

Original Article

KNOWLEDGE, ATTITUDE & PRACTICE (KAP) ON BOOSTER DOSE OF COVID-19 VACCINE IN MALAYSIAN ADULTS

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ABSTRACT

COVID-19, also known as coronavirus disease, was caused by SARS-CoV-2 originating from Wuhan, China, in December 2019. More than two years has been passed and now world is facing Omicron wave. Ministry of health (MOH) of Malaysia rolled out Booster dose for Covid-19 to fight against the new variant and now widens its vaccine roll-out to those as young as five years old to combat the disease. In this cross-sectional study was conducted from May 18th, 2022 to June 11th, 2022 through Google form. The questionnaire comprises 33 questions covering demographic data and the KAP of the respondents. The link to the survey was distributed through social media platforms such as Facebook, Instagram, Telegram, and WhatsApp and received over 400 responses. The inclusion criteria for this study were Malaysian citizens aged 18 and above who had received the Covid-19 vaccine and its booster dose. The SPSS statistical package version 28 was used to analyze all data. Less than 10% of the respondents have moderate knowledge, 30% of the respondents have a poor to moderate attitude and 80% of the respondents have poor and moderate practice about booster dose of COVID-19 as they are not sure about the effectiveness of it. There was no significant difference ($p > 0.05$) between age, gender, religion and ethnicity groups regarding KAP of booster dose. Awareness of Booster dose of Covid-19 is significantly improved among the Malaysians because of government vaccine campaign and implication mysejahtera to monitor health status of people. A larger population sample with a longer period of study would reflect a better impression of KAP on booster dose.

INTRODUCTION

COVID-19 infection from human to human is caused by Severe Acute Respiratory Syndrome Virus 2 which is known as (SARS-CoV-2). It will result in a disease called coronavirus disease which was found in 2019 (COVID-19) [1]. In March 2020, the World Health Organization (WHO) announced that the disease COVID-19 as a pandemic. The virus that causes COVID-19 appears to spread easily between people and researchers will continue to discover more about how it spreads over time, the available data shows that it spreads through close personal contact with infected people within a 2-meter distance. The virus also spreads through released respiratory droplets when an infected person sneezes, breathes, coughs, or talks, the virus in the air droplets can be inhaled or enter into the mouth, nose, or eyes of a nearby person. However, COVID-19 can sometimes be spread by exposure to small droplets or mists that remain in the air for several minutes or hours. This is called airborne transmission [2]. Signs and symptoms of Covid-19 may appear two to 14 days after exposure [3]. The period after exposure to the virus and before symptoms appear is called the incubation

period [4]. Common signs and symptoms may include fever, cough, tiredness and loss of taste or smell. Other symptoms of the disease include shortness of breath or difficulty breathing, muscle pain, sore throat, runny nose, headache, chest pain, redness eye (conjunctivitis), nausea, vomiting and diarrhea [2]. Signs and symptoms of Covid-19 may appear two to 14 days after exposure [3]. Symptoms of Covid-19 can range from mild to severe, as some people may have only a few symptoms, while others have no symptoms at all [5].

As an effect, some people may feel worse about a week after they start, such as worsening shortness of breath and pneumonia. The risk of developing severe symptoms of Covid-19 infection increases with age. Also, certain conditions may increase the risk of developing severe symptoms from COVID-19, including serious heart disease, cancer, chronic obstructive pulmonary disease, having type 1 or type 2 diabetes, obesity, hypertension, smoking, chronic kidney disease, sickle cell disease or thalassemia, pregnancy and asthma [6]. The U.S. A recent study showed that unvaccinated people who had previously had Covid-19 were twice as likely to have

a recurrence as those who did get vaccinated. The Centers for Disease Control and Prevention (CDC) recommend a booster dose for people age 65 or older, some people who have been fully vaccinated and whose immune response has weakened over time, such as people who had an organ transplant. People with weakened immune systems may not develop adequate protection after taking two doses of the mRNA-combined COVID-19 vaccine [7]. The additional dose may improve the level of protection against Covid-19. The third dose should be given at least 28 days after the second dose of the mRNA vaccine [8].

