

Hajj 2011: A Unique Learning Experience for Final Year Emergency Medical Services Student

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Abstract: Hajj (a pilgrimage to Mecca in Saudi Arabia) is the epicenter of mass movement of millions of Muslims of enormous ethnic diversity. The huge attendance runs in figures unparalleled to any other universal mass congregation. People attending are exposed to extreme temperatures, crowds and congestion, which encourage spread of contagious diseases and occurrence of several other afflictions, besides, exacerbation of chronic health conditions. These eventualities necessitate emergency admissions. Government of Saudi Arabia provides meticulous health care to all the pilgrims. Several healthcare professionals are engaged to take care of any emergencies. Although, there is always the attendance of regular staff from emergency departments, but involving the final year paramedics in the routines of Hajj emergencies, became a novel initiative during 2011 Hajj. This scheme provided enormous practical experience to the students and hence, it is thought worthwhile to present some of their experiences and examine, if such visits can become a routine. The study was conducted at Mina Aljesir hospital. The student paramedics (a total of 14) belonging to the Emergency Services Program, College of Applied Medical Science, King Saud Bin Abdulaziz University for Health Sciences were given the tasks of managing the different emergencies. During a period of seven days, the students had examined 3157 patients attending Mena hospital with complaints of different morbidities. It was a rewarding learning experience, which provided them with on hand skills' practice working as a team with highly competent health care providers. It is desirable that such visits and participation in attending to emergencies during Hajj becomes a part of the curriculum in different colleges of health specialties throughout the Kingdom.

Key words: Hajj • Pilgrims • Emergencies • Management • Student paramedics

INTRODUCTION

Hajj (a pilgrimage to Mecca in Saudi Arabia) is a principal religious obligation of an able-bodied adult Muslim who can afford to do so. As the largest pilgrimage in the world, it has become the epicenter of mass movement of millions of Muslims of enormous ethnic diversity [1]. According to Central Department of Statistics and Information, the total number of pilgrims for 1432 (2011) was 2,927,717 of those, 1, 829,195 arrived from outside the Kingdom and the rest came from within the kingdom, all gathered in an area of 550 square KM of Mena. These figures are unparalleled to any other universal mass congregation. It is a demonstration of the solidarity of Muslims in their submission to Almighty God. Stay in crowds at Holy Shrines, extreme temperatures, crowded transport and mass movements for the rituals causes physical exhaustion that encourage

disease transmission through airborne agents. Hajj related spread of infectious diseases; Hajj-related environment and public health hazard are well described [2].

Diarrhea and food poisoning are generally common during Hajj. The Hajj rituals are demanding in terms of a lot of physical activity and mental efforts. A significant percent of those performing Hajj are elderly and may suffer from chronic medical conditions, which often aggravated during Hajj [2-6]. During mild weather, lower respiratory tract infections, exacerbation of bronchial asthma and chronic obstructive pulmonary disease (COPD) are the most commonly encountered diseases. Heatstroke and renal failure during pilgrimage are the main reasons for emergency admissions [2-7]. Recent studies showed a high prevalence of non-communicable diseases, including diabetes and cardiovascular diseases [4-6]. These diseases are reported as the leading cause of morbidity during Hajj [8-11].

The kingdom of Saudi Arabia provides meticulous health care to pilgrims during Hajj. Several hospitals and health centers are established in vicinity of the Holy Shrine of Hajj, they are equipped with the most advanced emergency management medical systems and are staffed with highly specialized personnel to provide state of art health care 24 hours/day for the pilgrims. These centers are run by the Ministry of Health, Saudi National Guard, the Interior Security Forces and the Ministry of Defense and Aviation. During the 2011 Hajj, several hospitals were established in Mena, Mena Almahbat, Mena Aljesir Mina Alwad, in addition to clinics run by National Guard Health affairs. These hospitals operated during 7 days (7th to 13th Zilhaj) of pilgrimage. Several professionals related with health specialties are engaged around the center to take care of any emergencies, however; beyond all, the squads of emergency including paramedics play a crucial role in attending the gruesome eventualities. Although, there is always the attendance of regular staff from emergency departments, but involving the final year paramedics in the routines of Hajj emergencies, became a novel initiative during 2011 Hajj. This scheme provided enormous practical experience to the students and hence, it is thought worthwhile to present some of their experiences.

