

ORIGINAL ARTICLE

THE FUNDAMENTAL OF HAJJ DEMAND FOR HEALTH CARE SERVICES WITHIN CONGESTION IN MAKKAH

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ABSTRACT

The large population of human congestion in Makkah during Hajj would promote contagious diseases. Thus, the pilgrims require health care services that are efficient, effective, and high quality. The aim of this study is to determine the type of health-related problems among Malaysian pilgrims and to identify the health care services required by them during Hajj in Makkah. A cross-sectional study was conducted in which involved 379 Malaysian pilgrims in 2013/14234H. The survey was conducted after the pilgrims completed their Hajj ritual. A total of 400 sets of questionnaires were distributed at Abraj Janadriyah Hotel, which was occupied by more than 3000 Malaysian pilgrims. The response rate for this survey was 93%. Male respondents were constituted of 49.6% and female respondents were 50.4% with the mean age 52 years old. The underlying disease among Malaysian pilgrims during Hajj was respiratory disease (77.5%). The demands for health personnel (36.1%) and quality medication (34.7%) are among the important healthcare services required by the Malaysian pilgrims in Makkah. Respiratory disease is a common disease experienced by Malaysian pilgrims in Makkah. A certain types of services such as health personnel and quality medicine are strongly demanded by the Malaysian pilgrims to overcome their health problem during Hajj. This research provides a fundamental input to the health care providers, and also benefited the Hajj management authority to improve the quality of hajj management in future.

Keywords: Healthcare management, Hajj pilgrims, and health demand

INTRODUCTION

Hajj is the fifth pillar in Islam and attracts over 2.5 million pilgrims from more than 140 countries to perform Hajj in Makkah, Saudi Arabia in order to respond to the commands of Allah the Almighty¹. Muslims who are capable physically and financially must perform Hajj once in their lifetime. Makkah is the birthplace of Prophet Muhammad and it is considered as the holiest city in Islam. The Hajj brings millions of pilgrims from different nationalities with different colours of eyes, custom, gender, and ethnicity where the population density can reach seven people per square metre². Hajj takes place on a fixed date of five to six days between the 8th and the 13th days in the month of *Dhu al-Hijjah*, the twelfth month in Muslim calendar³. Muslims depend on the Islamic lunar calendar or known as the *Hijri* calendar to perform Hajj, in which the *Hijri* calendar is shorter than the Gregorian calendar by 10 or 11 days. Therefore, the period to perform Hajj falls 10 or 11 days earlier each year. This inconsistency caused climatic difference occurred from one hajj season to another, and thus affects the types of diseases in different climatic season. During hot weather, heat-related diseases become a common health problem during Hajj^{4, 5}. Diseases transmission usually occur during intense congestion of humans, physical fatigue, and

extreme climatic conditions⁶, which increase the needs of the the pilgrims to get more effective and efficient healthcare services during Hajj. For Hajj, the Malaysian pilgrims stay in the holy land for about six weeks. In the year 2013 Hajj season, approximately two-thirds of the Malaysian pilgrims arrived in Madinah where they spend a minimum 8 days in the city, which is also known as "City of the Prophet". Then they move to Makkah to perform the Hajj rituals, meanwhile, the remaining of the pilgrims went directly to Makkah and travel in groups to Madinah after completing the Hajj rituals. After the rituals of the Hajj have been completed, the pilgrims stay at a transit place called Madinatul-Hujjaj in Jeddah before returning home from Jeddah airport.

