



النشرة الوبائية السعودية

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- Change in carriage rate of Meningococcal meningitis among Hajjis from low and high endemic countries 38
- Health Related Experiences among International Pilgrims Departing Through King Abdul Aziz International Airport, Jeddah, Saudi Arabia, Hajj 1431 H (2010) 42
- Pattern of diseases and preventive measures among domestic Hajjis from Riyadh, 1431 H. 45
- Notifiable Disease Reports 48

INDEX

النشرة الوبائية السعودية

Change in carriage rate of Meningococcal meningitis among Hajjis from low and high endemic countries

Despite numerous studies, the pattern of Meningococcal carriage in sub-Saharan Africa and Hajj remain unclear. This study was conducted to measure the Meningococcal meningitis carriage rate among hajjis, to determine its change during Hajj and to investigate some determinants related to this change.

A longitudinal descriptive study was conducted at King Abdul Aziz International airport. Single stage stratified random cluster sampling, with probability proportionate to size, was used to determine sample size, with stratification based on endemicity data. Data was collected using self administered questionnaires and a throat swab was obtained from all participating hajjis.

A total of 829 hajjis were recruited at arrival to the Kingdom and 886 at departure. Meningococcal carriage rate for all Hajjis was 5.7% on arrival and 6.3% on departure.

N. meningitidis carriage rate was slightly higher among arriving than departing African and South Asian hajjis and vice versa for Southeast Asian hajjis (Table 1).

Of all sociodemographic characteristics, only gender was significantly associated with *N. meningitidis* carriage on arrival (P value = 0.0196). Health status, vaccination status and health related experiences during stay in Makkah were not associated with the change in *N. meningitidis* carriage rate on arrival or departure of international Hajjis. Administration of ciprofloxacin tablet on arrival

had an effect on carriage rate during hajj period (P=0.206) (Table 2).

The study showed that the most frequent meningococcal meningitis strains in arrival were Group C followed by A and Y, and the least were Groups D, W135, B then X. On departure, Group A followed by group Y and C were the most common, and the other serotypes, namely W135, D, B and X were less common.

- Reported by: Dr. Rashed M. Al Somaily, Dr. Abdul Jamil Choudhry (Field Epidemiology Training Program).

Editorial Note: Participant hajjis, whether on arrival or departure, were markedly different in sociodemographic characteristics, including age group, sex, country of origin educational level, history of illnesses (Diabetes mellitus, Bronchial asthma and Cancer) and vaccination status (Immunization against

Table 1: Carriage rate of *Neisseria meningitidis* by the country group among international hajjis passing through King Abdul Aziz International Airport Jeddah during Hajj 1431H.

Country Group	Arrival			Departure			P-value
	N	No	%	N	No	%	
African	253	13	5.1	286	13	4.5	0.916
South Asian	286	20	7.0	300	20	6.7	0.986
South east Asian	290	14	4.8	300	23	7.7	0.243
Total	829	47	5.7	886	56	6.3	0.665

influenza and against meningococcal meningitis) and this difference was statistically significant for all the characteristics.

Such significant difference can be explained by one or more if not all of the following. First, all participants hajjis were recruited over the late days of arrival to hajj, while on departure participants hajjis were recruited at the beginning. Second, within the same country both the arrived and departed hajjis came from different places, regions, cities or villages that had wide variations in demographic, social and economic statuses, in addition to different backgrounds regarding history of illnesses and vaccination status.

Meningococcal carriage rate among pilgrims in this study before and after Hajj was (5.7% and 6.3% respectively) which were higher than

about 10 years ago.¹ *Neisseria meningitidis* carriage rate was slightly higher among arrived than departed African and South Asian hajjis. This decline in carriage rates during hajj is understandable, as African hajjis coming from highly endemic areas receive ciprofloxacin tablets immediately after reaching the arrival terminal by MOH as a protective measure against possible infections or outbreaks among hajjis. South Asian hajjis, on the other hand, do not receive such prophylaxis at arrival.

Immunization against Meningococcal meningitis is mandatory for all hajjis, whether coming from inside or outside of the Kingdom. This is another justification of decrease in meningococcal meningitis carriage rate among African and South Asian hajjis during hajj. It was recognized that the decline in meningococcal meningitis carriage among hajjis

from endemic areas between pre and post Hajj is a result of ciprofloxacin administration on arrival.^{1,2}

On other hand, difference in carriage during the period before and after hajj increased among Southeast Asian hajjis. Coming to the Hajj allows contact with people who come from areas of high endemicity and therefore raises the chance of colonization, exactly like traveling to the endemic area. Hajj season and frequent attendance of overcrowded places, such as Almasjed Alharam is believed to increase the carriage rate of Meningococcal meningitis.^{3,4} Even if hajjis had been vaccinated, the level of antibodies might declined rapidly to near pre-vaccination level, which may not be enough to prevent mucosal colonization.⁵

Except for Ethiopian hajjis, Indian and Pakistan hajjis had higher carriage than African Hajjis, which agrees with the results in the previous study and may relate to preventive measures practiced in home countries. The high carriage rate reported among Malaysian and Indonesian hajjis may be a result of their exposure to

Table 2 : Relationship between administration of ciprofloxacin tablet at arrival and the carriage rate at departure of hajjis Hajj 1431 H

