

# Diseases pattern among patients attending Holy Mosque (Haram) Medical Centers during Hajj 1434 (2013)

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## ABSTRACT

**الأهداف:** تقييم أنماط المرض بين الحجاج الذين قاموا بمراجعة مراكز الرعاية الصحية التابعة للحرمين الشريفين في مكة المكرمة والمدينة المنورة خلال موسم الحج 2013م (1434 هجرية).

**الطريقة:** أُجريت هذه الدراسة الاستطلاعية خلال 16 يوماً من 6 أكتوبر إلى 21 أكتوبر 2013م. وقد قمنا بجمع بيانات المرضى من مركزين صحيين تابعين للحرمين الشريفين في مكة المكرمة والمدينة المنورة، المملكة العربية السعودية من بداية شهر ذو الحجة وحتى 16 ذو الحجة 1434 هجرية.

**النتائج:** لقد قام 1008 مريضاً بمراجعة المراكز الصحية خلال 16 يوماً من فترة الحج عام 1434 هجرية (2013 ميلادي). ولقد كان عدد الذكور 554 ذكراً (55%) و454 أنثى (45%). ولقد كانت غالبية المرضى من المصريين (العدد=242، 24%)، تلاهم السودانيون (العدد=116، 11.5%)، والباكستانيون (العدد=114، 11.3%)، و الأتراك (العدد=50، 5%)، ومن ثم باقي الجنسيات الأخرى (العدد=404). وبالنسبة للتوزيع العمري فقد كانت الغالبية العظمى من المرضى في مجموعة الفئة العمرية 51-60 عاماً (العدد=237، 23.5%) وقد تلتها الفئات العمرية الأخرى. وقد تم علاج 842 مريضاً (83.5%) وبعدها تم تسريحهم من المراكز الصحية، فيما حوّل 166 مريضاً (16.5%) إلى المراكز الصحية المتخصصة. وفيما يخص توزيع أنماط المرض فقد كان غالبية المرضى يعانون من المشاكل التنفسية (العدد=177، 17.6%)، تلتها الأمراض الجلدية (العدد=158، 15.7%)، وأمراض الجهاز الهضمي (العدد=133، 13.2%).

**الخلاصة:** أظهرت نتائج هذه الدراسة بأن غالبية المرضى كانوا يعانون من المشاكل التنفسية، تلتها الأمراض الجلدية وأمراض الجهاز الهضمي، فيما حوّل أقل من 25% إلى مراكز الصحية المتخصصة.

**Objective:** To evaluate the diseases pattern among pilgrims attending the 2 Holy Mosque (Haram) Health Care Centers during the Hajj season 2013 (Hijra 1434).

**Methods:** In this cross-sectional study, data was collected from 2 medical centers located in the Holy Mosque in Makkah city, Saudi Arabia, from the first of Dhul-Hijjah to sixteenth Dhul-Hijjah 1434. The present study was completed in 16 days (6th October to 21st October 2013).

**Results:** Over 16 days, 1008 patients attended the medical centers during Hajj 1434, (2013), out of which 554 (55%) were males and 454 (45%) were females. Most of the patients were Egyptians (n=242, 24%), followed by Saudis (n=116, 11.5%), Pakistani (n=114, 11.3%), Turkish (n=50, 5%), and other nationalities (n=404). According to age distribution, mostly were in the 51-60 years age group (n=237, 23.5%), followed by other age groups. Out of 1008 patients, 842 (83.5%) patients were treated and subsequently discharged, while 166 patients (16.5%) were referred to the tertiary centers. According to the diseases pattern, most of the patients were suffering from respiratory problems (n=177, 17.6%) followed by skin diseases (n=158, 15.7%), gastrointestinal tract (GIT) diseases (n=133, 13.2%), and others.

**Conclusion:** Most of the patients were suffering from respiratory problems followed by skin and GIT diseases, and <25% of patients were referred to tertiary care centers.

