MERIT RESEARCH JOURNALS
www.meritresearchjournals.org

Merit Research Journal of Medicine and Medical Sciences (ISSN: 2354-323X) Vol. 8(8) pp. 351-360, August, 2020
Available online http://www.meritresearchjournals.org/mms/index.htm

DOI: 10.5281/zenodo.3996264

Original Research Article

Common Health Complains Among Pilgrims during Manasik El Hajj; Season 1439H (2018)

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Abstract

Hajj is one of the biggest mass gatherings across the globe drawing pilgrims from different countries. The pilgrims are vulnerable and require focused medical support. The Saudi authorities spare no effort to ensure a safe and healthy environment during the Hajj. The study aimed to determine the pattern of common health complains during each Manasik of El Hajj Season 1439H, to optimize the health education services allocation during future seasons. it is a cross-sectional study conducted on 1782 Pilgrims pilgrims randomly selected from two main airports (Jeddah and Madinah cities) before departure after the ending of Pilgrims. Data were collected using a well-structured, pretested questionnaire, that consisted of three parts; socio-demographic characteristics, the received health educations (sites, and sources); and the common health complains among pilgrims. The majority of pilgrims were 81.9% aged ≥ 35y, 56.9% were males, and 39.9% had chronic diseases. Out of the 95.7% who had received health education, 93.2% received it inside Kingdom of Saudi Arabia (KSA)and 98.4% received it through lectures. 47.3% of Pilgrims developed complains and 6.02% reported multiple complicated disorders. The diseases distributed mainly in Mina 25.2%, Arafat 20.7% and Muzdalifah, 17.2%). The most common health complaints were respiratory tract symptoms 30.0%, 17.7% reported complicated chronic diseases, and 14.4% reported general symptoms. These symptoms significantly occurred among abroad pilgrims (87%), and males. There was a significant difference between sexes at arthritis and complicated chronic disease. Flu is the commonest health problem and Mina is the main site for health complaining. Therefore, it may provide important information for the optimal provision of health education about preventive measurements during the Hajj to ensure that pilgrims now enjoy modern facilities and perform various rites at ease.

Keywords: Disease pattern, Hajj, Health complain, Pilgrims, Saudi Arabia

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INTRODUCTION

Hajj is the biggest and longest mass gathering across the globe drawing pilgrims from more than 185 countries (Hosseini and Rahimian, 2017). Pilgrims face different risks related to the environment, their behaviors and their underlying health conditions that can result in a variety of diseases. Moreover, the rituals of Hajj are physically very demanding. Extreme physical stressors (Ahmed et al., 2006) increase the risk of communicable

and non-communicable diseases (Shuja et al., 2008). For these reasons, pilgrims are vulnerable and require focused medical support (Memish et al., 2014).

Most international pilgrims fly into Jeddah or Madinah and take a bus to Makkah, where the rituals begin with a walk around Kaaba, (a cube-shaped building in Makkah most sacred site in Islam), followed by the Sa'i consisting of walking between two hills (Safa and Marwa) seven times, each with a distance of about 450 m to a total of 3.15 km (Abdullah Al Shimemeri, 2012). Then go about 5 km from Makkah to the tent city of Mina (the largest temporary city in the world where the majority housed in air-conditioned tents (Alzahrani et al., 2008). At dawn on the 9th day of Dhul Hijah, pilgrims begin other rites include a 14.5 km journey to the Arafat mountain (Abdullah Al Shimemeri, 2012) either walking, bus ride, or train ride to the plain of Arafat, spending the daytime where pilgrims may expose to (the risk of heat-related illnesses as the temperature can reach up to 50°C. After sunset, pilgrims begin the 9 km journey back to Muzdalifah, where pebbles to be thrown and most sleep in the open air where they expose to dust (Memish, 2010).

