Knowledge and Attitude Towards Vaccine Preventable Diseases and Vaccination Among Prospective Malaysian Hajj Pilgrims in Klang Valley, Malaysia

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ABSTRACT

Introduction: Hajj is a unique religious mass gathering among Muslims hosted by Kingdom of Saudi Arabia (KSA) annually. It is a fifth pillar that must be carried out as stated in the five Pillars of Islam. Infections due to Neisseria meningitidis, Streptococcus Pneumoniae and Influenza virus are very high among Hajj pilgrims in KSA. Study shows knowledge and attitude towards vaccine preventable disease and vaccination which is very important for the prevention of these infectious diseases. This study aims to determine knowledge and attitude among the prospective Malaysian hajj pilgrims on vaccine preventable disease and vaccination. Method: A cross sectional study was conducted among prospective hajj pilgrims in June 2019. Self-administered questionnaires were given to the respondents through simple random sampling. The socio-demographic characteristics were described using descriptive analysis. Chi-square test was used to analyse the association between the socio-demographic and Malaysian hajj pilgrims’ knowledge and attitude towards the vaccine preventable diseases and vaccination. Results: A total of 135 respondents were recruited in the study. There were statistically significant associations between the knowledge and the highest education level (p=0.01), and also between the knowledge and the occupation (p=0.02) on vaccine preventable disease and vaccination. Conclusion: There is a lack of knowledge among the Malaysian hajj pilgrims about these vaccine preventable diseases and vaccination, especially those who have lower education level and also unemployed. Tabung Haji are highly advised to focus on this group and prepare a special course that focused on these vaccine preventable diseases so that Malaysian Hajj pilgrims will be protected.

Keywords: Knowledge, Attitude, Meningococcal, Influenza, Pneumococcal, Malaysia

INTRODUCTION

Hajj is a unique religious mass gathering among Muslims hosted by Kingdom of Saudi Arabia (KSA) annually. It is a fifth pillar that must be carried out as stated in the five Pillars of Islam. This religious duty must be performed by Muslims at least once in their lifetime for those who are physically and financially capable to do it (1). Apart from being obligatory duty for Muslims, this eventful religious gathering can bring together and stronger the brotherhood among Muslims from different parts of the world irrespective of their sociodemographic characteristics.

According to the General Authority for Statistics of KSA, there has been substantial increase in the number of pilgrims during the last five years from the year 2013 to 2018 which is from 1,980,249 increase to 2,371,675 pilgrims. 612,953 of the total pilgrims in 2018 were from domestic pilgrims and 1,758,722 of them were from other countries’ pilgrims (2). It was reported from Tabung Haji Malaysia, that Hajj quota for Malaysian increased to 30,200 in 2018 from 22,230 people in 2013 (2).

Higher risk of transmission of infectious disease can be found with increased in the number of pilgrims to the
The data was collected using self-administered questionnaires adapted from previous study (6-8). Section A was designed to determine the socio demographic status of respondents including gender, age, highest educational level, marital status and occupation. Section B was designed to measure the knowledge and attitude towards vaccine preventable diseases and vaccination. The questionnaire focused on the mandatory and strongly recommended vaccines by Kingdom of Saudi Arabia. The knowledge questions focused on the mode of transmission, risk of contracting diseases and mandatory vaccination uptake for meningococcal vaccine and also additional immunization. For awareness part, the questions focused on the general knowledge regarding the meningococcal, influenza and pneumococcal diseases and vaccination, their common symptoms. Questions in attitude section includes acceptsances and attitudes toward vaccination policy instructed by Saudi Arabia government, vaccination benefit, additional information about the vaccines and their attitude to seek for more information regarding vaccination for pilgrims. Finally, the last 3 questions were designed to determine the attitude towards the practice of Malaysian pilgrims on their obligatory towards vaccination program required by Tabung Haji and others preventive measure.

The total questions for knowledge were 5 with maximum score of 5. One score was given for each correct response. Scores equal or more than 4 (75% of the maximum score) was considered ‘good knowledge’. Awareness questions were not scored and only analysed descriptively. Meanwhile, 7 questions (with the maximum score of 7) were designed to assess the attitude. Scores equal or more than 5 (approximately 75% of the maximum score) was considered ‘good attitude’.

Ethics Statement
This research was conducted with the approval from JKEUPM (Ethics Committee For Research Involving Human Subject) and also from Tabung Haji. Written informed consent was obtained from each of the respondents for this research.

