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# النشرة الوبائية السعودية

تصدرها وزارة الصحة

الوكالة المساعدة للطب الوقائي وبرنامج الوبائيات الحقلي

المجلد الثالث – العدد الرابع – أكتوبر ، نوفمبر ، ديسمبر ١٩٩٦م

# Prevalence of obesity, diabetes mellitus, and hypercholesterolemia in Saudi Arabia

In 1995 the Preventive Medicine Department of the Ministry of Health conducted a cross-sectional survey to estimate the prevalence of overweight, obesity, diabetes mellitus, and hypercholesterolemia. A probability sample of 13177 Saudi subjects over the age of 15 years (mean = 33 years) was selected to represent all regions of Saudi Arabia. General practitioners visited them at their houses and interviewed them. Subsequently each subject was examined and age weight and height were measured at the local primary health care center. A subsample of 4548 subjects (mean age = 33 years) were selected for measurement of serum cholesterol.

**Overweight and obesity**

Overall, females had a mean body mass index (BMI) of 26 compared to 25 for males and this slight difference was evident across all age groups. Having a BMI >= 25 (overweight or obese) was more common among females (51%) than males (45%). This difference was most evident in the obese category (BMI > 30) with 24% of females and 16% of males. In addition 2.2 % of females and 0.7% of males had morbid obesity (BMI > 40). The proportion of males (27%) and females (29%) in the overweight range BMI 25-30 was similar. BMI increased progressively with age for both sexes, reaching a maximum in the fifth decade of life. The difference between mean BMI for given age group and the mean BMI for the consecutive age group was statistically significant between all

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# Prevalence of obesity, diabetes mellitus, and hypercholesterolemia in Saudi Arabia

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the age groups, except for males and females aged 50 to 69. The higher prevalence of obesity and overweight among females was uniform across all regions of Saudi Arabia. Among females the highest prevalence of obesity was in the Northern Province (32%) and among males in the Eastern Province (23%). Far greater geographic differences were seen in comparing rural to urban populations. Of urban males, 18% fell into the obese category compared to 12% of rural males. Similarly, 28% of urban females were obese compared to 18% of rural females.

**Impaired Glucose Tolerance (IGT) and Diabetes mellitus (DM)**

Mean random blood sugar (RBS) concentrations were higher among males (5.4 mmol/L) than females (5.2 mmol/L) ($p < .05$ z-test). The male (mean RBS = 6.3 mmol/L) and female (mean RBS = 6.5mmol/L) residents of Northern region had the highest RBS in the country. Prevalence of IGT without DM was 10% for males and 9% for females (P=0.001). Prevalence of DM was 11.8% for males and 12.8% for females (P-0.001). The prevalence of DM progressively increased with age to 40% in the sixth decade of life. DM prevalence was highest (17.6%) in males in the Eastern region and females (18.6%) in the Northern region. The prevalence of IGT without DM was highest for males (12.3%) and females (9.9%) in the Central region.

The mean RBS concentration for urban males (5.7 mmol/L) and females (5.5 mmol/L) was higher ($p<0.01$ Z-test) than rural males (4.9 mmol/L) and females (4.9 mmol/L). Similarly, IGT without DM was more prevalent among urban males (10.9%) males and females (9.1%) than rural males ( 8.4%) and females (8.1%) ($p<0.01$ Z-test). DM was also more common among urban males (11.7%) and females (13.8%) than among rural males (6.8%) and females (7.4%) ($p<0.01$ Z-test).

**Hypercholesterolemia (HC)**

Females had a slightly higher mean serum cholesterol concentration (SCC) (4.25 mmol/L) than males (4.0 mmol/L). Twenty-one percent of females and 17.5% of males had mild HC (serum cholesterol 5.2-6.2 mmol/L) while 7.5% of males and 9.0% of females had very high cholesterol (>6.2 mmol/L). A progressive increase in the prevalence of HC with age was seen until the sixth decade of life. HC varied considerably by region with the lowest in the Northern region and the highest in the Eastern region. The mean SCC was significantly higher for both male (4.2 mmol/L) and female ( 4.3 mmol/L) residents of rural communities compared with male (3.9 mmol/L) and female (4.2 mmol/L) residents of urban communities.