At sunrise on the 10th day of Dhul Hijah, pilgrims collect small pebbles at Muzdalifah and carry them to Mina to throw Jamaraat, during this ritual; pilgrims exposed to overcrowded conditions pose multiple deadly crowd crush hazards (Memish, 2010). In the past, after pilgrims sacrifice an animal that may be a potential risk for zoonotic diseases (Mashal et al., 2018). After returning to Mecca, pilgrims go immediately to the Grand Mosque, to perform a tawaf. Because of the vast number of people, it can take hours. In addition to tawaf, pilgrims may perform sa'i, (Memish and Al-Rabeeah, 2013), and then return to Mina and pelt all three columns at the Jamaraat on the 11th and 12th of the month, with the option of repeating it on the 13th. After performing a final tawaf, pilgrims leave Mecca, ending Hajj. Although it is not required as part of Hajj, many pilgrims extend their trips to travel to Madinah to visit the Mosque of the Prophet (Ahmed, 2017).

Rational

The Hajj is a special event that attracts a large number of people from different cultures (Alzahrani et al., 2008). This creates an environment where health issues such as infections, accidents, complication of chronic diseases and climate complications may arise and affect the health of those pilgrims (Ahmed et al., 2006). So it is a major challenge for the Saudi Ministry of Health (MOH) to make the necessary arrangements each year for the growing annual number of pilgrims that may reach up to more than 2,000,000 (World Health Organization Health education, 2016) and to provide health services, especially preventive services, for this event.

Although several studies were conducted in the past few years to determine the pattern of diseases among pilgrims, most of these were in hospitals, who constitute the minority of those seeking medical services for advanced diseases (Yousuf et al., 1995; Madani et al., 2003; Madani et al., 2004; Al-Ghamdi et al., 2003). However, no studies have been conducted to determine the pattern of complains, including mild complains, in every step among pilgrims

Ministry of Hajj in collaboration with the (MOH) providing the hospitals and health centers in and around the holy sites with adequate staff and equipment. All provided services with high quality of care, and for free (Memish, 2011). This study will provide information that will be useful in the planning for the next Hajj seasons to ensure the optimum provision and allocation of health education services (Madani et al., 2003). To improve pilgrims' experience and decreasing health risks among them.

Aim

This study aim to provide up to date information to guide the optimal allocation of health education services during future Hajj seasons through the following objectives: To determine the general characteristics and the pattern of common health pilgrims complaints during each Manasik of Hajj Season 1439H, (2018).

METHODOLOGY

A cross-section study, targeting 1782 randomly selected hajj pilgrims who fulfilling the inclusion criteria (aged 18 years old or above, and without any mental or psycho-logical disorders) before departure from the two main airports (King Abdul Aziz Airport-Islamic Port- the city of pilgrims in Jeddah, and Prince Mohammed bin Abdulaziz International Airport in Madinah city) after the ending of Pilgrims during the period from 18 Dhu al Hijjah 1439 H to the 1st of Muharram 1440; (29 August to 11 September 2018).

The calculated sample size were 590 participants, calculated using OpenEpi web. With the total number of pilgrims in the hajj season 2.371.675. (1.758.722) of them are outside of the KSA (about 90% entered by the airplanes). Whereas (612.953) are domestic (Saudi Ministry of Health. Health statistical yearbook, 2007). The prevalence of diseases among pilgrims were reported to be 44.5% (Alamri et al., 2018) with 95% confidence interval with an error less than 5%, so the calculated in order to compensate deviation from simple random sample and to represent many (Madani et al., 2003) pilgrim contributing nations. The sample size was tripled

Table 1. Shows the sample stratification of according to nations

Country	f	%	Country	F	%	Country	F	%
Bangladesh	228	12.8	Afghanistan	13	0.7	Albania	4	0.2
Algeria	27	1.5	Antigua, Barbuda	4	0.2	Armenia	4	0.2
France	20	1.1	Australia	9	0.5	Barbados	4	0.2
Germany	6	0.3	Austria	4	0.2	Bermuda	4	0.2
India	27	1.5	Bahamas	4	0.2	China	4	0.2
Indonesia	240	13.5	Bahrain	4	0.2	Denmark	4	0.2
Iran	174	9.8	Egypt	246	13.9	Canada	4	0.2
Iraq	31	1.7	Kuwait	21	1.2	Libya	14	0.8
Nigeria	113	6.3	Monaco	4	0.2	Malaysia	4	0.2
Pakistan	280	16.8	Morocco	113	6.3	Mexico	4	0.2
Saudi Arabia	5	0.3	Sudan	24	1.3	Turkey	117	6.6
Yemen	20	1.12						