Statistical Analysis
Statistical Package for the Social Science (SPSS Version 25) was used to analyse the data. These data were used to do descriptive analysis in order to determine the frequency and percentage of the sociodemographic characteristics. Chi-square test was used to compare between 2 categorical variables and association between the level of knowledge and level of attitude. The level of significance was set as $\alpha = 0.05$ and a p-value that is less than 0.05 was considered significant.

RESULTS

Demographic characteristics
Among 138 questionnaires that were distributed to Hajj pilgrims in Klang Valley only 135 questionnaires were...
collected back completely with consent. The response rate was 98%. Majority (43.0%) of the Hajj pilgrims were at the age range of 56 to 65 years old. 84 (62.2%) of them were females and 51 (37.8%) of them were males and (91.1%) of them were married. Majority had secondary qualifications (45.2%). Almost a third of them (28.9%) were housewives (Table I).

Table I : Frequency distribution of answers regarding knowledge of Hajj Pilgrims in Klang Valley towards vaccine preventable diseases and vaccination (n=135)

<table>
<thead>
<tr>
<th>No.</th>
<th>Knowledge</th>
<th>Yes (%)</th>
<th>No (%)</th>
<th>Not Sure (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Which of the following is transmitted by respiratory droplets?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>a)</td>
<td>Meningococcal disease</td>
<td>60 (44.4)</td>
<td>75 (55.6)</td>
<td>NA</td>
</tr>
<tr>
<td>b)</td>
<td>Influenza</td>
<td>99 (73.3)</td>
<td>36 (26.7)</td>
<td>NA</td>
</tr>
<tr>
<td>c)</td>
<td>Pneumococcal disease</td>
<td>64 (47.4)</td>
<td>71 (52.6)</td>
<td>NA</td>
</tr>
<tr>
<td>2</td>
<td>Do you think you are at risk of contracting the disease when you travel to Mecca?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>94 (69.6)</td>
<td>25 (18.5)</td>
<td>16 (11.9)</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Which vaccination is mandatory according the Saudi Arabia policy for Hajj Pilgrims?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>a)</td>
<td>Meningococcal disease</td>
<td>76 (56.3)</td>
<td>15 (11.1)</td>
<td>44 (32.6)</td>
</tr>
<tr>
<td>b)</td>
<td>Influenza</td>
<td>42 (31.1)</td>
<td>49 (36.3)</td>
<td>44 (32.6)</td>
</tr>
<tr>
<td>c)</td>
<td>Pneumococcal disease</td>
<td>32 (23.7)</td>
<td>59 (43.7)</td>
<td>44 (32.6)</td>
</tr>
</tbody>
</table>

NA= Not Applicable

Knowledge of prospective Malaysian Hajj pilgrims towards vaccine preventable diseases and vaccination

Majority (87%) of respondents had poor knowledge (scores less than 4 out of 5) towards vaccine preventable diseases and vaccination. Sixty (44.4%) respondents were able to identify meningococcal disease as transmitted by respiratory droplets whereas for influenza, 73.3% were able to identify the mode of transmission. On the other hand, 64 out of 135 (47.4%) successfully identified that pneumococcal disease is transmitted by respiratory droplets. For the knowledge regarding the risk of contracting diseases in Mecca, majority of them (69.6%) identified that Hajj pilgrims are at risk of contracting the diseases in Mecca. In terms of knowledge on the mandatory vaccination based on the Saudi Arabia policy (8) for Hajj pilgrims, slightly more than half of the Hajj pilgrims (56.3%) were able to identify meningococcal vaccine as mandatory vaccination (Table I).

Attitude of prospective Malaysian Hajj pilgrims towards vaccine preventable diseases and vaccination

Majority (88.9%) were reported to have good attitude. Almost all (97.0%) respondents agreed that vaccination is beneficial to them. Most of the respondents, 98.5% (133) stated that it is important to receive vaccine if it required and 78.5% of the respondents also agreed to receive vaccines if it is just recommended. About 80% (108) of the respondents will seek more information about vaccine preventable diseases and vaccination for Hajj Pilgrims. Majority (98.5%) of the respondents followed the obligatory vaccination program provided by Tabung Haji. Unfortunately, only 35.6% of the respondents searched for other available vaccines and 85.2% of the respondents stated that they will apply preventive measures such as wearing masks to avoid meningococcal, influenza or pneumococcal infection during the Hajj season (Table II).