Ciprofloxacin administered	Culture Result			
	Positive		Negative	
	No.	%	No.	%
Yes	13	4.6	268	95.4
No	43	7.1	562	92.9

Chi square value: 1.60, DF=1, P value: 0.206

African and South Asian carriers during Hajj, which has been previously recognized.¹

In this study only gender was significantly associated with the change in meningococcal meningitis carriage rate during arrival but not departure. Carriage was found to be nearly equal among genders with a slight increase among males. This agrees with the findings of a previous study that reported a higher incidence of Meningococcal meningitis among males with an overall male-to-female incidence ratio of 2.1, which follows the same pattern in other countries over the world.⁶

Administration of Ciprofloxacin tablet on arrival was significantly associated with the change in carriage rate of meningococcal meningitis between arrival and departure, which has been previously recognized.¹

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وبائية مرتفعة بالحمى الشوكية أثناء تأدية مناسك الحج والتنقل بين أماكن مزدحمة جدا كالمسجد الحرام .

لا تزال ديناميكية التغير في معدلات حمل البكتيريا المسببة لمرض الحمى المخية الشوكية غير مفهومة بشكل جيد، حيث تتراوح فترة حمل هذا المرض من عدة أيام إلى عدة أشهر، ويعتمد معدل انتشار المرض على عدة عوامل منها طريقة ووقت أخذ العينة وكذلك أخذ اللقاحات والتناول الوقائي للعقاقير. من الواضح أن إلزام جميع الحجاج بأخذ لقاحات ضد هذا المرض و أيضاً أخذ الأدوية الوقائية للحجاج القادمين من المناطق الموبوءة قد أدى إلى انخفاض معدلات حمل البكتيريا المسببة لهذا المرض .

تم التوصية على تبليغ معدلات انتشار مرض الحمى المخية الشوكية للدول المعنية لتفعيل الإجراءات الوقائية الكفيلة بخفض معدلات انتشار هذا المرض ، الاستمرار في تطبيق الإجراءات الوقائية المعمول بها حالياً للحجاج القادمين عند وصولهم لأداء الحج وتوجيه الدول الأخرى بإعطاء الأدوية الوقائية للحجاج العائدين من موسم الحج .

- إعداد: د. راشد الصميلي،
د. عبدالجميل شودي (برنامج
الوبائيات الحقلية)

التغير في نسبة حمل بكتيريا الحمى الشوكية لدى الحجاج من البلدان ذات الوبائية العالية والمنخفضة في موسم حج ١٤٣١هـ (٢٠١٠م).

زالت الأعلى . وبالتركيز على الدول الأكثر نسبة في حمل الجرثومة ، نجد أن أكثر نسبة الحمل للجرثومة في دول اثيوبيا والهند وباكستان ، وبناء على ذلك فإنه لا بد من توجيه اجراءات وقائية أيضا على دول جنوب آسيا . كما أن انخفاض نسبة حمل الحمى الشوكية أثناء تأدية مناسك الحج يمكن أن يعزى ذلك إلى الإجراءات الوقائية من وزارة الصحة بالمملكة العربية السعودية بأخذ حبوب (سيبروفلوكساسين) للحجاج القادمين من المناطق ذات الوبائية المرتفعة ببكتيريا الحمى الشوكية فور وصولهم المملكة لمنع ظهور الفاشية بين الحجاج، وأما بالنسبة للحجاج القادمين من جنوب آسيا، الذين لم يدرجوا في الإجراءات الوقائية ضد الحمى الشوكية عند وصولهم لأن بلدانهم ذات وبائية منخفضة، فإن التقارير تفيد بأنهم تلقوا تطعيم قبل ١٠ أيام من حضورهم الحج وهو ما يفسر الانخفاض البسيط في نسبة الحمل للجرثومة لديهم. من جهة أخرى أظهرت النتائج زيادة نسبة حمل بكتيريا الحمى الشوكية خلال أداء مناسك الحج بين الحجاج القادمين من دول جنوب شرق آسيا الذي قد يعزى إلى ارتفاع خطورة العدوى من الحجاج القادمين من دول ذات

■ بالرغم من كثرة الدراسات التي ناقشت هذا الموضوع، إلا أن نمط حمل بكتيريا الحمى الشوكية مازال يشوبه بعض الغموض . تهدف هذه الدراسة إلى معرفة معدلات حمل بكتيريا الحمى الشوكية بين الحجاج القادمين عن طريق مطار الملك عبد العزيز بجدة من الدول ذات الوبائية العالية بهذه البكتيريا والدول ذات الوبائية المنخفضة ، وتحديد التغير في معدلات حمل بكتيريا الحمى الشوكية بين الحجاج عند الوصول وعند المغادرة والعوامل المؤثرة على التغير في معدلات الحمل بين الحجاج ، ومعرفة دور أقراص (سيبروفلوكساسين) التي تعطى للحجاج حال وصولهم إلى المنافذ السعودية ومن ثم الخروج بتوصيات مناسبة .

الحالة الصحية، حالة التطعيم، والخبرات المتعلقة بصحة الحجاج جميعها لم تكن لها أي علاقة . أقراص (سيبروفلوكساسين) كان لها دور في تغير نسبة الحمل حيث ظهر ان أغلب الحجاج الذين تناولوا هذه الأقراص عند القدوم لم يكونوا حاملين للبكتيريا عند مغادرتهم (القيمة المرجحة = ٠,٢٠٦) .

