KING ABDULLAH FELLOWSHIP PROGRAM
Hubert Department of Global Health
January 2014
# Table of Contents

## Cohort of 2011
Hubert Department of Global Health

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<tr>
<td>Hisham Bashawri</td>
<td>M.B.B.S., MPH</td>
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<td>Mohammad Jamal Al Khalawi</td>
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<tr>
<td>Fawaz Saror Al Rasheedie</td>
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<tr>
<td>Fatima Younis Al Slail</td>
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<tr>
<td>Osama Alwafi</td>
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<td>Saud Alzahrani</td>
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## Cohort of 2012
Hubert Department of Global Health

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<td>Rana Abed Al Helali</td>
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## Cohort of 2012
Health Policy & Management

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<td>Rania Al Qudaihi</td>
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<td>Sulafa T. Al Qutub</td>
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Hubert Department of Global Health

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<td>Fahad Almutairi</td>
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<td>Hassan Alosari</td>
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<td>Hossam Moussa</td>
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<td>Mai Jamdar</td>
<td>BSN, MPHc 2015</td>
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<td>Marei Alrouaili</td>
<td>M.B.B.S., MPHc 2015</td>
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<tr>
<td>Sultan Alshamrani</td>
<td>BSN, MPHc 2015</td>
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Cohort of 2013

Health Policy and Management

Abdurahman Almutairi, MPHc, 2015

Fahad Aldhuwayhi, BSN, MPHc, 2015

Hossam Alakhrass, M.B.B.S., MPHc, 2015

Ibrahim Alsumah, M.B.B.S., MPHc, 2015

Maryam Almoklif, M.B.B.S., MPHc, 2015

Mohammed Aldhafiri, BSN, MPHc, 2015

Zaki Algasemi, M.B.B.S., MPHc, 2015

Mohammed Aldawsari, MPHc, 2015

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http://kingabdullahfellowship.com
Cohort of 2011
Hubert Department of Global Health

Hisham Bashawri, M.B.B.S., MPH


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Work Experience and Training: Family medicine consultant (since June 2010), General director assistant for primary care centers and preventive medicine in Mekkah, Head of non-communicable disease in primary health care - Mekkah, coordinator of national program to combat Diabetes, coordinator of quality program primary health care, trainer in family medicine program

Specialty: Consultant Family Physician
Email: drbashawri@gmail.com

Sleepless in Makkah City, Saudi Arabia: Prevalence and Risk Factors among Visitors of Primary Health Care Centers

Hisham Bashawri, Ministry of Health, Saudi Arabia

Thesis advisor: Dr. Roger Rochat, Rollins School of Public Health at Emory University

Field mentors: Dr. Zied Memish and Dr. Abdullah Assemi, Ministry of Health, Saudi Arabia

Introduction

Insomnia is the most common sleep disorder. Insomnia is defined as difficulty in falling asleep, difficulty in staying asleep or nonrestorative sleep, which is awakening feeling unrefreshed. Insomnia is a risk factor of depression, higher rate of absenteeism and health care utilization. The direct costs of insomnia have been estimated to be $13.9 billion annually in the U.S. Estimates of insomnia reported worldwide range from 11.9% in Finland to 21% in Japan. In the United States, a study showed that 30% of adults aged 18 to 79 experienced difficulty falling asleep or staying asleep. In the Kingdom of Saudi Arabia (KSA), neither the prevalence nor the risk factors have been studied.

Objectives

1. To describe the general sleep habits of those attending primary health care centers (PHCCs).
2. To characterize the prevalence of insomnia among visitors to PHCCs in Makkah.
3. To measure the sleep quality among visitors to PHCCs in Makkah based on the Pittsburgh Sleep Quality Index (PSQI) score and to study related risk factors.
4. To investigate the extent of sleep problems in relation to the frequency of treatment and find a simple, useful screening tool for PHCC physicians to manage the cases.

Methods

This study was a cross-sectional analytic study. The main tool used to collect data was an interview using a Pittsburgh Sleep Quality Index (PSQI) questionnaire. The study was conducted in five primary health care centers (three urban and two rural) in the metropolitan area of Makkah, Saudi Arabia, during the first three weeks of July 2013. Inclusion criteria was being 18 years and above.

