

## Pattern of diseases among Bangladeshi Hajj Pilgrims in Mecca, Saudi Arabia

Md. Nurul Amin,<sup>1</sup> Md. Rafiqul Islam,<sup>2</sup> Md. Rafiqul Islam<sup>3</sup>

### ABSTRACT

**Background & objective:** Each year millions of Muslims embark on a religious pilgrimage called the "Hajj" to Mecca in Saudi Arabia. The mass migration during the Hajj is unparalleled in scale, and pilgrims face numerous health hazards. Performing the tasks of pilgrimage is stressful and laborious and as such requires immense mental and physical fitness on the part of the pilgrims. But a substantial proportion of the pilgrims lack it. Besides, the hot and dry environment and untold overcrowding predispose them to the risk of many communicable diseases. The present study, was therefore, intended to find the pattern of diseases among Bangladeshi Hajj pilgrims at Mecca, Saudi Arabia.

**Methods:** This descriptive cross-sectional study was carried out on Bangladeshi Hajj pilgrims in Mecca Saudi Arabia over a period of 1 month from mid-September to mid-October, 2015. A total of 710 pilgrims (18 or > 18 years) attending at Bangladeshi Hajj Medical Center (BHMC) in Mecca, Saudi Arabia during the period were consecutively included in the study after having voluntary verbal consent obtained from them. Diseases were diagnosed mainly on the basis of clinical signs and symptoms with provision of only random and fasting blood sugar estimation and ECG. The diagnosed diseases were grouped into major and minor problems or conditions and were treated as out-patient basis.

**Result:** In the present study upper middle-aged (50 – 60 years) and elderly ( $\geq 60$  years) pilgrims together formed nearly 73% of the patients with mean age of the patients being 56 years. Males were a bit higher than the females with male-female ratio being roughly 11:9. The study demonstrated that the commonest cause of out-patient visit was respiratory illness (41.2%) followed by diabetes (17.2%), peptic ulcer disease (PUD) (11.7%) and cardiovascular diseases (10.7%)(which included hypertension, new onset ischemia or exacerbation of preexisting ischemic heart diseases). A few (3.2%) of the patients presented with diarrhoeal diseases (loose motion or dysentery). Other minor ailments were allergy or dermatitis, insomnia, paronychia, anxiety, UTI, hemorrhoids, epistaxis, glossitis, oral ulcer, earache, conjunctivitis, worm infestation, spot bleeding etc., accounting for 4.8% of the patients.

**Conclusion:** The study concluded that respiratory illness is the most common health problems among pilgrims visiting to Mecca, Saudi Arabia followed by diabetes, PUD and cardio-vascular diseases. The pilgrims should be educated in their home country before starting for pilgrimage as how to maintain their health in their new and challenging environment and Bangladesh Hajj Mission in Mecca should ensure enough medical support to them.

**Key words:** Hajj, pilgrims, pilgrimage, disease pattern etc.

### Authors' information:

**1 Dr. Md. Nurul Amin**, Associate Professor (Research & Development) & Executive Editor (Ibrahim Cardiac Medical Journal), Ibrahim Cardiac Hospital & Research Institute, Shahbag, Dhaka, Bangladesh.

**2 Dr. Md. Rafiqul Islam**, Assistant Professor, Development of Paediatric Endocrinology and Metabolic Disorder, Dhaka Shishu (Children) Hospital, Dhaka

**3 Dr. Md. Rafiqul Islam**, Assistant Professor, Development of Paediatric High Dependency and Isolation, Dhaka Shishu (Children) Hospital, Dhaka

**Correspondence:** Dr. Md. Nurul Amin, Mobile: 01753178452, e-mail: mdamin01@yahoo.com

## INTRODUCTION:

The Hajj pilgrimage is one of the greatest religious gatherings in the world. Every year Hajj brings millions of pilgrims of several Nationalities from different countries of the world to perform the Hajj pilgrimage in Mecca, Saudi Arabia. Hajj being one of the five pillars of Islam is mandatory for all Muslims who are physically and financially capable to make the journey to Mecca once in a lifetime. It is a unique public health challenge requiring mental, physical and financial fitness of the pilgrims for its performance. So, it is the obligation of their home countries to provide all kinds of health care possible to the pilgrims to keep them physically fit, which if ignored, may jeopardize their health.

