

## **Vaxx-Confident and Vaxx-Hesitant Agents: Factors Affecting COVID-19 Vaccination Willingness Among Young Adults in Klang Valley, Malaysia**

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### **ABSTRACT**

In February 2021, the government of Malaysia started the rollout of COVID-19 vaccination with the frontlines, such as healthcare personnel, essential services, and defense and security personnel. This effort was followed by the second phase of vaccination between April to August 2021 with senior citizens and high-risk groups, followed by the third phase from May 2021 to February 2022 with individuals aged 18 and above. Though this plan has been widely publicized and seemed to be carried out as planned, not much is known about the reaction of young adults getting vaccinated. As such, the current research was conducted to examine the (1) willingness of Malaysian young adults to get vaccinated, (2) contributing factors, and (3) hindrance factors towards vaccination among young adults. A self-administered online survey method was employed in this study, with 306 Malaysian young adults living in Klang Valley as research samples. The findings indicated that 74.5% of the respondents were willing to get vaccinated and that most of them, regardless of their vaccination willingness, emphasized the salient role that reliable and trusted information plays in shaping their inclinations. Based on their reported willingness, the respondents were categorized into two categories: vaxx-confident and vaxx-hesitant agents. The agents of socialization that were analyzed and discussed were news and media, family members, government, and opinion leaders. The two-way socialization processes that promote and hinder their COVID-19 vaccination were further discussed and highlighted.

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## INTRODUCTION

The world has been battling Coronavirus Disease 2019 (COVID-19) for two years since its outbreak in Wuhan, China, in December 2019. The highly transmissible disease has threatened the world's healthcare system and presented extraordinary challenges to the government globally. As of the 5<sup>th</sup> of August 2022, more than 597 million confirmed cases and more than 600 million deaths worldwide.<sup>1</sup> In the fight against the unexpected pandemic, governments globally have imposed movement restrictions on their citizens to contain the spread of the virus. Other measures include the practice of social distancing, wearing face masks, and washing hands frequently. As there is no infallible cure, the current trend is to vaccinate world citizens and achieve herd immunity. In December 2020, countries such as the United States and the United Kingdom led the trend by vaccinating their citizens against COVID-19 ("COVID-19 Vaccine", 2020; "COVID-19: First vaccine", 2020).

On the 31<sup>st</sup> of December 2020, World Health Organization (WHO, 2020) listed the Comirnaty COVID-19 mRNA vaccine for emergency use. It was the first validation issued by WHO since the outbreak of COVID-19, which officially supports the vaccination rollout. On the 1<sup>st</sup> of June 2021, the China-invented Sinovac-CoronaVac COVID-19 vaccine was listed in the WHO emergency use listing (EUL). The vaccines listed in EUL currently include Pfizer/

BioNTech, Astrazeneca-SK Bio, Serum Institute of India, AstraZeneca EU, Janssen, Moderna, and Sinopharm vaccine (WHO, 2021).

Subsequently, in the first quarter of 2021, many countries worldwide have implemented phased distribution plans by prioritizing the frontliners such as doctors, nurses, healthcare workers, and those at higher risk of complications, for instance, the elderly. Malaysia kicked off its three-phase COVID-19 vaccination program on the 24<sup>th</sup> of February 2021 for citizens and non-citizens. By the 6<sup>th</sup> of June 2021, it was reported that 2,081,718,731 vaccine doses had been administered worldwide, and 3.42 million doses were given in Malaysia, with 1,127,336 individuals in the country having completed two doses of the COVID-19 vaccine. It indicates that a total of 3.5% of its population is fully vaccinated (Bernama, 2021; Johns Hopkins Coronavirus Resource Center, 2022).

## COVID-19 Vaccination and Vaccine Hesitancy

**Definition and Past Research.** Despite the efforts done by the government to educate and socialize members of its citizens, one of the main challenges during the vaccination rollout is the issue of refusal or hesitancy. The opposition to vaccination can be traced back to the 1800s against smallpox vaccination and diphtheria, tetanus, pertussis (DTP) immunization, measles, mumps, and rubella (MMR). The concerns stem from fear of the unknown effects and effectiveness, skepticism, and

<sup>1</sup> WHO Coronavirus (COVID-19) Dashboard, <https://covid19.who.int/>

distrust towards the government officials, worry about the vaccine source, which may not be in line with religious beliefs as well as the violation of human rights, especially when vaccination was made mandatory by the government (College of Physicians of Philadelphia, 2022).

Individuals who opposed vaccination have been labeled as anti-vaxxers. Scholars believe that anti-vaxxers are “someone who believes vaccines do not work, are not safe or refuse vaccines for themselves and their children if applicable” (Benoit & Mauldin, 2021, p. 2). The pressures imposed by social institutions and mandatory moves by the government arguably give rise to anti-vaxxers and anti-vaccination social movements (Durbach, 2000). Some scholars use anti-vaccination and vaccine hesitancy interchangeably or distinguish them by their differing intensity or mere terminology change (Roberts et al., 2022).

Kumar et al. (2016) pointed out that vaccine hesitancy is a new term replacing the old terms such as ‘vaccine resistance’ or ‘vaccine opposition’ and defined vaccine hesitancy as reluctant to be vaccinated. According to these researchers, vaccine hesitancy is caused by a lack of confidence in the vaccine’s safety which is also related to the reliability and competency of the health system. Other factors include the quality of vaccination services and their conveniences, such as physical availability, geographical accessibility, affordability, and the patient’s willingness to pay.