The study population totaled 483 (233 males and 250 females).

The dependent variables were sleep quality based on PSQI score and insomnia. Bad sleepers scored ≥ 5 on the PSQI assessment and insomnia assessment tool over 30 minutes to full insomnia.

Results

- Out of 483 participants, 61.8% were classified as good sleepers, while 38.2% were classified as bad sleepers. The prevalence of insomnia was 29.4%. This figure is very close to that of the United States.
- 50% of the study population slept less than 7 hours a night.
- Half of the study population went to bed between 11 p.m. and 1 a.m., while 20% went to bed after 1 a.m.
- A study showed that 30% of adults aged 18 to 79 experienced difficulty falling asleep or staying asleep. In the Kingdom of Saudi Arabia (KSA), neither the prevalence nor the risk factors have been studied.

Discussion

Sleep problems are common and underestimated in Saudi Arabia. Females aged 40-59 were more affected by bad sleep habits than males. Males and females shared having chronic diseases as a risk factor for sleep problems. Financial status was strongly influenced females than males. Being a rural resident is a protective factor for males. Asking the visitors about their sleep quality was a quick and useful tool to pick up on the cases needing more medical attention.

Recommendations

1. There should be a Saudi Center for Sleep Medicine concerned with medical and epidemiological aspects of sleep. The center can be under authority of the Ministry of Health in collaboration with Saudi universities and counterparts international centers.
2. Sleep quality should be considered as a public health measure.
3. Special attention should be paid to insomnia and other sleep problems in females in Saudi society to look for underlying factors.
4. PHCC doctors need to be trained effectively to evaluate insomnia and other sleep problems in patient encounters and be trained on simple non-pharmacological treatments.
5. PHCC doctors should ask for patients to report their sleep quality and treat them accordingly, as well reported sleep quality has been shown to closely reflect actual sleep quality.

Acknowledgements

Special thanks to the staff in the PHCCs who assisted me during the data collection and to Dr. Scott McNabb and the King Abdullah Fellowship team for their full support.

Table 1: Percent of Females and Males who were Bad Sleepers, by Selected Characteristics, According to PSQI Scores, Makkah, July 2013

<table>
<thead>
<tr>
<th>Category</th>
<th>Percentage</th>
<th>Male</th>
<th>Female</th>
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<tbody>
<tr>
<td>Age Groups</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Early Young</td>
<td>25</td>
<td>30%</td>
<td>36%</td>
</tr>
<tr>
<td>Middle Aged</td>
<td>40</td>
<td>25%</td>
<td>35%</td>
</tr>
<tr>
<td>Senior and Above</td>
<td>30</td>
<td>18%</td>
<td>22%</td>
</tr>
<tr>
<td>Location</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Urban</td>
<td>60</td>
<td>30%</td>
<td>30%</td>
</tr>
<tr>
<td>Rural</td>
<td>40</td>
<td>20%</td>
<td>20%</td>
</tr>
<tr>
<td>Chronic Illness</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Acute Illness</td>
<td>60</td>
<td>30%</td>
<td>30%</td>
</tr>
<tr>
<td>Chronic Illness</td>
<td>40</td>
<td>20%</td>
<td>20%</td>
</tr>
<tr>
<td>Medical Status</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Single</td>
<td>40</td>
<td>20%</td>
<td>20%</td>
</tr>
<tr>
<td>Divorced</td>
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<td>20%</td>
<td>20%</td>
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<tr>
<td>Widowed</td>
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<td>30%</td>
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<td>25%</td>
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<tr>
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<td>55</td>
<td>25%</td>
<td>25%</td>
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<tr>
<td>Gender</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>60</td>
<td>25%</td>
<td>25%</td>
</tr>
<tr>
<td>Female</td>
<td>40</td>
<td>25%</td>
<td>25%</td>
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</table>
Evaluation of Tuberculosis Public Health Surveillance in Al-Madinah Province, Kingdom of Saudi Arabia, 2012