Sudden shifting of the Hajj pilgrims to the new environment, characterized by overcrowding and the hot climate, make them vulnerable to health hazards, particularly to respiratory tract infections and allergic manifestations.<sup>1,2</sup> Besides, change in dietary habit may make them further vulnerable to aggravation of risk factors of non-communicable diseases (NCDs) or aggravation of preexisting NCDs like hypertension, diabetes and ischemic heart diseases etc.<sup>1,3,4</sup> During the Hajj days, too many Hajj pilgrims get medical problems ranging from minor flu to major illnesses and some may need surgical intervention. Yousaf and his colleagues<sup>5</sup> have recorded the health problems of pilgrims seen as outpatients. Of them, the commonest diseases were pneumonia, diabetes, and ischemic heart disease. Heart diseases, whether exacerbations of pre-existing disease or the onset of new ones has been reported to account for (20%) of all diseases seen during the 2-week periods of the Hajj.<sup>6</sup> The pattern of surgical problems alone was studied by Al-Harhi<sup>7</sup> and Elhassan et al.<sup>8</sup>. The commonest surgical problems listed were blunt abdominal trauma due to traffic accidents, obstructed inguinal hernia, and intestinal obstruction. In recent years, there has been a change in the pattern of diseases among pilgrims (from cholera and meningitis, to diabetes, hypertension & ischemic heart disease),

perhaps due to improved health education and hygiene<sup>9</sup> as highlighted in Hajj studies for specific diseases.<sup>9-11</sup>

The present study, was therefore, intended to find the pattern of diseases among Bangladeshi Hajj pilgrims who attended Bangladeshi Hajj Medical Center at Mecca, Saudi Arabia.

## METHODS:

This descriptive cross-sectional study was carried out Bangladeshi Hajj pilgrims in Mecca Saudi Arabia over a period of 1 month from mid-September to mid-October, 2015. A total of 710 pilgrims (18 or > 18 years) attending at Bangladeshi Hajj Medical Center (BHMC) in Mecca, Saudi Arabia during the period were consecutively included in the study after having voluntary verbal consent obtained from them. Diseases were diagnosed mainly on the basis of clinical signs and symptoms with provision of only random and fasting blood sugar estimation and ECG. The diagnosed diseases were grouped into 1 major and minor problems or conditions. The major problems/conditions included respiratory tract infection, diabetes mellitus, peptic ulcer disease (PUD), cardiovascular diseases and musculoskeletal problems, while the minor problems/conditions included loose motion or dysentery, constipation, traumatic or accidental injury, abscess/cellulitis, headache. Chest pain, menorrhagia or dysmenorrhea, allergy or dermatitis insomnia, paronychia, anxiety, UTI, hemorrhoids, epistaxis, glossitis, oral ulcer, earache, conjunctivitis, worm infestation, spot bleeding etc.

The treatment was given as out-patient basis with a provision of an Observation Ward in the Center. The seriously ill patients needing In-patient care were referred to Saudi Government's Specialized Hospitals based on their need. Data were first recorded on out-patient history-sheet (supplied by the Hajj Medical Center) and was then entered into statistical software, SPSS (Statistical Package for Social Sciences), version 17.0. The test statistics used to analyze the data were

descriptive statistics. While the categorical data were presented with frequency and corresponding percentage, the continuous data were presented with mean and standard deviation (SD) from the mean.

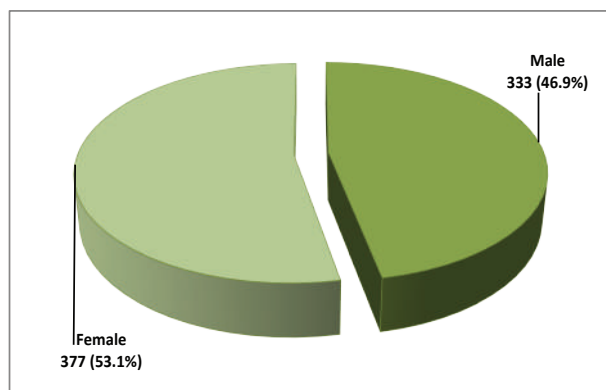
## RESULTS:

Age distribution of the pilgrims shows that approximately 38% were elderly (60 or >60 years old) followed 35.2% 50–60 years, 20.6% 40–50 years and 5.6% 30–40 years old, Very few (0.7%) pilgrims were young (<30 years old). Male-female distribution among the study patients was almost same (53% and 47% respectively) (Fig.1).

