



Hajj Cluster Research: Medical and Health Project: 2007/9 – final report after completion of year 1 of the study

Title: RESPIRATORY SYNDROMES AMONG PILGRIMS: ASSESSMENT OF HEALTH STATUS AND INTERVENTIONS TO ALLEVIATE RESPIRATORY SYMPTOMS [1428H-1430H].

(A Collaboration Research between USM, UQU, LUTH, FAMA and GlaxoSmithKline Pharmaceutical Bhd)

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Research on health on hajj pilgrims: Issues and challenges

Siti Amrah Sulaiman¹ and Nor Hayati Othman²

¹Dept. of Pharmacology, School of Medical Sciences, ²Clinical Research Platform, Health Campus, Universiti Sains Malaysia, 16150 Kubang Kerian Kelantan, Malaysia.

Each year millions of Muslims around the world congregate in Mekah, Saudi Arabia to perform the hajj. The time to perform hajj is very specific and all hujjajs are required to be at specific places at stipulated time to perform the rituals. Overcrowding, stress, improper diet and sleep, dehydration and air pollution lead to various medical and health problems. Major medical complications such as diabetic ketoacidosis, stroke, heart attack and meningococcal meningitis are rare, as these medical problems are screened during compulsory examinations as per requirement to get visa into Saudi Arabia. Meningococcal vaccination prior to departure to Mekah is mandatory. Heat stroke during summer is minimized by encouraging hujjajs to consume large amount of water. However respiratory symptoms are still overwhelming and cause significant morbidity and mortality especially among elderly, debilitated and immuno-compromised pilgrims. The medical and health hajj research team from Universiti Sains Malaysia (USM) in collaboration with Ummul Qura University (UQU), Lembaga Urusan Tabung Haji (LUTH) and Glaxo-Smith Kline conducted a Prevalence and Interventional studies on pilgrims. The prevalence study is to determine the proportion of pilgrims who had had respiratory symptoms and determine possible causes of acute respiratory symptoms. Two interventional clinical trials were carried out at the recent hajj season 1428/29 H, 2 more will be carried out next year [masks & bioaerosols] and another 2 in year 3 [medicated honey & of the research period. The 2 interventional studies done so far are to evaluate the effectiveness of influenza vaccine and using wild Malaysian honey "Madu Lebah Tualang – Agromas" in reducing acute respiratory symptoms. These 2 studies were co-sponsored by Malaysian Federal Agricultural Marketing Authority (FAMA) and Glaxo-Smith Kline company. Volunteers amongst pilgrims from Kelantan and Terengganu were recruited into the study. Vaccine, Honey and health Diaried were distributed to the subjects and control groups prior to their departure to Mekah. For Prevalence study, survey questionnaires were distributed to pilgrims at Madinatul Hujjaj in Jeddah. Four USM medical researchers went to Mekah to monitor the progress and compliance of the subjects to research protocols. The researches faced some challenges in performing these studies; identification of the microorganisms was not possible due to technical and logistic problems, random selection of participants was not achievable as the numbers of volunteers were limited, monitoring compliance of participants to research protocol was not satisfactory as it was difficult to locate their whereabouts despite knowledge of their Maktabs, the completed health diaries were not all returned by research subjects. For future research, a better packaging of honey suitable for traveling is recommended, highly committed and more educated pilgrims should be recruited to ensure compliance and accurate data entry and adequate training on how to enter diary entry should be done before departure.

The Occurrence of Acute Respiratory Symptoms among Malaysian hajj pilgrims 2007

Zakuan Zainy Deris¹, Habsah Hasan¹, Siti Amrah Sulaiman², Mohd Suhaimi Abdul Wahab², Nyi Nyi Naing³, Ruhana Che Yusuf³, Mohd Bazlan Hafidz Bin Mukrim⁴, Nor Hayati Othman⁴,

¹Department of Medical Microbiology and Parasitology, ²Department of Pharmacology, ³Unit of Biostatistics and Research Methodology, School of Medical Sciences, ⁴Clinical Research Platform, Universiti Sains Malaysia, Malaysia

Background: Acute respiratory symptoms are the commonest problems faced by pilgrims in Makkah. They could result from overcrowding, physical exhaustion and anxiety. The hot-dry atmospheric air exacerbates the problems.