The path of the Hajj pilgrimage

Hajj has begun hundreds of years ago in Makkah. Based on the Islamic teaching, Hajj rituals start on the Arafah day, 9th of *Dhu al-Hijjah* when all pilgrims gather on the plain of Arafah, where the pilgrims seek forgiveness from Allah. Arafah is located about 21.9 km southeast of Makkah. After the sunset on the 9th *Dhu al-Hijjah*, they move together with equanimity and peacefulness towards Muzdalifah, the place where all pilgrims₁

collected pebbles for the throwing and spend a night there on 10 *Dhu al-Hijjah* before proceed into Mina, which is located at about 7 km northeast of Makkah. Most of the pilgrims camp for three days at the camping site of Mina in overcrowded condition. After the pilgrims finish throwing the pebbles at three *Jamarat*, which are *Jamaratul Oola*, *Jamaratul Wusta*, and *Jamaratul Aqaba* on the 11,12,13 *Dhu al-Hijjah* as a symbolic of stoning the devil, then the pilgrims shave their heads, perform the sacrifice ritual (to thank God for his blessings), and celebrate *Eid al-Adha*. The *Hajj* includes circumambulation (*Tawaf*) of the *Ka'ba* seven times which may cover the distance between 500 m to 1 km, and is followed by sa'e, a ritual which require the pilgrims to walk between the hills of Safa and Marwa seven times. The distance between the two hills is 420 m which means the total distance covered in seven times is 2.94 km.

Health problem during Hajj

The simultaneous movement of a very large group of people during *Hajj* may cause numerous risks of health problems such as communicable as well as noncommunicable diseases. Communicable diseases can be easily spread during congestion. The extreme crowds, insufficient basic facilities, and close contact during *Hajj* would make the transmission of contagious diseases easier, such as the respiratory diseases. Several studies have reported that respiratory infections are the most common illnesses among the pilgrims⁷ and pneumonia is the main reason for hospital admission which is 39% of total hospital admission¹. Other health problems include cardiovascular diseases⁸, gastrointestinal problems⁹, and meningococcal diseases¹⁰. Respiratory symptoms recorded the high prevalence among Malaysian pilgrims. Approximately 90% of the Malaysian pilgrims suffered from cough, runny nose (79.3%) and fever (59.2)¹¹. Another study by Choudhry A et al. reported high incidence of respiratory diseases among the pilgrims from Riyadh (39.8%), this result concur with the study conducted by Gautret P et al. that showed the prevalence of respiratory diseases was 15.6% among France pilgrims. Meanwhile, respiratory diseases also were detected among the pilgrims from Pakistan, (49%)¹², Iran (35.2%)¹³ and Egypt (cough 28.2%, fever, 25.0%)¹⁴.

Services provided by the Hajj Fund (Tabung Haji)

Due to the high prevalence of diseases and high morbidity rate among the pilgrim during *Hajj*, thus it is not a surprise that the demands or desires of

health care services continuously increasing. The provisions of the health care services have been provided by the Ministry of Health and co-administer by the Malaysian *Hajj* Fund (Lembaga Tabung Haji [LTH]). TH is an institution that plays an important role in managing the Malaysian pilgrims during *Hajj*. It manages two types of *Hajj* packages, which are *muassasah* (*Hajj* services partially subsidized by the LTH) and private package provided by tour and travel agents. The LTH allows tour and travel agents to provide private *hajj* packages as an alternative for pilgrims who do not want to

use the *muassasah* service. Approximately, at least 28,000 Malaysian *hajj* pilgrims perform *Hajj* every year. Tabung Haji Malaysia provided both welfare services to the Malaysian pilgrims during *Hajj* such as providing necessary accommodation, providing saving and withdrawal services, counseling, as well as medical services and medical information to the pilgrims. Tabung Haji Malaysia also provided pre-*Hajj* services including medical assessment, *Hajj* registration, *Hajj* guidance courses, and travel arrangement¹⁵. In an effort to overcome health problems faced by Malaysian pilgrims in the Holy Land, TH has established 6 medical facilities to the pilgrims such as Syishah Medical Centre, Tabung Haji clinic in Makkah, Aziziah Medical Centre, Medina medical centre, Madinatul Hujjaj clinic in Jeddah, and Maktab clinics. It is required that, for those pilgrims who become very ill are referred to Saudi Ministry of Health's hospital. Although LTH has allocated a lot of services, the authority still unable to meet the pilgrims' satisfaction. Therefore, this study is conducted to determine the type of problems related to health faced by the Malaysian pilgrims during *Hajj* and to identify the health care services needed by them within their stay in Makkah for *Hajj* pilgrimage.