**Table I. Distribution of respondents by age (n = 710)**

| Age* (years) | Frequency | Percentage |
|--------------|-----------|------------|
| < 30         | 5         | 0.7        |
| 30 – 40      | 40        | 5.6        |
| 40 – 50      | 146       | 20.6       |
| 50 – 60      | 250       | 35.2       |
| ≥60          | 269       | 37.9       |

\*Mean age = (55.8 ± 10.8) years; range = (15 – 99) years.



**Fig.1: Sex distribution of the respondents (n = 710)**

The study of disease pattern among pilgrims shows that respiratory tract infection (which, among others, included acute respiratory tract infection, pneumonia, COPD, bronchial asthma, tonsillitis, pharyngitis, laryngitis and simple cough & cold) formed the main bulk (41.2%) followed by diabetes mellitus (17.2%), peptic ulcer disease (11.7%), cardiovascular diseases (10.7%) and musculoskeletal problem (arthritis, myalgia, leg cramp etc.). The minor problems were loose

motion or dysentery (3.2%), constipation (2.1%), traumatic or accidental injury (1.1%), abscess/cellulitis (0.9%), headache (0.6%). Chest pain, menorrhagia/dysmenorrhea, allergy or dermatitis each formed 0.7% of the patients. Other minor ailments (insomnia, paronychia, anxiety, UTI, hemorrhoids, epistaxis, glossitis, oral ulcer, earache, conjunctivitis, worm infestation, spot bleeding etc.) consisted of 4.8% of the patients (Table II).

**Table II. Distribution of pilgrims by pattern of diseases/ conditions (n = 710\*)**

| Major problems/conditions                                    | Frequency | Percentage |
|--|-----------|------------|
| RTI (Respiratory tract infection)                            | 293       | 41.2       |
| Diabetes mellitus (DM)                                       | 122       | 17.2       |
| Cardiovascular diseases (Hypertension & IHD)                 | 76        | 10.7       |
| Musculoskeletal problem (arthritis, myalgia, leg cramp etc.) | 71        | 10.0       |
| PUD (Peptic ulcer disease)                                   | 83        | 11.7       |
| Minor problems/conditions                                    |           |            |
| Loose motion or dysentery                                    | 23        | 3.2        |
| Constipation   | 15        | 2.1        |
| Traumatic or accidental injury                               | 08        | 1.1        |
| Abscess/cellulitis   | 07        | 0.9        |
| Headache   | 06        | 0.8        |
| Chest pain   | 05        | 0.7        |
| Menorrhagia/dysmenorrhoea                                    | 05        | 0.7        |
| Allergy/dermatitis   | 05        | 0.7        |
| Others   | 34        | 4.8        |

\*Total will not correspond to 100% for multiple response.

## DISCUSSION:

In the present study upper middle-aged (50-60 years) and elderly (≥60 years) together comprised nearly 73% of the patients with mean age of the patients being 56 years. Males were a bit higher than the females with male-female ratio being roughly 11:9. The study revealed that the most frequent cause of out-patient visit was respiratory illness (41.2%). Consistent with the finding of the present study, several studies showed that respiratory diseases are the most common cause of outpatient department visits during the Hajj, accounting for 40–60% of visits.<sup>12-15</sup> However, in the Ear, Nose and Throat

(ENT) clinic alone, upper respiratory tract infections (URTIs), including pharyngitis, viral URTI, and tonsillitis, represented 85.2% of the total diagnoses.<sup>16</sup> Another study showed that among the international pilgrims, over one-quarter (25.6%) presented with URTI.<sup>13</sup> However, a study on domestic pilgrims showed that nearly 40% of them developed URTI.<sup>17</sup> In a French study, 16.6% of French pilgrims experienced fever during their stay in Saudi Arabia and over 60% had a cough.<sup>18</sup> In a Malaysian study of 394 pilgrims, majority (95.2%) had respiratory symptoms.<sup>19</sup>