عند مقارنة نسبة الذين يحملون بكتيريا الحمى الشوكية مع نتائج دراسة سابقة أجريت قبل عشر سنوات ، فإن النسبة أقل من ذلك الوقت سواء قبل أو بعد أداء مناسك الحج ، وعلى الرغم من ذلك أوضحت الدراسة تأثير أداء الحج في زيادة نسبة الحجاج الذين يحملون بكتيريا الحمى الشوكية بعد أداء المناسك. وبالرغم من تركيز الإجراءات الوقائية تجاه دول الحزام الأفريقي ، فإن نسبة حمل بكتيريا الحمى الشوكية ما

أجريت دراسة وصفية على الحجاج بمطار الملك عبد العزيز الدولي بجدة . أخذت العينة بطريقة عنقودية حيث تم توزيع الحجاج إلى مجموعات، بلدان ذات وبائية عالية ذات وبائية منخفضة ومن ثم أخذ ثلاثين حاجاً من على متن كل طائرة قادمة أو متجهة لإحدى هذه البلدان . تم جمع المعلومات عن طريق استبيان مترجم لعدة لغات .

أظهرت الدراسة ان هناك ارتفاعاً في معدل حمل البكتيريا من ٧,٥٪ عند القدوم إلى ٦,٣٪ عند المغادرة. معدل الحمل كان أعلى لدى القادمين منه لدى المغادرين بالنسبة للحجاج الأفارقة وحجاج جنوب آسيا و العكس لدى حجاج جنوب شرق آسيا. من بين جميع المعلومات الديموغرافية للحجاج وجد أن الجنس هو الوحيد الذي كان له علاقة بتغير نسبة الحمل (القيمة المرجحة= ٠,٠١٩٦) . أما

Health Related Experiences among International Pilgrims Departing Through King Abdul Aziz International Airport, Jeddah, Saudi Arabia, Hajj 1431 H (2010)

Hajj terminal at King Abdul Aziz International Airport in Jeddah is the main facility for processing pilgrims visiting Makkah and Madinah for Hajj and Umrah. This cross-sectional study aims to assess health related experiences of pilgrims departing through this terminal during Hajj season of 1431 H (2010 G). Single stage stratified random cluster sampling was done, with probability proportionate to size. Stratification was based upon five geographical groups of countries. A self administered questionnaire translated to thirteen languages was used to collect the data.

A total of 1717 pilgrims agreed to participate in the study, their mean age was (46.20 ± 11.53), 63.7% were males, 54.1% had university education or above, 83.7% were performing Hajj for first time. Almost half of participating hajjis (44.6%) had not used the face mask during hajj, and there was a strong association between fever and not using the face mask (p=0.007) (Table 1). 39.5% had shaved their heads at an authorized barber, of whom 75.7% were sure that the blade was new; 63.6% and 52.4% had been vaccinated against meningococcal meningitis and seasonal influenza; 64% had brought a 1st aid bag for hajj.

Hajj missions and restaurants were the main food source for 42% and 24.8% respectively, and there was a strong association between eating from a restaurant and development of abdominal pain (p=0.02) and diarrhea (p=0.007) (Table 2). 21.7% reported having been trapped in an elevator during hajj, 11.3% had foot injury secondary to walking barefoot, 27.1% had chronic diseases mainly Hypertension and Diabetes and among them 14.9%

had fallen sick as a result of deterioration of their condition.

The most frequent complaint among the participants was cough (72.2%), which was strongly related to crowdedness (p=0.001). Over half (51.4%) had visited one or more health facilities, and a strong association was found between lower education and visiting health facilities (p=0.001).

The study showed that 42.5% and 42.9% of hajjis were fully satisfied with the availability and quality of Saudi health facilities.

- Reported by: Dr. Yahya A. M. Maslamani Dr. Abdul Jamil Choudhry

Editorial Notes: Hajj is a long journey where pilgrims experience a lot of events. Due

to their differing demographic characteristics, their behaviors are also different. Age, gender, nationalities and education along with other factors play sensitive roles in changing pilgrims' actions.

The face mask was not used by a large proportion of hajjis. The efficiency of the face mask in prevention of respiratory symptoms is controversial. A previous study in Hajj season 2009 conducted among French pilgrims reported that face mask use did not significantly reduce respiratory symptoms.¹ However, this study revealed a significant relationship between fever and not using a face mask.

Head shaving through razor blade is a risk factor for scalp wounds, which may lead to blood borne infection if contaminated. These wounds arise from lack of practice as in case of unauthorized barbers. In this study, nearly half the male pilgrims went to unauthorized barbers. A previous study reported many reasons for pilgrims going to unauthorized barbers, mainly crowded and expensive authorized barber shops.²

Table 1 : Using face mask and development of cough and fever among pilgrims, Hajj season 1431 H (2010). (Weighted)

Symptom	Using Face Mask				p-value	
	Yes		No			
	No.	%	No.	%		
Cough	Yes	680	73.0	545	72.5	0.82
	No	252	27.0	207	27.5	
	Total	932	100	752	100	
Fever	Yes	193	20.7	117	15.6	0.007
	No	740	79.3	635	84.4	
	Total	933	100	752	100	