The objective of this study was to utilize Hajj health care facility for field training of final year paramedics in an emergency care facility.

MATERIALS AND METHODS

Site of the Study: Mina Aljesir hospital

Type of Study: Cross Sectional Study of all the patients attending the hospital

Mina Aljesir Hospital: Mina Aljesir hospital is the best and most comprehensive health care facility in the holy shrines. It is situated on King Abdulaziz Bridge in the centre of Mina with a capacity of 150 beds, equipped with the most sophisticated equipments for the management of upper respiratory tract infection (URI), SARS (severe acute respiratory syndrome) and any disease that need emergency care. It is run by highly competent and skilled health care team in emergency medicine and intensive care

Student Paramedics, Their Tasks and Distribution of Duties: A total of 14 final year paramedics of the emergency services program, College of Applied Medical Sciences, King Saud bin Abdulaziz University for Health Sciences, was deputed to attend the emergency services during Hajj 2011. They were stationed in the emergency department of Mina Aljesir hospital. The students covered three emergency stations and used utilization all physical examination instruments, in addition to all necessary medical tools. They reviewed the patients upon admission to the department and followed until the

Table 1: Primary assessment on vital signs of patients and determination of their destination

| Triage | Yellow | Red |
|---|--|---|
| <p>Procedure done in this area by the medics are;</p> <ul style="list-style-type: none"> <input type="checkbox"/> Initial assessment of the patient and taking brief history <input type="checkbox"/> Assess set of vital signs (blood pressure oxygen saturation body temperature) <input type="checkbox"/> Determine the patient destination depending on the patient priority <input type="checkbox"/> Contact the other paramedics depending on the area that patient going to <input type="checkbox"/> Open an emergency file in the hospital for every patient and register patient information and emergency complaint in cases needing admission or if the patient come again. | <p>In this area the patient condition vary but the main goal is to stabilize the patient condition and if not the patient will be transferred to the red area the cases is seen in this area:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Asthmatic patient are the most commanding seen cases <input type="checkbox"/> Diabetic patients (whether hypo or hyperglycemic patients) the second most common seen cases <input type="checkbox"/> Seizures (mostly pediatric febrile seizures) <input type="checkbox"/> Psychotic patients <input type="checkbox"/> Trauma patients (fall is the most common one) <input type="checkbox"/> Acute coronary syndrome (myocardial infarction) <input type="checkbox"/> Respiratory upper tract infection ([pneumonia and bronchocholiolitis most common) <input type="checkbox"/> Meningitis <input type="checkbox"/> Abscess and ulcers (most commonly in the foot) <input type="checkbox"/> Varicose <input type="checkbox"/> COPD exacerbation <input type="checkbox"/> Hypertensive/hypotension patient <input type="checkbox"/> Epitasis <input type="checkbox"/> Heart stroke <input type="checkbox"/> Burn patients (third degree most common) <input type="checkbox"/> Anaphylaxis <input type="checkbox"/> Panic attack <input type="checkbox"/> The procedure done in this area depends on the case but all come in one theme <input type="checkbox"/> Obtain detailed patient assessment and history taking also head to toe physical examination <input type="checkbox"/> Determine the patient chief complaint <input type="checkbox"/> After the diagnosis the patient the paramedic conduct the treatment which involve different skills: | <p>The patient is evaluated as higher priority patient with life threatening injury either from the paramedic in the triangle or from the yellow area. There are variety of cases</p> <ul style="list-style-type: none"> <input type="checkbox"/> Cardiac arrest <input type="checkbox"/> Post cardiac resuscitation <input type="checkbox"/> Cardiac dysarthmia <input type="checkbox"/> Myocardial infraction <input type="checkbox"/> Severe trauma and head injury <input type="checkbox"/> Severe asthmatic attack and status asthmatics <input type="checkbox"/> Status epileptics <input type="checkbox"/> Any heamodynamically unstable with no specific cause: <input type="checkbox"/> Severe hypertension <input type="checkbox"/> Severe hypo/hyperglycemia <input type="checkbox"/> Severe dyspnea and low o2 saturation <p>The skills obtained in this area are:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Endotracheal intubation <input type="checkbox"/> Bag valve mask <input type="checkbox"/> Air way and tube suction <input type="checkbox"/> Airway adjuncts (oropharyngeal, nasopharyngyal) <input type="checkbox"/> Nasogastric tube and orogastric tube <input type="checkbox"/> Chest depression <input type="checkbox"/> Drug administration: drugs given are (amidrone, epinephrine,magnesium sulphate diclofenac, atropine, normal saline, ringal lactate, succinylcholine, haloperidol) <input type="checkbox"/> 12 lead ECG apply and interpretation |