However, the current authors argue that anti-vaccination should be clearly

distinguished from vaccine hesitancy. Drawing from the report of the Strategic Advisory Group of Experts (SAGE, 2014) on Immunization as well as The European Center of Disease Prevention and Control (n.d.), vaccine hesitancy refers to “delay in acceptance or refusal of vaccines despite availability of vaccine services” (para. 2). Vaccine hesitancy is complex as it depends on the context, which varies across time, place, and type of vaccine. A few determinants of vaccine hesitancy include contextual influences, individual and group influences, and vaccine/vaccination-specific issues that may arise from socio-culture, environmental, health system/institutional, economic, or political factors. These include the influences of communication and media, influential leaders, anti- or pro-vaccination lobbies, religion/culture/socioeconomic, and politics. Individual and group influences refer to the influences of significant others and socializing environments such as family, peers, and/or community members. Another determinant of hesitancy relates to vaccine/vaccination-specific issues directly related to the vaccine or vaccination itself. For instance, epidemiological and scientific evidence on the vaccine’s benefit, the introduction of a new vaccine, reliability and/or source of vaccine supply, and/or vaccination equipment (SAGE, 2014). Thus, unlike the anti-vaxxers, vaccine-hesitant individuals may eventually get vaccinated due to favorable exposure and influences of their significant others, social-religious-political context, and mass media.

Numerous studies have been conducted on vaccine hesitancy in different countries. For instance, de Figueiredo and Larson (2021) investigated the global trend and found that vaccine uptake is linked to individuals' religious beliefs, and the minority religious group tended to have lower probabilities of uptake. Similar findings were also found by Ergur (2020) in Turkey. The common reason for his sample was their religious and traditional beliefs towards the vaccine, and their philosophical convictions and concerns about the safety of the vaccines influenced their vaccine willingness. They highlighted the need for more precise guidance and vaccine information to increase vaccination uptakes. There is also evidence of the role of social media on willingness towards vaccination. A recent study found that popular content on the topic of vaccination on social media was related to anti-vaccination messages, and vaxx-hesitant tend to spend longer on social media (Herr, 2021).

Besides religion and social media, political inclinations, ethnicity, gender, and occupation have also affected willingness to vaccinate. Studies in countries such as the United States showed that 1 out of 4 Americans are still unwilling to be vaccinated (Soucheray, 2021), and over 31% of individuals, especially ethnic minorities and women with conservative political leaning, had no intention of getting vaccinated. Another survey conducted by USA TODAY on 276 hospital networks and public hospitals in the United States discovered that some of its medical staff

were not willing to be vaccinated, and this affected President Joe Biden's goal to vaccinate 70% of its adult population by the 4th of July 2021 (Heath, 2021; "States turning down COVID-19", 2021). In the case of Asian and Southeast Asian countries such as India, Indonesia, and the Philippines ("Countering vaccine hesitancy", 2021), the reasons for hesitancy or refusal mainly relate to the lack of trust or confidence towards the vaccine, such as safety issues, unknown side-effects, lack of knowledge about the effectiveness of the vaccine as well as social-cultural factors such as personal belief and religion as well as political leaning and the spread of false news (Che Awang, 2021; Heath, 2021; JoJack, 2021; Pertiwi, 2021; Yiğit et al., 2021). These contributing factors have affected governments' efforts to manage the COVID-19 pandemic, and Malaysia is no exception.

In Malaysia, statistics released up to the 28th of March by Statista.com recorded a high percentage of individuals willing to be vaccinated (83%). However, the number dropped to 77% by the 10th of May 2021 ("Share of people willing", 2021). In March 2021, the Deputy Health Minister of Malaysia, Dr. Noor Azlie Gazali, announced that the government was tracking down frontliners registered for the National COVID-19 Immunization Program but refused or failed to turn up for vaccination. Locality and culture may have contributed to hesitancy as there was an overrepresentation of individuals from certain states who failed to turn up, i.e., Kelantan (Idris, 2021). Another study

found that one-third of individuals living in *Projek Perumahan Rakyat* flats (translated as the people's housing project) remain unwilling to be vaccinated despite the free COVID-19 vaccines. The reasons cited were vaccine safety and the risk of side effects (United Nations Children's Fund Malaysia & United Nations Population Fund [UNICEF & UNFPA], 2021). Besides culture and socioeconomic status, vaccine hesitancy is also evident based on age group. A study by Syed Alwi et al. (2021) concluded that the overall acceptance of COVID-19 vaccination is high (83.3%) among Malaysians. However, the hesitancy rate is high among the elderly aged 60 years and above (63.4%). Reasons given by the respondents include their concerns about side effects and safety, lack of information about the vaccines and their effectiveness, and religious and cultural factors related to the vaccine. The study also indicated that diabetic and hypercholesterolemia patients are among those who were more hesitant to accept the COVID-19 vaccine than others. As such, there is a need to investigate further vaccine hesitancy, particularly among the young adults (18-30 years old) that contributed 69.37% of the total population (this figure includes those 31–65 years old) in Malaysia (Statista, n.d.).

**Socialization and Vaccination.** To manage vaccination hesitancy and ensure the vaccination rollout's success, initiatives to socialize individuals and acculturate them into vaccination culture were carried out. Socialization is the process where

individuals learn through their interactions about society's norms, values, customs, and expected behavior (Britannica, n.d.). This process is imperative to ensure individuals can adjust and function well in society as a collective unit and is done by agents of socialization such as parents, peers, government, workplace, religious institutions, and media.