Table II : Frequency distribution of answers regarding attitude towards vaccine preventable diseases and vaccination (n=135)

<table>
<thead>
<tr>
<th>No.</th>
<th>Attitude</th>
<th>Yes (%)</th>
<th>No (%)</th>
<th>Not Sure (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Do you think vaccination is beneficial?</td>
<td>131 (97.0)</td>
<td>0 (0.0)</td>
<td>4 (3.0)</td>
</tr>
<tr>
<td>2</td>
<td>Is it important to receive vaccines if it is required?</td>
<td>133 (98.5)</td>
<td>0 (0.0)</td>
<td>2 (1.5)</td>
</tr>
<tr>
<td>3</td>
<td>Is it important to receive vaccines if it is just recommended?</td>
<td>106 (78.5)</td>
<td>20 (14.8)</td>
<td>9 (6.7)</td>
</tr>
<tr>
<td>4</td>
<td>Will you seek more information about vaccine preventable diseases and vaccination for Hajj Pilgrims?</td>
<td>108 (80.0)</td>
<td>21 (15.6)</td>
<td>6 (4.4)</td>
</tr>
<tr>
<td>5</td>
<td>Do you follow the obligatory vaccination programs?</td>
<td>133 (98.5)</td>
<td>10 (7.7)</td>
<td>0 (0.7)</td>
</tr>
<tr>
<td>6</td>
<td>Will you search for other available vaccines (Example: Hepatitis, Yellow Fever)?</td>
<td>48 (35.6)</td>
<td>71 (52.6)</td>
<td>16 (11.9)</td>
</tr>
<tr>
<td>7</td>
<td>Will you apply any preventive measure (Example: Wearing Mask) to avoid meningococcal, influenza or pneumococcal infection?</td>
<td>115 (85.2)</td>
<td>13 (9.6)</td>
<td>7 (5.2)</td>
</tr>
</tbody>
</table>

Awareness of prospective Malaysian Hajj pilgrims towards vaccine preventable diseases and vaccination

Influenza was the most heard disease (82.2%), followed by pneumococcal disease (62.2%) and meningococcal disease (61.5%). Besides that, common symptom that mostly heard was influenza with 69.6% of respondents followed by pneumococcal disease with 45.9% and meningococcal meningitis 45.9%. For the vaccination, influenza vaccination also was the most heard by the respondent with 83.7% of the respondent, while meningococcal vaccination with 76.3% and pneumococcal vaccination with 71.9%.

Source of information

Majority (68%) of respondents received information regarding vaccine preventable diseases and vaccination from healthcare providers. Other sources of information include social media (42%), posters or flyers (24%), television and radio (29%) and friends or family (17%).

Association between socio-demographic factors of Hajj pilgrims and level of knowledge towards vaccine preventable diseases and vaccination

For socio-demographic factors, there was no significant association between age (p=0.10), gender (p=0.49) and marital status (p=1.00) with level of knowledge of...
Association between socio-demographic factors of Hajj pilgrims and level of attitude towards vaccine preventable diseases and vaccinations

There are no significant association between age (p=0.95), gender (p=0.06), marital status (p=0.36), highest education level (p=0.81) and occupation (p=0.39) with the level of attitude of respondents (Table 4).

Association between level of knowledge and level of attitude of Hajj pilgrims

Among those who have good knowledge, a slightly higher percentage (91.7%) of them have good attitude. Among those who have poor knowledge, only 87.4% have good attitude. However, the results are not significant (p = 0.45) (Table 5).

DISCUSSION

Based on the finding, we can see that most of the pilgrims were aged from late 40s until 60s age group which most probably because of the policy made by Lembaga Tabung Haji in a “First-Come, First-Served” concept for hajj registration system since 1995. There was similar study regarding the fundamental of Hajj demand for healthcare services within congestion in

9. Makkah reported the highest number of respondents are 51-60 years old age group (9).

Only 35.6% of Hajj pilgrims were reported to have good knowledge. This result generally showed relatively poor knowledge among Malaysian Hajj pilgrims towards vaccine preventable diseases and vaccination. Similar study conducted on knowledge of Hajj pilgrims towards infectious diseases and vaccination demonstrated a significant lack of knowledge (6,8,10). However, it can be improved after educational intervention as shown in the study conducted in the year 2011 in which they used health educator to improve knowledge of healthy behaviour among Hajj pilgrims (11). For question regarding the mode of transmission, it was noted that most of the pilgrims (73.3%) were able to identify the mode of transmission for influenza but only 44.4% and 47.4% of them were able to identify the mode of transmission for meningococcal and pneumococcal respectively. This is on par with the research conducted in Egypt as only 23% among the Egypt Hajj pilgrims were able to identify the mode of transmission for meningococcal and pneumococcal respectively.
transmission of meningococcal disease (6). Majority of the respondents (69.6%) identified that Hajj pilgrims are at risk of contracting the diseases in Mecca and slightly more than half of them (56.3%) were able to identify the meningococcal vaccine as a mandatory vaccine. These results show it is important to further educate Malaysian Hajj pilgrims regarding vaccination to ensure their safety throughout their journey to Mecca.