METHODOLOGY

This is a cross-sectional and descriptive study which involves 424 samples. Data was collected from 18th May 2022 until 11th June 2022. Online Google form was created and distributed during the worldwide epidemic since it seemed to be an easy approach to build a questionnaire and collect data more methodically.

The questionnaire consisted of four parts: socio-demographic, knowledge, attitude and practices regarding Booster Dose of COVID-19 Vaccine for Malaysian Adults. 33 questions were used regarding three dimensions, which were knowledge, attitude and practical regarding Booster Dose of COVID-19 Vaccine for Malaysian Adults. A pilot study was performed involving 18 people randomly. Any errors have been rectified and later distributed among Malaysian adults via social media such as WhatsApp, Facebook, Telegram and Instagram.

Malaysian citizens, Age 18 and above were included in the study while non-Malaysian citizens, age 18 and below were excluded. The participants range in age from 18 to 77 years old. We selected 424 Malaysians

out of 432 Malaysians at a certain age. Eight responses are excluded because they are not eligible based on our inclusion criteria.

The sample size was calculated using Cochran formula. The sample of 424 was obtained with 5% of allowable error (e) at 95% of confident interval (CI) or Z in the Cochran formula.

Data analysis

Questions about COVID-19 booster vaccination were used to measure knowledge among the population in Malaysia. Malaysian adults citizens were categorized based on their responses. each response was given a score ranging from 1 to 16 with a “1” for the strongly disagree answer and a “5” for answering strongly agree a cut-off level classified as in Table 1.

Questions about COVID-19 booster vaccination were used to measure attitude among the population in Malaysia. Malaysian adults citizens were categorized based on their responses. each response was given a score ranging from 1 to 16 with a “1” for the strongly disagree answer and a “5” for answering strongly agree. A cut-off level classified as in Table 2.

Questions about COVID-19 booster vaccination were used to measure practice among the population in Malaysia. Malaysian adults citizens were categorized based on their responses. each response was given a score ranging from 1 to 16 with a “1” for the strongly disagree answer and a “5” for answering strongly agree. A cut-off level classified as the Table 3.

Data analysis was performed using SPSS version

Table 1: Score and knowledge level

Number of scores	Knowledge on booster dose of COVID-19 vaccine
1-16	Poor knowledge
17-32	Moderate knowledge
33-50	Good knowledge

Table 2: Score and attitude level

Number of scores	Attitude on booster dose of COVID-19 vaccine
1-16	Poor attitude
17-32	Moderate attitude
33-50	Good attitude

Table 3: Score and practice level

Number of scores	Practice on booster dose of COVID-19 vaccine
1-16	Poor practice
17-32	Moderate practice
33-50	Good practice

28. The following statistical methods were used:
- Descriptive statistics – to describe the socio-demographics of respondents.
 - Chi-Square Test – to see the association between variables.
 - One Way ANOVA – to see the difference of mean between two or more groups.

RESULTS

The number of participants in this study was 424 respondents which constitute of 57.3% (243) females and 42.7% (181) males (Figure 1). The respondents were categorized into six age groups. The highest number of respondents was from young adults (18-27 years old) which is 328 (77.8%), followed by older adults (28-37 years old) which is 33 (8%), and middle age (38-47 years old) (Figure 2). The majority of ethnicity was Malay with 302 respondents (71.2%), followed by Indian with 76 respondents (17.9%), Chinese with 30 respondents (7.1%) and other ethnicity with 16 respondents (3.8%) (Figure 3). For religion, the highest percentage was Islam (83.3%), followed by Hindu (8.5%), Buddha (4.5%) and Christian (3.5%) (Figure 4).