Objectives: The aim of the study was to determine the occurrence of acute respiratory symptoms among Malaysian hajj pilgrims

Methodology: A cross-sectional study was conducted amongst two thousands Malaysian pilgrims. Survey forms were distributed at Madinatul-hujjaj, Jeddah where pilgrims stay on transit before returning to Malaysia. Response to the survey was on voluntary basis. The results were analysed using STATA version 9.0. The denominator was the number of completed survey forms.

Results: 394 pilgrims completed and returned the survey forms; 219 males and 173 were females [2 persons did not state their gender]. Only two (0.5%) pilgrims were younger than 10 years and 51(13.0%) were above 61 years of age. A large majority received influenza vaccination 278 (72.4%). The common underlying diseases were diabetes 48 (12.2%), asthma 35 (8.9%), prolonged cough 34 (8.6%) and rhinitis 28 (7.1%). In descending order the occurrence of symptoms and their respective 95% confidence intervals were: cough 91.3% (88.0-93.7), runny nose 79.2% (74.9-82.9), sore throat 57.1% (52.1 -61.9) and fever 59.1% (54.2-63.9). Only 3.6% (2.2-5.9) of pilgrims did not suffer from any of these symptoms. Majority had more than two symptoms and longer than 2 weeks duration. The Malaysian hajj pilgrims who had single symptom were 9.3% (6.8-12.6), two symptoms 23.7% (19.7-28.1), three symptoms 25.4% (21.4-30.0), and four symptoms 36.5% (31.9-41.4). Only 1.5% (0.7-3.3) had had hospitalization due to their illness.

Conclusion: Acute respiratory symptoms were remarkably common among Malaysian hajj pilgrims. The interventional measures to reduce the morbidity of respiratory related symptoms should be carried out in future Hajj seasons.

Associated factors of acute respiratory symptoms among Malaysian Hajj Pilgrims

Zakuan Zainy Deris¹, Habsah Hasan¹, Siti Amrah Sulaiman², Mohd Suhaimi Abdul Wahab², Nyi Nyi Naing³, Ruhana Che Yusuf³, Mohd Bazlan Hafidz Bin Mukrim⁴, Nor Hayati Othman⁴

¹Department of Medical Microbiology and Parasitology, ²Department of Pharmacology, ³Unit of Biostatistics and Research Methodology, School of Medical Sciences, ⁴Clinical Research Platform, Universiti Sains Malaysia, Malaysia

Abstract

Background: Hajj is one of the five pillars of Islam to be performed by a Muslim who has the means and health to accomplish the rituals. However, some Muslims have underlying medical illnesses which may suppress immune system. They are exposed to environmental situations such as overcrowding and dry-hot weather of Mekah which possibly make them more susceptible to acute respiratory symptoms.

Objectives: The aim of the study was to determine the association of selected underlying chronic illnesses with acute respiratory symptoms amongst Malaysian hajj pilgrims

Methodology: A cross-sectional study was conducted amongst two thousands Malaysian pilgrims. Survey forms were distributed at Madinatul-hujjaj, Jeddah where the pilgrims stay on transit before returning to Malaysia. Response to the survey was on voluntary basis. The results were analysed using Pearson chi-square and Fisher's exact tests. Level of significant was set at 0.05.