On the other hand, 88.9% of Hajj pilgrims were reported to have good attitude. Almost all of them (98.5%) stated that they followed the obligatory vaccination provided by Tabung Haji and it is important to receive vaccine if it is required while, 78.5% of the respondents also agreed to receive vaccines if it is just recommended. Besides that, 80% of the respondents said they will seek more information about vaccine preventable diseases and vaccination for Hajj Pilgrims, supporting the data from study conducted to Egypt’s Hajj pilgrims about knowledge and attitude towards meningococcal vaccination (6). This attitude to seek more information is a good sign to Malaysian pre-travel counselor because the health education regarding the risk diseases and vaccination is potentially effective and useful. 97% of the respondents agreed that vaccination is beneficial to them and 85.2% of the respondents stated that they will apply preventive measures during Hajj seasons but unfortunately, only 35.6% of the respondents searched for other available vaccines. The generally good attitude towards the vaccine preventable diseases and vaccination may be due to the experience shared by the previous Hajj pilgrims that gave a good insights and understanding.

Most Malaysian Hajj pilgrims were aware of influenza (82.2%) followed by pneumococcal disease (62.2%) and meningococcal disease (61.5%). In Malaysia, the high awareness of influenza may be due to the more frequent outbreak and it is relatively more common compared to the other diseases. Thus, the information regarding influenza is more widely disseminated. In terms of the common symptoms, similarly, most of the respondents were aware of influenza with 69.6% of respondents followed by pneumococcal disease with 45.9% and meningococcal meningitis 45.9%. Research from Egypt regarding attitude about meningococcal vaccination among hajj pilgrims reported that only less than one third of the participants (28%) knew that meningococcal meningitis presents with headache, fever, and unconsciousness (6). Furthermore, most of the Algerian Hajj pilgrims (56.80%) did not know anything about pneumococcal disease (12). This is a good indication to focus the education towards meningococcal meningitis and pneumococcal disease. For awareness in the context of vaccination, influenza vaccination is the most heard by the respondent with a high percentage at 83.7%, while meningococcal vaccination with 76.3% and pneumococcal vaccination with 71.9%. In conclusion, Malaysian Hajj pilgrims were more aware of influenza in terms of disease, symptoms and also the vaccination. However, knowledge about meningococcal disease and vaccination is low even though the vaccine is compulsory. This situation might be due to the fact that meningococcal disease is far less common than influenza in this country.

There were no significant association between age (p=0.10), gender (p=0.49) and marital status (p=1.00) with the level of knowledge. For the age group, previous studies showed opposite result whereby there was a significant association between the age and the level of knowledge (p=0.0014 and p=0.002) respectively (6,13). The difference may be highly due to the briefing given by Tabung Haji or health authorities regarding disease and vaccination is not specific for certain age groups only. There was a similar finding regarding the non-significant result between gender and level of knowledge in the research reported in the study towards MERS-CoV infection at Makkah hospital (13). In contrast with research finding among Egypt’s Hajj pilgrims regarding meningococcal vaccine, where it stated that the level of knowledge is affected by marital status (p=0.011) (6), our result showed there was no significant association between marital status and knowledge’s level. This could be due to the lower number of respondents that are unmarried participated in the research compared to the high number of married respondents. There were a significant association between the level of knowledge with highest education level (p=0.01) and occupation (p=0.02). The finding is in line with study reported regarding knowledge towards antibiotic use among pilgrims attending the 2015 Hajj gathering where education level and health related occupation was significantly correlated with level of knowledge (14).

There was no significant association between level of attitude with age (P=0.95), gender (0.06), marital status (p=0.36), highest education level (p=0.81) and occupation (p=0.39). Similar result was found in the study conducted towards healthcare provider at Mecca hospital whereby age (p=0.882), gender (p=0.749) and occupation (p=0.39) were not significantly affecting the level of attitude (13). However, study about antibiotic used among pilgrims in 2015 reported that there was a significant association between the age, education and occupation with the level of attitude (14). Similarly, there was a study showed that marital status was a significant factor in determining the level of attitude (15). This may be due to the unbalanced number of respondents between unmarried to married where married had higher in number compared to unmarried respondents. Other than that, strict implementation of vaccination among Hajj pilgrims which have been forced by the government despite age group might be the cause of insignificant result. The difference between the result also may be due to the due to respondent’s
own awareness about vaccination and the disease as it’s being highlighted by Tabung Haji and other health authority during Hajj preparatory course regarding vaccination and prevention of the disease related to it.