*—Reported by: Dr. Abdull Rahman Al-Nuam and Dr. Khalid Al-Rubeaan, Consultant Endocrinologists and Diabetologists (King Khalid University Hospital), Dr. Yagob Al-Mazroa, Assistant Deputy Minister, Preventive Medicine, Dr. Tawfik Khoja ,Director General Health Centers(Ministry of Health), Dr. Omer Al-Attas, Mr. Nasser Al-Daghari (King Saud University).*

**Editorial note:** This survey documents what may be the major threat to public health in Saudi Arabia over the upcoming decades(1,2). The prevalence rates for both obesity and DM are among the highest reported and in some groups (urban females) exceed rates seen in developed countries(3). Currently, Saudi Arabia has a relatively young population. Since all these conditions increase with age, the magnitude of the problem will certainly increase in epidemic proportions.

Overweight, obesity, DM, and HC all cause irreversible, chronic changes which in turn lead to major chronic diseases including coronary artery disease, myocardial infarctions, cerebrovascular disease, cerebrovascular accidents, and chronic renal disease. These chronic diseases involve long hospitalizations and expensive specialized care and will place a mounting burden on the curative care services in Saudi Arabia over the upcoming decades.

A substantial multidiciplinary effort needs to be initiated to reverse the trend and lower prevalence of these precursor conditions plus others such as hypertension and tobacco abuse. This effort will require a substantial investment in community education and a far greater awareness by the public about the risks of these conditions. DM will need additional control through medical management and through identifying important cofactors such as hypertension for the progression to renal failure and other complications.

Special programs and other efforts to reduce the prevalence of obesity, DM, and HC will need assessment through follow-up surveys chronic disease surveillance, and registries (for DM, and vascular diseases). This will require appropriately equipped and staffed regional offices for chronic disease prevention and control. This survey serves as an important benchmark against which future data from these monitoring systems may be compared.

**References:**

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# Malaria outbreak in Gellwa, Al-Baha, Saudi Arabia, January to March 1996

From January 1 to March 31, 1996, 476 confirmed *Plasmodium falciparum* malaria cases had been reported from in and around Eliab Valley in Al-Baha region. This was an increase from cases reported for each year from 1990 to 1995 (between 32 and 176) (Figure). In 1996, following heavy rainfall in Tihama, many valleys were flooded. The most affected valleys were Eliab, Rumadah, Muzera, Summa, and Ahseba. The total population of the villages around Eliab valley is 7946, around Rumadah valley, 3103, and around Ahseba valley, 3100. The people are casual laborers, farmers, and shepherds. The malaria center in Gellwa informed the malaria department of the Ministry of Health (MOH) and the MOH asked the Field Epidemiology Training Program to work with the malaria department to investigate the outbreak, assess the malaria problem, and make recommendations.

A case of malaria was defined as an acute elevation of body temperature (>37°C) with any *Plasmodium* species identified on thick or thin blood film from January 1 to March 31, 1996 in a resident of any village in the Eliab, Rumadah, Nawan, or Ahseba valleys. Malaria case data was obtained from the registry in the Malaria center in Gellwa city.

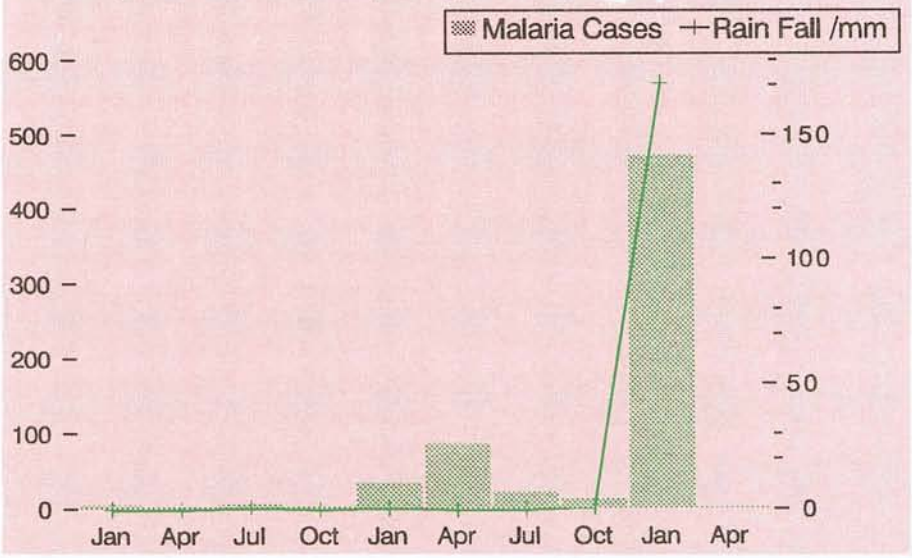
Of the 478 cases of malaria, 476 were identified as *P. falciparum* and two were identified as *P. vivax*. Cerebral malaria occurred in 14 patients, two died and one developed permanent brain damage. All age groups were heavily affected with malaria except for infants (0 to 11 months). The mean age for a malaria case person was 14.3 years (range 6 months to 70 years). The majority of cases (98%) were in Saudis (466). Male to female ratio was 1.2:1.

