu to English. Before the real session, pilot interviews with a few people (n = 2) who wished to receive the COVID-19 vaccine were performed to refine the interview questions. This sample was not included in the final analysis. All interview sessions were conducted by the first author, assisted by the second author who helped with notes taking during each session. Each interview session varied in length between 31 to 49 minutes with an average of 38 minutes.

Data analysis

Thematic analysis was used to analyse the data. Triangulation among researchers was done to increase the ability to interpret the findings and data consistency. The authors read the interview transcripts to familiarise themselves with the participants’ responses and developed codes based on points of similarity found in the transcripts. All codes were incorporated into subthemes and themes with continuous and repeated reviews with initial transcripts, to verify the consistency.

Ethical Statement

This study was approved by the Medical and Ethics Committee, Ministry of Health Malaysia with approval number NMRR ID-21-02026-AKX.

RESULTS

Characteristics of Participants

A total of 20 participants were enrolled in this study. One of the participants withdrew consent while the others were able to complete the interview sessions. The majority of the participants were female (~63%, n = 12), of Malay ethnicity (~78%, n = 15), with educational level up to secondary school (~58%, n = 11), and married (~74%, n = 14).
Conceptual Framework: Themes and Subthemes

Four themes and eight subthemes of factors influencing the acceptance of the COVID-19 vaccine among recipients who were initially hesitant were identified from the analysis (Figure 1). The themes were elaborated with several representative quotes from the participants.

![Conceptual Framework: Themes and subthemes.](image)

<table>
<thead>
<tr>
<th>Themes</th>
<th>Subthemes</th>
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<tbody>
<tr>
<td>Self-, peers- and community-driven evidence surrounding the COVID-19 vaccine</td>
<td>Witnessing the worst-case scenarios occurred to unvaccinated close social contacts</td>
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<tr>
<td>Perceived poor prognosis and health risk related to COVID-19 infection</td>
<td>First and second-hand experience of bearable post-vaccination side effects</td>
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<td>The impact of information and communication</td>
<td>Perceptions on the effects following COVID-19 infection, in addition to existing health problems</td>
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<td>Enforcement by the rulers and higher authorities</td>
<td>Perceptions of the possibility to contract COVID-19 infection due to requirement for frequent visits to high-risk places</td>
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<td>The influence of information on COVID-19 vaccine attributes i.e., effectiveness, types, and make</td>
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<td>The influence of recommendation and persuasion by close social contacts</td>
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<td>The urge for convenience in self-mobility</td>
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Subtheme 1.1: Witnessing the worst-case scenarios that occurred to unvaccinated close social contacts. Some participants felt insecure after the death of their family members due to the COVID-19 infection.

“I’m scared of this situation, my cousin died from COVID-19, and he was not yet vaccinated, so I’ve decided to take the vaccine” - Participant #15

Subtheme 1.2: First and second-hand experiences of bearable post-vaccination side effects. Participants gained confidence after watching minimal effects on their close social contacts such as family members and peers who had taken the vaccine. One participant mentioned:

“My husband took the vaccine earlier than me. I saw nothing happen to him, just a mild fever and pain at the injection site for 2 days. So, I think I’m brave enough to take” - Participant #18

Meanwhile, some participants changed their minds after drawing observations from the community. Their concern about contracting COVID-19 following the fluctuating number of new cases as well as the emergence of new variants makes the participants decide to finally take the vaccine. Some of their statement:

“I saw a lot of people already taken the vaccine and nothing happen to them. For my safety in this current situation, I just took” - Participant #12

“Rumors said a lot of people died after taking the vaccine. But I didn’t see a single one around me. This changed my mind and decided to take” - Participant #07
Participants shared their own experiences after vaccination and the majority of them mentioned that the side effects after vaccination were tolerable and claimed that it is comparable to the other vaccines they’ve taken before.

“I felt nothing, both for the first and second dose, it is not like what they said that you may get bad effects after taking this vaccine, I shouldn’t believe that” - Participant #13

“For the first dose of vaccination, I got a fever and there is muscle pain over the hand that received the injection which lasted for 3 days. And for the second dose, I felt nothing after that. For me, it is the usual effect after you took a jab” - Participant #02

“I just had a fever, after taking Panadol, it got better. Just similar to other vaccines I took before” - Participant #04

**Theme 2: Perceived poor prognosis and health risk related to COVID-19 infection.**

**Subtheme 2.1: Perceptions of the effects following COVID-19 infection**, in addition to existing health problems. Participants with underlying medical conditions and comorbidities tend to accept the vaccine, regardless of the uncertainties about the vaccine’s side effects. The statement is as follows:

