

## THE PREVALENCE OF CARDIOVASCULAR DISEASES AND ROLE OF PROTECTIVE MEASURES AMONG HAJJ PILGRIMS 1432 (2011)

WALEED H. ALMALKI

*Department of Pharmacology & Toxicology, Faculty of Pharmacy  
Umm Al Qura University, Makkah PO Box No.13578, Saudi Arabia*

### ABSTRACT:

This descriptive study was undertaken to determine the pattern of Cardiac diseases among hospitalized patients during hajj 2011 because the world is now facing the growing prevalence of cardiac diseases.

The aim of this study is to estimate the prevalence of the main CVD during hajj. A special form was used to collect information from patients' medical records including age, sex and nationality.

One hundred and eleven patients, belonging to 20 different countries, with mean age of 62 years and male: Female ratios of 2.4:1 were admitted. Among the persons examined 34% had ischemic heart disease, 20% had elevated blood pressure and prevalence of stroke was 17% per cent.

In conclusion, although this is a small study but it provides a brief overview of age distribution, regional and clinical pattern of Hajj in-patients. We would like to recommend to Higher Health authorities to advise and educate the hujaj regarding health care. This will reduce hospitalization rate and the burden on health services in Makkah and Medina during the critical session of Hajj.

**Keywords:** Hajj, cardiovascular diseases.

### INTRODUCTION

Hajj the pilgrimage to Makkah, is one of the five basic principles of Islam. Every year millions of people came to Makkah, Saudi Arabia to perform this ritual. It is one of the largest pilgrimages in the world. Muslims from all over the world not only of different ethnic groups but also of different colour, social status and culture gather together in these days (Alborzi *et al* 2008). In addition to these dissimilarities hajjes are also differ from each other in accordance to their physical condition, healthiness, health related issues and medical requirements.

Hajjis are vulnerable to different types of diseases majorly due to two factors. Firstly people usually perform Hajj in the middle and later age of life due to varieties of different

reasons. Secondly Hajjis are exposed to different types of health related issues in these days many of these are associated to the extreme congestion and over crowdedness such as epidemics of flue, sore throat meningitis and influenza whereas other like non communicable diseases mainly of cardiovascular group are associated with rigorous walking, exhaustion, fatigue, heat and physical trauma. In addition to these two factors, preexisting risk factors particularly of the cardiovascular origin such as hypertension, hypercholesterolemia, diabetes and lack of exercise also aggravates the situation.

Cardiovascular diseases are the major cause of death all over the world. The disease claimed highest numbers of the death every year. In the year 2008 an estimated 17.3 million people died from CVDs, representing

30% of all global deaths. Of these deaths, an estimated 7.3 million were due to coronary heart disease and over 80% of these cardiovascular disease related deaths were took place in low- and middle-income countries.

Every year in hajj season Government of Saudi Arabia takes many precautionary measures for the ease of hujaj but even though every year excessive number of hujaj get medical problem of different severities and cardiovascular diseases claimed to be on the highest ranking. According to a statement by the Saudi government, in the hajj of year 2006 the majority of deaths among the pilgrims were related to heart problems (Sapa, 2006). In the hajj of year 2011, around 1.82 million foreign pilgrims arrived from different countries to Saudi Arabia (Royal Embassy of Saudi Arabia, 2011) and beside many other clinical problems, cardiovascular diseases were also on the rise this year as well. Thus there is need that one should stress upon the risk factors evaluations of every hajji so that valuable life can be saved.

Keeping in view the importance of cardiovascular diseases among hujaj this study was designed with the following two objectives.

1. To determine the most prevalent CVD diseases among hujaj of different nationalities hospitalized in different Hospitals and Al-Noor Hospital Makkah during hajj 2011.
2. To evaluate the pattern of the disease so that a national level policy can be designed.