There was no significant association between the level of knowledge towards vaccine preventable diseases and vaccination and level of attitude towards vaccine preventable diseases and vaccination among Malaysian Hajj pilgrims \((p=0.45)\). However, significant positive correlations were found between the mean knowledge score and attitude score in similar study \((13)\). Besides that, similar positive correlation between knowledge and attitude of healthcare workers towards MERS-CoV was reported in a study conducted in multispecialty hospitals of Qassim, Saudi Arabia \((16)\). From the previous research, it could be established that adequate knowledge can lead to positive attitude. The theory of Reasoned Action also explained the findings. The reason why the results from our research differ from the previous research is most probably due to our limitation that prevent us to get more samples.

CONCLUSION

Meningococcal disease, pneumococcal disease and influenza are the three main vaccine preventable diseases that can cause serious outbreak during Hajj season and occurs among considerable crowding and pilgrim density. There is a lack of knowledge among the Malaysian hajj pilgrims about these vaccine preventable diseases and vaccination, especially those who have lower education level and also unemployed.

RECOMMENDATIONS

More comprehensive and interactive slots should be conducted during hajj preparatory course to ensure all pilgrims understand the risk and related prevention. The information should be disseminated months before Hajj season so that the pilgrims have adequate time to explore more about the diseases and to look for related vaccines. Sessions should be conducted by giving out lectures on health education and distribute brochures with information regarding infectious diseases focusing on the three main vaccine preventable diseases which are meningococcal disease, pneumococcal disease and influenza, symptoms of the disease, mode of transmission and vaccination should be given to pilgrims.

In addition, general preventive measures that include hand hygiene, cough etiquette and wearing mask should also be disseminated. Last but not least, all pilgrims should be encouraged to give a prior report on pass travel history and hospitalization to their primary care provider or health professional in order to consider the possible acquisition of Hajj-related contagious disease and to implement appropriate measures to prevent the spread of the diseases.

ACKNOWLEDGEMENT

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REFERENCES


Keywords: vaccination, vaccine refusal, attitudes towards vaccination, systematic. Introduction. Data on the methods and results of an empirical study of the vaccine refusal phenomenon among any population group had to be available; the studies had to focus on attitudes/behavior leading to the rejection of all or most vaccines (but not any one specific vaccine) for oneself and/or one's children. A cross-sectional survey among Malaysian Hajj and Umrah pilgrims in 2018. The uptake of the recommended vaccines was surveyed through an anonymous self-administered questionnaire to pilgrims attending a pre-departure Hajj/Umrah orientation course. Descriptive statistics were used for elaborating the demographic characteristics and vaccines uptake of the respondents. Multiple logistic regression was used for predicting the factors associated with the vaccines' uptake. A total of 1,274 pilgrims participated in the study with a mean age (standard deviation) of 42.42 (15.6). A total of 833 (65.4%) participants were females and 232 of the participants (18.2%) had at least more than one chronic disease. However, the vaccination uptake among Saudi pilgrims has not been assessed in recent years. Objective This analysis aims to evaluate influenza vaccine uptake among Saudi Hajj pilgrims, and identify the key barriers to vaccination. Method Data on influenza vaccination were obtained from Saudi pilgrims who took part in a large trial during the Hajj of 2013, 2014 and 2015. The vaccination uptake among Malaysian Hajj and Umrah pilgrims is low and declining from previous years. Educating the pilgrims toward vaccine uptake is essential and exploring the barriers for vaccination. The pre-travel vaccination is a major essential component that reduces the risk of vaccine-preventable diseases as recommended by the World Health Organization (WHO) (10). Similarly, it is vital in preventing the risk of transmission of the infections from pilgrims returning to their home countries with the bacteria carriage (11). Malaysia is a predominant Muslim country and the recent surge in vaccine-preventable disease enticed us to conduct a survey to measure the Knowledge, Attitude and Perception of Muslim parents toward vaccination process. The data were collected under four segments such as demography, Knowledge, Attitude and Perception. The questionnaire had high internal consistency (0.823) for Cronbach's alpha. The sociodemographic determinants such as marital status (OR = 1.12; 0.91-1.38;p < .05), education level (college OR = 1.35; 1.12-1.64;p < .05, secondary OR = 1.22; 1.01-1.47;p < .05) and the occupation of parents (OR = 1.25; 1.07-1.45;p < .05) were observed affecting the Knowledge score significantly.