Of 478 cases, 268 (56%) were reported from the Eliab Valley [Attack rate(AR)=3.6%)], 110 (23%) from the Rumadah valley (AR=3.6%), 71 from the Nawan sector (AR=2.3%), and 27 from the Mekhwa sector (AR=0.18%). Attack rates in individual villages within heavily affected Eliab and Rumadah valleys varied greatly. In the Eliab valley, three out of the ten villages (Dalafa, Hareeja, Agsan) had malaria attack rates above 10% and accounted for 68% of the malaria cases in that valley. Similarly, three villages out of 13 in the Rumadah valley had malaria attack rates above 10% which accounted for 44% of malaria cases in that valley.

**Entomological and ecological investigation**

The vector identified in Gellwa sector was *Anopheles arabiensis*. Villages with high malaria attack rates were usually within one Km of a watercourse which had Arak trees growing on both banks. Anophelines appeared to favor this plant as a natural resting site. Most people slept outdoors, clustered in adjacent beds near their houses. The indoor anopheline resting density detected in three villages (Hareejah, Agsan, Dalafa) from 3 March to 5 April 1996 was 3.7 mosquitoes per room. The anopheline density in the same villages after applying adulticide was 5.5 mosquitoes per room. The malaria control center then changed the insecticide and intensified spraying. These measures were effective.

Figure. Malaira cases by rainfall, Gellwa, Saudi Arabia, January to October, 1994-95 and January to April 1996.




**Epidemiological study**

Three villages from this valley (Dalafa, Agsan, and Abagaraf) were selected as representative of high and medium attack rates. Two teams of interviewers enumerated persons and houses, linked reported malaria cases to this census, and determined characteristics of each household. Although information, including surveillance reports, at the malaria center showed 160 malaria cases from these villages, enumeration revealed that 217 of the registered cases were actually living in these three villages (Table). Accordingly, attack rates computed from the house to house census were much higher than indicated by surveillance. Within these villages the method of water storage, distance to breeding site, or method of keeping livestock were not associated with malaria attack rates. However houses which used bed nets had higher attack rates than houses that did not (P-value <0.05). Bed nets had holes and were improperly hung.

*—Reported by: Dr. Zaki Al-Abdullatif, Dr. Robert E. Fontaine, Dr. Abdelaziz Ben Saeed, and Dr. Nasser Al-Hamdan (Field Epidemiology Training Program), and Suliman Al-Sagheer (Malaria Dept. MOH).*

**Editorial note:** Al-Baha is located in the southwestern area of Saudi Arabia where malaria is endemic. *Anopheles arabiensis* mosquito is a vector for malaria. *Plasmodium falciparum* is

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# A suspected nosocomial malaria case, Riyadh city, March 1997

On March 23, 1997 the infection control committee chairman at Riyadh hospital consulted the Field Epidemiology Training Program about a 14 month old girl with a *Plasmodium falciparum* infection. On March 21, she presented to hospital A with a four day history of fever and rigors. A blood film showed numerous *P. falciparum* trophozoites. She was admitted, treated with antimalarials for one week, and improved clinically.

The patient and her family had never left Riyadh since her birth. They lived in Nadheem, a district in east Riyadh. They were originally from northern Saudi Arabia and had no visitors from malarious areas of Saudi Arabia. Malaria surveillance reports for February and March revealed 62 other malaria cases in Riyadh but all were in persons with recent travel to malarious areas and none were from Nadheem.

From 11 to 17 days (March 1 to 6) before onset of malarial fever this girl had been admitted for asthma and a respiratory infection to the pediatric ward of the same hospital. She did not receive a blood transfusion or other blood products and was discharged in good condition. Malaria parasites were not seen on blood films taken during this initial hospitalization for asthma. However, three patients with *P. falciparum* infections imported from Gizan were hospitalized on the same ward.