Results: Out of 394 returned survey forms, the percentage and their 95% confidence intervals of Malaysian hajj pilgrims with underlying diabetes mellitus were 12.2 (9.3-15.8); asthma 8.9 (6.4-12.1); rhinitis 7.1 (5.0-10.1); cancer 0.3 (0.1-1.4) and prolonged cough 8.6 (6.3-11.9) respectively. Only 34 (8.6%) of Malaysian hajj pilgrims smoked before they performed hajj. Of these chronic illnesses, underlying rhinitis significantly caused sore throat ($p=0.047$) and prolonged cough significantly caused cough during hajj ($p=0.039$). Other symptoms such as runny nose and fever were not significantly associated with any underlying diseases.

Conclusion: Underlying chronic illnesses are not significantly associated with acute respiratory symptoms among Malaysian hajj pilgrims except for presence of underlying rhinitis and chronic cough.

A study to evaluate the effectiveness of the Influenza vaccine in reducing acute respiratory symptoms among Malaysian Hajj Pilgrims

Habsah Hasan¹, Zakuan Zainy Deris¹, Siti Amrah Sulaiman², Mohd Suhaimi Abdul Wahab², Zulkefle Ab. Rahman³, Ruhana Che Yusof⁴, Nyi Nyi Naing⁴, Nor Hayati Othman⁵,

¹Department of Medical Microbiology and Parasitology,²Department of Pharmacology, ⁴Unit of Biostatistics and Research methodology, School of Medical Sciences, ⁵Clinical Research Platform, Health Campus, Universiti Sains Malaysia, 16150 Kubang Kerian, Kelantan, Malaysia. ³Department Research and Development, Institut Perguruan Sultan Mizan, Terengganu, Malaysia.

Abstract

Introduction: Overcrowding and physical exhaustion predispose pilgrims to a number of infectious diseases and influenza is one of them. Influenza can be deadly for the elderly and those with compromised immune systems, diabetes, kidney dysfunction and heart disease.

Objective: This study was to determine the effectiveness of influenza vaccine in preventing acute respiratory symptoms among Hajj pilgrims.

Materials and methods: A non-randomized controlled trial was conducted to evaluate the effectiveness of influenza vaccine compared to individuals who were non vaccinated, in reducing acute respiratory symptoms among Malaysian hajj pilgrims. The vaccine was administered intramuscularly at least two weeks before departure. The outcome was measured in symptoms score and evaluated statistically using repeated measures ANOVA by SPSS software.

Results: A total of 65 vaccinated and 41 control pilgrims were recruited. There were no significant differences of weekly acute respiratory symptoms and symptoms score between vaccinated and non-vaccinated pilgrims.

Conclusion: Influenza vaccination is not effective in reducing respiratory symptoms among Malaysian hajj pilgrims hence it is not recommended to be given as routine. However, it can still be given to selected Hajj pilgrims with high risk.

A study to evaluate the effectiveness of “Madu Lebah Tualang” in reducing acute respiratory symptoms among Malaysian Hajj Pilgrims

Siti Amrah Sulaiman¹, Habsah Hasan², Zakuan Zainy Deris², Mohd Suhaimi Abdul Wahab¹, Ruhana Che Yusof³, Nyi Nyi Naing³, Nor Hayati Othman⁴,

¹Department of Pharmacology, ²Department of Medical Microbiology and Parasitology, ³Unit of Biostatistics and Research Methodology, School of Medical Sciences, ⁴Clinical Research Platform, Universiti Sains Malaysia, Malaysia

Abstract

Introduction: Acute respiratory symptoms such as cough associated with rhinitis, sore throat or fever is one of the main health problems encountered by the Malaysians hajj pilgrims. The possible causes of this problem is still uncertain. Honey is known to contain multiple chemical compounds beneficial for health. It is capable in enhancing immune system and has antibacterial, antiviral and antifungal properties. The presence of hydrogen peroxide and high antioxidant properties of honey enables the user to combat against infections and other diseases. It is stated in the holy Quran that honey is a medicine for mankind.

Objectives: To determine the effectiveness of Malaysian multi floral wild honey “Madu Lebah Tualang - Agromas” in reducing acute respiratory symptoms amongst Hajj pilgrims.