Mohammad Al Khalawi, Scott J. McNab, Ziad A. Memish, Abdullah Assiri

1. Ministry of Health, Kingdom of Saudi Arabia
2. Hubert Department of Global Health, Emory University, Rollins School of Public Health

Introduction:
Tuberculosis (TB) is a significant global health problem. Among infectious diseases, TB is the second leading cause of death globally and the single most infectious killer among youth and adults. Currently, 1/3 of the world’s population is infected with Mycobacterium tuberculosis. The Kingdom of Saudi Arabia (KSA) does not have a high TB burden, yet it faces real challenges in controlling and preventing TB due to its large number of pilgrims and migrant workers. In 2011, there were 6,330 cases in KSA, 4,600 were incident cases. Of these, 2,895 cases were males and 1,705 cases were females. According to WHO, 80% of the TB cases were detected, and most of the new cases were smear-positive, the most contagious type. In contrast to other countries in the region, whose prevalence and mortality rates have decreased, the rates of TB in KSA have remained almost unchanged.

To control and eliminate TB, KSA launched a TB surveillance program in 2003. This program is responsible for data collection, analysis, and feedback, as well as the implementation of control measures.

Objective:
To evaluate the quality of the data, the possibility of the surveillance, and the completeness of identification and investigation of patients’ contact within the KSA (Public Health Surveillance) in Al-Madinah province.

Methods:
The study was conducted in KSA during the summer of 2011. The study covered all new TB cases diagnosed between Jan. 1, 2010 and Dec. 31, 2011.

The missed cases (smear-positive) were identified by comparing all of the cases that were reported to the regional coordinator with all of the cases registered in the labs and hospitals.

Due to the highly infectious nature of TB, all of the contact investigations were conducted. The TB program requires investigation of pulmonary TB patients and their contacts with positive sputum smears.

All notifications sent from any health facilities to the regional coordinator were compared in terms of internal completeness of data, monthly reports sent to the national coordinator were compared with patient treatment cards.

Results:
The results revealed high completeness rates for demographic and disease data and low completeness rates for the result test fields. The lowest completeness was seen in the HIV test result field. The contact identification and investigation found that 42 smear-positive cases’ contacts were not identified. Out of the 446 contacts identified, only 50% (87%) of them were investigated. The review of hospital records and lab registers showed that 244 cases were not reported. In spite of the fact that 213 of them (87%) were confirmed by labs.

Table 1: Completeness Rate of Different Categories of TB Notification Forms, 2011, Saudi Arabia, Al-Madinah Province

<table>
<thead>
<tr>
<th>Category</th>
<th>completeness rate</th>
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<tr>
<td>Contacts with smear positive tests</td>
<td>100%</td>
</tr>
<tr>
<td>Contacts with smear positive tests and contact investigation</td>
<td>97%</td>
</tr>
<tr>
<td>Contacts with smear positive tests and contact investigation and treatment</td>
<td>93%</td>
</tr>
<tr>
<td>Hospital admission</td>
<td>94%</td>
</tr>
<tr>
<td>Patients with smear positive tests</td>
<td>100%</td>
</tr>
<tr>
<td>Patients with smear positive tests and contact investigation</td>
<td>97%</td>
</tr>
<tr>
<td>Patients with smear positive tests and contact investigation and treatment</td>
<td>93%</td>
</tr>
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</table>

Table 2: Discrepancies Between Register Book and Monthly Report, 2011, Saudi Arabia, Al-Madinah Province

<table>
<thead>
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<th>Field</th>
<th>Discrepancies</th>
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<td>Result of treatment</td>
<td>8.5%</td>
</tr>
<tr>
<td>Treatment plan</td>
<td>14%</td>
</tr>
<tr>
<td>Spine cases</td>
<td>21%</td>
</tr>
<tr>
<td>Treatment plan</td>
<td>6%</td>
</tr>
<tr>
<td>TB cases</td>
<td>5%</td>
</tr>
</tbody>
</table>

Table 3: Operational of Laboratory Centers, 2011, Saudi Arabia, Al-Madinah Province

- The results presented the best practices and lessons learned.
- The study showed the rates of completeness for different notification report fields varied in the lab results, and the general results of notification fields.
- The study identified the importance of surveillance and the need to improve the system.
- The study provided recommendations for improving the tuberculosis surveillance system.