In hajj season 1431 H (2010 G), new instructions were released from the Saudi Ministry of Health targeted international pilgrims from each country regarding which vaccines to be received prior to Hajj; these are Meningococcal Meningitis, Seasonal Influenza (including H1N1), Yellow Fever, and Poliomyelitis vaccines. It is worth mentioning that some vaccines that are recommended for a particular country may not be recommended for others.³

A large number of hajjis come from areas endemic for Meningococcal Meningitis, which may result in an increased risk of outbreaks. In order to prevent occurrence of these outbreaks, high vaccination coverage rates against meningococcal meningitis have to be maintained, in addition to other preventive measures. Vaccination coverage rate against Meningococcal Meningitis was lower than expected (63.6%), in comparison with previous similar studies, that reported 90%, 88%, 89.8% and 84.4% in 1997, 1998, 2002 and 2007 respectively.^{2,4,5,6}

There was a reasonable increase of seasonal influenza vaccine coverage rate this year (52.4%), as a result of the pandemic H1N1 virus and developing of new influenza vaccine including this strain.⁷ However, the influenza vaccine remains a weak defender. A study conducted in 2009 among French pilgrims showed that seasonal influenza vaccine did not significantly reduce respiratory symptoms.¹

Eating from restaurants was significantly associated with food poisoning symptoms (abdominal pain and diarrhea) among pilgrims. The small

number of restaurants in the area that provide food to a huge number of pilgrims within a limited area may cause food handlers to neglect hygiene and cook food inadequately. However, it has been noticed that throughout the last couple of hajj seasons, a big decline in food poisoning outbreaks occurred.² This decline coincides with the start of Hamlas (Hajj companies), which receive fees from pilgrims for food-provision, that are monitored by the Saudi health authorities. Nearly half of the pilgrims in this study depended on Hamlas as a main source of food.

Nearly one third of the pilgrims had one or more chronic diseases, mainly hypertension and diabetes. It is worth noting that in 2010, the prevalence of chronic diseases among pilgrims (27.1%) was higher than that reported in 2007 (25%), and double that of 2002 (13.2%). This dramatic increase reflects the global situation of rising chronic diseases.

Cough and fever were the leading causes of morbidity

among pilgrims, similar to the 2002 study.²

For a healthy Hajj environment in the future it was recommended to coordinate with health and hajj ministries of other countries in order to initiate/enhance the health education and hajj orientation programs for hajjis before they leave their home countries. The Saudi ministry of health should also coordinate with other national ministries of health to strengthen the weakening vaccination program against meningococcal meningitis, and ensure vaccination of all hajjis at least 10 days before hajjis departure from their home countries.

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Table 2 : Relationship between food source and development of abdominal pain, diarrhea, and vomiting among pilgrims, Hajj season 1431 H (2010G). (Weighted)

Main Food Source	SYMPTOM					p-value	
	Yes		No		Total	χ ²	p-value
	No.	%	No.	%			
ABDOMINAL PAIN	Cooked own food	19	4.9	372	95.1	391	Reference
	Hajj Mission	52	7.7	621	92.3	673	3.26 0.07
	Restaurants	36	9.1	360	90.9	396	5.42 0.02
	Street Vendors	6	7.2	77	92.8	83	0.77 0.38
	Canned Food	1	1.8	55	98.2	56	FE* 0.49
DIARRHEA	Cooked own food	25	6.4	366	93.6	391	Reference
	Hajj Mission	66	9.8	607	90.2	673	3.68 0.05
	Restaurants	47	11.9	349	88.1	396	7.09 0.007
	Street Vendors	9	10.8	74	89.2	83	2.04 0.15
	Canned Food	5	8.9	51	91.1	56	0.50 0.48
VOMITING	Cooked own food	11	2.8	380	97.2	391	Reference
	Hajj Mission	22	3.3	651	96.7	673	0.17 0.68
	Restaurants	11	2.8	385	97.2	396	0.00 0.91
	Street Vendors	3	3.6	80	96.4	83	FE* 0.72
	Canned Food	0	0.0	56	1.0	56	FE* 0.37

الخبرات المتعلقة بصحة الحجاج من خارج المملكة المغادرين عبر صالة الحج بمطار الملك عبد العزيز الدولي بجدة، موسم حج ١٤٣١هـ (٢٠١٠م).

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أوصت بتوصيات من أهمها تقوية برامج التثقيف الصحي قبل مواسم الحج، ويجب أن يكون للجهات الصحية السعودية جهودها الخاص والمضاعف لتثقيف الحجيج. تم التوصية على تحسين وزيادة برامج التثقيف الصحي للحجاج قبل قدومهم من بلدانهم و حال وصولهم إلى المنافذ السعودية، وعلى كل بعثة حج توفير مترجم مهمته المساعدة في تثقيف حجاج دولته بلغتهم الأم .

- إعداد : د. يحيى علي مسلماني،
د. عبد الجميل شودي (برنامج
الوبائيات الحقلية)

■ الخبرة هي المعرفة والسلوك التي يشترك فيها مجموعة من الناس في مجتمع معين ، بحيث تؤثر على طريقة تفكيرهم وتصرفاتهم. تهدف هذه الدراسة إلى تحديد الخبرات المتعلقة بصحة الحجاج المغادرين عبر صالة الحج بمطار الملك عبد العزيز بجدة ، موسم حج ١٤٣١هـ و تقييم دور العوامل الاجتماعية والسكانية والسلوكية للحجاج وتأثيرها على حالتهم الصحية خلال موسم الحج للخروج بتوصيات لتحسين الوضع الصحي والخدمات الصحية في مواسم الحج القادمة .