Materials and methods: A nonrandomized control trial was conducted among hajj pilgrims during 1407/2007 hajj season. The intervention group (n=56) was given two kilograms of honey and they were requested to consume the honey 20 g twice daily throughout 42 days hajj period. They were requested to record the respiratory symptoms daily in the diary provided. The outcomes were compared with the control group (n=41) that received neither honey nor influenza vaccine. Outcome was measured in symptoms score and evaluated statistically using repeated measures ANOVA by SPSS software.

Results: Results showed that group that received honey has significantly lower percentage of symptoms on sore throat and rhinitis during the third week of the haj period. No significant differences were noted in the symptoms of cough and fever. The difference of mean symptoms score was maximum on the third week of the period, however it was not statistically significant between the two groups.

Conclusion: “Madu Lebah Tualang - Agromas” is significantly effective in reducing sore throat and rhinitis on the mid hajj period amongst Malaysia Hajj pilgrims. It is therefore suggested that honey could be adopted as one of the prophylactic measures in reducing acute respiratory symptoms among pilgrims.

Concept papers for future research projects.

A study to determine the common bacterial isolates and their sensitivity pattern in the throat swab of Malaysian hajj pilgrims before departure and post hajj

Principle Investigator: Dr. Habsah Hasan, Dept. of Medical Microbiology dan Parasitology, School of Medical Sciences, Health Campus, Universiti Sains Malaysia, 16150 Kubang Kerian Kelantan.

Propose Year of Study: 2008

Introduction

The rituals of hajj required the pilgrims to be exposed to a large number of people from all over the world during a certain period of times. The overcrowding situation was a risk factor for transmissions of infections especially for organisms that are transmitted via airborne and droplets. The causative organisms that cause respiratory tract infections are associated with the virulence of the organisms and the ability of the organism to colonize the respiratory tract. Respiratory disease was the most common cause (57%) of admission to hospital, with pneumonia being the leading reason for admission in 39% of all patients (Al-Ghamdi et al, 2003). Causative agents commonly associated with respiratory tract infections in Hajj pilgrims were *Haemophilus influenzae*, *Klebsiella pneumoniae*, *Streptococcus pneumoniae* (4.8%), *Staphylococcus aureus* (3.8%) and *Streptococcus pyogenes* (El Shaikh et al, 1998). The overall incidence rate of tuberculosis was 1% (El Shaikh et al, 1998). The antimicrobial of choice can be predicted based on the knowledge on the common pathogens the hajj pilgrims were exposed to and the bacterial sensitivity pattern. The congestion of people during the Hajj also promotes increased throat carrier rates of *N meningitides* (Al-Gahtani et al, 1995). This organism can cause fulminant CNS infections and series of outbreak has been reported before the introduction of quadrivalent meningococcal vaccine (Memish et al, 2003)

Objectives

The objective of this study is to determine the common bacterial isolates and their sensitivity pattern in the throat swab of Malaysian hajj pilgrims before departure and post hajj.

Methodology

This is a prospective cohort study. A group of pilgrims will be selected by random sampling based on the flight number. Two sets of throat swab will be taken at the airport before they leave for Makkah and another respiratory specimens (Throat swab/sputum) were taken upon their return from Makkah at the airport. The swabs will be transported in amies medium and cultured on CBA , BA and MacConkey agar. The protocols for culturing and identification of organisms will follow the Microbiology Laboratory of School of Medical Sciences, KK, Kelantan. The pathogens identified include beta hemolytic streptococcus, *Streptococcus pneumoniae*, *Haemophilus influenzae*, *Klebsiella pneumoniae*, *Pseudomonas aeruginosa*, *Neisseria meningitides*, *Staphylococcus aureus*. These pathogens will be identified if they present as pure growth, predominant

growth or when they grow in the third quadrant of culture. In the presence of three or more organisms in the third quadrant, the organisms will not be identified and presumed to have contamination during specimen collection. The common bacterial isolates will be identified and susceptibility test will be performed by modified Kirby- Bauer method.