In the case to prevent the spread of COVID-19 and vaccination, the government of Malaysia has been socializing its citizens by leveraging media platforms (especially social media) such as the ministry's official portals, MySejahtera application, the official National Security Council's (Majlis Keselamatan Negara) telegram, and news portal. Through these platforms, the government provided daily updates on COVID-19 statistics, explained the vaccination process, shared the do's and don'ts during the movement control order, and even validated fake news surrounding COVID-19, among others. To socialize more effectively, the information provided via these channels is also delivered in all four main languages in Malaysia and presented in various formats such as text, video, and infographics. The government not only shared relevant factual information but also included campaign messages such as posters on choosing the proper diet, *hukum* of COVID-19 testing during Ramadhan, and ways to keep individuals healthy during home confinement. Other initiatives include encouraging individuals above 18 years of age to get vaccinated, encouraging significant others

to get vaccinated, and reminding them of necessary standard operating procedures during festive seasons were also shared to further promote vaccination in Malaysia via infographics (Ministry of Health Malaysia, 2021).

These efforts are applauded by many as the messages were perceived as necessary socialization to achieve the herd immunity target by the government. However, has this effort been successful? Are members of the nation ready to be vaccinated? Do the messages address the concerns that the different segments of society need to get their buy-in? The success of this effort can be measured by the internalization of the narrative by the government and the willingness to get vaccinated the members of the population. Failing and re-strategizing the effort is imperative and necessary.

With the current push of getting young adults in Malaysia (18 and above) and the intersectionality of issues raised on one's willingness to get vaccinated, as mentioned above, this research focuses on uncovering the vaccine willingness among young adults residing in Klang Valley Malaysia. Thus, this paper aims to discuss the (1) willingness of Malaysian young adults to

get vaccinated, (2) the contributing factors, and (3) the hindrance factors towards vaccination among young adults.

**Conceptual Framework and Significant of the Study.**

The success of a vaccination program depends very much on the uptake of the population. It is important to consider the local factors or issues that affect vaccine hesitancy or refusal: demographic factors, sources of trusted information, and agents of socialization (Figure 1). The demographic factors analyzed include gender, ethnicity, and household income, while the sources of trusted information include WHO, Malaysian health professionals, foreign health professionals, government and politicians, family members, friends, and news (i.e., newspaper, TV) and social media. The agents of socialization included news and media, government, family members, and opinion leaders. These variables were identified and analyzed to help answer the research questions and test this study's null hypothesis;  $H_0$ : There is no significant contribution of the socialization agents (news and media, government, family members, and opinion leaders) toward the willingness of COVID-19 vaccination.

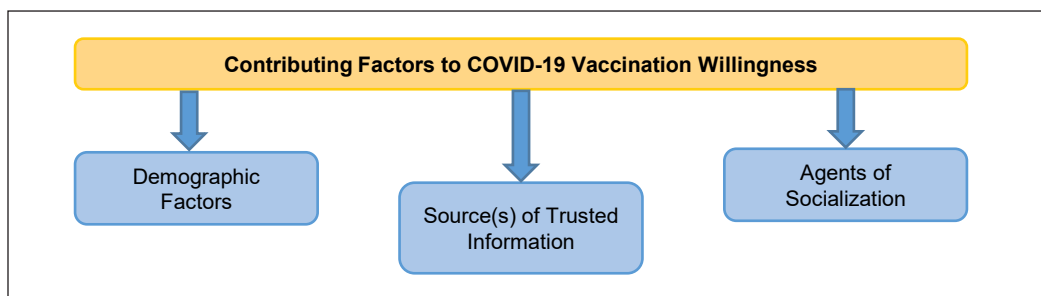


Figure 1. Conceptual framework



These research findings are an important contribution to the corpus of knowledge on COVID-19 vaccination as it provides a comprehensive approach to the willingness to vaccinate among youths. The government and policymakers will be able to refer to this study to manage the current pandemic holistically and systematically, especially among the youth.

## METHODOLOGY

The research method used in this study is a self-administered online survey method, with a combination of closed-ended and open-ended questions adapted from the questions outlined in the Report of the Sage Working Group on Vaccine Hesitancy (SAGE, 2014). Statistics on COVID-19 reported by the Ministry of Health Malaysia have shown a consistent peak of cases in Selangor and its neighboring areas, wholly known as the Klang Valley. This area is one of the most industrialized and populated areas with high COVID-19 spreading tendencies. Therefore, getting the population of Klang Valley vaccinated has been on the national agenda and is viewed as imperative to manage the spread of the disease and protect the citizens.

According to the Department of Statistics Malaysia (2021), 30% of the Klang Valley population comprises young adults aged 18 to 30, making it the highest percentage among all other age groups. The research sample is 306 young adults, aged between 18 to 30 years old, currently residing in the Klang Valley, Malaysia. The sampling estimation was based on the

sample size calculator by Roasoft, with a 95% confidence interval. Data was collected using Google Forms, and the survey link was shared through social media and snowballed through researchers' students, school alumni, and professional networks.

The survey was divided into three main sections: Section A consists of demographic questions; Section B includes basic information on vaccination and their willingness for vaccination; and Section C explores the role of socialization agents in their willingness for vaccination. Socio-cultural factors and socialization agents included news and media, opinion leaders, culture and religion, government and policies, and family members. A pre-test was conducted with 30 respondents to test the instrument and research procedures.

The quantitative data was divided by the willingness of the respondents to be vaccinated: Group 1 represents willing individuals, and Group 2 represents unwilling individuals. The effects of socialization agents on willingness were measured using the linear regression analysis for all Likert-scaled data. Univariate logistic regression was used to access the odd ratios (OR) for the dichotomous data, with a 95% confidence interval (CI). Socialization agents were thus considered as the independent variable, and willingness was the outcome of interest. Consequently, the OR value  $< 1$  indicated less association between the effect of socialization agents on willingness for vaccination, while an OR value  $> 1$  indicated otherwise. All statistical analyses were performed using the Statistical Package for

the Social Science (SPSS) software version 25, while the data collected based on open-ended questions were analyzed using QSR International NVivo 12 software.

