Assessment of utilization of additional human and medical resources to primary health care centers in Makkah city during Hajj season 1426 H.

The Saudi Ministry of Health invests a huge amount of human and financial resources during Hajj to provide free health care to millions of hajjis. The health services provided year-round is strengthened during Hajj by assigning additional manpower and medical resources and additional supplies, in preparation for a higher patient load, care for longer hours and more frequent supervisory activities. However, it is feared that these supplies may be mal-distributed, leading to waste of precious resources. This study aimed to evaluate the hours and more frequent supervisory load with highest concentration near Ka‘ba. It is a known fact that during hajj, all hajjis prefer to stay close to Ka‘ba to perform their religious rituals easily, thus creating a gradient of patient load, with highest concentration near Ka‘ba. In consequence, the Makkah Health Directorate distributes manpower and medical resources to PHCCs according to their distance from Haram and Hajji’s congestion, adding more supplies to those in need. During this hajj season, there were 27 PHCCs that received additional resources (AR).

A cross-sectional study was conducted among 23 PHCCs of those supplied with AR (AR PHCCs; i.e. those that received additional staff and medications during hajj season) and 7 PHCCs without additional resources (NoAR; i.e. staff and medications same as year-round) were selected. Data was collected in two visits: the first at the beginning of hajj, when the investigating team visited all participating health facilities and collected pertinent information about the previous year and the allocation of additional resources during Hajj; the second was carried out after hajj, to collect the data on patient load and drug consumption during hajj.

The minimum distance of the PHCCs from Haram was 300m and the maximum was 50km. The mean distance of AR PHCCs from Haram was 5.8 km (SD ±5.2), while that of NoAR PHCCs was 24.1 km (SD ±15.9) (t-test = 4.89, P <0.0001).

The mean number of total physicians in the AR PHCCs was 7.57 (SD ±2.29) as compared to 5.3 (SD ±3.4) in NoAR PHCCs (P=0.048); the mean number of total nurses in the AR PHCCs was 12.0 (SD ±3.7), compared to 13.4 (SD ±6.5) in NoAR centers (P=0.56).

Among AR PHCCs, 91.3% reported that the duty of additional staff was from the 1st-15th Dhul Hijjah, 4.3% was 1st-30th Dhul Hijjah, and in one center (4.3%) was 1st-7th. One duty shift was implemented in most AR PHCCs (82.6%), and the rest (17.4%) had two shifts. Among NoAR PHCCs, 42.9% implemented one shift system and 57.1% had two shifts. Regarding duration of the shift, among AR PHCCs, 19 (82.6%) implemented one shift duty of 12 hours, and 4 (17.4%) implemented two shifts of 12 hours each. Among NoAR centers, 3 (42.9%) had 2 shifts of 4 hours each, 3 (42.9%) had one shift of 9 hours, and one (14.3%) had two shifts of 8 and 9 hours.

The mean number of staff in AR PHCCs in the 1st shift was 27.5 (SD ±6.95) compared to 9.1 (SD ±6.4%) in NoAR centers; and in the 2nd shift was 14 (SD ±10.9) in the AR PHCCs compared to 10.3 (SD ±8.6) in NoAR centers. Most of the AR centers (95.7%) and over half of NoAR centers (57.1%) reported that the number of medical staff was sufficient.

On average, a physician managed 54.2 (SD ±47.0) patients/day, and a nurse managed 31.1 (SD ±38.0) patients/day during hajj. In general, AR PHCCs, had the highest patient load, but was thought to be reasonable in most AR facilities, with exception to a few PHCCs that showed daily patient to physician ratio and patient to nurse ratio reaching or exceeding one hundred.

Table 1: Comparison between mean patient load during the hajj period and the rest of the year 1426H, among PHCCs with additional resources and those without additional resources