تم تقسيم الحجاج جغرافياً إلى خمس مجموعات حسب بلد الوصول ومن ثم أجريت دراسة مقطعية حيث تم أخذ عينة عشوائية من كل مجموعة عبارة عن ثلاثون حاجاً من إجمالي عدد الحجاج على متن كل طائرة مغادرة. تم جمع المعلومات بواسطة استبيان مترجم لثلاث عشرة لغة ويحتوي أسئلة متعلقة بالمعلومات الديموغرافية والسلوكية والحالة الصحية للحجاج ومستوى الرضى عن الخدمات المقدمة .

تم جمع البيانات من ١٧١٧ حاج وحاجة ، متوسط أعمارهم ٤٦,٢٠ عاماً (انحراف معياري ١١,٥٣)، ٦٣,٧٪ كانوا من الذكور، ٥٤,١٪ تلقوا تعليماً جامعياً أو أعلى، ٨٣,٧٪ كانوا يؤدون الفريضة لأول مرة، و ٤٤٪ لم يستخدموا قناع الوجه (الكمامة) خلال أدائهم للفريضة. كما أظهرت النتائج وجود علاقة قوية بين عدم استخدام الكمامات وارتفاع درجة الحرارة (القيمة المرجحة=٠,٠٠٧) .

أظهرت الدراسة ان ٢٩,٥٪ من الحجاج الذكور قد حلقوا رؤوسهم في محلات حلقة مرخصة ، ٧٥,٧٪ كانوا متأكدين أن شفرة الحلقة كانت جديدة ولم يسبق لأحد أن استعملها، ٦٣,٦٪ و ٥٢,٤٪ على التوالي كانوا قد تلقوا تطعيمى الحمى الشوكية والأنفلونزا الموسمية، و ٦٤٪ كان بحوزتهم شنطة إسعافات أولية. كانت بعثات الحج والمطاعم المصدران الرئيسيين لإعاشة ٤٢٪ و ٢٤,٨٪ من الحجاج على التوالي، كما وجدت علاقة قوية بين تناول الطعام من المطاعم وظهور بعض أعراض التسمم الغذائي مثل ألم البطن (القيمة المرجحة=٠,٠٢) والاسهال (القيمة المرجحة=٠,٠٠٧) . ٢٧,١٪ كان لديهم أمراض مزمنة غالبيتها الضغط والسكر ومنهم ١٤,٩٪ تدهورت حالتهم الصحية نتيجة للمرض المزمن الذي يعانون منه .

أكثر الأعراض التي اشتكى منها الحجاج كانت الكحة (٧٢,٢٪)، وقد أظهرت الدراسة وجود علاقة قوية بين الزحام و الكحة (القيمة المرجحة=٠,٠٠١). وقد قام ١٥,٤٪ بزيارة واحد أو أكثر من المرافق الصحية خلال موسم الحج، وقد أظهرت الدراسة وجود علاقة قوية بين دنو المستوى التعليمي لدى بعض الحجاج وكثرة زيارتهم للمرافق الصحية (القيمة المرجحة=٠,٠٠١). أوضح ٤٢,٥٪ من الحجاج غاية الرضى عن توفر المرافق الصحية السعودية في المشاعر المقدسة و ٤٢,٩٪ كانوا في غاية الرضى عن جودتها .

أظهرت الدراسة تحسناً ملحوظاً في السلوكيات المتعلقة بالحلاقة وأخذ تطعيمات الأنفلونزا الموسمية، والمشي دون حذاء وما ينتج عنه من إصابات في القدم. كما أظهرت الدراسة زيادة ملحوظة في أعداد الحجاج المصابين بأمراض مزمنة، عدد الذين تم إعطائهم تطعيمات الحمى الشوكية. مع الجهود التي تقدمها بعثات الحج والحملات في إعاشة الحجاج إلا أن المطاعم ما زالت تشكل خطراً كبيراً لحدوث فاشية تسمم غذائي بين الحجاج. كما وجد أن الزحام هو السبب الرئيسي وراء الالتهابات الصدرية الحادة بين الحجاج .

الكثير من الدراسات التي أجريت سابقاً بخصوص سلوكيات الحجاج وخبراتهم

Pattern of diseases and preventive measures among domestic Hajjis from Riyadh, 1431 H.

Mina is a holy place where more than 2 million hajjis camp for at least 3 days during the annual pilgrimage to Makkah (Hajj). The objective of this study was to assess the incidence of selected diseases and injuries among hajjis during Hajj season 1431 H and assess preventive measures practiced by hajjis. A cohort study was conducted among hajjis from Riyadh using a standardized phone based questionnaire. A two stage sampling technique was used.

Out of 1804 initial recruits, 1507 individuals were enrolled into the study. Males comprised 61.7% (male to female ratio 1.6:1). Their mean age was 37.9 years (SD± 12.1, range 21-83). The main nationalities were Saudis and other Arabs (84.5%), while hajjis from South Asia, South East Asia, and Africa comprised 7.4%, 4.9% and 3.2% respectively. Almost half the study population (49.5%) had a university and higher level of education, and occupations were reported as 31.4% unemployed, 13.7% manual workers, 21.4 employees, 21.3% professional, 3.8% retired, 4.9% students, and 3.5% self employed.