=1770 as this study was a stratified random sample Final sample size should be adjusted for expected attrition (20%) so, finally sample size will equal 1870 pilgrims, as domestic; foreign ratio was nearly about (1:4) so the number of domestic pilgrims was 374, and 1486 were foreign, then that distributed to include many pilgrim-contributing nations that represent more than 90% of all pilgrims. The proportion from each stratum (nation) depends on the accessibility and collected by simple random or accessibility sampling methods (minimally 4 pilgrimss from each country), because the sample collected in the crowded airport places from pilgrim's companies before departures, and the questionnaire was only in Arabic and English, so we depend on the campaign guide for translation. Table 1

The data was collected using a pre tested (its reliability was estimated 0.96), pre coded, validated by four experts, and well-structured questionnaire, that was designed on an electronic form in Arabic and translated to English, it includes data regards;

- Socio-demographic characteristics e.g. age, sex, education …
- The received health education includes site, type, nature …
- Common health complaints which the pilgrims may suffer from to report the complaint and where during Manasik el pilgrims. (cough, abdominal pain, fever, head-ache…etc)

The data was collected by 21 health care providers after training for 6 hours on (data collection and questionnaire) through interviewing pilgrims and sup-ported by the head of the campaigns (in translating the questionnaire after taking a verbal informed consent before answering the questionnaire from the Pilgrims participants.

Statistical analysis

All collected data were entered into the excel database, and the program automatically exclude incomplete questionnaires, and then analyzed using SPSS (version 22). Qualitative data were summarized using frequency (F) and percentage (%) and analyzed using the chi-square test (X^2) at a level of significant (P-value ≤ .05) and 95% Confidence Interval.

Ethical considerations

An authorized permission from the King Abdul Aziz Airport-Islamic Port- the city of pilgrims in Jeddah and Prince Mohammed bin Abdul-Aziz International Airport in Madinah city. After the approval of the ethical committee of the research center at King Fahad Medical City IRP Log No.19-039E.

RESULTS

Finally, 1782 pilgrims participated in this study selected randomly from 34 countries, 88(4.7%) of questionnaires were excluded due to incomplete data. The majority of the participant were males (56.9%), aged (35y-less than 55y) old 47.8%, high school or university-educated (35.6%), about 39.6 % had chronic diseases, 19.7% were hypertensive, 17.7% were diabetic, 5% had arthritis, and 3.9% had cardiovascular disorders, it was the 1st pilgrims in 68% (Table 2).

Out of the95.7% of the participant who received health education (HE).49.1% received health education only in the KSA, and about 44.1 % of them received HE inside the KSA and in their native countries, through the following routes lectures (98.4%), brochures (16.3%), radio (5.7%), while social media and electronic webs showed the lowest percentages 4.7%,3.7%, and only 4.3% did not receive any education, as illustrated in details at Table 3

About 47% of Pilgrims reported developed symp-toms (table 4), and 6.02% reported multiple complicated

Table 2. Some sociodemographic criteria of the included participants

	F No = 1782	%
Age(y)		
• <18y	62	3.5
• 18-<35y	238	13.4
• 35-<55	851	47.8
• >55y	631	35.4
Sex		
• Male	1013	56.8
• Female	769	43.2
Pregnant (No=769)	50	6.5
Level of education		
• Illiterate	321	18.1
• read and write	494	27.7
• Primary or secondary	332	18.5
• High school or university	635	35.6
Chronic disease*		
• No	1077	60.4
• Diabetes mellitus	315	17.7
• Hypertension	351	19.7
• CVD	69	3.9
• Liver disease	18	1.0
• Asthma	36	2.0
• Epilepsy	46	2.6
• Renal disease	19	1.1
• Arthritis	90	5.0
• Obesity	29	1.6
• Psychiatric	19	0.9
• Others	11	0.6
Mode of transportation		
• Air transportation	1736	97.4
• Road transportation	15	0.8
• Sea transportation	31	1.7

*multiple answers were allowed.