The single respondents were 336 (79.2%), married 84 (19.8%) and divorced or separated or widowed were only 4 (0.9%) (Figure 5). Most respondents had tertiary education (75.0%), followed by respondents with pre-university (17.5%), and primary and secondary school (7.6%) (Figure 6). Most of the respondents were from the northern peninsular of Malaysia (Kedah) with 19.8%, followed by respondents from the middle peninsular (Perak) (15.3%), Penang (6.4%), southern peninsular – Johor (4.5%) and lastly from East Malaysia with only 1.4% (Figure 7). Most respondents were living in urban areas (75%) compared to rural areas (25%) (Figure 8).

Knowledge Towards Booster Dose of COVID-19 Vaccines

The total number of respondents is 424. Their responses were analysed and categorized based on their scores. Respondents with 1 to 16 correct answers were considered as having poor knowledge. Those with 17 to 32 correct answers were considered as having moderate knowledge. While respondents who answered 33 to 50 questions correctly were considered as having good knowledge. Our study revealed that 394 respondents have good knowledge of COVID-19 booster vaccination, followed by 30 respondents with moderate knowledge and 0 respondents with poor knowledge. The percentages are 92.9%, 7.1% and 0.0% respectively (Table 4).

Figure 9 shows the knowledge of Malaysian adults on different questions on the Booster dose of COVID-19 vaccine. Most of the participants have high knowledge of COVID-19 booster doses (Question 1). However, they have the least knowledge of the post-booster effect and technology of the vaccine (Question 3 and Question 4).

Attitude Towards Booster dose of COVID-19 Vaccines

The total number of respondents is 424. Their responses were analysed and categorized based on their scores. Respondents with 1 to 16 correct answers were considered as having poor attitude. Those with 17 to 32 correct answers were considered as having moderate attitude. While respondents who answered 33 to 50 questions correctly were considered as having a good attitude. Our study revealed that 297 respondents have a good attitude toward COVID-19 booster vaccination, followed by 124 respondents with a moderate attitude and 3 respondents with a poor attitude. The percentages are 70.0%, 29.2% and 0.7% respectively. This data is shown in Table 4.

Figure 10 depicts respondents' answers for ten questions regarding attitudes towards COVID-19 vaccine. Overall, question 6 and 7 has the most positive answer which are respondents think that taking a booster dose is a social responsibility and booster dose will protect them from COVID-19 infection. Whereas Question 4 has the highest disagreement which is booster dose is prohibited in their religion.

Practice Towards Booster dose of COVID-19 Vaccine

The total number of respondents is 424. Their responses were analysed and categorized based on their scores. Respondents with 1 to 16 correct answers were considered as having poor practice. Those with 17 to 32 correct answers were considered as having moderate practice. While respondents who answered 33 to 50 questions correctly were considered as having good practice. Our study revealed that 58 respondents have good practice on COVID-19 booster vaccination, followed by 365 respondents with moderate practice and 1 respondent with poor practice. The percentages are 13.7%, 86.1% and 0.2% respectively. This data is shown in Table 4.

Figure 11 shows the results of practice towards COVID-19 booster dose in which Malaysian population rejects booster dose mainly due to underlying health condition (Question no 2) or due to currently suffering from any form of illness (Question no 3). The figure also tells us that the practice of boosters is not effective among the Malaysian population as their knowledge and attitude.

Inferential tests were done like One-way ANOVA for age, Ethnicity and religion and t-test for gender and area of residence, it is found that there is no significance of difference of knowledge ($p > 0.05$) in between gender, age, ethnicity, religion and area of residence. And the same indifference to attitude differences in Age, ethnicity, religion and area of residence. However, there are significant differences in attitude between males and females ($p < 0.05$). There was a significant association ($p < 0.05$) between practice category and gender and ethnicity. There was no significant association ($p > 0.05$) between practice category and age, religion and area of residence group.