This study will be conducted over a 5 year period to collect data for a prospective 5 year study on **A five year prospective cohort of common bacteriological isolates from Malaysia hajj pilgrims**

Analysis of results

A dependent correlation study will be performed based on the organisms isolated and their significance will be determined. The antimicrobial sensitivity obtained pre and post hajj for each organism will be compared. The overall antimicrobial sensitivity pattern of post hajj will be determined against commonly used antibiotics such as cefuroxime, ciprofloxacin, ampicillin/clavulanic acid, bactrim, ceftazidime, cefuroxime, and cefipime.

A trend over the 5-year period will be determined .

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A retrospective study of common bacterial isolates and their sensitivity pattern in the throat swab of Malaysian hajj pilgrims: A five-year review

Principle Investigators: Prof. Dr. Syed Hatim Noor, Dr. Habsah Hasan

Co-researchers: Researchers from Ummul Qura University and USM

Introduction

The rituals of hajj required the pilgrims to be exposed to a large number of people from all over the world during a certain period of time. The overcrowding situation was a risk factor for transmissions of infections especially for organisms that are transmitted via airborne and droplets. The causative organisms that cause respiratory tract infections are associated with the virulence of the organisms and the ability of the organism to colonize the respiratory tract. Respiratory disease was the most common cause (57%) of admission to hospital, with pneumonia being the leading reason for admission in 39% of all patients (Al-Ghamdi et al, 2003). Causative agents commonly associated with respiratory tract infections in Hajj pilgrims were *Haemophilus influenzae*, *Klebsiella pneumoniae*, *Streptococcus pneumoniae* (4.8%), *Staphylococcus aureus* (3.8%) and *Streptococcus pyogenes* (El Shaikh et al, 1998). The overall incidence rate of tuberculosis was 1% (El Shaikh et al, 1998). The antimicrobial of choice can be predicted based on the knowledge on the common pathogens the hajj pilgrims were exposed to and the bacterial sensitivity pattern. The congestion of people during the Hajj also promotes increased throat carrier rates of *N meningitidis* (Al-Gahtani et al, 1995). This organism can cause fulminant CNS infections and series of outbreak has been reported before the introduction of quadrivalent meningococcal vaccine (Memish et al, 2003)

Objectives

The objective of this study is to determine the common bacterial isolates and their sensitivity pattern in the throat swab of Malaysian hajj pilgrims for the last five years.

Methodology

This is a retrospective record review study. The laboratory results of common bacterial isolates and their sensitivity pattern amongst Malaysian hajj pilgrims for the last five years diagnosed by Ummul Qura University (UQU) will be traced from the laboratory data record of UQU. Required minimum sample size will be determined and an appropriate sampling method will be applied to obtain the determined sample size. The identified pathogens to be included will be beta hemolytic streptococcus, *Streptococcus pneumoniae*, *Haemophilus influenzae*, *Klebsiella pneumoniae*, *Pseudomonas aeruginosa*, *Neisseria meningitidis*, *Staphylococcus aureus*. These pathogens will be identified if they present as pure growth, predominant growth or when they grow in the third quadrant of culture. In the presence of three or more organisms in the third quadrant, the organisms will not be identified and presumed to have contamination during specimen collection.

Analysis of results

The frequency and percentage distribution of common pathogens isolated and their sensitivity patterns will be presented. An association analysis will be carried out between

pathogens and sensitivity patterns. Socio-demographic and other potential confounding variables will be included in data collection and data analysis. The overall antimicrobial sensitivity pattern of post hajj will be determined against commonly used antibiotics such as cefuroxime, ciprofloxacin, ampicillin/clavulanic acid, bactrim, ceftazidime, cefuroxime, and cefipime. A trend over the five-year period will be determined .

References

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