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The Hajj (pilgrimage) is a distinctive event for Muslims, for this more than 2.5 million Muslims come from all over the world on the twelve lunar month of Islamic calendar to Makkah, Kingdom of Saudi Arabia (KSA). The actual Hajj is performed in 5 days from the 8th-13th of Dhul-Hijjah, but the Saudi government issues the visa for 40 days, so that pilgrims can visit other sacred places in Makkah and the region of Al-Madinah Al-Munawarah. Hajj flights start arriving 20-25 days before the actual Hajj dates. Hajj is one of the 5 basic principles of Islam, obligatory only for those who have the ability to travel and for those who can afford the journey, which they have to perform at least once in their lifetime. In performing the Hajj rituals, pilgrims travel from one Holy site to another on foot or occasionally by bus, and due to congestion vehicles travel only a few kilometers distance in several hours, which results the physical exertion and possible exacerbation of preexisting diseases (such as cardiovascular, diabetes mellitus, and renal diseases).<sup>1-3</sup> During Hajj, congestion, exhaustion, sometimes excessive temperatures, and disturbances in the body fluid and electrolytes are some of the contributing factors that lead to some illness. Additionally, due to overcrowding, pilgrims are at augmented risk for transmission of communicable diseases.<sup>4,5</sup> The provision of health care facilities to 2.5 million people who gather for a short period of time in a relatively smaller area is a huge challenge for the concerned authorities. There are several studies available related to the health issues of pilgrims and Hajj pilgrimage.<sup>4,6-8</sup> The present study reviews the burden of patients from 2 health care centers situated inside the Holy Mosque (Haram), during the first 16 days of the Dhul-Hijjah. Inside the Holy Mosque, these 2 emergency centers are operating 24 hours and the staff work in 2 shifts (12 hours a day). Both centers are equipped to deal with critical cases with all necessary emergency equipment available for monitoring, and crash carts with defibrillators, and portable ventilators. All emergency medicines are available in both centers. Mild cases are treated and discharged while severe cases requiring further management are transferred to hospitals in Makkah. Therefore, this study aimed to evaluate the diseases pattern presenting to Haram health care centers and to find out the number of

referral cases to other hospitals. The data of the present study will contribute substantially to future planning to make available the best possible medical facilities in the Haram medical centers and other referral hospitals according to the pattern of diseases.

**Methods.** This observational study was undertaken by the Department of Quality Management and Patient Safety, Directorate General of Health Affairs, Makkah region, Ministry of Health, Saudi Arabia. We collected the data from 2 medical centers inside the Haram area in Makkah city, Saudi Arabia. The data from the 2 medical centers was collected from 1st Dhul-Hijjah to 16th Dhul-Hijjah 1434 (6th October to 21st October 2013). Both medical centers were well equipped including a few intensive care beds to cater for the incoming patients and limited stay facilities. The patients requiring advanced medical treatment or extended hospitalization were shifted to other tertiary care hospitals in Makkah. By employing the convenience-sampling technique, all patients who attended the Holy Mosque health care facility were included in the study. A specially-designed performa was used to collect the data of patients' attending the medical centers facilities, which was approved by the local and regional authorities of the Ministry of Health. The study was performed according to the principles of Helsinki Declaration. The performa included the name, gender, nationality, presenting complains and provisional diagnosis, time of arrival and departure from the medical centers, outcome of the treatment, either discharged or referred to the tertiary care hospitals. The Statistical Program for Social Sciences (SPSS) Version 13 (SPSS Inc, Chicago, IL, USA) was used for all statistical analysis and frequencies and percentages of the collected data were calculated.

**Results.** A total of 1008 patients attended the 2 health care centers during the Hajj seasons 1434 (2013), out of which 554 (55%) were men and 454 (45%) women. Most of the patients were Egyptians (n=242, 24%), followed by Saudi (n=116, 11.5%), Pakistani (n=114, 11.3%), Turkish (n=50, 5%), and other nationalities (n=404) (Table 1). According to the age-wise distribution, most patients were in the age group of 51-60 years, followed by 41-50 years, and other age groups (Table 1).

Out of 1008 patients, 842 (83.5%) were discharged after treatment, while 166 patients (16.5%) were referred to tertiary care centers after initial treatment. Most of the patients were referred to Ayyad Hospital, followed by the King Abdulaziz Hospital, and other

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hospitals. Table 2 shows the outcome of the patients who attended the Haram Medical Centers and the percentage referred to other hospitals. According to the diseases pattern, most of the patients were suffering from respiratory problems followed by diseases of the skin, GIT, rheumatology, and others (Table 2). Out of these 16 days, the maximum number of patients attended the out patient department (OPD) on the 13th of Dul Hijjah (n=106, 10.5%) followed by 12th day (n=103, 10.2%), 3rd day (n=103, 10.2%), and others (Figure 1).