Table 1: Continue

| Triage | Yellow | Red |
|--------|--|---|
| | <input type="checkbox"/> Patient assessment, history talking and physical examination head to toe <input type="checkbox"/> Vital signs (blood pressure oxygen saturation body temperature pulse rate) <input type="checkbox"/> Blood glucose level <input type="checkbox"/> Intravenous line <input type="checkbox"/> Drug administration <input type="checkbox"/> Intravenous, intramuscular, sub continuous, orally <input type="checkbox"/> Drugs are (diclofenac aspirin paracetamol hydrocortisone nitroglycerin metoclopramide scopolamine sulbutamol nor, al saline ringal lactate WD5% dextrose 50% regular insulin, haloperidol. <input type="checkbox"/> Splint and bandages <input type="checkbox"/> Fracture realiment <input type="checkbox"/> Hemorrhage control <input type="checkbox"/> Nebulizers <input type="checkbox"/> Blood sample request and withdraw to the laboratory (blood sample result interpretation) <input type="checkbox"/> X-ray request and interpretation and manually application <input type="checkbox"/> Paper work (patient report, chart and admission or discharge) <input type="checkbox"/> Oxygen administration (simple face mask, nasal cannula, non rebreather mask) <input type="checkbox"/> Wound suture <input type="checkbox"/> Manual immobilization by log roll and board the patient and cervical collar <input type="checkbox"/> Burn management (decontaminated, dry bandages, fluid resuscitation) <input type="checkbox"/> 12 lead ECG apply and interpretation <input type="checkbox"/> Arterial blood gas, venous blood gas <input type="checkbox"/> Foley catheter | <input type="checkbox"/> X-ray request and interpretation <input type="checkbox"/> Paper work (patient report, chart and admission or discharge) <input type="checkbox"/> Suction <input type="checkbox"/> Manual immobilization by log rolls and boards the patient with cervical collar. |

end of their hospital stay under supervision of emergency medical specialist. The data recorded on structured case report form constituted the results. The students covered the emergency department for seven days, twenty-four hours/day (Fourteen shifts) seven in each shift. Each group was divided in one paramedic at the triage and four at the yellow area which is for patient with major injuries (but hemo-dynamically stable and conscious) and two at the red area which was the resuscitation room. Each person in each area was to rotate after four hours depending on his position in the schedule. Depending on the area position in emergency department he will acquire techniques in different skills and carry out the appropriate procedures (Table I).

The Triage: In the triage area the paramedic receive the patient, take primary assessment, get set of vital signs and determine the patient destination, depending on the patient priority. The selection of priority of the patient to different destination areas needs a great knowledge and experience (Table 1).

RESULTS

During a period of seven days, the students had examined 3157 patients attending Mena hospital with complaints of different morbidities (Table 2, Figure 1). The patients were from different nationalities and hence, it was difficult to communicate with most of them because of languages barriers. During this period, the students

Table 2: A quantitative statement on number of cases and percentage of different diseases

| Dieases | No. Of Cases | Percentage % |
|-----------------------------------|--------------|--------------|
| Upper respiratory tract infection | 1500 | 47.5 |
| Asthma | 500 | 15.8 |
| Resuscitation | 25 | .79 |
| Gastritis | 150 | 4.75 |
| Chest pain | 200 | 6.30 |
| Uncontrolled hypertension | 150 | 4.75 |
| Uncontrolled diabetes | 200 | 6.33 |
| Renal colic | 200 | 6.33 |
| MI | 30 | .95 |
| Allergic reaction | 150 | 4.75 |
| Psychiatric cases | 50 | 1.58 |
| Obi Gyn | 2 deliveries | .063 |