MATERIAL AND METHOD

Study design and populations

A cross-sectional study was conducted among 379 Malaysian *Hajj* pilgrims during the *Hajj* season in October 2013/1434 H. This study was conducted in Makkah, Kingdom of Saudi Arabia. Approximately, 28,000 Malaysian were selected to perform *Hajj* in this mentioned year. The survey was conducted after the pilgrims completed their *Hajj* ritual starting from 14 *Dhu al-Hijjah* 1434 H until all pilgrims departed to Malaysia. A total of 400 sets of validated questionnaires were distributed to *Hujjaj* in Makkah together with the consent form at Abraj Janadriah Hotel. This hotel accommodated a total of three Maktab ie. Maktab 90, 91 and 97. Maktab refer to the pilgrims' accommodation in Makkah, which contains a total

of 2500 to 2800 pilgrims in each maktab. Ethical approval was obtained from USM Research and Ethics Committee prior to conducting this research. A random sampling technique was applied in the selection of respondents among Malaysian *Hujjaj*, which involved women and men who performed *Hajj* either under the management (*muassasah*) or private package. Only those who are willing to share their experience, opinions, and suggestions for a better *Hajj* management were selected for this study. The data collection was conducted for two weeks with assistance from the well-trained enumerators in Makkah.

Questionnaires

The questionnaire was constructed based on the information gathered from the focus group discussion (FGD) held among those who had performed *Hajj* for the past 2 years either under *muassasah* or private package managements. The questionnaire had gone through the validity and reliability tests before distributed to the respondent in Makkah. The questionnaire was structured into four separate sections, comprised of both open-ended and close-ended questions. The health status information and health care services available and/or provided during the season were analysed in detail. The language applied in this questionnaires was Malay language because all pilgrims able to understand Malay and they can answer the questions.

Statistical Analysis

The data was analysed using the Statistical Package for the Social Sciences (SPSS version 2.0). The results were expressed in terms of number, mean, and standard deviation. We used the

Pearson's Chi-square to test for independence. We also used multivariable analysis to study the factors associated with the problems during the *Hajj* among Malaysian *Hajj* pilgrims. *p*-value of <0.05 was considered to be statistically significant.

RESULTS

The response rate for this survey was 93%. Out of 400 pilgrims who returned the questionnaires, 30 pilgrims did not complete the questionnaires. Therefore, a total of 370 questionnaires completed and were analysed. The majority (86.6%) of the pilgrims performed *hajj* with their companion and 11 (3.1%) of the respondents were disabled people. Out of these, 4 of them have vision problems and physical disabilities, while 2 of them have hearing problem. Male respondents were constituted 49.6% and female respondents were 50.4%. Overall, the respondents' average age was 52 years old, where majority of them (41.4%) fall into the age category of 51-60 years old. The respondents' socioeconomic outcomes showed that most of them are government servants (31.9%). Most of the respondents earned RM1001-RM3000 monthly of living, while, only 21.7% of the respondents earned below than RM1000.

Sixty-six respondents (18.8%) reported that they perceived problems during Hajj performed that year. Most of the problems were related to the distance they had to walk from hotel to Masjidilharam (50%), which was quite far (875 m), congestion (30%), unavailable transport to Masjidilharam (6.7%), lack of facilities for pilgrims such as toilet and water supply (5%), pilgrims' attitudes on hygiene (3.3%), and long distance to go and perform worship in Mina (5%) as presented in Table 1 below.