The asthmatic girl had only one exposure in common with the malaria patients. A heparin solution from a common container was used on the intravenous lines (IVLs) and heparin locks (HLs) of the asthma patient and two malaria patients. Two malaria patients had IVLs started using single use, one ml, heparin-filled syringes within one hour before asthma patient had her heparin lock flushed with heparin. In addition the asthma patient and one malaria patient had their HLs flushed at the approximately the same time. However, different nurses had attended the malaria patients and asthma patient for manipulations of the IVL and HL.

All heparin solution for maintenance of HL and IVL came in a multidose (50 ml) soft plastic packet with an injection port. Nurses would fill 1 ml syringes as needed from this container. After filling the syringes the needles were removed and the nozzle of the syringe was attached directly to the IVL or HL. The nozzles of syringes used to administer heparin would become contaminated with blood more often after starting an IVL (28%) than when converting an IVL to a HL (17%) than when flushing a HL after medication (2.4%).

Three deviations from ideal procedures were observed. First, syringes could not be disposed of in patients' rooms so nurses might carry heparin syringes along with new syringes in the same container between patients until the used syringes could be discarded. Blood from nozzles of used syringes might be accidentally transferred to unused syringes at this time. Second, since nurses frequently covered for each other it was also possible that one nurse accidentally picked up a partially used heparin syringe from another nurse to use on the asthmatic patient. Finally, one pediatrician recalled observing one nurse contaminate the multi-use heparin container with blood. After withdrawing heparin from the heparin packet with a new 1 ml syringe the nurse disattached the syringe from the needle leaving the needle in place through the rubber diaphragm of the injection port. After using the syringe to start an IVL the nurse needed more heparin and reattached the used syringe to the original needle. At this time blood was visible entering the heparin packet. The hospital administration responded by providing point of use syringe disposal in all patients' rooms and switching to single use heparin containers.

*—Reported by: Dr. Abdullah Al-Saigul, and Dr. Robert E. Fontaine, (Field Epidemiology Training Program).*

**Editorial note:** Riyadh city and the surrounding rural areas have never been known to support vector-borne malaria transmission. Although *Anopheles sergenti* does occur in central Saudi Arabia, this potential vector has not been found in or near Riyadh city for the past 10 years. Accordingly, the report of one malaria case in a person who had not left Riyadh requires a full investigation. Mosquitoes carried in luggage or by car have previously been proposed as an explanation for malaria in non-malarious areas, but these reports have been purely conjectural with no epidemiologic or entomologic evidence in support. However, two previous reports provide clear evidence of malaria transmission through heparin containers and heparin locks(1,2).

The incubation period for accidental inoculation of small numbers of infected red cells clearly puts this patient in the hospital for asthma treatment when she was exposed. This exposure is substantiated by the finding of three potential source cases of *P. falciparum* hospitalized on the same ward at the same time as the potential exposure. Finally, the linkage to the heparin lock and heparin container as the only pericutaneous exposure in common to both the malaria patients and the asthma patient suggests that infected erythrocytes were transferred via the heparin container and the heparin syringes.

This incident has more widespread implications. First, in comparison to other blood borne infectious agents malaria is relatively difficult to transmit. Erythrocytes must be intact whereas other infectious agents (e.g. hepatitis B virus) may survive more severe treatment. Second, small deviations from ideal management of intravenous devices can be dangerous and should be avoided at all costs. Third, a recent investigation of post vaccination abscesses revealed that the practice of leaving a needle inserted through the injection port of multidose containers is widespread and allows contamination of vaccines and other injectables(3). Nurses, hospitals and clinics throughout Saudi

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# Reasons for tooth loss, Riyadh city, 1996

The Field Epidemiology Training Program (FETP) conducted a survey from 29 June to 18 July, 1996 in Riyadh to determine the incidence of loss of permanent teeth in adolescent and adult Saudi nationals residing in Riyadh city. A representative probability sample of MOH and private dental clinics was selected. Clinics tabulated all dental consultations by Saudi nationals for a three week period. For a patient with any dental problem potentially treatable by tooth extraction a self administered questionnaire was completed by the dentist and by the patient.