### PATIENTS AND METHODS

The present cross-sectional study was carried out in the department pharmacology, Umm Al Qura University. The cohorts of this study were the patients presented to different Hospitals in Makkah during hajj 2011 for the various ailments of cardiovascular origin. The rituals of this Hajj were performed from the 3<sup>rd</sup>-6<sup>th</sup> of November 2011. The study was

conducted over a period of 30 days (25<sup>th</sup> October to 25<sup>th</sup> November) divided in 4 weekly intervals, with the Hajj falling in the 2<sup>nd</sup> week. All cardiac patients admitted during this time period were included in the study. A total of 111 hospitalized cardiac patients were studied and analyzed for age, sex, and nationality. The main causes of hospital admission were used for calculations. The Statistical Package Minitab (Minitab® 15.1.30.0.) was used for data entry and analysis. Descriptive statistics were calculated as appropriate including frequencies, means  $\pm$  standard deviations.

### RESULTS AND DISCUSSION

During the study period, data of 111 cardiac patients was collected. Table 1 shows the frequency distribution of patients suffering from different cardiovascular diseases, mean age and gender distribution. 69% of the patients were male with the mean age of  $63.56 \pm 3.21$  whereas the mean age for the female patients was 55 years. The present study shows that majority of admitted patients were male with age group of 55-64 years (Table 1) with particular emphasis on the fact that males tend to be employed in more dangerous, harmful, stressful, or difficult occupations than women. Further during the hajj male take the major component of the stressful act in terms of physical activities and mental effort as compared to the females (Arjan *et al.*, 1999). Our result are in accordance with previous studies which suggested that a significant proportion of those performing Hajj are elderly and may suffer from chronic medical conditions, which usually get aggravated during Hajj (Al-Ghamdi *et al.*, 2003; Khan *et al.*, 2006; Madani *et al.*, 2007).

Among the 111 patients 38% had ischemic heart disease comprised of angina, myocardial infarction and acute coronary syndrome. 20% had elevated blood pressure according to WHO hypertension criteria. The patients presented with of stroke were 17%. The frequency distribution of other cardiovascular diseases such as cardio-

myopathies and heart failure were 9% and 16% respectively among the studied population.

Table 2 shows that 34% of the studied cohort was admitted to the hospital with Ischemic heart disease. This cohort was comprised of acute coronary syndrome 27%, myocardial infarction 4.3% and angina 1.75%. Our present data suggest that CVD are most common cause of admission during hajj. Serafi, 2010 also reported the same results. Present study showed relatively high prevalence of IHD, hypertension and stroke but a low prevalence of arrhythmia. Similar result were reported by Jose and Gomathi, 2003; Krishnaswami *et al.*, 1991.

Table 3 represents the regional distribution of patients from all over the world. The patients of 23 different nationalities were grouped in to four main regions such as South Asia, South East Asia, Middle East, South African countries and the Gulf Peninsula.

The highest number of hujaj who hospitalized with CVD was from Asian and African region of the world 45.3% and 12% respectively. From Middle East countries, 9% patients were from turkey, 7% from Iraq and 3% from Iran. The majority of hujajs who hospitalized with CVD were from were from India and Pakistan such as 17% and 16% respectively. From the Southeast Asia, 10% were from Indonesia and 1% from Malaysia. From African region Egyptian hujaj were 2%, Nigerian hujaj 3%, Tunisian 4% whereas only one haji each from Libya and South African. The present study mentioned a high prevalence of acute coronary syndrome, Stroke and Hypertension among hujaj of south Asia regions which is similar to data presented by Jafar *et al.*, 2003.

The incidence of cardiac diseases were

**Table 1**  
Demographic and clinical characteristics of in-patients of Hajj 1433H (n=111)

Cardiovascular disorders	Total no of patients	% of patient	Age			Gender	
			mean	±	SEM	Male	Female
Stroke	20	17.54	60.85	±	1.84	13	7
Hypertension	23	20.18	62.48	±	2.08	16	7
Cardiac myopathy	10	8.77	63.60	±	3.28	8	2
Heart Failure/ cardiac arrest	18	15.79	62.00	±	1.56	14	4
IHD/CD	38	33.33	63.22	±	2.33	6	1
Arrhythmia	2	1.75	69.50	±	7.50	2	0

**Table 2**  
Frequency distribution of IHD Patients during Hajj 1433

IHD	Total no of patients	% of patient	Age			Gender	
			mean	±	SEM	Male	Female
Angina	2	1.75	57.00	±	2.00	1	1
Acute coronary syndrome	31	27.19	61.79	±	3.05	18	13
MI	5	4.39	69.50	±	7.50	3	2

found low in Africa as compare to south Asia and South East Asia except for Tunisia where smoking is more prevalent 61.4% as compared to all other countries of the European Community (De Onis and Villar, 1991, Ghannem and Hadj 1997).