Table 1: Socio-demographic, socio-economy data, and the pilgrimage information, (n=370)

Variable	Frequency	%
Age in years; mean (SD) 52.18(11)		
≤30 years old	17	4.8
31-40	28	7.9
41-50	92	26.1
51-60	146	41.4
≥61 years old	70	19.8
Gender		
Male	181	49.6
Female	184	50.4
Occupation:		
Government	117	31.9
Private	55	15.0
Self-employed	68	18.5
Retired	69	19.0
Retired/Housewife	56	15.2
Not working or student	2	0.5
Salary:		
Below than RM1000	70	21.7
RM1001-RM3000	92	28.6
RM3001-RM5000	84	26.1
RM5000 and above	76	23.6
Departure by:		
Own	49	13.4
Companion	316	86.6
Pilgrims physical condition		
Non-disable	349	96.9
Disable	11	3.1
Type of disabilities:		
Hearing problem	2	20
Vision problem	4	40
Physical disabilities	4	40
Condition during pilgrimage:		
No problem	286	81.2
Having problem	66	18.8
Type of problems:		
Long distance from hotel to Masjidilharam	29	46.7
Congestion	18	29.0
No vehicles to go to Masjidilharam	4	6.5
Lack of facilities for pilgrims	4	6.5
Pilgrims' attitudes	4	6.5
Long distance to go and perform worship in Mina	3	4.8

A total of 93.4% of the respondents were non-smokers. Most of them had underlying history of medical illness such as hypertension (48.3%), diabetes (25.2%), respiratory diseases, coronary diseases, and knee pain for 10.0%, 6.6%, and 2.6% respectively. Anemia, back pain, hernia diseases, muscle pain, and gout recorded the same percentage, which was 1.32%, while the remaining 0.7% was renal disease. This study found that the acquired health problems among Malaysian

pilgrims during *Hajj* were respiratory illness (77.5%), fever (15%), sore foot (1.4%), sore eyes, joint pain and muscle pain (1.2% each), back pain (1.0%), cracked lips (0.2%), gout (0.5%), diarrhoea, and headache (0.2% each).

During *Hajj* ritual, most respondents experienced health problems during three days in Mina (48%). Respondents also faced problem during *wukuf* in Arafah (30%), *tawaf* (16%), and *sa'i* (6%) (Table 2).

Table 2: health status information (n=370)

Variable	Frequency	%
Pilgrims' behavior:		
Not smoking	338	93.4
Smoking	24	6.6
Health problem before pilgrimage		
Hypertension	73	48.3
Diabetes	38	25.2
Respiratory diseases	15	10.0
Coronary	10	6.6
Sore knee	4	2.6
Anaemia	2	1.32
Back pain	2	1.32
Hernia disease	2	1.32
Muscle pain	2	1.32
Gout	2	1.32
Renal transplant	1	0.7
Total:	151	
Health problems during Pilgrimage		
Respiratory diseases	440	77.5
Fever	86	15.0
Sore foot	8	1.4
Sore eyes	7	1.2
Sore knee	7	1.2
Muscle pain	7	1.2
Back pain	5	1.0
Broken lips	1	0.2
Gout	3	0.5
Stomach	1	0.2
Diarrhoea	1	0.2
Headache	1	0.2
Gastric	1	0.2
Total:	568	
Location of health problems during Hajj		
<i>Tawaf</i>	81	16
<i>Sa'i</i>	30	6
<i>Wukuf</i> in Arafah	149	30
Mina	238	48

The most common treatments sought by the pilgrims during *Hajj* were the treatment for respiratory diseases (73%), followed by fever, sore eyes, hypertension, and others (16.30%, 1.30%, 1.10% and 8.30 respectively).

Several suggestions were expressed by the respondents for a better service in Makkah. Those suggestions were for improvement of health services (52%) during *Hajj* which includes increase the number of health personnel, provide more quality medicine, increase the number of clinic with longer time for treatment, provide wheelchairs and facemasks, and increase the number of ambulance in Makkah.

Another suggestion is for the improvement of public services (15%), which includes the transport services such as bus and car, the quality of

accommodation and bathroom, and increases the number of *mutawwif*. Suggestion for the improvement of management (12%) includes to make a proper planning and research to avoid pilgrims facing health problem, separate the pilgrims who have specific diseases from those who are healthy, provide sufficient Zam-zam water, and provide clear information to pilgrims during *Hajj*. Suggestion for the improvement of activity (8%) includes organizing talks, hygiene and health briefing, provide advisory services, and exercise activity. Suggestion on the improvement of hygiene (7%) includes improving the hygiene among pilgrims, and suggestion on the improvement of food quality (6%) includes preparing food according to Malaysian's taste, improve the food management, and provide variety of food (Table 3).