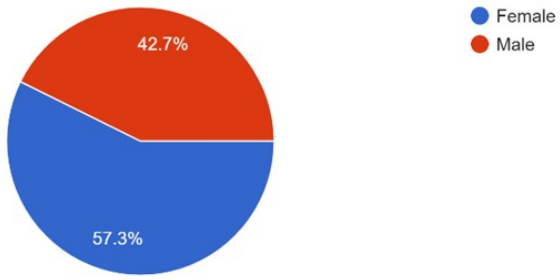


Figure 1: Gender

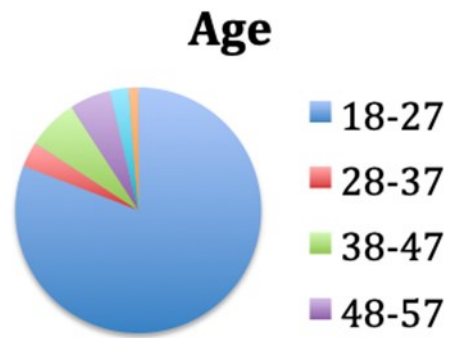


Figure 2: Age groups

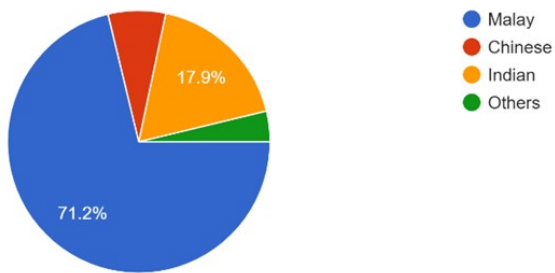


Figure 3: Ethnicity

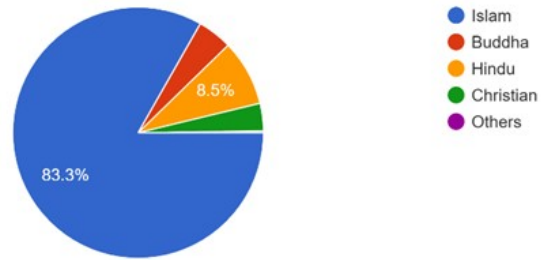


Figure 4: Religion

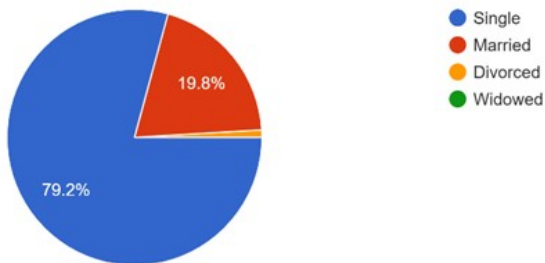


Figure 5: Marital status