Table 3. The perceived health education among participant pilgrims

	F	%
Receiving health education		
• NO	75	4.21
• YES	1707	95.79
Site of health education (1707)		
• In KSA	839	49.1
• Mother home (native countries)	116	6.8
• Both	752	44.1
Routes of health education (N=1707)		
• Lectures	1680	98.4
• Radio	97	5.7
• Internet websites	64	3.7
• Social media	80	4.6
• Newspaper	40	2.34
• Brochures	290	16.3
• Airline bus	309	17.3

Table 4. The distribution of suffering from complains or diseases during Hajj

	F	P
Suffering from health disorder during Hajj		
• No	939	52.7
• Yes	843	47.3

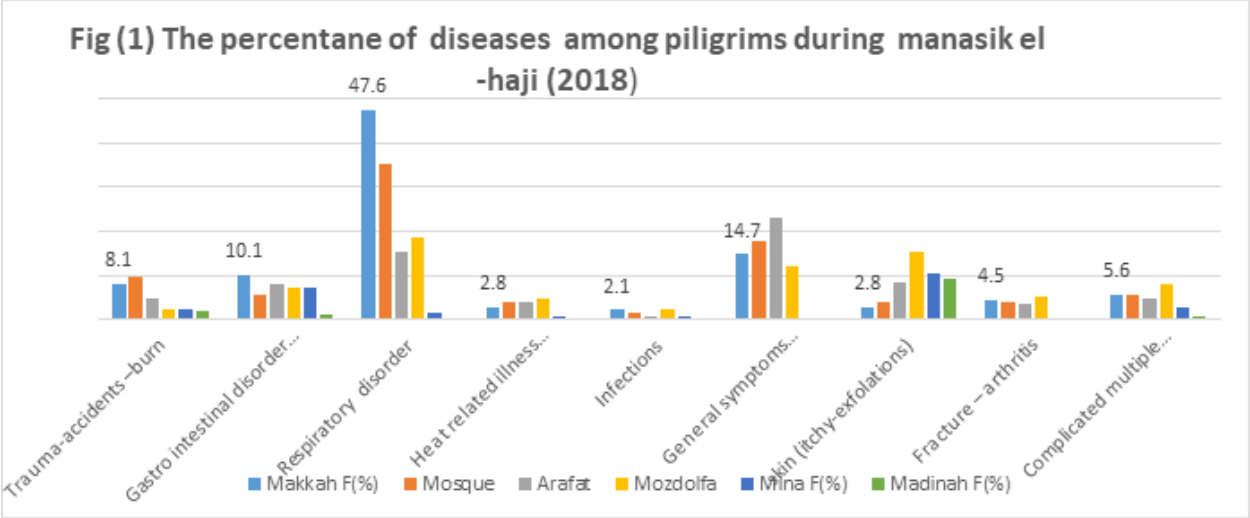

Table 5. The pattern of the common complains during manasik el pilgrims among studied pilgrims

	Makkah F (%)	Al-Haram Mosque F (%)	Arafat F (%)	Mozdolfa F (%)	Mina F (%)	Madinah F (%)	Total
N	286	427	529	439	629	244	2554
%	11.2	16.7	20.7	17.2	24.6	9.5	100.0

Table 6. Shows the distribution of common complains during pilgrims among studied pilgrims