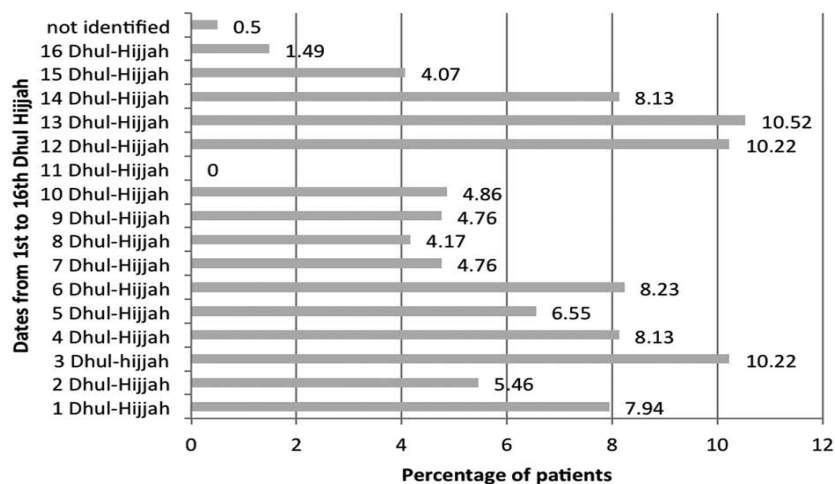
**Discussion.** Saudi Arabia is unique in the Islamic world where the world's largest mass gathering occurs every year. The Ministry of Health of Saudi Arabia endeavor to deliver the best possible health care facilities to pilgrims. The present study provides data of 16 days from the 2 health care centers located inside the Holy Mosque (Haram) area. We found that most of the patients were suffering from respiratory problems followed by the diseases of the skin, GIT, rheumatology, cardiovascular, orthopedic, endocrinology, urology, and others. These results are similar to several other studies.<sup>1,9</sup> The present data is contrary to Khan et al,<sup>3</sup> they reported that the 4 common reasons for admission were diabetes mellitus (31.9%), hypertension (37.2%), cardiac diseases (31.8%), and chronic lung diseases (14.9%). A discrepancy in the result is due to the different type of setups; they reported the diseases pattern among admitted patients during Hajj season in a tertiary care hospital in Makkah, while the present study reported data from the OPD of Haram Medical Centers. The present study and other previous studies<sup>4,7,10</sup> reported that upper respiratory tract infections (URTIs) were the most common disease in pilgrims. There are many contributing factors for increasing URTIs, such as direct contact with affected individuals, climate change, and limited and overcrowded space.<sup>11,12</sup> Al-Tawfiq & Memish<sup>13</sup> described that the most frequent diseases during Hajj are the URTIs. Mandourah et al<sup>4</sup> reported that in 2 successive Hajj seasons, pneumonia was the cause of admission to intensive care unit (ICU) in 27% critically ill patients. Many studies have described that during Hajj, URTIs are the principal category of infections,<sup>14-16</sup> and the reason of serious sepsis and septic shock requiring admission to the ICU.<sup>6</sup> Al-Jasser et al<sup>17</sup> described that among domestic hajjis from Saudi Arabia, URTI was the common health problem followed by diarrheal symptoms. Almalki,<sup>8</sup> described that during the Hajj season in 2011, there were 111 pilgrims admitted to Makkah region hospitals with

**Table 1 -** Demographic characteristics of 1008 patients, attended the Haram centers health care facilities from the first of Dhul-Hijjah to sixteenth Dhul-Hijjah 1434 (6<sup>th</sup> October to 21<sup>st</sup> October, 2013) (N=1008).

Characteristics	n (%)
<b>Gender</b>	
Male	554 (55.0)
Female	452 (44.8)
Male:female ratio	1.22:1
Unidentified	2 (0.2)
<b>Age groups</b>	
1-10	5 (0.5)
11-20	20 (2.0)
21-30	123 (12.2)
31-40	168 (16.7)
41-50	203 (20.1)
51-60	237 (23.5)
61-70	168 (16.7)
71-80	60 (6.0)
81-90	14 (1.4)
>90	1 (0.1)
Not identified	9 (0.9)
<b>Country of origin</b>	
Egypt	242 (24.0)
Saudi	116 (11.5)
Pakistan	114 (11.3)
Turkey	50 (5.0)
Indian	43 (4.3)
Indonesia	39 (3.9)
Others*	404 (40.1)
*Includes 53 nationalities	

**Table 2 -** System based and complaints based distribution of patients and number of patients referred to other hospitals from Haram centers health care facilities (N=1008).