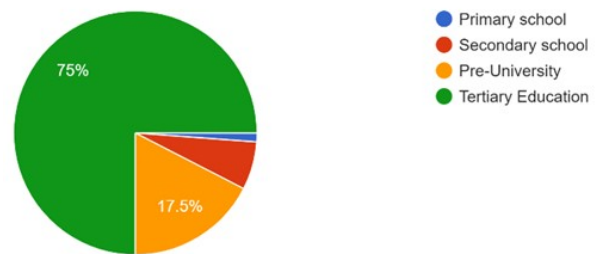


Figure 6: Education

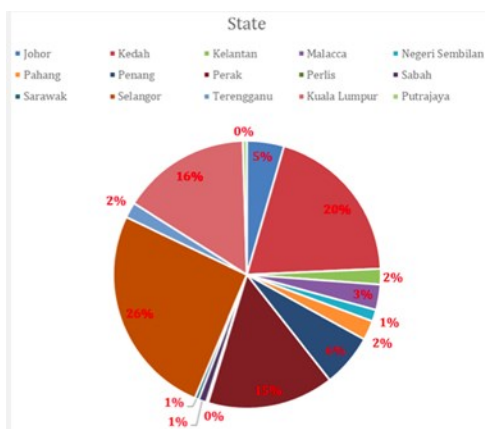


Figure 7: State

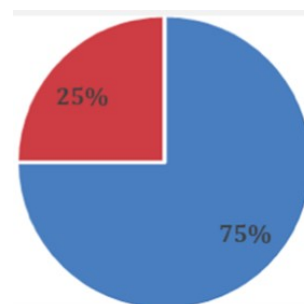


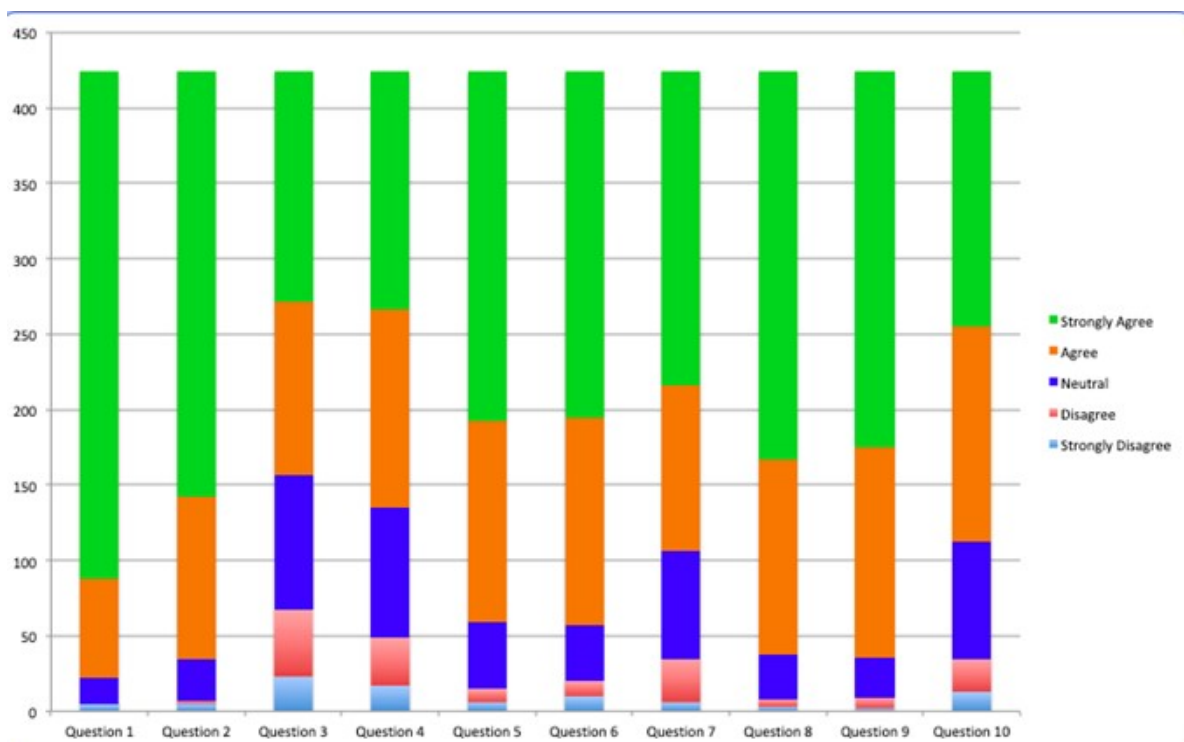
Figure 8: Urban vs Rural area

Table 4: Level of Knowledge, Attitude and Practice towards Booster dose of COVID-19 vaccine