	Makkah F (%)	Al-Haram Mosque F (%)	Arafat F (%)	Mozdolfa F (%)	Mina F (%)	Madinah F (%)	Total	%
Trauma	19(6.6)	40(9.3)	23(4.3)	8(1.8)	13(2.1)	35(14.3)	138	5.4%
Burn	---	1(0.2)	---	2(0.4)	-----	1(0.4)	4	0.15
Accidence	4(1.4)	1(0.2)	3(0.5)	---	1(0.1)	16(6.5)	25	0.9%
Nausea	16(5.5)	10(2.3)	23(4.3)	20(4.5)	28(4.4)	8(3.3)	105	4.1
Diarrhea	11(3.8)	7(1.6)	10(1.8)	5(1.3)	9(1.4)	3(1.2)	45	1.8%
Headache	26(9.0)	48(11.2)	75(14.1)	20(4.5)	27(4.3)	11(4.5)	207	8.1
Dizziness	7(2.4)	18(4.2)	33(6.2)	20(4.5)	15(2.4)	8(3.3)	101	3.9
Palpitation	9(3.1)	9(2.1)	13(2.4)	13(2.9)	7(1.1)	8(3.3)	59	2.3
Itchy	4(1.4)	2(0.4)	5(0.9)	5(1.3)	5(0.8)	2(0.8)	23	0.9
Flu	107(37.4)	136(31.8)	69(13.0)	57(12.9)	176(27.9)	29(11.9)	574	22.5
Cough	29(10.1)	15(3.5)	12(2.3)	25(5.7)	92(14.6)	19(7.8)	192	7.5

disorders during the same site. 30. 0% reported respiratory tract symptoms (22.5% flu, 7.55 cough), 17.7% reported complicated chronic diseases, and 14.4% reported general symptoms mainly headache (8.1%).

There was a significant difference in distribution of disease pattern during Hajj trip at the following descending orders (Mena 25.2%, Arafat 20.7%, and Muzdalifah, 17.2) as in Figure 1. In Mena the most common complaints were (flu 27.9%, complicated chronic diseases 15.3%, cough 14.6%, and skin exfoliation (9.5), while in Mozdalfa (complicated chronic disease 23.4%, skin exfoliation 14.1% and flu 12.9%), Arafat (complicated chronic disease 25.7%, headache 14.1%, flu 13% and skin exfoliation 7.5%), and Makkah the comments complains were (flu 37.4%, cough 29.1%, headache 9.0% and trauma 6.6% as illustrated in details in Table 5, 6 and 7.

Out of the 705 (39.6%) pilgrims who had chronic diseases, 402 (57.0%) of them developed complicated complaints mainly diabetic, and hypertensive complications (54 %, 40.4%) in order. Diabetic and hypertensive complications significantly higher in Arafat (26.6%, 35.0 %) respectively, while Angina significantly higher in Muzdalafa as illustrated in details in the Table 8.

Table (9, 10, 11) showed that there was a statistically significant association between the age groups, sex, and the level of education and having a chronic disease and suffering from health complains during Hajj.

Table 7. The distribution of common diseases during Hajj among pilgrims

	Makkah F (%)	Al-Haram Mosque F (%)	Arafat F (%)	Mozdolfa F (%)	Mina F (%)	Madinah F (%)	Total	%
Ear infection	1(0.3)	4(0.9)	1(0.1)	5(1.3)	6(0.9)	4(1.6)	21	0.82
Eye infection	3(1.0)	2(0.4)	2(0.3)	2(0.4)	3(0.5)	2(0.8)	14	0.55
Bleeding	2(0.6)	1(0.2)	6(1.1)	4(0.9)	1(0.1)	2(0.8)	16	0.63
Abdominal pain	2(0.6)	6(1.4)	10(1.8)	7(1.6)	8(1.3)	2(0.8)	35	1.4
Arthritis	13(4.5)	15(3.5)	17(3.2)	21(4.8)	23(3.6)	11(4.5)	100	3.9
Fracture	--	1(0.2)	2(0.3)	1(0.2)	----	--	4	0.15
Heat exhaustion	6(2.1))	2(0.4)	14(2.6)	10(2.3)	5(0.8)	5(2.0)	42	1.6
Sunburn	2(0.6)	1(0.2)	7(1.3)	10(2.3)	6(0.9)	2(0.8)	28	1.1
Exfoliation	4(1.4)	14(3.2)	40(7.5)	62(14.1)	60(9.5)	21(8.6)	201	7.9
Skin infection	2(0.6)	1(0.2)	1(0.1)	2(0.4)	2(0.3)	2(0.8)	10	0.4
Complicated multiple disorders	16(5.6)	23(5.3)	26(4.9)	35(7.9)	44(6.9)	10(4.1)	154	6.02
complicated chronic diseases	-----	68(15.9)	136(25.7)	102(23.2)	97(15.4)	43(17.6))	445	17.4
Others	3(1.0)	2(0.1)	1(0.05)	3(0.2)	1(0.05)	----	10	0.4