Cases Managed by the Students

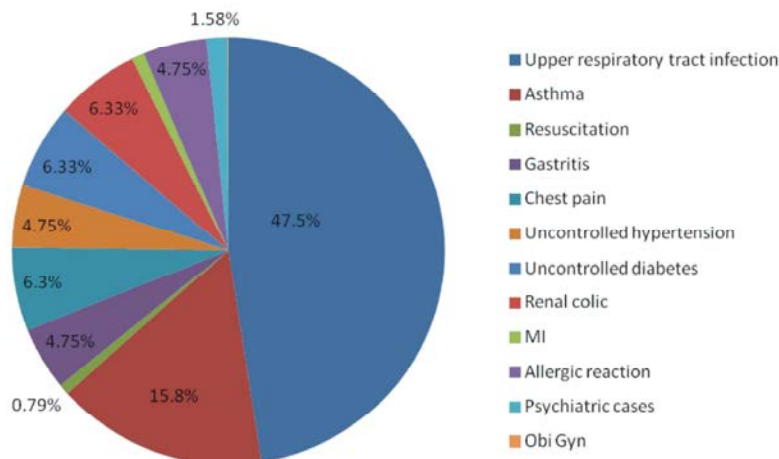


Fig. 1: Add a title Percentage of different cases managed by paramedic students

managed 47.5 % cases with asthma, 6.3% with chest pain, 6.3% with renal colic, 4.75% with gastritis, 4.75% with allergic reaction, 1.58% with psychosis, 0.95% with Myocardial infection and 0.063 with obs/gyn problems and 0.76% patients who needed resuscitations. Patients who did not recover at Mina hospital even by 13th evening were transferred to permanent healthcare facility in Makkah. During the seven days of Hajj the students learned different procedures of the essentials of patient care. Either the case was discharged after a total cure or was referred to appropriate station in the hospital.

DISCUSSION

During the Hajj season the students were exposed to different types of patients from almost more than 80 different nationalities from all over the world with different emergency cases. The students have gained an experience that is rarely available for paramedics in other situations within a short period of time. They rotated within 3 emergency care areas alternatively i.e. Triage, yellow and red. The long list of procedures that they carried out in each area provided them with a wealth of experience in skills and competencies and was done under supervision of highly qualified emergency medicine specialists. The inevitable overcrowding in a confined area of such large numbers increases the risk of respiratory infections. Of these 'Hajj cough' is the most frequently reported complaint and is caused by a variety of viruses and bacteria. Ongoing diseases' surveillance and data analysis is necessary to understand health risk

and strengthen evidence base for health policy and prevention. A multi pronged approach involving awareness program for pilgrims and their health advisors supported by rapid diagnosis, timely treatment, prevention by vaccine, community measures, infection prevention and control practices are necessary. The benefits from such measures are apt to marked protect health. Establishing international centre for health care relating to Hajj pilgrims will enable involvement of more sophisticated international health action for appropriate remedies and prevention of affliction and diseases [12]. Among all Mass Gatherings, the public health issues, associated with Hajj are clearly the best reported, probably because of their international or even intercontinental implications in terms of infectious diseases. The WHO's, global health imitative have converged with Saudi Arabia's efforts to ensure the wellbeing of pilgrims, contain infectious disease and reinforce global health security through the management of the Hajj. Both initiatives emphasize the importance of Mass Gatherings' health policies guided by sound evidence and based on experiences and the timeliness of calls for a new academic science-based specialty of Mass Gatherings' medicine. [13]

Expertise in critical care, emergency medicine, wound care, infectious diseases, chronic diseases and management of adults and children are essential components of Hajj health care team. Challenges faced included stressful and potentially intricate and hazardous working conditions, besides, cultural and language barriers. This service fulfilled the CAMS commitment to

social responsibility and provided a valuable training opportunity in advocacy. For other health sciences colleges seeking to respond in future Hajj seasons, we suggest early identification and, recruitment of administrative and faculty support, significant pre-departure orientation and utilization of volunteers and advocates. Through this process, Health Sciences colleges can play an important role in Mass gathering (Hajj) health problems' response.

In conclusion, this study was a rewarding learning experience which provided the students with on hand skills' practice working as a team with highly competent health care providers, in addition to their exposure to different emergency cases which are rarely found in one place over a short period of time. Furthermore, communicating with different ethnic groups from almost 80 nationalities is a marvelous experience. Additionally, it is a rare chance that makes the students to be acquainted with colleagues from other universities which is an enjoyable experience. Finally, it is desirable that such visits and participation in attending to emergencies during Hajj becomes a part of the curriculum in different colleges of health specialties throughout the Kingdom.

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