KNOWLEDGE	SCORE RANGE	COUNT	PERCENTAGE
GOOD	33-50	394	92.9%
MODERATE	17-32	30	7.1%
POOR	1-16	0	0%

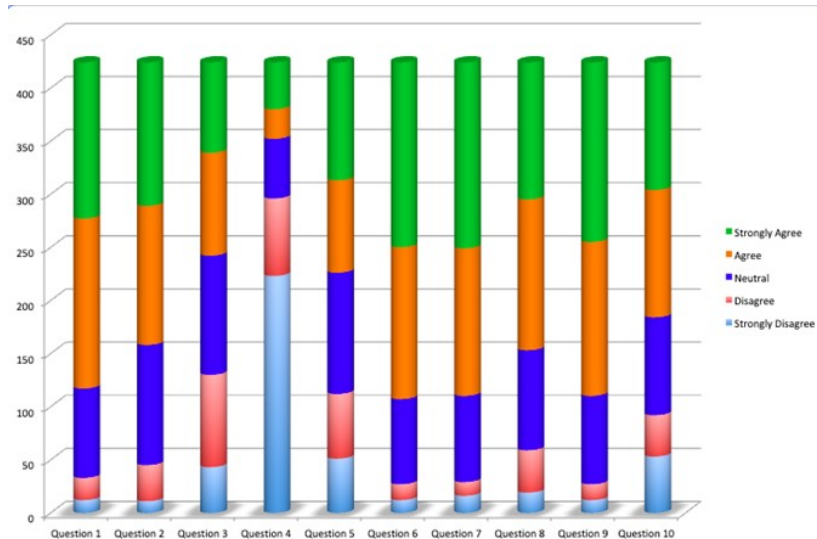
ATTITUDE	SCORE RANGE	COUNT	PERCENTAGE
GOOD	33-50	297	70.0%
MODERATE	17-32	124	29.2%
POOR	1-16	3	0.7%

PRACTICE	SCORE RANGE	COUNT	PERCENTAGE
GOOD	33-50	58	13.7%
MODERATE	17-32	365	86.1%
POOR	1-16	1	0.2%



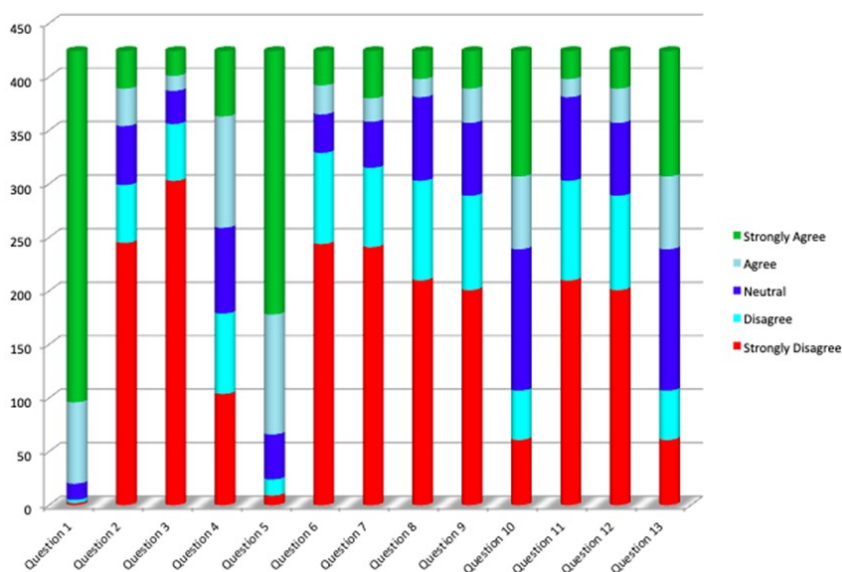
- Q1: I am aware of the existence of booster vaccination
- Q2: I know the importance of the COVID-19 booster vaccination
- Q3: I am aware of the most common post effect of the COVID-19 booster vaccination
- Q4: I am aware of the content/technology of the COVID-19 booster vaccinations
- Q5: I am aware of why I have to take COVID-19 booster vaccination after second dose
- Q6: I am aware of how COVID-19 booster vaccination increase our immunity
- Q7: I am aware of the different companies that produce COVID-19 booster vaccination
- Q8: I know that who should be prioritized first to take the COVID-19 booster vaccination
- Q9: I am aware of the type of Covid-19 booster vaccine provided by the Ministry Of Health
- Q10: I am aware of why the Malaysian government doesn't make COVID-19 booster vaccine as compulsory vaccination