Table 8. The pattern of complicated chronic diseases among pilgrims

	Total	Al-Haram Mosque F (%)	Arafat F (%)	Muzdalifah F (%)	Mina F (%)	Madinah F (%)	p
Elevation or decrease of blood sugar(315)	244(54.03)	42(17.4)	64(26.6)	57(23.6	55(22.8))	23(9.5)	0.00*
Elevation or decrease of blood pressure (315)	180(40.4)	23(12.8)	64(35.6)	38(21.1	37(20.6)	18(10.0)	0.00*
Angina (69)	25(5.6)	3(12.0)	8(23.0)	7(28.0)	5(20.0)	2(8.0)	0.00*
Total	466	68	136	102	97	43	
%	100.0	15.2	30.5	22.9	21.7	9.6	0.00*

Table 9. The relationships between the age groups and the following variables

	<18y F(%)	18-<35y F(%)	35-<55y F(%)	55->55y F(%)	P
Had chronic diseases	7(11.3)	115(48.3)	364(42.8)	335(53.1)	0.00*
Received health education	59(95.2)	222(93.3)	817(96.0)	608(96.4)	0.23
Suffering from health complains during Hajj	29(46.8)	115(48.3)	364(42.8)	335(53.1)	0.00*

*p<0.05 there was a statistical significant difference

Table 10. The relationships between the level of education groups and the following variables

	Illiterate F (%)	Read and write F(%)	Primary or preparatory F (%)	High school or university F(%)	P
Had chronic diseases	230(96.3)	193(39.1)	140(42.4)	133(20.9)	0.00*
Received health education	311(96.3)	481(97.4)	318(96.4)	596(93.9)	0.03*
Suffering from health complains during Hajj	203(62.8)	255(51.6)	131(39.7)	254(40.0)	0.00*

*p<0.05 there was a statistically significant difference

Table 11. The relationships between the sex and the following variables

	Males F (%)	Females F (%)	P
Had chronic diseases	345 (33.8)	351 (46.2)	0.00*
Received health education	984(96.4)	722(95.0))	0.19
Suffering from health complains during Hajj	424(41.5)	419(55.1)	0.00*

*p<0.05 there was a statistically significant difference

Table 12). The relationship between receiving health education and the suffering from health complains during Hajj

	Didn't Suffer from any health complains during Hajj F (%)	Suffering from health complains during Hajj F (%)	P
The perceived HE			0.01*
➢ Didn't receive	51(5.4)	414(49.1)	
➢ Receive	888(94.6)	429(50.9)	
Had a chronic disease	267(28.4)	429(50.9)	0.00*

*p<0.05 there was a statistically significant difference

The health education significantly associated with reduction in the frequency of suffering from health complains during Hajj as illustrated in Table 12.

Males were more likely to develop all diseases except arthritis, general symptoms, gastrointestinal symptoms that are more in females without any significant difference between both sexes except in (arthritis in females and complicated chronic disease in males).

The age groups had a strong positive significant association with the number of health complains and the sites of health complaint during the Manasik el pilgrims ($r=0.73$, $p<0.05$).

DISCUSSION

Hajj is one of the five pillars of Islam attracts more than 2.3 million people from different cultures from all over the world (General Authority for Statistics, Kingdom of Saudi Arabia, 2018; Gatrad and Sheikh, 2005). It's a physically demanding rituals approximately 45 days in the desert climate of Saudi Arabia, that associated with many factors, including inadequate rest, malnourishment, old age, chronic diseases, infectious disease outbreaks, accidents, disasters, and high rates of morbidity and mortality all of which require appropriate surveillance and emergency response (Gatrad and Sheikh, 2005; Al-Jasser et al., 2012; Ahmed et al., 2006). It is a major challenge for the Saudi MOH to provide the standard health services (preventive and curative), for this event. This study provides information for planning the health care services during the Hajj. To our knowledge, this is the first study to study the pattern of common clinical health pilgrims' complaints during each Manasik of El Hajj Season1439H, (2018).