Recommendations:
Implementation of operational guidelines and reporting.
Nurturing and comprehensive reporting is required in order to control and prevent TB. Electronic reporting should include both providers and laboratories. Such systems will reduce incompleteness in data and delays in reporting that result from paper-based notifications.

Mandatory lab and suspected cases reporting
Because laboratories identified most of the missed cases, it is essential to improve laboratory monitoring reports. All lab and suspicion cases should be reported to the coordinator even before investigation. By providing a brief summary of suspected cases, the coordinator can follow up on the cases through the health and ask looking for either confirmation or investigation data. In addition, data can be transferred to the contacts and interrupted transmission.

Discussion
Improving the communication between different health providers, especially in primary care centers, will improve the surveillance and the feedback process.

Other strategies, like initiating a specific outreach program and continuous training program tailored to healthcare providers, will increase awareness, awareness, and improve their response rate. Also, a review of the national TB control program review, which includes disease surveillance, reporting guidelines and case management, would also increase awareness and improve reporting. Periodic feedback from healthcare workers to regional coordinators and the dissemination of progress reports will increase the confidence of the patients in the program. Finally, the program should be evaluated periodically to improve its quality and achieve special disease control.

Conclusion
First, all data were hand-written, which took a long time to read and evaluate. Second, the lab reports were anachronistic, and some did not contain the necessary data. Third, the treatment cards of some patients were not on hand at the coordinator’s office. Finally, there were no automated reporting systems, so we could not use the capture-recapture method. Fourth, there was an uncontrolled rate of smear-positive cases, which made it difficult to investigate the infections in the laboratories, so we could not find the missed admitted cases.

Concluding remarks:
The study showed that the rates of completeness for the different notification report fields varied in the lab results and the general results of notification fields. Over half of the patients’ contacts were not identified or investigated, and there were significant numbers of unreported cases, even though most of them were laboratory confirmed. Finally, there were discrepancies between different reports and the reported data.
Fawaz Saror Al Rasheedi, M.B.B.S., MPH

Education: MBBS Degree from College of Medicine, Qassim University
Work Experience and Training: College of Medicine, Qassim University
Postdoctoral Internship training in several Hospitals for one year Elective Months (Paediatric Medicine, Orthopedic Surgery for 2 months)
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Measles Trends In The Kingdom Of Saudi Arabia, 2002 – 2012

Fawaz S. Araisheedi1, Scott J. N. McNabb2, Ziad A. Memish1, Abdullah Assiri1
1 Ministry of Health, Kingdom of Saudi Arabia
2 Emory University, Rollins School of Public Health, 1518 Clifton Rd, Atlanta GA, USA

Introduction
Measles is a highly viral infectious disease that can cause severe illness, permanent complications and death.
The extensive use of the measles vaccine since 1980 has led to a significant decrease in global morbidity and mortality.
Measles prevention efforts in the Kingdom of Saudi Arabia (KSA) are divided into two main phases: the control and elimination phases.
The control phase was started in 1974 with the introduction of a single measles vaccine dose (Schwartz) that targeted children from 1-9 years old.
The elimination phase started in 1998 and has continued to the present. In 2001, the introduction of lab confirmation strengthened the measles surveillance system.
The official target date to eliminate measles in the KSA is 2015.

Objectives
To describe the distribution and track the annual incidence rates (%) of measles in all 13 provinces of KSA from 2002-2012.
To give policymakers a clear picture of how to improve measles surveillance and accelerate elimination efforts.

Methods
Trends in the annual measles IR in KSA were determined and described by age, gender, nationality, province, month, and immunization status using the national measles notification data reported to the Ministry of Health by all 13 provinces from 2002 – 2012.
Most of the measles cases occurred in the provinces of Makkah (21.5%), Jizan (17.1%), Eastern region (13%), Riyadh (12.4%), and Asir (11.2%) (Figure 3).