According to the survey results, an estimated 445,536 patients visited MOH and private dental clinics in Riyadh city in 1996. Of these consultations only 84,168 (19 %) were for preventive (periodontal) procedures while 285,516 (64%) were for restorative work and 22,680 (5.1%) were for extraction. Extractions accounted for an estimated 2112 (2.2%) of 100,195 dental consultations to private clinics compared to 16,877 (5.7%) of 297,101 consultations to MOH dental clinics and 5112 (7.6%) of 75,528 consultations to dental units in MOH hospitals. Of all teeth extracted for dental disease, 44% were removed because of caries alone, 21% because of periodontal (gum) disease alone and 35% because of both caries and periodontal disease. Periodontal disease contributed to an increasing share of extracted teeth as age increased from 28% of extractions for the age group 15 to 29 years to 81% for ages above 44 years.

Dentists provided their opinions about whether a tooth was potentially treatable by extraction. Among patients seen during the survey days, they extracted 10% of teeth that were potentially treatable by extraction and 90% were treated more conservatively. However, this extraction rate was lower in private clinics (4.4%) than in MOH facilities (10%). MOH clinics served a population of a lower social class than private clinics. Of MOH patients treated by tooth extraction, 23% were illiterate and 24% had completed secondary school. In comparison, only 6% of private clinic patients were illiterate and 71% had completed secondary school.

*—Reported by: Dr. Musaad A. Al-Sulaiman, and Dr. Robert E. Fontaine (Field Epidemiology Training Program).*

**Editorial note:** Dental extraction or tooth loss is the end result of dental and periodontal disease that develops over the lifetime of the patient. Extraction or other loss of permanent teeth and in particular in younger age groups are important and measurable targets for prevention. In particular the substantial number of extractions in the under 45 year age group needs to be targeted for decrease. Preventive efforts will be particularly important in MOH clinics which see more patients for tooth extraction and serve a greater proportion of the lower socioeconomic classes. Systematic

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# Malaria out break in Gellwa

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the most common parasite. Our findings were consistent with Mazoub's 1980 study(1): that the seasonal peak for malaria incidence is from January to March 1996. The pattern of malaria seen here with wide fluctuations from year to year and a major epidemic characterizes unstable malaria.

Although using bed nets was associated with higher malaria rates bed nets were of poor quality and improperly affixed. This problem has been recognized elsewhere, and as a solution, highly effective insecticide-impregnated bed nets have been developed.

Good surveillance information is needed to monitor the malaria diseases progress in the community and evaluate the outcome of the control measures' effectiveness.

This investigation demonstrated that malaria transmission can be highly localized. Only a few villages were responsible for most of the malaria transmission, when misclassification of cases to village was corrected this localization became even more extreme. Traditionally, malaria surveillance has been used to evaluate the outcome of control measures over large geographic areas. However, surveillance data if reported quickly and accurately can be of great assistance to control through identification of localized transmission foci and early detection of outbreaks in areas of unstable malaria.

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Table. Comparison of surveillance and census of malaria cases, Eliab valley, January to March,1996.

| | Surveillance | | | Census | | |
|---|---|---|---|---|---|---|
| | No Cases | Population | Attack rate | No Cases | Population | Attack rate |
| Dalafa | 113 | 399 | 28% | 107 | 142 | 75% |
| Agsan | 13 | 100 | 13% | 102 | 140 | 73% |
| Abagaraf | 34 | 680 | 5% | 8 | 64 | 13% |
| Total | 160 | 1179 | 46% | 217 | 346 | 161% |

# Guidelines for treatment of malaria

The aim of the National Malaria Control Program is to accelerate malaria control through integrated vector control measures to achieve the target where malaria will no longer be a major public health problem.

Malaria transmission in Saudi Arabia is confined to the southwest (Jizan, Asir, Al Baha, Qunfuda, and Lith) and some isolated rural foci in the Jeddah, Makkah, Madina, and Taif regions. Plasmodium falciparum predominates in these areas. The central province and most of northeastern regions are free from transmission. Transmission is seasonal with peak incidence from October to March.

Malaria importation poses a health hazard and more than 16% of the total cases is reported annually from countries representing a wide variety of sensitivity to chloroquine (1). Resistance (R!) of P. Falciparum to chloroquine has been documented for some locally acquired cases in the southern region. However, the resistance is local and of low degree so that chloroquine remains operationally effective.