In the present study, patients from the South Asian region (particularly Pakistan and India) were higher in percentage as compare to the hujaj of other eagions. This is in agreement with Bettiol *et al.*, 1999, who reported higher cardiovascular mortality and risk factors in South Asians. Similarly Patel and Bhopal (2004) reported a high mortality rates from ischemic heart disease among hujaj from India and Pakistan.

The study of cardiovascular disease evaluation among hujaj during hajj season was of great interest for several reasons. Firstly it is evident from the results that cardiovascular diseases (CVD) are the one of the major causes of hujaj admission to the hospital. Secondly among the non-communicable diseases, CVD ranked on the top of all other dieses. Earlier studies on the topic also showed relatively high prevalence of cardiovascular disease among hujaj during Hajj (Health statistics, 2005).

Saudi government provides best health-care facilities to hujaj during hajj, ambulance-supported emergency medical service teams is one of them. This team is comprised of well trained people that can handle any cardiac emergency at site (Ahmed *et al.*, 2006).

In conclusion, although this is a small study addressing an important issue of the Muslim pilgrimages but the study found remarkable results such as during study most of the patients hospitalized were elderly from South Asia. We therefore recommend that as South Asian elderly are more prone to CVD during the Hajj, detailed instruction regarding the scrutiny and health related educational advice of the hujaj should be given to the corresponding countries. Similarly preventive measure such as provision of medical facilities

particularly of cardiovascular disease related must be provided to theses hujaj well in advance so that not only harm to the hujaj can be minimized but burden on the hospital and utilization of resources can also be minimized.

As it is evident from the current study that the magnitude of the problem is large enough which demand urgent attention and action. We also would like to recommend that higher health authorities should take measure to advise and educate hujaj regarding their health related issues particularly of cardiac origin.

**Table 3**  
Graphic regions and major countries  
of origin of patients

Region/Country	No. of Patients (n)	%
Middle East		
Turkey	10	9%
Iran	3	3%
Iraq	8	7%
South Asia		
Pakistan	18	16%
India	19	17%
Bangladesh	7	6.30%
China	1	1.00%
Afghanistan	5	5.00%
Southeast Asia		
Indonesia	11	10%
Malaysia	1	1%
Africa		
Egypt	2	2%
Nigeria	3	3%
Algeria	2	2%
Tunisia	4	4%
Libia	1	1%
South African countries	1	1%

## REFERENCES

- Ahmed, A.Q., Arabi, Y.M. and Ziad, A.M. (2006). Health risks at the Hajj. The *Lancet*. **367**(9515): 1008-1015.
- Alborzi, A., Oskoe, S., Pourabbas, B., Alborzi, S., Astaneh, B. and Gooya, M.M.,