Results
The national measles IR showed a slight decline over a period of 11 years with two epidemic spikes in 2004 and 2007 (Fig. 2).
In general, Saudis were more affected by measles than non-Saudis, except in 2005 (Table 1).

Almost all provinces showed a decline in the measles incidence rate except for Makkah, which experienced a continuous increase in the IR from 2010 - 2012 (Fig. 5).

Discussion
Measles rates from 2002 – 2012 showed a slight decrease, but epidemics still occurred approximately every 3 years. The resurgence of measles could be due to an accumulation of susceptible cases among those in the vulnerable age group of 0-14 years in highly populated provinces like Makkah, Riyadh, Eastern Province, Asir and Jizan.

Makkah is a challenge because of the Hajj, the biggest mass gathering in the world, during which an estimated 2-3 million pilgrims travel there each year. Sustainable elimination has been achieved in Baha province; it is the only province that was free of measles from 2008 to the end of the study period in 2012.

Recommendations
Because the measles vaccine is safe, effective, and inexpensive (costing less than one U.S. dollar), we recommend adding the measles vaccination to the list of required vaccinations before issuing ‘hajj’ or work visas.
We recommend data registry training sessions for those who are working on measles surveillance so that the data will be clearer, more reliable, and more complete.
Also, we recommend paying more attention to the vaccination process in Makkah, Riyadh, Jizan, Eastern Province, and Asir because these provinces have the greatest number of cases.
Finally, though KSA is moving toward measles elimination by 2015, we need greater political and public health commitment to achieve this goal.
A Descriptive Study of Cardiovascular Risk Profiles of Adults with Type 2 Diabetes from Hospitals in Urban Saudi Arabia

Fatima Y. Al Slail, Mohammed K. Ali, Ziad A. Memish, Abdullah Assiri

Introduction

- Diabetes mellitus (DM) patients have always had a higher risk of cardiovascular disease (CVD) complications than those without diabetes.
- Those with DM have a 2-4-fold increased risk of dying from coronary artery disease. Several studies of diabetic patients have shown a significant reduction in cardiovascular morbidity and mortality when these patients closely control their glycemia and the main cardiovascular risk factors, such as hypertension and dyslipidemia.

Table 1: Summary of data regarding DM in KSA from 1992-2010

<table>
<thead>
<tr>
<th>Year</th>
<th>Percentage</th>
<th>Other DM complications causing the CVD risk factors</th>
</tr>
</thead>
<tbody>
<tr>
<td>1992</td>
<td>23%</td>
<td>Unknown differences among the KSA regions</td>
</tr>
<tr>
<td>1993</td>
<td>15%</td>
<td>Unknown differences among the KSA regions</td>
</tr>
<tr>
<td>1994</td>
<td>22.5%</td>
<td>Unknown differences among the KSA regions</td>
</tr>
<tr>
<td>1995</td>
<td>20%</td>
<td>Unknown differences among the KSA regions</td>
</tr>
<tr>
<td>1996</td>
<td>15%</td>
<td>Unknown differences among the KSA regions</td>
</tr>
</tbody>
</table>

Results

- 422 patients were included: 50.24% were women (n = 212), and the average age was 52 years (n = 452).
- From KFMC, there were 729 (34.60%), and 64% (n = 146) were women, while from PSB, 34% (n = 98) were women.

Discussion

- A retrospective study that used outpatient data from King Fahad Medical City (KFMC) and Prince Salman Hospital (PSB) from 2008 to 2012.
- Exploratory analyses of the data were done to produce summary statistics.
- Continuous variables were summarized with descriptive statistics.

- A cross tab analysis of demographic, clinical and metabolic features of KFMC vs. PSB was conducted using Chi-Square analysis.

Conclusion

- This study provides useful baseline data about whether diabetes patients reach the AHA’s optimal target control of T2DM management in two different diabetes centers, one a tertiary healthcare setting KFMC and the other a secondary hospital in Riyadh (PSB).
- There was a high prevalence of CVD risk factors among patients with diabetes in urban KSA, and a large proportion of these risk factors were not well controlled.
- The results of this study reveal that the strategic in-depth study and assessment of the management of care and control of T2DM are needed to achieve further improvements.

