Middle East Journal of Family Medicine

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We congratulate **Dr. Mona Alshaik Almahmood from Bahrain,** who has been selected as MEJFM Middle East Doctor of the Year.

This is the first issue this year and we would like to wish our readers happy start of the year and for all the supporter of the journal. This is the seventh year for the journal and the journal has gained wide success in the region and we look forward for continuous improvement with the help of our editorial team, the production team and our readers.

In this issue a descriptive study from Saudi Arabia used a questionnaire to investigate students' knowledge of and attitudes to HIV/AIDS. A total of 600 questionnaires were distributed randomly to students at four high schools (two girls' and two boys'). Despite the majority of high school students correctly identified the main modes of HIV/AIDS transmission, there was a relative deficiency in their knowledge about the disease. The authors concluded that there is need to provide students with correct information on HIV/AIDS infection.

A paper from Iraq looked KAP Survey of Knowledge, Attitudes and Practices Enhanced Response to TB ACSM, Iraq. The authors stressed that Iraq is one of the high TB burden countries in the eastern Mediterranean region with the highest tuberculosis burden. The estimated incidence of all TB forms accounted for 56/100000 population in 2006(Global TB report 2008). The authors stressed that Iraq has implemented its National TB Program (NTP) according to WHO guidelines since the late seventies. This program included BCG compulsory vaccination for infants, DOTS strategy in treatment of active cases with screening, prophylaxis and treatment of latent TB cases.

A retrospective cross-sectional study from Ministry of health, Kingdom of Saudi Arabia analyzed referrals from employee's health clinic to specialty care, at a teaching hospital in Riyadh city. The authors found that family physicians tend to manage more health related problems by themselves and refer less to specialist care. The results of this study can be used as an aid for decision makers in the health services for determining policy and determine which services are overstaffed or in need of additional resources.

The second statistical paper looked at Direct and indirect standardization methods. The author stressed that Spatial data visualisation is the accurate description of data taking into account the component of space. Although plots of data such as box plot are among the fundamental tools for data visualisation in general, for the spatial data visualising maps are the most important tools. One necessary step in producing a map is to standardise the rates of disease mortality and morbidity. The aim of the present article, which is the second article in a series of two, is to discuss the pros and cons of two most important ways of standardisation i.e. direct and indirect methods using a hypothetical example.

A paper from Hawler medical university looked at the Efficiency of seminal fructose estimation as a marker of seminal fluid colonization with bacteria.

A prospective study was carried out on eighty five infertile men, and the results were compared with twenty six fertile men. The authors concluded that estimation of seminal fluid fructose is not an efficient marker for the presence of bacterial colonization in the semen.

A cross sectional questionnaire attempted to measure the level of health promotion practice among primary care physicians in Qatar. The authors concluded that although health promoting health is one of the key role primary care physicians, the current practice rate remains low. More training and incentives concerning health promotion intervention is required for physicians in order to contribute effectively to health promotion.

A paper from King Hussein Medical Centre looked at FNA as an indication for thyroid surgery without the need for further investigations. A total of 100 patients with clinical thyroid nodules were studied. The authors concluded that F.N.A is reliable, highly accurate and aids in selection of patients for thyroid surgery and decrease also the need for other investigations namely thyroid isotope scan.

ABSTRACT

Appropriate referral to a subspecialty is a key component of family medicine. It makes the system safe, effective, patient-centered, timely, efficient and equitable.

Objectives:
1. To assess the referral rate of King Khalid University Hospital employees, from the employee's health clinic to specialty care.
2. To compare the rate of referral among both sexes, and Saudi nationals versus expatriates.

Methodology: Retrospective cross-sectional study. We used descriptive analysis to assess all visits (4,315) and new referrals (301) during July 1st to December 31st 2007.

Results: Referral rate from employee's health clinic to specialists care was 6.98 %. The specialists to whom the employees were referred most frequently were ophthalmologist, dermatologists, general surgeon and otolaryngologists. Most frequent reasons to visit employee's health clinic were acute upper respiratory infection, follow up of chronic problems (Diabetes Mellitus, Hypertension and Bronchial asthma), diseases of musculoskeletal system and diseases of digestive system.
Saudi nationals visited employee's health clinics more frequently than expatriates and had higher population based referrals. Expatriate females had more episode based referrals than other subgroups of interest. The correlation of referral among referred employees was not associated by gender (p = 0.237) or nationality (p = 0.969)

Conclusion: Presently employee's health clinic family physicians tend to manage more health related problems by themselves and refer less to specialist care. The results of this study can be used as an aid for decision makers in the health services for determining policy and to determine which services are overstaffed or in need of additional resources.

Analysis of Referrals from Employee's Health Clinic to Specialty Care, at A Teaching Hospital in Riyadh City, Saudi Arabia

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Introduction

Referral decision by a family physician has an enormous impact on the cost and quality of care that a patient receives[1-2]. Family physicians usually make specialty referrals to obtain advice for clinically uncertain diagnostic evaluations or treatment plans that fall outside their scope of practice. High rates of referral to specialists may reflect excessive use of expensive resources, but it may be that lower referral rates reflect a family physician's lack of sensitivity to the needs of patients for specialist care. Appropriate referral to specialist care may lead to prompt diagnosis and treatment of conditions that are beyond the immediate expertise of a family physician; whereas, inappropriate referral may lead to a chain of events initiated by unnecessary testing and/ or procedure[3].

There is a sizeable variation in referral rates between family physicians, among different practices and different regions of countries[4]. In a survey from Alexandria, referral rates from primary care physicians to specialists was found to have a 6.6-fold variation among clinics and a 54.8-fold variation among individual general practitioners[5].