All participants had been vaccinated for meningococcal meningitis. Some Hajjis had also received other vaccines (n=218); 5.9% against Hepatitis A, 6.4% against Hepatitis B, and 94.4% for seasonal flu (categories not mutually exclusive).

Modes of travel to Makkah were either by bus (50.6%), plane (20.2%), or car (29.2%). The travel coordination services of a Hamla were utilized by nearly all Hajjis (95.7%). The average length of stay in Hajj was 7.04 (± 1.78) days and all but two hajjis were able to complete the Hajj.

Symptoms of illness were reported by 825 (54.7%) of the returning Hajjis, 97% reported upper respiratory tract symptoms and 9.3% reported diarrheal symptoms (not mutually exclusive). Of the 825 hajjis, 51% reported contact with a person having similar symptoms

and 43.2% had sought medical care at a health care facility. Trauma (e.g. cut wounds and contusions) was reported by 2.9%.

Face masks were used by 851 (56.5%) of participants. Of those, 216 (25.4%) reported using it most of the time and 635 (74.6%) reported using it sometimes. Of the 577 females in the study population, 333 (57.7%) reported wearing a face cover and 300 (90.1%) reported wearing it most of the time.

Food service was provided by the hamla for 73.6%; the rest reported consuming self cooked meals (8.4%) and food from street vendors (18.0%). Consumption of raw food or vegetables from any source was reported by 83.9% and most used bottled water for drinking (88.9%).

The services of a licensed barber were utilized by 392 (42.2%) of the 930 male participants. Unlicensed barbers (6%) and other hajjis (11.5%) were also utilized; 40.3% did not shave. Requests for a new shaving blade were made by 95.9%. Scalp wounds from shaving were reported by 13.5%. Only 1.2% of the Hajjis reported being involved in animal slaughter.

A majority of hajjis reported washing their hands more than 5 times per day (90.3%), and 45.5% used hand sanitizers.

None of the females reported smoking, while 307 males (33.3%) were smokers. Selected chronic diseases were reported by 278 (18.4%). Of those, diabetes was reported in 55.7%, hypertension

in 60.7%, other cardiac disease (7.5%), and bronchial asthma (11.5%) (Not mutually exclusive). Exacerbation of chronic illness during hajj was reported in 28.4%. Among diabetic Hajjis; 32.3% had exacerbations, while 33.7% of hypertensive's had exacerbations. Hajjis who had a chronic disease were using their medications regularly (82.0%); of those with a chronic disease, 89.2% reported that they had enough supply of their medications. (Table 1)

Those under 40 years of age were more likely to develop an URTI (P=0.004). There was no significant influence of age on diarrheal diseases or trauma. Regarding educational level, no significant difference was found for URTI or trauma, but there was a statistically significant difference for diarrheal diseases (P=0.002). As for nationality, there was no significant difference regarding diarrheal diseases and trauma, but there was a statistically significant difference for URTI (P< 0.001).

No statistical difference was found for use of facemask, but there was a statistically significant difference (P= 0.034) between those who used it most of the time and those who used it sometimes. No statistical difference for face cover use was found for URTI.

No statistically significant findings were identified for food or water source and eating raw vegetables as risk factors for diarrheal illnesses. No statistical difference for use of hand sanitizer or frequency of hand washing was found for URTI or diarrheal diseases.

- Reported by: Dr. Fahad S. Al-Jasser, Dr. Abdullah Al-Zahrani, Dr. Ibrahim Kabbash (Field Epidemiology Training Program).

Editorial notes: Acute respiratory tract infections, diarrheal

diseases and injuries are a group of health conditions occurring worldwide throughout the year and are not limited to any specific age, gender, or nationality. Several factors contribute to the wide spread of URTIs including direct contact with an affected person, change in climate, and crowded places; while all of these contributing factors are ominously present in Hajj.¹

In the present study, the majority of symptoms reported by hajjis after returning home were related to URTI. Crowdedness during Hajj is a major risk factor. This high incidence, even with low severity as indicated by low hospital admission rate, reveals a high burden of disease. A large proportion of cases developed the sickness even before they had left Makkah, demonstrating the difficulty hajjis may have

encountered to complete the hajj rituals. The problem is further compounded by the fact that URTI, being communicable diseases with high secondary attack rates, have a great potential of spread among susceptible populations of home towns of returning hajjis. This study also showed the need for studying the burden of illness on the community due secondary waves of URTI among non-Hajjis exposed to infected hajjis.²

The main question is how to prevent the occurrence of this heavy burden of URTI. Given the circumstances of Hajj, it is impossible to control the issue of crowding and exposure to contacts. The remaining alternates are personal protective measures, such as vaccination, chemoprophylaxis and use of facemask. Keeping in view the varied etiology of

URTI, including both viruses and bacteria, the use of vaccines against one or multiple organisms does not appear to be rational.³

Facemask has turned out to be the most important practical protective factor, and their regular use has shown a decrease in the URTI incidence. The use of facemasks has been advocated to protect from inhalation of aerosols containing organic and inorganic particulates.⁴

While comparing the results of our studies with previous behavioral risk factor studies conducted in 1998, 2002 and 2006,⁵⁻⁷ improvements were noticed in some behavioral aspects, such as the rise in proportion of hajjis for whom Hamla was the main source of cooked food, for whom sealed plastic bottles were the main source of drinking water, those who got their hair cut by professional barbers, those who used a face mask, those who had received both influenza and Hepatitis A vaccination coverage; and a decline in the proportion suffering from injuries.