System/complaints	n (%)
Respiratory problem	177 (17.6)
Dermatology (skin diseases)	158 (15.7)
Gastrointestinal tract diseases	133 (13.2)
Rheumatology	95 (9.4)
Cardiovascular diseases	86 (8.5)
Orthopedic	69 (6.8)
Endocrinology	59 (5.9)
Urology	38 (3.8)
Otolaryngology (ENT)	11 (1.1)
Neurology	9 (0.9)
Gynecology	8 (0.8)
Surgery	8 (0.8)
Psychiatric	3 (0.3)
Acute headache/dizziness	122 (12.1)
Fever	25 (2.5)
Unknown	7 (0.7)
<b>Hospital referrals (n=166)</b>	
Ajyad Hospital	66 (39.7)
King Abdulaziz Hospital	48 (6.5)
King Faisal Hospitals	33 (19.9)
Hera Hospital	6 (3.6)
Others	13 (7.8)



**Figure 1** - Number of patients presenting to the Haram health care centers from first of Dhul-Hijjah to sixteenth Dhul-Hijjah 1434 (6<sup>th</sup> October to 21<sup>st</sup> October, 2013) (N=1008).

cardiovascular diseases. In the present study, no patients arrived at the OPD with heat stroke as it was mild weather during October. Similar results were described by other studies, which were conducted in the winter season.<sup>9,14,15</sup> Preventive measures can play an important role in controlling URTIs. It is recommended to employ individual shielding procedures such as vaccination, chemoprophylaxis, repeated hand washing/sanitizing, and wearing of a face mask.<sup>18</sup> Using a face mask does not prevent infection completely, but it may lessen contact to droplet nuclei, believed to be one of the major means of spread of most URTIs.<sup>19</sup>

The male:female ratio in our study was 1.22:1, which is similar to Khamis<sup>9</sup> and other studies.<sup>3,10,20</sup> Most of the patients were treated and subsequently discharged, while <25% of the patients were referred to tertiary care centers after initial treatment. The volume of patients was referred to the Ajyad Hospital, Makkah followed by the King Abdulaziz Hospital, and others. The results indicate the need for more staff, patients' beds, and medicines. We found that most patients attending the Haram medical center facilities belonged to the age group 41-60 years (43.7%). This figure was similar to the previous study<sup>14</sup> that found 38.1% were admitted to the ICU at the group age of 41-60 years. The same study also reported that a large number of ICU admitted patients (92%) were older than 40 years.<sup>14</sup> Khan et al<sup>3</sup> also described that most of the patients admitted during Hajj were of older age, and they observed that it was the one of the risk factors linked with a high death rate. The reason may be that this age group become monetarily capable to

perform Hajj, after saving money for several years for Hajj journey, and more importantly their children have grown up, and are not dependent on them. The probability of contracting diseases, developing more grave medical complications, and comparatively higher rates of death found in elderly pilgrims.<sup>14</sup>

According to geographical distribution, most of the patients were Egyptians, followed by Saudis, Pakistani, Turkish, Indians, and other nationalities. These results were similar to the figures from other studies.<sup>9,14</sup> The reason for similar percentages could be that the number of pilgrims from these countries are of large numbers, so comparatively they attended more health care facilities as compared with other countries pilgrims. Out of these 16 days, the maximum number of patients attended the OPD on the 13th, 12th, and 3rd day of Dhul Hijjah. The reason for large number of patients on 12th and 13th day could be that after performing most of the Hajj ritual, elderly people have become exhausted and their chronic diseases are aggravated because of changes in their daily pattern of wake and sleep, dietary change, and walking long distances. Several studies have found that most of the patients hospitalized during Hajj were of old age, and with high occurrence of chronic diseases.<sup>3,8,14</sup> A study among pilgrims,<sup>16</sup> suggested that older aged people (46-60 years) had a higher risk of severe asthmatic attack. It was suggested that to decrease the health related issues among pilgrims, comprehensive health education programs should be planned for all those who intended to perform Hajj to enhance their awareness of protective measures against URTIs, diarrheal diseases, injuries, and exacerbations of chronic diseases for domestic pilgrims,<sup>15</sup> and for foreign

pilgrims in their own countries. A full medical checkup prior to arrival in Saudi Arabia should also assist in correct medication reconciliation.

**Study limitations.** The present study shows the results from the 2 health care centers located inside the Holy Mosque while thousands of pilgrims take treatment from the Mina and Arafat health care facilities and other hospitals situated in Makkah city. Therefore, the pattern of diseases does not reflect the actual pattern of diseases found in the pilgrims.

In conclusion, most of the patients were suffering from respiratory problems followed by skin and GIT diseases, and <25% of patients were referred to the tertiary care centers. The present data can be used by the policy makers and health care facility providers in improving the health care facilities during Hajj. We recommended that a thorough pre-Hajj health assessment should be carried out in pilgrims in their respective countries. This step would not only reduce the chances of worsening of their chronic disease by taking appropriate treatment, but it would also help in identifying the underlying new problems and information on the complications of their chronic diseases. It would substantially contribute to reducing the burden of health related issues and mortality rate during Hajj.

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