Table 3: Health care services during *Hajj* (n=370)

Variable	Frequency	%
Types of treatment sought by pilgrims		
Respiratory diseases	273	73
Fever	61	16.3
Sore eyes	5	1.3
Hypertension	4	1.1
Others	31	8.3
Pilgrim's suggestion on health care services		
<i>1. Improvement of health services (52%)</i>		
Increase health personnel	26	37.68
Increase quality medicine	25	36.23
Increase clinic/ time treatment	15	22.0
Provide wheelchair	1	1.4
Provide facemask	1	1.4
Increase ambulance	1	1.4
<i>2. Improvement of public services (15%)</i>		
Provide vehicles (bus, car)	6	29
Improve accommodation & bathroom	12	57
Increase mutawwif	3	14
<i>3. Improvement of management (12%)</i>		
Make planning and research to avoid pilgrims facing health problem	4	25
Separate the pilgrims who have specific diseases from those who are healthy	8	50
Provide sufficient zam-zam	3	19
Provide clear information to pilgrims during Hajj	1	6
<i>4. Improvement of activity (8%)</i>		
Organize talks	2	18.2
Hygiene and health briefing	4	36.4
Provide advisory services	2	18.2
Exercise activity	3	27.2
<i>5. Improvement of hygiene (7%)</i>		
Improve hygiene among pilgrims	10	100
<i>6. Improvement of food quality (6%)</i>		
Food must be accordance with Malaysian's appetites	5	62
Improve the food management	2	25
Provide variety of food	1	13

The problems experienced by the pilgrims during Hajj were significantly associated with existing health problems before performing *Hajj* ($p=0.032$; OR 2.32 95% CI 1.10, 5.0). Moreover, the factor of long walking distance from hotel to Masjidilharam ($p=0.001$; OR 19.41 95% CI 7.30, 51.71), the congestion ($p=0.001$; OR 23.54 95% CI 7.43, 74.54),

the lack of facilities for pilgrims ($p=0.021$; OR 17.61 95% CI 1.54, 202), pilgrims' attitudes ($p=0.021$; OR 17.61 95% CI 1.54, 202), and the long distance to go and perform worship in Mina ($p=0.008$; OR 28.13 95% CI 2.42, 326.4) appeared to be the main risk factors to the health issues (Table 4).

Table 4: Associated factors of the problems during Hajj among Malaysian Hajj pilgrims

Variable	Regression Coefficient (b)	Crude Odds Ratio (95% CI)	Wald Statistic	p-value ^b
Gender				
Male	0	1		
Female	0.22	1.25 (0.60, 2.65)	0.34	0.56
Pilgrims behaviour				
Not smoking	0	1		
Smoking	1.0	2.61 (0.66, 10.38)	1.85	0.17
Health problems before pilgrimage				
No problem	0	1		
Having problem	0.84	2.32 (1.10, 5.0)	4.62	0.032
Types of problems during the Hajj				
• Long distance from hotel to Masjidilharam (Yes)	3.0	19.41 (7.30, 51.71)	35.20	0.001
• Congestion (Yes)	3.20	23.54 (7.43, 74.54)	28.84	0.001
• Lack of facilities for pilgrims (Yes)	2.87	17.61(1.54, 202)	5.31	0.021
• Pilgrims' attitudes (Yes)	2.87	17.61 (1.54, 202)	5.31	0.021
• Long distance to go and perform worship in Makkah (Yes)	3.34	28.13 (2.42, 326.4)	7.12	0.008

^b Multiple logistic regression

Significance level was set at 0.05

Table 5 below shows that in Mina, 79.0% of the pilgrims have communicable disease, 38.2% of the pilgrims have non-communicable disease, while

31.1% of the pilgrims have both contagious and non-contagious diseases.