The MOH URTI surveillance system needs to be enhanced because of the high incidence and the burden URTI has on the health system both in Hajj areas and in the city. A surveillance system should also be in place for the URTI secondary wave back in the cities where the hajjis came from.

Table 1 : Use of preventive measures among domestic hajjis from Riyadh.

Preventive measures	No.	%
Face mask: (n= 1507)		
Most of the time	216	14.3
Sometimes	368	24.5
Occasionally	267	17.7
Never	656	43.5
Face cover : (n=577)		
Most of the time	300	52.0
Sometimes	25	4.3
Occasionally	8	1.4
Never	244	42.3
Eat usually: (n= 1507)		
Street vendor	272	18.0
Hamla	1109	73.6
Self cooked food	126	8.4
Eat raw food/vegetables: (n= 1507)	1265	83.9
Shaved head: (n= 930)		
Licensed barber	392	42.2
Unlicensed barber	56	6.0
Another Hajji	107	11.5
Did not shave	375	40.3
Ask for new blade: (n= 555)	532	95.9
Scalp wounds: (n= 555)	126	13.5
Animal slaughter: (n= 930)	11	1.2
Hand washing: (n= 1507)		
Less than 5 times/day	146	9.7
More than 5 times/day	1361	90.3
Using hand sanitizer: (n= 1507)	686	45.5
Source of drinking water: (n= 1507)		
Bottled water	1340	88.9
Shared water	41	2.7
Public water	334	22.2
Smoking: (n= 1507)	307	20.4

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أنماط الأمراض التي تنتشر بين حجاج مدينة الرياض وسبل الوقاية المتبعة لحج عام ١٤٣١هـ

■ في كل عام يجتمع أكثر من مليوني حاج لاداء مناسك الحج في مناطق محدودة. ونظرا للازدحام في مكة والمدينة والمشاعر المقدسة فانه من المتوقع زيادة انتشار الأمراض التي تنتقل عن طريق الهواء أو الاتصال المباشر ومنها أمراض الجهاز التنفسي وخصوصا العلوي ، وقد سجلت مشاهدات كثيرة باصابة الحجاج بالتهاب المجاري التنفسية العلوية بعد عودتهم من الحج ولكن المعلومات عن عوامل الخطورة للإصابة ومعدل انتشارها وأنماطها غير متوفرة بدرجة كافية وبالتالي لا يمكن التخطيط لإجراءات وقائية احترازية يمكن تطبيقها بالإضافة إلى أن تلك المعلومات تساعد على وضع بروتوكول علاجي فعال لمجموعة من المرضى الذين يراجعون المراكز الصحية في فترة ما بعد الحج .

هدفت هذه الدراسة إلى تحديد معدل الإصابة لمجموعة من الأمراض والاصابات المحددة للحجاج من مدينة الرياض الذين ينوون اداء فريضة الحج عام ١٤٣١هـ. نوع الدراسة هو دراسة (Prospective cohort study) وقد قام فريق البحث بأخذ عينة الدراسة على مرحلتين حيث تم اختيار الأشخاص الراغبين باداء الحج عشوائيا من مدينة الرياض. ومن ثم تم جمع البيانات من الحجاج بعد عودتهم من الحج باستخدام استبيان موحد عن طريق الاتصال الهاتفي بالأشخاص موضع الدراسة.

كان عدد الحجاج الذين شملتهم الدراسة (١٥٠٧ حجج) من ١١ مركزاً صحياً. كان عدد الحجاج من الرجال ٩٣٠ حاجاً (٦١,٧٪) ومن النساء ٥٧٧ حاجات (٣٨,٣٪) وكان عدد السعوديون ٦١٠ حجج (٤٠,٥٪) وعدد الحجاج غير السعوديين ٨٩٧ حاجاً (٥٩,٥٪). كان متوسط الأعمار للجنسين هو ٣٧,٩ سنة. جميع الحجاج الذين شملتهم الدراسة تم تطعيمهم ضد الحمى الشوكية. اما بالنسبة لتطعيم الانفلونزا الموسمية فكانت نسبة الحجاج الذين حصلوا على التطعيم ١٤,٥٪. كانت فترة بقاء معظم الحجاج في منطقة الحج ما بين خمسة الى عشرة ايام. بالنسبة لوجبات الطعام ، ٧٣,٦٪ من الحجاج كانوا يأكلون وجباتهم في حملات الحج و ١٨٪ كانوا يأكلون وجباتهم من المطاعم الموجودة في منطقة الحج.