**RESULTS**

The closed-ended questions were analyzed based on their willingness to be vaccinated, and the results were summarized in Table 1. Of 306 respondents, 228 (74.5%) were willing to take the COVID-19 vaccine, while 78 (25.5%) participants were not willing to be vaccinated. 56.4% of the respondents willing to be vaccinated were Malays (n=128), while 49.4% from the unwilling group were Chinese (n=39). Almost half of the unwilling group were from the Bottom 40 group (B40), earning less than RM4849 per month.

Qualitative data were analyzed and highlighted below to support the data above. General responses to their willingness to be vaccinated include the highlights of achieving herd immunity and their hope to ‘return to normalcy.’ Some also highlighted the importance of ensuring the safety of society and their confidence that this is the only way forward based on their research on vaccination. Quoting some of them:

*The best and only option we have right now is to get vaccinated; the faster we reach herd immunity, the faster we get back to some ‘normalcy’ again. (Malay, Female, 24 years old)*

*The vaccine is vital in achieving herd immunity which would, in turn,*

Table 1  
Demographic factors to the willingness for COVID-19 vaccination

	<b>Willing</b> N (%)	<b>Unwilling</b> N (%)	<b>Total</b> N (%)
	228 (74.5)	78 (25.5)	306 (100)
<b>Gender</b>			
Male	65 (28.6)	23 (29.1)	88 (28.8)
Female	162 (71.4)	56 (70.9)	218 (71.2)
<b>Ethnicity</b>			
Malay	128 (56.4)	23 (29.1)	151 (49.3)
Chinese	68 (30)	39 (49.4)	107 (35)
Indian	21 (9.3)	11 (13.9)	32 (10.5)
Others	10 (4.4)	6 (7.6)	16 (5.2)
<b>Household Income</b>			
<RM2500	48 (21.1)	19 (24.1)	67 (21.9)
RM2500 – 4849	54 (23.8)	21 (26.6)	75 (24.5)
RM4850 – 10959	49 (21.6)	12 (15.2)	61 (19.9)
RM10960 – 15039	17 (7.5)	1 (1.3)	18 (5.9)
>RM15039	28 (12.3)	2 (2.5)	30 (9.8)
Don’t Know	31 (12.7)	24 (30.4)	55 (18)



*be able to protect everyone in the community.* (Kenyah, Female, 21 years old)

*I have conducted my readings and befriended several medical professionals throughout this pandemic and talked about the virus and the vaccines, and I have ascertained that the risks of contracting/suffering from severe symptoms/dying from COVID-19 heavily outweigh the risks of the adverse effects from the vaccines.* (Malay, Male, 21 years old)

In contrast, as evident in Table 2, those unwilling to get vaccinated claimed that they are hesitant as the vaccine has not been fully proven safe for consumption, lacks details on its effects, and has questionable ingredients. They also believe that they have the right to remain hesitant and make their own decision. They said:

*It is my own choice, and nobody can tell me otherwise.* (Chinese, Female, 30 years old)

*Well, for the safety of everyone, I would still consider taking the vaccine and doing my part in fighting against covid-19, but once the vaccine is proven 100% safe.* (Malay, Female, 19 years old)

*Because there are not enough details about the effect that can happen after we get vaccinated.* (Malay, Female, 23 years old)

Both groups claimed that they mainly relied on information from the WHO and Malaysian health professionals (willing [n=191] and unwilling [n=52]). Though this is more salient among willing people, both groups of respondents are more reliant on these sources than social media (willing n=35, unwilling n=17) or friends (willing, n=20, unwilling, n=9).

Table 3 summarizes the role of agents of socialization in COVID-19 vaccination. In terms of the influence of news and media, substantial differences were seen in Q5, Q6, and Q7. In Q5, respondents who believed in stories of individuals claiming to lose a family member due to

Table 2  
*Sources of trusted information*

Source of trusted info	Willing	Not Willing	Total
WHO	191 (84.5)	52 (65.8)	243 (79.7)
Malaysian health professional	171 (75.5)	43 (54.4)	214 (70.2)
Foreign health professional	76 (33.6)	23 (29.1)	99 (32.5)
Government and politicians	28 (12.4)	10 (12.7)	38 (12.5)
Family members	30 (13.3)	19 (24.1)	49 (16.1)
Friends	20 (8.8)	9 (11.4)	29 (9.5)
News (i.e., newspaper, tv)	87 (38.5)	34 (43)	121 (39.7)
Social media	35 (15.5)	17 (21.5)	52 (17)

Table 3  
*Agents of socialization contribute to the willingness for COVID-19 vaccination*