Table 5: Relationship between diseases and health problems in Mina

Diseases	Health problems in Mina		Total N (%)	X ² (P)
	No N (%)	Yes N (%)		
Contagious diseases				
No	54(40.9%)	78(59.1%)	132(100%)	16.641(0.001) ^a
Yes	50(21.0%)	188(79.0%)	238(100%)	
Non-contagious diseases				
No				5.193(0.023) ^a
Yes	97(73.5%)	35(26.5%)	132(100%)	
	147(61.8%)	91(38.2%)	238(100%)	
Both				
No	105(79.5%)	27(20.5%)	132(100%)	4.842(0.028) ^a
Yes	164(68.9%)	74(31.1%)	238(100%)	

^a Pearson Chi-square

Significance level was set at 0.05

DISCUSSION

Our study revealed that respiratory diseases are the major health problem experienced by the Malaysian pilgrims during the Hajj season. However, this is not the first time it is reported. Another survey done on the Malaysian hajj pilgrims

in 2007 showed similar outcome, where 95.2% of them had one or more respiratory symptoms ¹⁶. Pneumonia, ischemic heart disease, and trauma were the common reasons for the admission to intensive care unit during Hajj ¹⁷. Whereas another study conducted among Malaysian pilgrims showed the high incidence of respiratory illness in which

90% of the 394 of them had cough and 87.1% of them had other respiratory symptoms¹¹. The incidence of respiratory diseases has increased over the years as a result of direct contact with pilgrims in highly overcrowded condition during Hajj¹⁸. Other than that, the extreme congestion, crowded accommodation among pilgrims and air pollution also contribute to the increase of respiratory diseases cases¹⁹.

High percentage of the respondents (48.3%) has past history of hypertension. This is expected as majority of the pilgrims were elderly and have health problems before departed to Makkah. As a consequence, they are at risk of acquiring health problems during the Hajj season due to the congestion and high demand for physical effort to accomplish the ritual. This was also similar to the study by Deris and colleagues during the Hajj season in 2007. Their finding showed that the pre-existing illness among Malaysian pilgrims were diabetes and hypertension²⁰.

High occurrence of respiratory diseases during Hajj reflected the demand for healthcare services (52%). However, there is no study available to be compared to our finding. Therefore, this study outcome suggested that, the health personnel and quality medication are among the important health care services demanded by the Malaysian pilgrims in Makkah. The high demand for health care services could be due to several factors including the physical stress from extreme hardship and increasing rates of transmitted diseases that commonly occurred in Mina. Hajj ritual involved movement of pilgrims from one place to another place. A huge movement of the pilgrims can be seen starting from day 8th of *Dhu al-Hijjah*, where the pilgrims travelled for a relatively long period due to traffic congestion in order to perform each Hajj ritual. After the sunset on 9th *Dhu al-Hijjah*, the pilgrims move to Mudzalifah, the place where they collect pebbles and then spent 3 days in Mina in a very extremely limited space, so this situation could explain why the pilgrims experienced health problems mostly in Mina (47.4%). This coincides with the results published by Alzahrani AG et al. From their study, it showed that the health related problems among visitors to Mina were increases due to fatigue after completed a full day of activities in order to complete the Hajj ritual²¹.

Interestingly, communicable and noncommunicable diseases experienced by the Malaysian pilgrims in Mina was respectively 79.0% and 38.2%. We noticed the widespread of the contagious diseases and non-contagious diseases were due to the improper accommodation in Mina. According to wordpress.com 2014, about 5000 acre (7¼ square

miles) of Mina is covered with more than 100,000 air-conditioned tents with a size range from 4x4m through to 8x12m²². Each pilgrims share a tent with other 50-100 pilgrims for 3 days²³ in an overcrowd condition with 1.5 people per square metre. Past studies have revealed the pattern of contagious diseases and non-contagious diseases in Mina, during Hajj pilgrimage. A study had been conducted at the primary health care centres (PHCCs) in Mina during the Hajj season in 1998 and showed that the main cause of morbidity during Hajj in Mina was respiratory diseases (48.6%)²⁴. Another study conducted in 2011 has reported an incidence of respiratory diseases (47.5%) among 3157 patients attended the hospital in Mina²⁵. In contrast, the results from other study showed that gastroenteritis was detected in 50 soldiers (39%) which was located at a government camp in Mina with the symptoms of diarrhoea (100%)²⁶. The possible factors that may lead to these infections are climate change. The increasing temperature during Hajj are directly linked to poor air quality which, in turn can affect the health problems especially respiratory diseases. Furthermore, food also becomes contaminated through a variety pathogenic bacteria or virus²⁷ that can caused infection due to poor air quality.