Recommendations

- Review current T2DM management program.
- Create a National Diabetes Committee.
- Develop a public awareness program.
- Increase the level of physical activity in the Kingdom.

Acknowledgements

The Minister of Health, Dr. Abdullah Al Rabeet
Osama Alwafi, M.B.B.S., MPH


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Specialty: Consultant Family Physician
Email: osamamfw@gmail.com

INTRODUCTION

Dengue fever is a serious disease with many complications. It is a vector-borne disease that is transmitted from person to person through the mosquito’s bite. According to the Centers for Disease Control (CDC), there are two species of mosquitoes that transmit dengue fever, but the primary vector of dengue is Aedes aegypti, which lives mainly in humid buildings in water sources, containers, and containers that collect water from rain, standing water in garbage, tires, and other outdoor areas with standing water, like construction sites and gardens.

Dengue fever has a wide range of symptoms, from a low self-limited fever to severe with life-threatening hemorrhagic shock. The incubation period of the dengue virus in human ranges from 3 to 14 days. Moreover, this disease has a major impact on the health and economy of any population.

Makkah is a holy city for Muslims and more than 15 million visitors enter the city every year. The city is located in the region of Mecca and Madinah. The city has an area of approximately 1,200 square kilometers and a population of around 700,000 people. Makkah is the third largest city after Riyadh and Jeddah. Controlling dengue fever infections is a priority in Makkah. To do this, it is important to calculate the incidence rate and analyze the distribution of dengue fever cases over time. Moreover, we need to take the necessary steps to prevent and control the disease in order to disseminate the data and use it to guide the development of new policies.

OBJECTIVE

1. Describe all reported cases of dengue fever investigated by the WDO from 2008 to 2012.
2. Develop and implement control measures to reduce the number of cases.
3. Make evidence-based recommendations for improved prevention and control.

RESULTS

The incidence rate of dengue fever was 43.96/100,000 inhabitants in 2008, and this number increased to 120.47/100,000 inhabitants in 2009 (118.96/100,000 inhabitants). After that, the incidence rate started to decline with 32.65/100,000 inhabitants in 2010, 33.32/100,000 inhabitants in 2011, and 27.65/100,000 inhabitants in 2012. We observed significant increases in the dengue fever incidence among males during these years. Also, we observed significant increases in the dengue fever incidence among Saudis compared to non-Saudis. There were no significant trends among males or females by nationality.

CONCLUSIONS

Dengue fever is unavoidable to control in Makkah. There was an outbreak in 2009. We recommend implementing the surveillance notification system to include the type of dengue fever (DHF, DHF/HF, DSS, and DSSH) and the outcome of the case after notification (full recovery, recovery with complications, or death). Also, we recommend using the revised WHO 2008 classification system instead of the older one. Additionally, data should be disseminated to the public before and after vector control programs are implemented, improving the health education program.

RECOMMENDATIONS

2. Detecting the type of dengue fever (DHF, HF, DSS, and DSSH) of reporting cases only as dengue fever cases by lab confirmation.
3. Differentiating these with primary infections from those with secondary infections.
4. Following cases of dengue infection after they have been reported to detect the outcome (full recovery, recovery with complications, or death).
5. Providing feedback to the management teams in the hospitals immediately after the lab confirmation.
6. Engaging in a more frequent door-to-door health education with the involvement of the community.
7. Developing a comprehensive surveillance system in Makkah and administering guidelines to those who don’t control the water containers properly.
8. Involving the media, especially TV, to present health education material regarding dengue fever.
9. Entering a consultation with the WHO regarding vector control activity requirements under the International Health Regulations. Disseminating the results of the dengue infection surveillance data to the public to increase the awareness of the magnitude of the problem and encourage change in their behavior to control vector-borne diseases.
10. Ensuring that the WHO follows the systematic approach to vector control promoted by the WHO, called Integrated Vector Management (IVM).
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