Figure 9: Knowledge on Booster dose of COVID-19 vaccine among Malaysian adults



- Q1: COVID 19 Booster vaccination can provide me long term immunity
- Q2: COVID 19 Booster vaccination can cause serious health complications to certain people
- Q3: COVID 19 Booster vaccination is only required for high risk groups like senior citizens, people with comorbidities and healthcare professionals
- Q4: COVID 19 Booster vaccination is prohibited in my religious teachings
- Q5: COVID 19 Booster vaccination should be made mandatory by the government
- Q6: I believe that taking the booster COVID-19 vaccine is a societal responsibility
- Q7: I believe COVID-19 booster vaccine will be useful in protecting me from the COVID-19 infection
- Q8: I believe that taking the COVID-19 booster vaccination will help in eradicating COVID-19 infection
- Q9: I feel the benefits of taking the COVID-19 booster vaccination outweighs the risks involved
- Q10: I am willing to get the COVID-19 booster vaccination even if I have to pay to get it

Figure 10: Attitude on Booster dose of COVID-19 vaccine among Malaysian adults



- Q1: I have received one of the COVID-19 vaccines
- Q2: If yes, which vaccine product(s) did you receive?
- Q3: I have a health condition or undergoing treatment that makes me moderately or severely immune-compromised and not suitable for COVID-19
- Q4: I have completed 2 doses of the vaccine
- Q5: I am currently suffering from any kind of illness and receiving treatment or medication and not suitable for COVID-19 booster vaccination.
- Q6: I have the following disease. Name of the disease:
- Q7: I experienced a moderate or severe side effect of the previous COVID-19 dose
- Q8: My family already takes a booster dose
- Q9: I do not take the booster dose because I am not sure of the effectiveness of the booster dose effective or not
- Q10: I do not take the booster dose because I am worried about the adverse effects of the booster dose
- Q11: I do not take the booster dose because I am at risk at getting severe covid-19 infection
- Q12: It is difficult to get a booster dose from a nearby vaccine centre
- Q13: Booster dose also protect others who are not fully vaccinated

Figure 11: Practice on Booster dose of COVID-19 vaccine among Malaysian adults

In the questionnaire, respondents were tested for causes of rejection of booster dose in practice questions. The reasons are shown in Figure 11. The main reasons were having underlying diseases and health concerns.

DISCUSSIONS

This study showed that the percentage of respondents with good knowledge of Booster doses of COVID-19 vaccination is high (92.9%). This percentage shows that most Malaysians have good knowledge of COVID-19 vaccination [9]. A study conducted by USIM stated that most Malaysians obtained their information regarding COVID-19 vaccination via internet websites especially the official Ministry of Health (MOH) website [10]. Only a small percentage of the participants of the research were using traditional mass media like newspapers, radio, magazines and news on television to get the newest information about the COVID-19 vaccination. It is known that information acquired by mass media is better compared to social media. The usage of mass media to get information is preferred because it brings out more healthy behaviour in the internet consumer compared to social media. This definitely will influence their decision to get booster dose vaccination [11]. It is also known that poor knowledge of the COVID-19 booster vaccination is due to a low level of education, poor economic status and getting information from unreliable sources while high knowledge of the COVID-19 booster vaccination is due to a high level of education, higher economic status and getting information from reliable sources [12].

In another study in Malaysia, it is found that females have higher knowledge regarding the COVID-19 booster vaccination compared to males [13]. However, this will impact the attitude as knowledgeable females will have poor acceptance towards the COVID-19 booster vaccination. Next, it is also acquired that people who prefer foreign booster vaccination over domestic booster vaccination have poor knowledge. Apart from that, people who are 20 years old and below has lower knowledge about COVID-19 booster vaccinations while people who are 30 years old and above have higher knowledge which is in line with our study. This is because the older generation shows more interest in obtaining current issues including health-related issues compared to the younger generation that opted for entertainment-related issues. In our study, there is no difference between the area of residency and their total knowledge of booster doses of COVID-19 Vaccination [14].

Most of the participants have a good attitude regarding COVID-19 booster vaccination (70.0%). There is a significant difference in gender and attitude toward COVID-19 vaccination by the participants. Based on the previous studies conducted by other researchers from various institutes, it is obtained that the acceptance of booster doses of the COVID-19 vaccine varied amongst different groups [15]. For the first example, students from health and sciences major in degree

have a better understanding and better perception of the COVID-19 booster vaccination compared to students that are not majoring in health and sciences degree courses. This is due to what they have learned throughout their university life leading them to have a better understanding of immunology and pathology [17].