<b>Agents of Socialization</b>	<b>Willing N (%)</b>	<b>Not Willing N (%)</b>	<b>R<sup>2</sup></b>	<b>Sig</b>
<b>News and Media</b>				
<i>Q2 Reconsider the decision for vaccination based on the media report</i>	SD 25 (11)	SD 3 (3.8)	.530	.001**
	D 38 (16.7)	D 6 (7.6)		
	N 69 (30.4)	N 40 (50.6)		
	A 61 (26.9)	A 22 (27.8)		
	SA 34 (15)	SA 8 (10.1)		
	M = 3.18 sd = 1.2	M = 3.32 sd = 0.9		
<i>Q5 Believe in stories of individuals claiming to have lost a family member due to the COVID-19 vaccine.</i>	SD 37 (16.3)	SD 2 (2.5)		
	D 59 (26)	D 4 (5.1)		
	N 68 (30)	N 33 (41.8)		
	A 35 (15.4)	A 26 (32.9)		
	SA 28 (12.3)	SA 14 (17.7)		
	M = 2.82 sd = 1.2	M = 3.5 sd = 0.9		
<i>Q6 The reports on side effects and death cases due to COVID-19 vaccination affect the decision to be vaccinated.</i>	SD 52 (22.9)	SD 2 (2.5)		
	D 57 (25.1)	D 2 (2.5)		
	N 59 (26)	N 30 (38)		
	A 46 (20.3)	A 26 (32.9)		
	SA 13 (5.7)	SA 19 (24.1)		
	M = 2.6 sd = 1.2	M = 3.7 sd = 0.9		
<i>Q7 The news on new variants of COVID-19 influenced my decision to be vaccinated.</i>	SD 22 (9.7)	SD 5 (6.3)		
	D 29 (12.8)	D 5 (6.3)		
	N 53 (23.3)	N 34 (43)		
	A 53 (23.3)	A 27 (24.2)		
	SA 70 (30.8)	SA 8 (10.1)		
	M = 3.53 sd = 1.3	M = 3.3 sd = 0.9		
<b>Government</b>				
<i>Q15 Malaysian government is making decisions based on my best interest with respect to what vaccines are provided</i>	SD 5 (2.2)	SD 4 (5.1)	.457	.009**
	D 24 (10.6)	D 8 (10.1)		
	N 96 (42.3)	N 52 (68.5)		
	A 65 (28.6)	A 12 (15.2)		
	SA 37 (16.3)	SA 3 (3.8)		
	M = 3.46 sd = 0.9	M = 3.03 sd = 0.7		
<i>Q16 Government has purchased the highest quality of vaccines available in the market</i>	SD 4 (1.8)	SD 8 (10.1)		
	D 21 (9.3)	D 15 (19)		
	N 101 (44.5)	N 46 (58.2)		
	A 69 (30.4)	A 7 (8.9)		

Table 3 (continue)

Agents of Socialization	Willing N (%)	Not Willing N (%)	R <sup>2</sup>	Sig	
	SA 32 (14.1) M = 3.45 sd = 0.9	SA 3 (3.8) M = 2.77 sd = 0.8			
<i>Q17 The national vaccination program has been carried out efficiently</i>	SD 36 (15.9) D 57 (25.1) N 77 (33.9) A 39 (17.2) SA 18 (7.9) M = 2.7 sd = 1.15	SD 6 (7.6) D 14 (17.7) N 40 (50.6) A 15 (19) SA 4 (5.1) M = 2.96 sd = 0.9			
<i>Q18 My decision on vaccination is mostly based on the influence of the government's assurance</i>	SD 27 (11.9) D 46 (20.3) N 76 (33.5) A 48 (21.1) SA 30 (13.2) M = 3.04 sd = 0.19	SD 5 (6.3) D 12 (15.2) N 32 (40.5) A 24 (30.4) SA 6 (7.6) M = 3.17 sd = 0.9			
<b>Family Members</b>					
<i>Q21 Decision on vaccination is mostly based on the influence of my family members</i>	SD 4 (19.4) D 49 (21.6) N 71 (31.3) A 47 (20.7) SA 16 (7) M = 2.74 sd = 1.19	SD 7 (8.9) D 11 (13.9) N 26 (32.9) A 23 (29.1) SA 12 (15.2) M = 3.28 sd = 1.15	.480	.001**	
<i>Q22 Important to get support or consent from the family members before making the decision to vaccination</i>	SD 45 (19.8) D 26 (11.5) N 68 (30) A 55 (24.2) SA 33 (14.5) M = 3.02 sd = 1.31	SD 4 (5.1) D 4 (5.1) N 28 (35.4) A 20 (25.3) SA 23 (29.1) M = 3.6 sd = 1.1			
Agents of Socialization	Willing N (%)	Not Willing N (%)	OR	CI	Sig
<b>Opinion Leaders</b>			.494	.37 - .67	.001**
<i>Q8 Agree with group leaders who refuse Vaccination.</i>	Y 29 (12.8) N 198 (87.2)	Y 38 (48.1) N 41 (51.9)			
<i>Q9 Celebrity advocacy against vaccination influences the decision to be vaccinated</i>	Y 14 (6.2) N 213 (93.8)	Y 16 (20.3) N 63 (79.7)			
<i>Q11 Religious leaders' advocacy against vaccination influences the decision to be vaccinated</i>	Y 24 (19.6) N 80 (35.2) NA 123 (54.2)	Y 11 (13.9) N 28 (35.4) NA 40 (50.6)			

the COVID-19 vaccine were most likely to be unwilling to take the vaccine (willing  $M=2.82$   $SD=1.2$ , unwilling  $M=3.5$   $SD=0.9$ ). In Q6, respondents who believed in the reports on the side effects and death cases due to the COVID-19 vaccination were unwilling to take the vaccine (willing  $M=2.6$   $SD=1.2$ , unwilling  $M=3.7$   $SD=0.9$ ). On the other hand, responses for Q7 showed that the news on the new variants of COVID-19 influenced the willing group to get vaccinated compared to the unwilling group (willing  $M=3.53$   $SD=1.3$ , unwilling  $M=3.3$   $SD=0.9$ ).

Linear regression was used to measure the effect of news and media on the level of willingness among respondents. A significant regression equation was recorded,  $H_0$  rejected,  $[F(1, 304) = 31.52, p < .001]$ , with an  $R^2$  of .530, indicating 53% of the willingness level was explained by the influence of news and media.