The drug policy (2,3,4,5) is based on practical issues so as to meet the following objectives:
Early treatment of any diagnosed case to relieve illness and prevent complications
Stop or delay the spread of *P. falciparum* resistance to chloroquine;
Prevent resumption of transmission to areas free of local transmission;
Prevent relapse in *P. vivax* and *P. ovale* infections.

Dependent of the malaria case being uncomplicated, complicated or severe the following management policy is recommended;
1. All patients should have a thick blood film, the malaria parasite should be identified to species and a quantitative parasites count should be made on the initial blood film.

Highly suspected malaria cases are given presumptive treatment after taking a blood slide. Complete and radical treatment is given to positive cases. All patients regardless of species, are immediately treated with chloroquine (10 mg base/kg followed by 5 mg base/kg 6, 24 and 48 hours later).
2. First-line treatment:
For uncomplicated *P. falciparum* malaria cases, Chloroquine is given as above. A single dose of Primaquine 0.5 mg/kg or 0.75 mg/kg is given as gamaetocidal. A follow-up parasite count should be made 24 hours after the initial chloroquine dose to measure the level of parasitaemia.

For *P. vivax* and *P. ovale* infection, chloroquine as above plus primaquine 0.24 mg/kg daily for 14 days or 0.75 mg/kg for 8 weeks as antirelapse treatment.
3. Second-line treatment:
For resistant *P. falciparum* infection, Fansidar (sulfadoxine 25 mg/kg and pyremethamine 1.25 mg/kg) is given in a single oral dose.
4. Third-line treatment:
For resistant *P. falciparum* infection if there is no response to Fansidar, then shift to Mefloquine 15 mg/kg single or better split oral dose, if no response then shift to Quinine dihydrochloride 10 mg/kg 8 hourly for 7 days accompanied by tetracycline 4 mg/kg 6 hourly for 7 days (tetracycline should not be given to pregnant women, lactating mothers and children below 8 years).

For complicated and severe cases patients should be treated in hospitals parenterally as follows:

Quinine dihydrochloride 20 mg/kg as a loading dose by infusion over 4 hours, in 5% dextrose solution

Quinine dihydrochloride 10 mg/kg as maintenance dose 8 to 12 hours after the start of the loading dose over 4 hours repeated every 8-12 hours until the patient can take oral medication.

All drugs mentioned above are available throughout Saudi Arabia and kept in strategically suitable places to meet the requirements of any situation. Drug sensitivity test is conducted regularly in Jizan and the ministry of Health routinely updates this antimalaria treatment through circulars to all regions of Saudi Arabia.

*—Reported by: Suleiman M. Al-Saghayer and Omer Tamim, Department of Malaria, Preventive Medicine, Ministry of Health.*

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## Request for articles

The Saudi Epidemiology Bulletin (SEB) publishes brief articles covering events of immediate public health importance to Saudi Arabia. Most often these are based on original data collected during investigation of public health problems including infectious disease, chronic disease, other non-infectious diseases, injuries, disasters, environmental threats, and occupational disease. The SEB also publishes articles describing the collection and utilization of public health surveillance and survey data. Although most articles involve issues within Saudi Arabia, we will publish articles about disease in neighboring countries if the problem constitutes a major threat to the public health in Saudi Arabia.

The SEB welcomes submission of articles from public health and community medicine practitioners throughout Saudi Arabia. Submitted articles should be brief — no longer than 800 words and should say only the minimum necessary to cover the topic clearly. Each article should be submitted in duplicate as a double-spaced hard-copy with tables, figures references and names and affiliations of all authors. We also appreciate an additional copy as a word processing file on a floppy diskette.

## Nosocomial malaria

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Arabia must be alert to this and similar practices which can transmit serious infections to their patients.

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3. Al-Abdullatif, Z. Post-Vaccination abscesses and deviations from correct vaccination practices. *Saud.*

Send correspondence, comments, calendar listings or articles to:

*Saudi Epidemiology Bulletin*
Editor-in-Chief,
P.O. Box 6344, Riyadh 11442
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## Mark your calendar . . .

### Inside the Kingdom

**Nov 19-20, 1997:** 5th Annual Meeting of the Saudi Gastroenterology Association, King Fahd Hospital of the University, Al-Khobar. Contact: Professor Abdulaziz Al-Quorain, Chairman of the Organizing Committee, 5th Saudi Gastroenterology Meeting, PO Box 40001, Al-Khobar, 31952, KSA, Tel and Fax: 966-3-898-3931.