The present study did not have the scope of isolating microorganisms from throat swab or cough samples. Several studies evaluated the type of pathogens causing respiratory infections among pilgrims.<sup>20-23</sup> One study confirmed that acute respiratory infections were caused by influenza virus (IV) or respiratory syncytial virus (RSV).<sup>20</sup> Influenza A virus (IAV) H3 accounted for 54% of the virus-positive samples, followed by RSV (24%), influenza B virus (IBV) (19%) and IAV H1(3%). Some preventive measures (if adopted) could reduce the risk of respiratory illness, such as practicing social distancing, hand hygiene, contact avoidance, and washing the throat and mouth with salt water.<sup>24,25</sup> However, the high prevalence of respiratory symptoms among Hajj pilgrims indicates that more preventive measures are needed.<sup>26</sup> The Saudi Ministry of Health recommends the use of face-masks to decrease the risk of respiratory infections. Studies show an increased rate of infections associated with intermittent or non-use of face-masks, compared to using facemasks all the time.<sup>13,17,27</sup> The Ministry also recommends administration of the seasonal influenza vaccine. Unvaccinated pilgrims contracted IV significantly more frequently than did vaccinated pilgrims (16.5% vs. 9.2%).<sup>22</sup>

The second most common illness presented at Out-patient service of the BHMC in Mecca was diabetes (17.2%). Diabetes is one of the risk factors for development of URTI. Although we did

not test the association between presence of diabetes among the pilgrims and respiratory tract infection, other studies showed a significant association of diabetes with longer duration of cough ( $p = 0.041$ ), longer duration of sore throat ( $p = 0.048$ ), and severe influenza-like illness requiring admission to hospital for further treatment ( $p=0.016$ ).<sup>28</sup> Diabetes has been reported as a leading cause for morbidity and mortality during Hajj.<sup>29</sup> Specific predisposing factors for poor diabetes control during Hajj include travel to an unaccustomed environment with sudden changes in dietary behavior (more consumption of saturated fat and less intake of vegetables). In addition, there may be lack of adequate supply of medication and/or monitoring instruments and limited access to specialist medical care facilities, or complacency on the part of the patients themselves towards self-care may contribute to problems with diabetes control.

Cardiovascular diseases are the most common cause of death during the Hajj, accounting for 66% of all deaths.<sup>30</sup> In the present study about 11% of the patients presented with cardiovascular diseases, which included hypertension, new onset ischemia or exacerbation of preexisting ischemic heart diseases. Pilgrims with pre-existing cardiac diseases are at high risk of physical stress that leads to ischaemia. Furthermore, studies also reported that cardiovascular disease accounted for 63.6% of ICU admissions, and was the second most common cause for admission to hospital (12.3%).<sup>31,32</sup> These high rates may have been due to the high number of elderly people with chronic diseases among the pilgrims.<sup>32</sup> Another study conducted in the ICU reported that 37.3% of cases admitted to ICU were pilgrims who were critically ill due to cardiovascular diseases (23.6% with myocardial infarction).<sup>33</sup> Therefore, pre-Hajj functional assessment should be carried out to identify patients at a high risk of mortality from cardiovascular diseases.<sup>34</sup> Another major problem PUD was seen in 11.7% of the out-patients in BHMC in Mecca. However, the problem of PUD was not specifically mentioned in other similar studies

available online. Bakhshand colleagues<sup>35</sup> conducted a study in which skin diseases were shown to occupy second position (15.7%) next to respiratory illness, although in our study its presence was negligible (0.7%).

Of the minor problems only 3.2% of the patients presented with diarrhoeal diseases (loose motion or dysentery) which is more or less comparable with a study conducted among French pilgrims that reported 4.5% to suffer from diarrhea.<sup>36</sup> In contrast, Aljasser et al<sup>27</sup> reported that 9.3% of pilgrims experienced diarrhoeal symptoms during the Hajj period. Other minor health problems that the Bangladeshi pilgrims in Mecca have already been presented in the result section and need not to be discussed further.

### CONCLUSION:

The study concluded that respiratory illness is the most common health problems among pilgrims visiting to Mecca, Saudi Arabia. The second and third common illnesses are diabetes and cardio-vascular problems respectively. Millions of pilgrims of several Nationalities from different countries of the world gather every year in Mecca. Although, this important pilgrimage needs mental, physical and financial fitness, for its performance, a sizable portion of the pilgrims lack it. It is the responsibility of both pilgrims and their home countries to ensure their physical fitness. The pilgrims should be educated in their home country before starting for pilgrimage as how to maintain their health in their new and challenging environment and Bangladesh Hazz Mission in Mecca should ensure enough medical support based on the most common diseases that the pilgrims usually encounter.

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