Closely related to the previous point, it is observed that people with higher education and incomes have better attitudes on the COVID-19 booster vaccination [18]. This is because they can have more access to the technologies and resources to get the accurate and latest information about the vaccination and the outbreak itself. Apart from that, people who have contracted the COVID-19 virus previously or their close acquaintances did, will have positive acceptance of the COVID-19 booster vaccination because they are more aware of the importance of getting the vaccination and the benefits of getting vaccination outweigh the side effects that it may cause. In the same research, it is also mentioned that females have lower acceptance rates for COVID-19 booster vaccination compared to males. Based on the observation, it is perceived that males received less information about the vaccine compared to females so they have less risk of misinformation about the vaccination [19].

In another study, it is known that people with high comorbidities have poor attitudes toward the vaccination due to false rumours and misinformation about the COVID-19 booster vaccine [20]. This is worrying because they are the group with a higher risk of getting serious complications from COVID-19 infection compared to other groups. In the same research, it is also obtained that people with a higher risk of getting COVID-19 infections like frontliners who are working in the health field, police, military, and people who have frequent contact with the public like the food delivery man have better acceptance rates on COVID-19 booster vaccination because of their integrity and conscience to protect people around themselves and people around them from getting infected by the COVID-19 virus [21].

Most of the participants have moderate practice regarding COVID-19 booster vaccination (86.1%). There is no difference in the distribution of total practice across categories of religions [22]. Our previous study on the willingness to receive primary COVID-19 vaccination in Malaysia that uses a similar intention scale found 48.2% indicated a definite intent followed by 46.1% reporting a probable intent. Our results indicate that the Malaysian public reported a near similar intention to receive the COVID-19 vaccine booster dose as for receiving the primary COVID-19 vaccine [23]. Achieving very high vaccination coverage for primary vaccination and booster doses represents the most important public health strategy to control the pandemic. Efforts are still needed to address hesitancy toward receiving a booster dose, particularly among those who expressed definite and partial unwillingness and those who remain undecided, as these groups comprise 18.7% of the overall participants.

Although our study found a high willingness to receive

a COVID-19 vaccine booster, there were noticeable demographic and geographical disparities in acceptance. In this study, as average monthly household income increases, so does the willingness to receive the COVID-19 vaccine booster [24]. Acceptance is also relatively high in the central region, the most populous and urbanized in the country. These findings demonstrate that lower-income people living in rural and remote areas, which are disproportionately impacted by COVID-19, may be disproportionately impacted by the pandemic due to a lack of willingness to receive the vaccine, even if the COVID-19 vaccine is widely available for everyone in the country [25].

CONCLUSION

Most of the participants have good knowledge regarding COVID-19 booster vaccination (92.9%). Most of the participants have a good attitude regarding COVID-19 booster vaccination (70.0%). Most of the participants have moderate practice regarding COVID-19 booster vaccination (86.1%). There is no difference in the distribution of total practice across categories of religions. There is no difference between the area of residency and their total knowledge of booster doses of COVID-19 Vaccination. There is a significant difference in gender and attitude of COVID-19 vaccination by the participants. Knowledge, attitude and practice themselves have weak relationships with each other.

The good knowledge, attitude and practice of Malaysians on COVID-19 booster vaccination proved the success of recent policies showing that it should be maintained. Other new effective policies also can be established to increase the percentage of good knowledge, attitude and practice levels among Malaysians. This study has its limitations which might make the result not conclusive and need significant improvements in future studies. Due to unequal questionnaire distribution, this result may not represent each class of Malaysians. In this study, mainly Malays, Muslims, females and adults dominate the results with age between 18-27. This inequality could cause biases in this study. In future studies, we could do large-scale studies with an equal distribution of questionnaires which will give us a clearer picture of the booster dose of COVID-19.

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