This study demonstrated that about 73% of the pilgrims have sought treatment from Tabung Haji clinic services. TH provides medical treatment and clinics in Makkah and Madinah. The finding was in accordance with a previous study conducted among Malaysian Hajj pilgrims in 2007 and showed that 74.1% of pilgrims have sought the treatment from Tabung Haji clinics¹⁶. In our study, some pilgrims treated themselves by using alternative ways of treatment such as bringing their own medication from Malaysia and drinking zam-zam water to heal themselves from any discomfort and illnesses. This could be explained by the fact that the pilgrims who already had pre-existing diseases had been given the adequate supplies of medications from doctor before departure and they rely on the effectiveness of those medicines for any illness during Hajj. Meanwhile, some of the pilgrims treated their illness by drinking zam-zam water because they believed that zam-zam water could get rid of any diseases and contributed to a good health. Other than that, another reason might be due to the psychological factors on the effectiveness of the medicines provided by Tabung Haji clinics. Psychological factors can affect the attitude and behaviour of the pilgrims where some of them preferred to believe the rumours about the ineffective of certain medicine from those who have performed the Hajj before. This is revealed from our study that, 20.9% of the respondents agreed that the medicine provided by the Hajj

management was not effective. However, 60.3% agreed that the treatment facilities provided by the management are sufficient. Although the pilgrims have options for health remedy, most of them (71.9%) continuously utilized the health facilities provided by TH during *Hajj*.

CONCLUSION

As a conclusion, respiratory disease is a common disease experienced by Malaysian pilgrims in Makkah. It clearly indicates that, certain types of services such as health personnel and quality medicine are strongly demanded by the Malaysian pilgrims to overcome their health problem during *Hajj*. This research provides a fundamental input to the health care provision, and also benefited the *Hajj* management authority to increase *Hajj* management efficiency and quality in the future.

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REFERENCES

1. Al-Ghamdi SM, Akbar HO, Qari YA, Fathaldin OA, Al-Rashed RS. Pattern of admission to hospitals during muslim pilgrimage (*Hajj*). *Saudi medical journal*;24(10):1073-6.
2. Aljoudi AS. A University of the *Hajj*? *The Lancet*;382(9906):1689.
3. Serafi AS, Alqasim AA. Cardiovascular Diseases in Mena Hospital during *Hajj* (1429H) at Makkah, Saudi Arabia. *Life Sci J*;9(3).
4. YAQUB BA, AL-HARTHI SS, AL-ORAINY IO, LAAJAM MA, OBEID MT. Heat stroke at the Mekkah pilgrimage: clinical characteristics and course of 30 patients. *QJM*;59(2):523-30.
5. Khogali M. Epidemiology of heat illnesses during the Makkah Pilgrimages in Saudi Arabia. *International journal of epidemiology*;12(3):267-73.
6. Alzeer AH. Respiratory tract infection during *Hajj*. *Ann Thorac Med*;4(2):50.
7. El-Sheikh SM, El-Assouli SM, Mohammed KA, Albar M. Bacteria and viruses that cause respiratory tract infections during the pilgrimage (*Hajj*) season in Makkah, Saudi Arabia. *Trop Med Int Health* 3(3):205-9.
8. Al Shimemeri A. Cardiovascular disease in *Hajj* pilgrims. *J Saudi Heart Assoc*;24(2):123-7.
9. Ghaznawi HI, Khalil MH. Health hazards and risk factors in the 1406 H (1986) *Hajj* season. *Saudi medical journal*;9(3):274-82.
10. Barlas S, Safdar M, Chaudhry S, Ahamad T, Hashmi I. Meningococcal disease: Clinical profile of 99 patients. *Annals of Saudi medicine*;13(3):237-41.
11. Deris ZZ, Hasan H, Sulaiman SA, Wahab MS, Naing NN, Othman NH. The prevalence of acute respiratory symptoms and role of protective measures among Malaysian *hajj* pilgrims. *J Travel Med*;17(2):82-8.
12. Yousaf M, Zafar M, Maqbool M. Medical problems of Pakistan pilgrims in Saudi Arabia. *Pak J Med Res*;32:172-5.
13. Meysamie A, Ardakani HZ, Razavi SM, Doroodi T. Comparison of mortality and morbidity rates among Iranian pilgrims in *Hajj* 2004 and 2005. *Saudi medical journal*;27(7):1049-53.
14. Khamis N. Epidemiological pattern of diseases and risk behaviors of pilgrims attending mina hospitals, *hajj* 1427 h (2007 g). *J Egypt Public Health Assoc*;83(1-2):15-33.
15. Mannan M. Islamic Socioeconomic Institutions and Mobilization of Resources with Special Reference to *Hajj* Management Fund of Malaysia. The Islamic Research and Teaching Institute (IRTI), 1997.
16. Deris ZZ, Hasan H, Sulaiman SA, Wahab MS, Naing NN, Othman NH. Preference of treatment facilities among Malaysian *Hajj* pilgrims for acute respiratory symptoms. *Saudi medical journal*;30(8):1103-4.
17. Madani TA, Ghabrah TM, Al-Hedaithy MA, Alhazmi MA, Alazraqi TA, Albarrak AM, et