### Outside the Kingdom

**Oct 22-25, 1997:** Third EIA/EMR Meeting, on Epidemiology & Prevention in the EMR, Beirut, Lebanon. Contact: Third IEA/EMR Epidemiology Secretariat, Faculty of Health Sciences, American University, Beirut, Lebanon. Fax: (9611) 351-1706, e-mail: kkassak@aubedu.lb.

**Nov 17-21, 1997:** International Conference on Low Doses of Ionizing Radiation: Biological Effects and Regulatory Control, Seville, Spain. Contact: Joint WHO/ IEAE Conference Secretariat, International Atomic Energy Agency IAEA-CN-67, Wagramerstrasse 5, PO Box 100, A-1400 Vienna, Austria. Tel: 43-1-2060 (0), Telex: 43-1-12645, Fax: 43-1-20607, Cable: INATOM VIENNA, e-mail: IAEO@IAEA1.IAEA.OR.AT.

**Nov 19-21, 1997:** Safe America: 4th National Injury Control Conference, Washington, D.C., USA.Contact: Ms. Elaine Murray, Prospect Associates. Tel: (301) 468-6555 ext. 2352.

**Nov 24-26, 1997:** Regional Conference, Chronic Non-Communicable Diseases, "Role of Nutrition", State of Bahrain, Ministry of Health, Nutrition Section. Contact: Organizing Committee, Nutrition Section, Public Health Directorate, Bahrain.



## Reasons for tooth loss in Riyadh

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monitoring (surveillance) of tooth extractions with statistics reported back to dentists will allow dentists to gauge the effectiveness of their preventive efforts.

Tooth loss may be prevented through personal dental hygiene supported by periodic (biannual) visits to the dental clinic for dental hygiene and for early detection of caries and periodontal disease. This survey illustrates the extremely low utilization of both public and private dental clinics for preventive examinations and procedures. The ideal number of consultations for preventive (periodontal) procedures in one year should exceed the population of Riyadh city, but in actuality amounted to only 84,168 consultations. Not only is it important for dentists to concentrate more on providing preventive services among their patient populations, the public also needs to be made aware of the benefits of dental hygiene and preventive dentistry.

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# Selected notifiable diseases by region, Oct-Dec 1996

| | Riyadh | Jeddah | Makkah | Madinah | Taif | Asir | Gizan | Najran | Al Baha | Eastern | Al Ahsa | Tabuk | Al Jouf | Goriat | Al Shmal | Hail | Qassim | Hafr al Batin | Bisha | Gonfuda | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Measles | 78 | 66 | 26 | 32 | 8 | 42 | 1 | 4 | 5 | 13 | 0 | 2 | 1 | 0 | 0 | 11 | 5 | 4 | 0 | 0 | 298 |
| Mumps | 59 | 141 | 65 | 159 | 6 | 33 | 12 | 7 | 2 | 32 | 11 | 10 | 10 | 6 | 3 | 7 | 21 | 6 | 1 | 1 | 592 |
| Rubella | 14 | 27 | 5 | 1 | 2 | 8 | 0 | 1 | 0 | 10 | 2 | 2 | 0 | 0 | 0 | 0 | 9 | 0 | 1 | 2 | 84 |
| Varicella | 2215 | 1318 | 263 | 332 | 306 | 1316 | 133 | 251 | 249 | 1517 | 708 | 598 | 172 | 30 | 40 | 314 | 412 | 267 | 135 | 87 | 10663 |
| Brucellosis | 115 | 32 | 12 | 40 | 30 | 289 | 53 | 55 | 40 | 37 | 20 | 14 | 2 | 0 | 4 | 67 | 130 | 36 | 74 | 7 | 1057 |
| Meningitis, mening. | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| Meningitis, other | 50 | 14 | 16 | 12 | 0 | 7 | 11 | 1 | 0 | 8 | 1 | 3 | 0 | 0 | 0 | 0 | 2 | 4 | 2 | 0 | 131 |
| Hepatitis A | 118 | 85 | 52 | 79 | 0 | 148 | 53 | 134 | 11 | 54 | 34 | 30 | 7 | 107 | 13 | 6 | 50 | 40 | 23 | 0 | 1044 |
| Hepatitis B | 114 | 227 | 95 | 24 | 2 | 78 | 21 | 12 | 67 | 138 | 18 | 18 | 2 | 2 | 4 | 6 | 11 | 9 | 9 | 0 | 857 |
| Hepatitis, unspecified | 32 | 113 | 25 | 20 | 0 | 29 | 27 | 12 | 0 | 4 | 12 | 20 | 0 | 0 | 2 | 49 | 0 | 0 | 0 | 0 | 345 |
| Typhoid & paratyphoid | 37 | 0 | 8 | 4 | 0 | 25 | 1 | 25 | 0 | 10 | 2 | 6 | 0 | 0 | 2 | 11 | 1 | 0 | 22 | 1 | 155 |
| Shigellosis | 27 | 17 | 0 | 3 | 0 | 8 | 16 | 27 | 1 | 28 | 2 | 20 | 0 | 0 | 0 | 0 | 4 | 6 | 0 | 27 | 186 |
| Salmonellosis | 117 | 64 | 1 | 1 | 11 | 11 | 1 | 5 | 6 | 257 | 15 | 26 | 0 | 0 | 0 | 0 | 7 | 17 | 0 | 0 | 539 |
| Amoebic dysentery | 70 | 1129 | 0 | 9 | 28 | 399 | 0 | 16 | 0 | 33 | 17 | 46 | 0 | 3 | 0 | 115 | 5 | 2 | 5 | 73 | 1950 |
| Syphilis | 4 | 25 | 0 | 0 | 0 | 6 | 5 | 0 | 0 | 15 | 7 | 0 | 0 | 2 | 0 | 2 | 0 | 1 | 3 | 1 | 71 |
| VD, other | 8 | 159 | 0 | 0 | 0 | 2 | 9 | 0 | 0 | 25 | 37 | 0 | 0 | 9 | 0 | 0 | 0 | 3 | 5 | 0 | 257 |