The following agent of socialization towards vaccination is the government. According to Q15, respondents who agreed that the Malaysian government was making decisions based on their best interest concerning what vaccines were provided were more willing to be vaccinated (willing  $M=3.46$   $SD=0.9$ , unwilling  $M=3.03$   $SD=0.7$ ). When the respondents believed that the government had purchased the highest quality of vaccines available in the market, they were also more willing to be vaccinated (willing  $M=3.45$   $SD=0.9$ , unwilling  $M=2.77$   $SD=0.8$ ). However, their perceptions of the efficiency of the vaccination program and the government's

assurance of vaccination did not show much effect on their willingness.

Those willing further elaborated that the government has done its part, and the citizens now need to do theirs to combat the COVID-19 pandemic. They said:

*The best vaccine is the one that is readily available, we all need to do our part to achieve herd immunity to overcome this pandemic. (Chinese, Female, 27 years old)*

*It is my responsibility to my community to ensure that I do not carry the virus and spread it. (Malay, Female, 19 years old)*

In contrast, those who are unwilling emphasize their distrust towards the government because of a lack of clear information regarding the vaccine, the process, and the effects of vaccination. Quoting two of them:

*Because there are no details about the effect that can happen after we get vaccinated. (Malay, Female, 28 years old)*

*They (parents) are senior citizens, and I love them dearly as WE ONLY HAVE ONE SET OF PARENTS. The government is doing a half bake crappy job, and I do not trust them. There are no proper legit black-and-white responses or answers from them on this. So, I will not let my parents be a "rat lab"! (Malay, Female, 30 years old)*

Through linear regression, there was a significant regression equation found,  $H_0$  rejected,  $[F(1, 304) = 26.93, p < .000]$ , with an  $R^2$  of .457, indicating 45.7% of the willingness level was explained by the influence of the government.

Family members were also found to play a significant role in COVID-19 vaccination. Respondents reported that their family members influenced their decision (willing  $M=2.74$   $SD=1.19$ , unwilling  $M=3.28$   $SD=1.15$ ). They also believed they needed support or consent from the family members before deciding on vaccination (willing  $M=3.02$   $SD=1.31$ , unwilling  $M=3.6$   $SD=1.1$ ). The open-ended data also suggests that the respondents considered the safety and well-being of their family members as contributing factors. Many of the willing respondents believe that vaccination will enable them to keep others around them safe and speed up the process for them to visit them again. They also highlighted their role in educating their family members and serving as role models to others to persuade them toward vaccination.

*I will try my best to educate them [family] about the vaccine, the benefits, and the possible side effects. (Indian, Female, 24 years old)*

*Although some would point out that youths have stronger immune systems and would not require a vaccination, others around them are still susceptible to getting infected. Therefore, vaccination is still*

*essential regardless of how strong your immune system is. (Chinese, Male, 28 years old)*

*The earlier we all get vaccinated, the earlier we get out of this pandemic and be allowed to visit families and friends. (Malay, Female, 25 years old)*

In a similar line of thought, the unwilling respondents highlighted that they would discourage their family members from getting vaccinated to keep them safe. It is especially for the elderly and those with health concerns. Instead, they believe that staying home and minimizing contact are better options until more information is available on the vaccine. Some of them said:

*They are older adults. I do not want anything bad to happen to them because of being vaccinated. So, I will encourage them not to get one. (Indian, Female, 18 years old)*

*I am cautious because my parents have underlying health conditions, so I would like them to wait for a little to know which vaccine is safest for those who have a weak immune system. (Malay, Female, 30 years old)*

*You cannot afford to lose them over a self-made choice to get vaccinated compared to covid that is preventable by staying home and minimizing contact. For now, we can avoid going out. So, we need*

*not get vaccinated yet. (Chinese, Female, 29 years old)*

The effect of family members on vaccination willingness as a whole can be explained by the significant regression found,  $H_0$  rejected,  $[F(1, 304) = 29.52, p < .000]$ , with an  $R^2$  of .480, indicating 48% of the willingness level was explained by the influence of family members.

Opinion leaders were one of the agents of socialization tested in this study. Univariate logistic regression was used to measure the effects of opinion leaders on the level of willingness among respondents. Statistically significant effects between opinion leaders and the level of willingness were found,  $H_0$  rejected with an OR value of  $0.494 < 1$ . It indicates the small effect of opinion leaders on the willingness for vaccination.

Both willing and unwilling groups have argued that opinion leaders lack the authority to speak of the COVID-19 pandemic unless they are involved with clinical trials or cite credible sources. Some are also perceived to comment on the vaccination to advance their agenda, as per excerpts below:

*These leaders did not do their research whatsoever and likely did not have any qualifications to say the vaccine is bad. I would not trust them. (Malay, Female, 22 years old)*

*It depends on who exactly these leaders are. The ones I trust and believe usually have a track record of talking about factual stuff and not simply sharing nonsense just*

*for popularity's sake. (Chinese, Female, 23 years old)*

However, there was also evidence of exceptions to the rule for religious leaders. Some respondents believed that the words of their religious leaders must be followed due to their broader knowledge and religious socialization. Some of their comments are as follows:

*When mufti releases their fatwa, we must follow. Their knowledge is broader than ours, and we need to ikhtiar; Allah will do the rest. (Malay, Male, 21 years old)*

*Most of the religious neighbors in my housing area strongly agree with taking a vaccine as it would allow us to perform prayers in the mosque even more and consistently. If ever we were to experience a bad side effect, it is part of our fate, and it's fine. (Malay, Male, 25 years old)*

*If someone has strong iman, they will believe in the cure given by Allah SWT. (Malay, Male, 23 years old)*

Furthermore, several unwilling respondents claimed that they are not religious, so the role of religious leaders does not impact their decision-making towards vaccination.