Males were (56.9%) of the pilgrims because the majority of women cannot go on the Hajj without a male to accompany her (usually her husband or an eternally mahram relative whom she can never marry) the same results reported by (Abdullah et al., 2008; Alamri et al., 2018). Nearly similar to (Khan et al., 2017; Denny Jr, 1995), the majority of the participant 47.8% were aged (35y-less than 55y) old, (54.1%) were educated.

About 39.6% had chronic diseases, 19.7% were hypertensive, 17.7% were diabetic, 5% had arthritis, and 3.9% had cardiovascular disorders, it was the first pilgrims in 68% nearly similar results reported in (Fatani et al., 2000; Mimesh et al., 2008) which is lower than the Al Amri et al. 2018 who reported 66.4% had chronic disease due to that the percentage of younger people was higher.

47.3% of Pilgrims developed symptoms and 6.02% reported multiple 30. 0% reported respiratory tract symptoms (22.5% flu, 7.55 cough), 17.7% reported complicated chronic diseases, and 14.4% reported general symptoms mainly headache (8.1%) complicated disorders which is significant lower than what reported by Al-Jasser et al. (2013) that the greatest burden was due to Respiratory diseases (60.8%), musculoskeletal diseases (17.6%), skin diseases (15.0%) and gastro-intestinal diseases (13.1%) similar to other studies (Al-Ghamdi et al., 2003; Khamis, 2007). These were also among the most common diseases due to the manifest continuous effort of the KSA.

Although the pattern of disease and its order changes from one site and another but the frequency of the respiratory symptoms remains the highest across years even in some hospital studied (Fatani et al., 2000 ; (Khamis, 2007; Yousuf et al., 1995; Madani et al., 2003) because of crowds, adverse weather in the Hajj environment (Jindal et al., 2015; Khan et al., 2017) especially this year Pilgrims was in August the

temperature reached 42°C, and the population density may reach up to 9 individuals/m^2) which increases the transmission of certain respiratory pathogens, such as Ebola virus, MERS, H1N1, multidrug-resistant tuberculosis and polymicrobial infections, against which many people do not have pre-existing immunity (Denny Jr, 1995), Inconsistent to this study Abodahish et al. 1998 (highest temperature was 55 °C) who reported a lower prevalence of respiratory diseases (49% vs 30%, respectively), due to the impact of ambient temperature on respiratory diseases (Weather Underground I, 2008; Weather Underground I, 2009; Abodahish and El-Bushra, 1999).

The prevalence of complicated chronic disease was 17.4%, although the call by Saber Yezli and colleagues (Yezli et al., 2006), to restrict pilgrimage based on non-communicable diseases (NCDs) but it is extremely disturbing to many Muslims. To the majority of developing pilgrims, Hajj is feasible only in older age after life-long savings so that the restrictions would likely deny the opportunity for Hajj for nearly half of the pilgrims (El. Bcheraoui et al., 2014). The trajectory of some NCDs is unpredictable (Jastaniah, 2011), and the required conventions level of NCDS severity to travel restrictions is unknown. Most pilgrims never screened for NCD and NCDs services might not be uniformly accessible in the resource-poor countries.

Out of the 705 (39.6%) pilgrims who had chronic diseases, 402 (57.0%) of them developed complicated conditions. Mainly 77.4% of diabetic patients, 57.1% of hypertensive ones developed complicated elevation in the blood pressures, and .diabetic and hypertensive complications significantly higher in Arafat (26.6%, 35.%),

36.2% of the cardiovascular disease patients (CVD) complained of angina, the incidence of angina significantly higher in Muzdalafa (28.0%), Arafat (23.0%), and then Mena (20%). This is because sudden physical activities in CVD patients elicit a number of mechanisms including a lowering of the venous return and reduction in cardiac output likely to precipitate acute cardiovascular attack (Afshin-Nia et al., 1999).