“I’m a cancer patient, so I decided to take the vaccine. I think the mild side effect of the vaccine is tolerable rather than getting the disease” - Participant #10

**Subtheme 2.2: Perceptions of the possibility to contract COVID-19 infection due to the requirement for frequent visits to high-risk places.** Participants who regularly visit high-risk places such as medical centers are worried that they might be exposed to infections, thus decided to take the vaccine. One of them stated:

“I have to go for regular hemodialysis, I should take this vaccine” - Participant #13

**Theme 3: The impact of information and communication**

**Subtheme 3.1: The influence of information on COVID-19 vaccine attributes i.e. effectiveness, types, and make.** The effectiveness of the vaccine was one of the criteria being considered by the participants in deciding whether to take the COVID-19 vaccine or not as well as the vaccine types and make. The availability of data on vaccine effectiveness in some way plays a role in decision-making on whether to accept the vaccine or not. Some of them said:

“I took the vaccine that has proven better in effectiveness. Initially, they offered me the less effective one, and I refused” - Participant #01

“My family and I took Pfizer, we refused Sinovac. Because from what we read, Pfizer has better effectiveness than Sinovac” - Participant #03

**Subtheme 3.2: The influence of recommendation and persuasion by close social contacts.** Participants with strong religious beliefs opposed the vaccine due to religious related reasons, yet they finally accept it following the information obtained from their close relatives.

“For me, the vaccine is not a good thing. It stirs relationships among the family members and the Muslims. People cannot pray at the Mosque as usual. I refused at the beginning because I don’t trust the content of the vaccine itself. My uncle who is very close explained that this vaccine is to reduce the possibility of getting infected with COVID and to reduce the pain if I got infected. I believe him and, in the end, I just take the vaccine, the rest I leave it to Allah” - Participant #02

On another note, some participants accepted the vaccine following continuous persuasion from individuals whom they relied on i.e., attending physicians, nurses, and superiors.

“The nurses keep asking when I will take the vaccine, which makes me eventually take it. Since I saw nothing happens to those who already took the vaccine” - Participant #13

**Theme 4: Restrictions by the rulers and higher authorities**

**Subtheme 4.1: The urge for convenience in self-mobility.** Participants reiterated the need to get vaccinated to attain access to move around the country, either for official or leisure purposes. These were clearly stated by several participants:

“I’m taking the vaccine just for the sake of going on holiday, a lot of hotels allowed only fully vaccinated guests to stay at their facilities...that is all.” - Participant #14

“I take the vaccine for easy mobilization, as interstate travel is permitted only for fully vaccinated people” - Participant #04

**Subtheme 4.2: Financial demand.** Participants see vaccination as one of the important criteria to be considered and accepted for the seeking job.
“I’m thinking of getting a job. It will be easier to get it if I got vaccinated” - Participant #02

DISCUSSION

The outcome of this study was a continuation of the previously published study on the hesitancy of the COVID-19 vaccine among the community in the country (27). The authors decided to further explore the contributing factors that changed those who were initially reluctant, to finally accept the COVID-19 vaccine. The participants of this study were mostly females, married, with a middle education level, and of a moderate-income group. The age-related could not be justified in this study as all participants come from various ages thus it is unfair to represent their age group. Demographically, they are almost similar to other studies exploring the acceptance of the COVID-19 vaccine in Malaysia (Lau et al., 2021; Mahmud et al., 2021; Syed Alwi et al., 2021) and other parts of the world (30,31).

The findings of this study revealed that the majority of participants had a change of mind following observation of events related to COVID-19 that occurred within their surroundings. Pieces of evidence gained from close social contacts such as family members and peers as well as the community as a whole seem to play a significant role in driving the participants to finally take the vaccine. This is supported by findings from a previous study by Zanesco et al. (2019) which highlighted the term “seeing is believing”, a situation where someone’s decision could be altered following inducers such as social pressure. In past works, a similar situation was observed where people started to have a change of stand against a conflicting issue in response to the fear of death or the fear of being infected (33,34). This finding emphasizes the power of real evidence, which could be adapted in the strategy of information dissemination to instill awareness of the importance of getting vaccinated among the public. On another note, this study alerted the “wait-and-see” behaviour among the participants, where they preferred to hold and observe the vaccine reaction on others first, before deciding to proceed with the vaccination. This attitude contributed to the delay in acceptance of the COVID-19 vaccine and curbs the brisk process to achieve herd immunity that has been a plan by the government (35).