## DISCUSSION

The effort of vaccinating the entire population during the COVID-19 pandemic



is an uphill battle. This research supports those found in previous studies where most people, including young adults, are willing to get vaccinated (Herr, 2021; Lazarus et al., 2021; “Share of people willing”, 2021). However, the factors that promote and hinder individuals from vaccination are important to be discussed better to understand the role of socializing agents and sociocultural factors to ensure the success of the vaccination program, in the long run, which has been largely absent in the academic writing and narrative by the officials.

Through this research, it was found that the agents of socialization play an important role in vaccination among these young adults—both to promote vaccination and to hinder them from getting vaccinated. The authors argue that the influence of socializing agents produces two types: vaxx-confident agents and vaxx-hesitant agents. The term agent is used as these individuals now are empowered individuals who claim to make rational and informed decisions, in addition to their role as agents of socialization to their family and friends.

It is supported by the open-ended data where the respondents claimed that they often provide the necessary information to their significant others and would persuade them, especially their aging and unwell parents. The term hesitance is used to distinguish these respondents from anti-vaccination respondents. This research shows no evidence that the respondents highlighted their stance against vaccination. Instead, they emphasized the delayed

decision to be vaccinated due to their concerns.

It is not surprising to note the significant influence of news and media as socializing agents towards vaccination. Similar findings have been discussed earlier, especially among younger people who spend longer on social media (Herr, 2021). Since the respondents can be associated with the ‘digital native’ label, their inclination to use social media as their main platform to conduct research, obtain information, and form their view toward vaccination would be relatively natural. Digital platforms make it easier for individuals to get a wide range of information from various experts locally and globally. However, unlike the arguments made by Herr (2021), who highlighted the high consumption of anti-vax content on social media, which in turn results in an unwillingness to vaccination, this research shows that the hours spent online among the youths in this study helps them to possess the necessary knowledge about the vaccine based on the available information learned by credible sources. This knowledge equips them with the necessary information and serves as the basis for their decision to get vaccinated regardless of the view of others. Armed with such knowledge, they also seemed empowered to decide confidently on getting vaccinated.

As for families, their role is an interesting one for vaxx-confident agents. Some respondents highlighted the cultural obligations of getting input, support, and blessings from their families before deciding to vaccinate. However, their reasoning

for getting vaccinated so that their family members are also safe, in addition to their hope to engage in family activities soon, indicates that the socialization process by family members may indirectly affect their decision to get vaccinated rather than a direct one. The vaxx-confident agents also showed that socialization is a two-way process where family members are also being socialized toward vaccination by these agents.

The role of the government as an agent of socialization has also been found to be significant in this study, perhaps indicating the effectiveness of the effort by the Malaysian government as previously indicated (Ministry of Health Malaysia, 2021). The government seemed to have persuaded individuals to vaccinate with the narrative that the vaccination program is in the people's best interest. The government also managed to create the impression that they did purchase the best vaccines available for the citizens. Since many of the respondents highlighted that their main reasons for vaccination are related to staying healthy and safe, the efficiency of the program's rollout process did not matter much for this group of respondents. Instead, the respondents mentioned the need to achieve 'herd immunization' as the only way forward to contain the pandemic. It reflects the stance of the government, as often highlighted in the media throughout the rollout process.

The impact of advocacy against vaccination by opinion leaders on young adults was a non-significant one - at least

statistically. It may be mainly attributed to these leaders' perceived authority and expertise to convey information related to COVID-19. Celebrities and religious leaders are not seen as 'relevant' to the COVID-19 discussion, hence their lack of influence over young adults. A number of the respondents claimed that they are better informed than those leaders due to their in-depth research and exposure to facts and data provided by various credible sources such as WHO and medically trained experts.

However, the open-ended data obtained from this study paints a fascinating picture of the influence of religious leaders on some individuals. These religious leaders are associated with the status of Muftis and 'leaders' in general and are socially accepted as the authority within the religious community. The opinion and advice of these religious leaders, which are often based on the interpretation of religious texts and teachings, are accepted as fatwa or obligatory guidance, and hence conformity by the believers is expected. Though the link between religious belief and vaccination has been previously discussed (read de Figueiredo & Larson, 2021; Ergur, 2020), this study adds to the expectation of these leaders to also quote credible scientific and medical sources regarding the vaccine in addition to linking them to the religious context for their arguments to be well received by the young adults.

These agents of socialization then contribute towards the shaping of what the authors' term vaxx-confident agents, individuals who are not only willing to get

vaccinated but also possess the following characteristics:

- Confident that they possess the necessary knowledge and information about the vaccine, the process, and the risk
- They firmly believe their choice is theirs, as they are responsible for their own bodies.
- Maintains that only with vaccination are they responsible agents to ensure that self is well and not putting others at risk
- holds a personal commitment to improving society by getting vaccinated so they can return to social activities with friends, families, and religious events.

For the hindrance factors, socializing agents such as media, family, and government also played important roles. The sensationalization of stories that evoke an emotional response and increase engagement, be it in the news or on social media amidst this overreported information about COVID-19, is arguably a strategy employed by individuals and media owners to get the attention of its consumers. Hence the story of side effects, especially towards specific target groups, death associated with vaccination taking, in addition to stories of losing family members tend to be highlighted. These stories may be true, but sensationalization and anti-vaccination propaganda may contribute to a loop-sided view against vaccination (Herr, 2021). It is in addition to the spread of false and unverified stories that the nation faces

during the pandemic. Thus, some young adults in this category reported that such news and stories make them hesitant to be vaccinated.