- (2008). Meningococcal carrier rate before and after hajj pilgrimage: Effect of single dose ciprofloxacin on carriage. *EMHJ*, **14**(2): 277-282.
- Al-Ghamdi, S.M., Akbar, H.O., Qari, Y.A., Fathaldin, O.A. and Al-Rashed, R.S. (2003). Pattern of admission to hospitals during muslim pilgrimage (Haj) *Saudi Med J.*, **24**: 1073-1076.
- Al-Harhi, A.M. and Al-Harbi, M. (2001). Accidental injuries during muslim pilgrimage. *Saudi Med J.*, **22**: 523-525.
- Al-Maghderi, Y., Al-Joudi, A., Choudhry, A.J., Al-Rabeah, A.M., Ibrahim, M. and Turkistani, A.M. (2002). Behavioral risk factors for diseases during Hajj 1422 H. *Saudi Epidemiology Bulletin.*, **9**(3): 19-20.
- Arjan Gjonça, Cecilia Tomassini and James W. Vaupel (1999). Male-female Differences in Mortality in the Developed World. MPIDR WORKING PAPER WP 1999-009, pp.1-9.
- Bettiol, H., Rona, R.J. and Chinn, S. (1999). Variation in physical fitness between ethnic groups in nine year olds. *Int. J. Epidemiol.*, **28**: 281-286.
- De Onis, M. and Villar, J. La (1991). consommation de tabac chez la femme Espagnole. *World Hlth Stat Q.*, **44**: 80-88.
- Ghannem, H. and Hadj Fredj, A. (1997). Prevalence of cardiovascular risk factors in the urban population of Soussa in Tunisia. *Journal of Public Health Medicine*, **19**(4): 392.
- Global burden of disease update 2004.WHO 2008. Geneva, Switzerland.
- Health statistics: Saudi Ministry of Health, 2005
- Jafar, T.H., Levey, A.S., Jafary, F.H., White, F., Gul, A. and Rahbar, M.H. (2003). Ethnic subgroup differences in hypertension in Pakistan. *J Hypertens*, **21**: 905-912.
- Jose, V.J. and Gomathi, M. (2003). Declining prevalence of rheumatic heart disease in rural school children in India: 2001-2002. *Indian Heart J.*, **55**: 158-160.
- Khan, N.A., Ishag, A.M., Ahmad, M.S., El-Sayed, F.M., Bachal, Z.A. and Abbas, T.G. (2006). Pattern of medical diseases and determinants of prognosis of hospitalization during 2005 Muslim pilgrimage Hajj in a tertiary care hospital. A prospective cohort study. *Saudi Med J.*, **27**: 1373-380.
- Krishnaswami, S., Joseph, G. and Richard, J. (1991). Demands on tertiary care for cardiovascular diseases in India: Analysis of data for 1960-89. *Bull World Health Organ*, **69**: 325-30.
- Lopez, A.D., Mathers, C.D., Eszati, M., Jamison, D.T. and Murray, C.J.L. (2006). Global Burden of Disease and Risk Factors. Washington: Oxford University Press and World Bank.
- Madani, T.A., Ghabrah, T.M., Albarrak, A.M., Alhazmi, M.A., Alazraqi, T.A. and Althaqafi, A.O. (2004). Causes of admission to intensive care units in the Hajj period of the Islamic year 1424. *Ann Saudi Med.*, **27**(2): 101-105.
- Madani, T.A., Ghabrah, T.M., Al-Hedaithy, M.A., Alhazmi, M.A., Alazraqi, T.A., Albarrak, A.M. and Ishaq, A.H. (2006). Causes of hospitalization of pilgrims in the Hajj season of the Islamic year 1423 (2003). *Ann Saudi Med.*, **26**: 346-351.
- Madani, T.J., Ghabrah, T.M., Albarrak, A.M., Alhazmi, M.A., Alazraqi, T.A., Althaqafi, A.O. and Ishaq, A. (2007). Causes of admission to intensive care units in the Hajj period of the Islamic year 1424 (2004). *Ann Saudi Med.*, **27**: 101-105.
- Mustapha Isah Kwaru, (2007). Nigeria: Hypertension, Diabetes Kill 33 Nigerian Pilgrims in Saudi Arabia <http://allafrica.com/stories/200701080951.html>
- Patel, Kiran C.R. and Bhopal Raj, S. (2004). The Epidemic of Coronary Heart Disease in South Asian Populations: Causes and Consequences. Ed 1st. South Asian Health Foundation, pp.1-18.
- Royal Embassy of Saudi Arabia. 2011-11-06. [http://www.saudiembassy.net/latest\\_news/news11061102.aspx](http://www.saudiembassy.net/latest_news/news11061102.aspx). Retrieved 2012-11-16.
- Sapa-afp (2006). Millions descend on Mecca for haj. <http://www.iol.co.za/news/world/millions-descend-on-mecca-for-haj-1.309057>

- Serafi Abdulhalim Salim (2010). Pattern of Cardiovascular Diseases in Pilgrims Admitted in Al-Noor Hospital Makkah during Hajj 1429H. *Pak J Physiol*, **6**(1): 14-17.
- The Advisory Board. (1992). The Victoria declaration on heart health. International Heart Health Conference, Victoria, B.C.
- Thorn, T.J. (1989). International mortality from heart disease: rates and trends. *Int J Epidemiol.*, **18**(Suppl 1): 520-529.
- Weekly Epidemiological Record (2010). 22 October 2010, 85th year / No. 43, 2010, 85, 425-436 <http://www.who.int/wer>