Since the COVID-19 pandemic, there is a marked increase in mortality among those with pre-existing comorbidities and medical conditions (36). Most of the participants with underlying health issues were aware of this fact and believed that if they became infected, their conditions would worsen, which appears to be a driving factor in their decision to accept the vaccine. This is consistent with findings from other studies compiled in a recent review by Al-Jayyousi et al. (2021), which showed that individuals who had chronic diseases are more likely to accept the vaccine. The participants of this study, however, delayed vaccination despite their understanding of the potential consequences of infection. This is in contrast to the finding in a study by Wong et al. (2020) that revealed a high percentage of intention to receive the vaccine by Malaysian with chronic illnesses before the vaccine is made available.

The data on the COVID-19 vaccine has been made available and openly accessible by the public, following the demand for informed-decision making before vaccine acceptance (38,39). This has allowed information transparency, a norm that is believed to have an impact on building the public’s trust and confidence and could help in promoting vaccination (40,41). In this study, the participants expressed that their decision to accept the vaccine was influenced by information on the effectiveness and side effects of the newly developed vaccine, and it is in agreement with findings from other similar studies conducted in Malaysia (42), Indonesia (25) and China (12). On another note, this study also revealed that there are preferences over vaccine types and manufacturers, as some participants finally agreed to receive the vaccine once the vaccine of their choice is made available. Comirnaty by Pfizer and BioNTech is the most preferred vaccine type over the other brands, among workers with a medical background as reported in Egypt (43), and Turkey (44) as well as among the public of Canada (45), which could be related to the disclosure of the vaccine attributes. A study by Stöckli et al. (2022) involving three countries i.e. France, Germany, and Sweden however, found that the vaccine attributes do not contribute much to fostering vaccine uptake, particularly among the hesitant. This study also pointed out the importance of persuasion and recommendation, which bring to light the role of communication in influencing people to accept the vaccine. The participants of this study take into consideration the advice heard from people who they deem credible. This is in agreement with the finding from a systematic review by Kamal et al., (2021), which has reiterated the significance of inclusive communication as a factor in influencing COVID-19 vaccination uptake. While, this is also backed up by a study that makes use of chatbot (48), which found that interactions build trust, deepen the understanding of the discussed issue, and potentially able to modify someone’s decision.

The National Vaccination Programme launched by the Malaysian government in February 2021 was allocated a huge amount of budget, with the Prime Minister being the first citizen to receive the vaccine (49). Nevertheless, the spread of various rumours and fake news about COVID-19 vaccination has led the government to face immense barriers such as hesitancy, delay, and
refusal. In response to these issues, emergency laws and rules to battle these obstacles have been imposed (50-52). This move by the government was seen to have a significant impact when it managed to change the stance of the participants of this study who strongly refused to receive the vaccine at the beginning. COVID-19 vaccine mandate in which the vaccination is made compulsory accompanied by restrictions for those who refused has been implemented in many countries around the world among healthcare workers (53,54), students and employees in high education institutions (55), and even the general population (56), to improve compliance to vaccination. While the strategy seems to work effectively, it should be properly evaluated before its execution, as findings from several studies have warned of criticism and an increase in resistance (57,58).

Limitation
This study was conducted in a single center and it is unfair to represent the whole population of the country. However, the study findings showed similar outcomes found in studies conducted in other countries. Future researchers may conduct this study in multiple centers so this may represent the country’s population.

CONCLUSION
The findings of this study have shed light on the importance and potential of evidence, information, communications, transparency, and enforcement in changing Malaysian attitudes towards the COVID-19 vaccine, from being hesitant to finally accepting. Future planning and strategy in promoting national immunisation programme, particularly of the COVID-19 vaccine, or any unprecedented medical intervention involving public participation should be carefully designed and tailored considering all these factors. Real evidence, solid information, and transparency in every aspect related to the interventions are vital in gaining the confidence of the Malaysian community, considering the nature of its multiracial, diverse, and strong cultural background. Immunization campaigns and promotions are not only the responsibility of the higher authorities but they should also be mobilized at all levels, especially by influential individuals such as medical professionals and religious representatives. All in all, mandatory vaccination is necessary, if all methods to encourage voluntary vaccination have been put in place and it still fails to achieve the minimum amount of group immunity. Future research is warranted to explore further on gaps identified in this study, especially on reasons to delay vaccination among high-risk individuals, despite knowing all possible consequences if they got infected.

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Declaration of Conflicting Interests
The Author(s) declare(s) that there is no conflict of interest

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