14.4% reported general symptoms mainly headache (8.1%) especially in Arafat(14.1%), El Masged Alharam (11.2%), and Makkah (9.0%) and due to the extra physical effort expended during the performance of rituals (long-distance walking, uncomfortable sleeping conditions and carrying heavy weights) and because of the clinical presentation of certain respiratory infections may be non-specific presented as general symptoms, especially in cases of seasonal influenza (Mourtzoukou and Falagas, 2007).

9.2% reported skin diseases (exfoliations 7.9%. itchy 0.9, and infection o.4%) especially in Mozdalfa, Arafat, and Mina, that consistent with other studies that reported skin diseases as one of the common causes to seek care from a health provider (Allison et al., 2002; Fatani and Al-Afif, 2000) due to overcrowding and long-distance walking (Abdullah et al., 2008).

The incidence of trauma and accidents was lower (6.3%) than previous studies due to the improved regulation of traffic, the new expansion of the Jamarat area, and the absence of any disaster this year (Madani et al., 2003; Al-Salamah, 2005) and the perceived effective HE.

The higher the level of education was significantly associated with a lower prevalence of chronic (20.9), and also the lower frequency of suffering from any health complains during Hajj (40.9%) as education is generally believed to be associated with improved health, life expectancy, and quality of life (Abdullah Al Shimemeri, 2013; Andy et al., 2012).

The elderly age groups >55y (53.1%) were having a chronic disease and more prone to suffering from health complaints during Hajj than the age groups in between, which are composed of more physically fit people, that agreed with (Abdullah et al., 2008).

55.1% of females were significantly suffering from more health complains during hajj than men (44.5%) because in general men more physically fit, the Musculoskeletal diseases were also more prevalent in women which have been reported in other studies (Abdullah et al., 2008; (Al-Mahgerdi et al., 2002; Urwin et al., 1998; Smith et al., 2001), about 6.5% of them were pregnant, and they significantly had more chronic diseases (46.2%).

As regards the health education, although the majority of Pilgrims had received health education (95.7%), that had no significant difference as regards age and sex, but the illiterate, and read and write significantly (96.3%, 97.4%) higher in receiving health educations, but its significantly (94.6%) associated with no suffering from any health hazards during Hajj as reported by other studies (Alamri et al., 2018; Accessed March 1, 2008).

CONCLUSION

Flu is the commonest health problem and Mina is the main site for health complaining. The pattern of diseases among pilgrims significantly different during each of Manasik El-Hajj Season 1439H, (2018) providing evidence-based information to guide the optimal allocation of health education services during the future Hajj.

RECOMMENDATIONS

Strengthening the health education programs especially prior to making Hajj e.g. regarding the beneficial role of all the preventive measurements in preventing and reducing Pilgrims health hazards, and exercise in preventing cardiovascular morbidity and mortality.

ACKNOWLEDGEMENT

The authors wish to thank the respondents and their head of campaigns for their participation/cooperation in the survey. This Study is supported by the Assistance Agency of Primary Health Care, Ministry of Health, Saudi Arabia. I would like to thank Dr. Nashwa M. Radwan, Professor of Public Health and Community Medicine, Tanta University, public health consultant, MOH, SA for reviewing this paper. We also like to extend our gratitude to the team of Clinical Health Education Department in Jeddah Affairs for their great effort in the data collection.

Footnotes

Institutional review board statement: This study was reviewed and approved by the Institutional Review Board of King Fahad Medical City, Saudi Arabia (Ref IRP Log No.19-039E).

Informed consent statement: Respondents' completion of the survey was considered as their implied consent, so verbal informed consent was not obtained, and no identifiable personal data were collected.

Conflict of Interest: None

Disclosure: None

Abbreviations: Ministry of Health (**MOH);** Saudi Arabia **(SA);** Health education **(HE);** Non-communicable diseases (**NCDs);** Cardiovascular Disease (**CVD);** Frequency **(F).**

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