- al. Causes of hospitalization of pilgrims in the Hajj season of the Islamic year 1423 (2003). *Annals of Saudi medicine*;26(5):346-51.
18. Al-Asmary S, Al-Shehri AS, Abou-Zeid A, Abdel-Fattah M, Hifnawy T, El-Said T. Acute respiratory tract infections among Hajj medical mission personnel, Saudi Arabia. *International journal of infectious diseases : IJID : official publication of the International Society for Infectious Diseases*;11(3):268-72.
19. Memish ZA. The Hajj: communicable and non-communicable health hazards and current guidance for pilgrims. *Euro surveillance : bulletin Europeen sur les maladies transmissibles = European communicable disease bulletin*;15(39):19671.
20. Hasan H, Deris ZZ, Sulaiman SA, Wahab MSA, Naing NN, Ab Rahman Z, et al. Effect of influenza vaccination on acute respiratory symptoms in Malaysian Hajj pilgrims. *J Immigr Minor Health*:1-6.
21. Alzahrani AG, Choudhry AJ, Al Mazroa MA, Turkistani AH, Nouman GS, Memish ZA. Pattern of diseases among visitors to Mina health centers during the Hajj season, 1429 H (2008 G). *Journal of infection and public health*;5(1):22-34.
22. Mandourah Y, Al-Radi A, Ocheltree AH, Ocheltree SR, Fowler RA. Clinical and temporal patterns of severe pneumonia causing critical illness during Hajj. *BMC Infect Dis*;12(1):117.
23. Gatrad AR, Shafi S, Memish ZA, Sheikh A. Hajj and the risk of influenza. *BMJ*;333(7580):1182.
24. Abdullah AM. The utilization of primary health care services at Mina during Hajj, 1998. *Saudi Epidemiology Bulletin*;6(1).
25. Al-Anazi AF. Hajj 2011: A unique learning experience for final year emergency medical services student. *World journal of medical sciences*;7(2):59-63.
26. Al-Joudi AS. An outbreak of foodborne diarrheal illness among soldiers in mina during hajj: the role of consumer food handling behaviors. *Journal of family & community medicine*;14(1):29-33.
27. Al-Tawfiq J, Memish Z. The Hajj: updated health hazards and current recommendations for 2012. *Euro surveillance : bulletin Europeen sur les maladies transmissibles = European communicable disease bulletin*;17(41):20295.