نسبة الحجاج الذين كانوا يقومون بغسل أيديهم أكثر من خمس مرات يوميا تجاوزت ٩٠٪. أما بالنسبة لمصدر مياه الشرب بالنسبة للحجاج ، فالنسبة الغالبة (٨٨,٩٪) من الحجاج كانوا يستعملون المياه المعبأة للشرب بينما نسبة ٢٢,٢٪ من الحجاج كانوا يشربون الماء من برادات المياه العمومية الموجودة في مناطق الحج. كان عدد الحجاج الرجال الذين قاموا بحلاقة رأسهم باستخدام شفرة الحلاقة ٥٩,٧٪ بينما كان عدد الذين قاموا بتخفيف شعرهم باستخدام المقص أو ماكينة الحلاقة ٤٠,٣٪. ٤٢,٢٪ من بين الذين حلقوا رؤوسهم باستخدام الشفرة قاموا بذلك عند حلاق مرخص.

من بين كل الحجاج الذين شملتهم الدراسة، كانت نسبة الذين عانوا من اعراض مرضية ٥٤,٧٪ كانت نسبة الذين عانوا منهم أعراض التهاب الجهاز التنفسي العلوي ٩٧٪. بينما كانت نسبة الحجاج الذين عانوا من اصابات مختلفة اثناء الحج ٢,٩٪ وكانت نسبة الذين يعانون من أمراض مزمنة ١٨,٤٪ و قام معظمهم (٨٩,٢٪) باحضار الأدوية الخاصة بالأمراض المزمنة.

إعداد: د. فهد الجاسر ، د. عبدالله الزهراني ، د. إبراهيم كباش (برنامج

الوبائيات الحقلية)

Selected notifiable diseases by region Oct. - Dec. 2011

	Riyadh	Makkah	Jeddah	Madinah	Taif	Qassim	Eastern	Hasa	Hafr Al-batin	Asir	Bisha	Tabuk	Hail	Al-Shamal	Jizan	Najran	Baha	Al-Jouf	Goriat	Goufuda	TOTAL	
Measles	1	1	0	1	1	1	2	0	0	16	0	0	0	0	1	0	0	0	0	0	0	24
Mumps	2	0	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5
Rubella	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Varicella	440	227	228	209	278	479	454	181	148	689	53	14	56	185	47	54	7	76	49	129	4003	
Meningitis mening.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Meningitis other	28	0	4	3	0	12	2	5	0	0	1	0	5	1	1	0	0	0	0	1	63	
Hepatitis B	228	0	277	93	31	53	121	3	1	103	7	24	5	12	19	5	2	10	1	25	1020	
Hepatitis C	124	0	233	34	13	17	71	5	0	44	4	9	1	2	2	0	0	15	2	18	594	
Hepatitis unspecified	2	0	2	0	0	0	0	0	0	15	0	0	0	0	3	0	0	0	0	0	22	
Hepatitis A	8	3	22	11	0	6	7	1	1	22	0	0	1	0	4	5	0	0	0	0	91	
Typhoid & paratyphoid	0	1	19	44	1	4	6	8	1	0	0	1	0	0	1	0	0	0	1	0	87	
Amoebic dysentery	3	0	215	13	48	2	120	26	1	64	16	0	0	0	0	0	0	0	1	0	509	
Shigellosis	3	0	0	0	0	0	1	2	1	0	0	0	0	0	0	2	0	0	0	0	9	
Salmonellosis	132	8	55	0	0	3	135	16	1	3	0	0	0	0	0	4	0	0	0	2	359	
Brucellosis	99	4	22	55	34	127	37	2	59	175	9	5	38	17	14	24	0	1	2	0	724	
Dengue Fever	0	78	119	0	0	0	0	0	0	0	0	0	0	0	18	0	0	0	0	0	215	
Alkhorma	0	4	6	0	0	0	0	0	0	0	0	0	0	0	0	27	0	0	0	0	37	

Comparisons of selected notifiable diseases, Oct. - Dec. 2010-2011

DISEASE	Oct - Dec 2011	Oct - Dec 2010	Change %	Jan - Dec 2011	Jan - Dec 2010	DISEASE	Oct - Dec 2011	Oct - Dec 2010	Change %	Jan - Dec 2011	Jan - Dec 2010
Cholera	1	1	0	1	4	Meningitis mening.	0	0	0	6	3
Diphtheria	0	0	0	0	0	Meningitis other	63	76	-17	261	272
Pertussis	1	0	100	17	0	Hepatitis B	1020	1255	-19	4494	4967
Tetanus, neonat	4	3	33	8	4	Hepatitis C	594	656	-9	2328	2498
Tetanus, other	3	2	50	12	6	Hepatitis unspecified	22	21	5	85	83
Measles	24	125	-81	349	336	Hepatitis A	91	148	-39	321	621
Mumps	5	12	-58	32	60	Typhoid & paratyphoid	87	96	-9	292	321
Rubella	0	0	0	0	35	Amoebic dysentery	509	974	-48	1985	3198
Varicella	4003	3277	22	19469	18118	Shigellosis	9	31	-71	54	102
Dengue Fever	215	191	13	3166	3377	Salmonellosis	359	395	-9	1394	1432
Alkhorma	37	35	6	93	81	Brucellosis	724	851	-15	3942	4460

Disease of low frequency : Oct - Dec 2011

- * Yellow fever , Plaque , Poliomyelitis , Rabies , Diphtheria , Rubella : No Cases
- * Pertussis :1 Case (Madinah)
- * Neonatal Tetanus :4 Cases (Makka)
- * Echinococcosis : 1 Case (Eastern)