# Comparisons of selected notifiable diseases, 1995-1996

| | Oct-Dec 1996 | Oct-Dec 1995 | Change % | Oct-Dec 1996 | Jan-Dec 1995 |
|---|---|---|---|---|---|
| Diphtheria | 0 | 1 | -100 | 0 | 1 |
| Pertussis | 11 | 6 | 83 | 11 | 33 |
| Tetanus, neonatal | 8 | 4 | 100 | 8 | 25 |
| Tetanus, other | 1 | 1 | 0 | 1 | 14 |
| Poliomyelitis | 0 | 0 | 0 | 0 | 3 |
| Measles | 297 | 395 | -25 | 297 | 2574 |
| Mumps | 592 | 513 | 15 | 592 | 1601 |
| Rubella | 84 | 102 | -18 | 84 | 385 |
| Varicella | 10663 | 6898 | 55 | 10663 | 35244 |
| Brucellosis | 1057 | 1072 | -1 | 1057 | 5997 |
| Meningitis, mening. | 5 | 8 | -38 | 5 | 58 |

| | Oct-Dec 1996 | Oct-Dec 1995 | Change % | Oct-Dec 1996 | Jan-Dec 1995 |
|---|---|---|---|---|---|
| Meningitis, other | 131 | 58 | 126 | 131 | 261 |
| Hepatitis A | 1044 | 737 | 42 | 1044 | 2697 |
| Hepatitis B | 857 | 813 | 5 | 857 | 3031 |
| Hepatitis, unspecified | 345 | 311 | 11 | 345 | 1487 |
| Typhoid & paratyphoid | 155 | 68 | 128 | 155 | 335 |
| Shigellosis | 186 | 388 | -52 | 186 | 1223 |
| Salmonellosis | 539 | 723 | -25 | 539 | 2973 |
| Amoebic dysentery | 1950 | 1916 | 2 | 1950 | 5949 |
| Syphilis | 71 | 94 | -24 | 71 | 386 |
| VD, other | 258 | 283 | -9 | 258 | 961 |

# Diseases of low frequency, Oct-Dec, 1996

Pertussis: 11 (Asir 1, Qassim 2, Bisha 2, Riyadh 3, Eastern 3)
Tetanus, neonatal: 8 (Makkah 3, Jeddah 2, Gizan 2, Riyadh 1)
Rabies: 2 (Jeddah 1, Asir 1)
Guillain-Barré Syndrome: 14 (Riyadh 5, Qassim 1, Asir 3, Eastern 1, Madinah 1, Gizan 1, Makkah 1, Jeddah 1)
No cases: Yellow fever, plague, diphtheria, poliomyelitis, viral encephalitis, hemolytic uremic syndrome, transverse myelitis