Another important socializing agent that was found to have influenced vaccine hesitancy among respondents is family. The respondents believe that the opinion of their family members matters and that getting their full support is important in their decision-making. Such a mentality is reflective of family-oriented Asian values and collectivistic communal norms. With more than 50% of the respondents of those who are unwillingly being from the bottom 40% (B40) group, their obligations towards the family may be at a higher stake than those in the middle 40% (M40) or top 20% (T20). Hence, they may be socialized to ensure they are healthy enough to support their family further. Should there be any health complications, the worry of financial burden or lack of assistance may be a further concern. It may also be linked to the studies by Idris (2021) on the jarring difference between individuals who turn up for vaccination by the Malaysian states and the PPR flat residents, as documented by UNICEF and UNFPA (2021). Another interesting finding was that these young adults played an active role in socializing their parents, especially the elder and fragile parents, against vaccination. Since they are unsure of the safety and effectiveness of the vaccines, they make their opinion clear to their parents, which in turn may affect their parents' willingness to get vaccinated. It is also based on their reasons that it is a risk

not worth taking, and they would be better off engaging in social isolation than getting vaccinated. Of course, some elderly may be easily swayed due to their reluctance toward vaccination, as found in the research by Syed Alwi et al. (2021).

The government also did not seem to have convincingly persuaded and assured those unwilling to be vaccinated. The data reveals that though this group of respondents thinks that the government is indeed considering people's best interests, they do not think the government purchased the best vaccines on the market. In fact, in the open-ended data, the findings reveal that the government has failed to socialize this group of young adults towards vaccination as they are unable to address the issue of side effects and fatality as well as the effectiveness of vaccines purchased. The lack of trust in the government and the failure to manage the expectations of young adults is in line with the previous research and reports (Che Awang, 2021; Heath, 2021; JoJack, 2021; Pertiwi, 2021; Yiğit et al., 2021). The government is also perceived not to have a well-thought-out plan, hence their hesitancy towards vaccination for themselves and their family members to avoid being the 'lab rats.'

Some of the vaxx-hesitant agents highlighted that they are not religious or do not know where vaccination stands in their religious, cultural, and philosophical stance. Thus, they claim that their decision not to be vaccinated is not linked to this cultural reasoning but to their perceived safety and scientific proof. Without such

data and clear evidence, some would prefer not to take risks and take on self-precaution instead. In contrast, for those who subscribe to a specific religion, there is evidence suggesting that they have been socialized against vaccination due to the questionable vaccine ingredients, lack of specific discussion in their holy book on vaccination, and the conspiracy theory of mass genocide via vaccines. These believers also reasoned that the supreme being is the best curer; hence, they can engage in various other religious rituals that protect them against COVID-19.

Thus, these agents of socialization either socialized these young adults into the 'hesitant' culture or failed to socialize them into the currently expected vaccination camp. As a result, the authors classify them as vaxx-hesitant agents. These individuals are not only unwilling to get vaccinated at the point of this research but also possess the following characteristics:

- Believe that the available vaccine is unsafe and/or risky
- It strongly holds that they need to take proactive measures to protect themselves and their significant others in ways other than vaccination.
- Firmly believe no one should pressure them into vaccination, which is their fundamental right over their own body.
- Expect the authority to provide more evidence and data on the effectiveness and side effects before considering vaccination.

- Maintains that not being vaccinated does not translate into deviance but rather their way to ensure that they and their family members are safe and not ‘test subjects.’

## CONCLUSION

This research’s aims were achieved as the findings provide a picture of the willingness to get vaccinated and the contributing and hindrance factors towards vaccination among young adults selected in this study. The qualitative and quantitative data obtained in this study provide more holistic insights into COVID-19 vaccine willingness, namely on the role of knowledge and data, cases and campaigns, health and well-being, self and communal protection, as well as religious and political factors that contribute to or hinder these young adults.

More specifically, it was found that the agents of socialization, namely media, family, and government, play important roles in shaping these young adults as vaxx-confident or vaxx-hesitant agents. However, socialization is a two-way process, especially with family members. The input of agents of socialization has both direct and indirect impacts on the perception of these respondents toward vaccination. Upon their crystalized view towards vaccination, these agents, in turn, would socialize with others around them to either become vaxx-confident or vaxx-hesitant themselves. Similarly, the media has been found to shape these young adults to either hinder or promote the likelihood of these individuals getting vaccinated. These individuals then

would use social media as a platform to spread their thoughts and concerns, as well as to educate their significant others. Thus, this adds to the complexity of the population getting vaccinated and the vaccination efforts by the government.

This study also outlines the characteristics of vaxx-confident agents and vaxx-hesitant agents. Previous studies tend to provide a rather simplistic lens and a unidimensional variable of vaccination willingness. Scholars have discussed vaccine hesitancy as anti-vax individuals unwilling to vaccinate. Instead, this study further describes the characteristics and attitudes of vaxx-confident and vaxx-hesitant agents, which showcase the multitude of aspects of these individuals. Although most of the respondents are vaxx-confident agents and are champions of vaccination, it is imperative for policymakers and medical practitioners also to pay attention to the vaxx-hesitant agents. It is imperative to take note of the factors that keep some young adults hesitant, namely the lack of surety on the safety and effectiveness of the vaccine, as well as clarification on the reasons for complications faced by some recipients. The government may put in more effort to further boost young adults’ confidence by providing more research data and facts—especially those highlighted by World Health Organization and medical practitioners. Though minimal, religious leaders’ roles can be further explored as they seem to impact some young adults. The religious teachings and beliefs backed by scientific data may be influential in promoting vaccination among believers.

Findings from this research contribute to understanding COVID-19 vaccine willingness among young adults in the localized context and shed light on factors that may influence vaccination willingness in other collectivistic societies. The study contributes to filling up the research gap in COVID-19 vaccination besides serving as a reference to the policymakers to achieve herd immunity. The limitations and suggestions for future study include the research areas that need to be expanded to more states in Malaysia and the focus group discussion method to enrich the data further to be obtained by the future researcher(s).

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