<table>
<thead>
<tr>
<th></th>
<th>PHCCs with additional resources</th>
<th>PHCCs without additional resources</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Total patients</strong></td>
<td>Mean during months 1-11/1426 H</td>
<td>3133.5</td>
</tr>
<tr>
<td></td>
<td>95% CI</td>
<td>2885.7 - 3381.2</td>
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<tr>
<td></td>
<td>Mean during Hajj 1426 H</td>
<td>6956</td>
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<tr>
<td><strong>Emergency cases</strong></td>
<td>Mean during months 1-11/1426 H</td>
<td>5.7</td>
</tr>
<tr>
<td></td>
<td>95% CI</td>
<td>5 - 6.5</td>
</tr>
<tr>
<td></td>
<td>Mean during Hajj 1426 H</td>
<td>69</td>
</tr>
<tr>
<td><strong>Notifiable diseases</strong></td>
<td>Mean during months 1-11/1426H</td>
<td>1.5</td>
</tr>
<tr>
<td></td>
<td>95% CI</td>
<td>1.1 - 1.8</td>
</tr>
<tr>
<td></td>
<td>Mean during Hajj 1426 H</td>
<td>0</td>
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Assessment of resident physicians and other health services,
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higher vulnerability to disease. ARI is very common during hajj.1
In recent years, a number of local hamlas have provided health facilities
for their hajjis, in an effort to increase the number of hajjis in the hamla, or
raising the price of these hamlas.
Emergency situations are common during hajj, such as heat exhaustion,
sunstroke, dehydration, injuries; in addition to complications of certain
chronic diseases.2,3 The most common illness among hajjis in this study was ARI. As previously
reported, almost 40% of hajjis may suffer from ARI during hajj.3
Another very important effect of having health facilities in the camps is reducing the load on ministry of
health facilities. In this study, hajjis who did not have health facilities
at their camps sought health care at governmental health facilities
when they became ill. It has been reported that 27.4% of hajjis utilize
governmental health facilities during their stay in Mina.4
This study showed that health services within the camps are of
benefit to hajjis, and may also reduce the load on governmental health
facilities. However, the high cost of these hamlas may hinder hajjis' from joining them. Training of hamla
physicians is recommended, and they should remain in contact with MOH.
References:
Madrasa alinaam. Camperdown,

Assessment of utilization of additional human and medical
resources to PHCCs in Makkah city during Hajj season 1426 H,
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(Al-hajla, Al-sulaimania and Al-shamia health centers).

During years 1425 & 1426 H, the means of total patients in AR PHCCs
reached maximum numbers during hajj. In the NoAR centers, there was no
difference in mean total patient number throughout the year including hajj. During hajj 1426 H, the mean of total patients in AR PHCCs reached a maximum on days
7 & 14, and minimum on the 9th. There was no difference in NoAR PHCCs.

The number of drug items prescribed exceeded 30 tablets/patient/day in some
PHCCs. On average, 24 (SD ±16.9) drug items were dispensed to each patient. However, 2 AR PHCCs (8.7%) and 4
NoAR PHCCs (57.1%) dispensed over 40 items/patient. Means of all medications consumed during hajj in AR PHCCs were
higher and above the upper 95% CI limit than that consumed during the rest of the
year. In NoAR PHCCs, almost all the means of medications consumed during hajj period fell within the 95% CI of the
mean of that consumed during the rest of the year.

-Reported by: Dr. Moslem Abu Hassan,
Dr. Adel Turkistani, Dr. AbdulJamil Choudhry (Field Epidemiology Training Program).

Editorial notes: During hajj season, certain health facilities in Makkah are
augmented by assigning extra health workers for hajj duty, based on the
distance of the PHCCs from Haram and the congestion of Hajji's. The strategy for provision of additional resources based on the distance of the health facility from the Kaa'ba is apparently working well, as
confirmed by this study.

Demarcation of a clear catchment area and accurate estimate of the population
to be served are essential requirements for planning and evaluating health
services, especially PHCCs.2 However, the population for the selected Makkah
PHCCs was fleeting, to an extent that 3 centers claimed they had no concept of the
catchment population. This unique feature could be a major obstacle in the proper
planning of resources for these facilities, not only during hajj but for the whole
year, and needs addressing by defining the catchment area and estimating the number of
permanent and temporary residents.

The lowest number of cases on the
9th of Thul hijjah is explained by the fact
that all Hajjis are in Arfat that day. The
increase in number of cases on day 14th is
due to the occurrence of many accidents
after rain fall that day.

It was noticed that none of the
facilities had a deficiency of essential
drugs during Hajj or throughout the year.
Patient-staff ratio also seemed adequate.
However, those facilities where patient to
physician/nurse ratio were unrealistically
high demand intervention to bring down to manageable levels.
It was recommended that allocation of staff and medicinal resources to all the
facilities continue in the same pattern, except for those facilities that were found to have very high patient to physician/nurse ratio where more staff should be
allocated. Those facilities that showed a very high ratio of number of medicinal
items prescribed per patient requires further exploration. Makkah health
directorate should routinely analyze the data collected during each hajj to study the
pattern of morbidity among patients and health care utilization, in order to develop
an evidence-based resource allocation model for coming hajj seasons.

References:
1- Shortt NK, Moore A, Coombes M,
Wymer C. Defining regions for locality health care planning; a

South Africa: Common health problems during hajj. [Updated
2006 Feb 16; cited 2006 May 22],
Al-Azeri A, Ashoor B, Al-Tuhami
among hajjis in Makkah, 1421 H.
Al-Mudameigh K, Al-Naji A, Al­Enzi M, Choudhry A, Turkistani
AM. Incidence of hajj-related Acute
Respiratory Infection among hajjis
from Riyadh, 1423 H(2003 G). SMJ,
Abdullah A, Abu Dahish M, El-Bushra HE. The utilization of primary
health care services at Mina during