It is reported from the UK that, each year 10 million new patients are referred from primary to secondary care[6]. Moreover, it has been reported that only 10 % or less of the patients are in need of specialist care, whereas 90 % or more could be looked after by family physicians in the primary health care setting[7]. Overall rate of referral by primary care physicians in medicare current beneficiary survey (MCBS) is approximately 10 percent[8]. In a survey of Israeli family practice, 10.5 % (1,140 of 10,896 visits) patients were referred to specialist care[9]; whereas, 8.4 % of office visits were referred in Alexandria[5]. Franks and Clancy[10] used data from 1985-1992 National Ambulatory Medical Care Survey (NAMCS) which showed a 4.5 % referral to specialty care. Referral rate of 5.1 % was found by Christopher Forrest[11] in a survey of 141 family physicians that had about 35 thousand office visits and made more than 2,000 referrals in 87 practices located in 31 states during 1997-1999.

Referral rates show clear relationships to several factors. Shortell[12] reported third-party coverage and severity of illness as two important associated factors for

more frequent referrals. Franks and Clancy10 identified male gender and health insurance as two key patient factors increasing the likelihood of referral to specialty care. Christopher Forrest et al[13] also found a strong positive effect of insurance on referral rates. Christensen investigated more than seventeen thousand referrals from 141 general practitioners to specialists in Denmark which revealed that referral rate increased both with a better access to specialists and with an increasing number of consultations per practitioner per year[14]. Catherine O'Donnell also proved that, availability of specialist care does affect the referral rate[15]. A cross-sectional interview survey of 125 Family Physicians of Nova Scotia reported significant non-medical factors affecting referral decisions[16]. In another study, malpractice fear was associated with greater likelihood of referral[17].

Several authors in the United Kingdom and United States have examined physicians' other reasons for consultation and referrals. These include diagnosis or confirmation of diagnosis; diagnosis and treatment recommendations; advice or treatment; treatment of a previous condition; reassurance of patient, relative, or referring physician; specific investigations or specialty procedure; routine specialty examination; referring physician's education; specific request by patient; medico-legal reasons[11,18-20].

Family medicine at King Khalid University Hospital demonstrates the key role in providing optimal care for all employees and is a gateway for referral to specialty care. Referrals from employee's health clinic settings are of significant interest to administrators. It is of interest to have insight into up-to-date information on family physician's referral rates and to know which health related problems are managed predominantly by family physicians and therefore seldomly referred. High referral rates could increase the costs to the organization as well as increase the burden on specialty care. The present study aimed to analyze the referral patterns of King Khalid University Hospital employees from employee's

health clinic to specialists by family physicians and compare these data between both sexes and Saudi nationals versus expatriates.

Materials and Method

Design: This is a retrospective design using cross-sectional descriptive and multivariate co-relational analysis.

Setting: King Khalid University Hospital (KKUH) is a tertiary care teaching hospital of 860 beds having all the medical and surgical subspecialties, established in 1982 in Riyadh city, Kingdom of Saudi Arabia. It is essentially a tertiary referral centre but operates an active primary health care unit and a 24 hours emergency service. Shift work for staff working in emergency and for in-patients care is organized as three shifts per day, each of 8 hours. All full time employees working at KKUH are medically covered. In order to provide a comprehensive and integrated health service for the employees, hospital administration has introduced an employee's health clinic (EHC), which operates during working hours (7:30 AM – 4:30 PM) from Saturday till Wednesday. EHC at KKUH, involving well trained and highly qualified family medicine doctors also act as a gatekeeper to further services. Although the vast majority of health problems of KKUH employees presented to EHC are managed by the family physicians themselves, a part of family physician's treatment of employees involve referrals. A referral system is one of the strategies to make the best use of specialist care. In this system, all patients should first be seen by primary health care physicians at EHC who decide whether a referral to specialty care is necessary, so that access to the specialist care is limited to those patients who are referred by their family physicians. In other words, access to specialty care is through the employee's health care clinic, except for emergency cases which employees can access directly through the accident and emergency department.

Study population: The total number of full time personnel employed during the six month study period was 3117. Data on the distribution of the

hospital employees according to their work category, gender and nationality was obtained from the personnel department's computerized files.

Records of full time hospital staff attending to EHC over a period of 6 months from 1st July to 31st December, 2007 were reviewed. Records of referrals by a family physician to specialty care were selected for detailed analysis. We extracted the information of each with regard to their gender, nationality (Saudi nationals Vs Non Saudi / Expatriate) and diagnosis. Record of teaching staff (faculty members) was not reviewed due to their separate highly privileged health care clinic (VIP clinic).

Statistical analysis: We entered the data into a spreadsheet and processed it with SPSS-9 package. The diagnosis of the illness was coded according to the international classification of diseases (WHO, 10th Revision, Version for 2007). Our descriptive analyses include cross-tabulation of referrals and targeted specialty care. For this article, we merely present some summary information on the total number of referrals and rate of referrals across the targeted specialty. Multivariate logistic regressions predicting the likelihood that the patient had a referral during the study period were estimated to identify important predictors of referral.

Ethics: Approval of the hospital ethic committee was obtained for the study.

Definition of referral: Referral is defined as a process in which the treating physician at a lower level of the health service, who has inadequate skills by virtue of his qualification or fewer facilities to manage a clinical condition, seeks the assistance of a better equipped or specially trained person, with better resources at a higher level, to guide him in managing or to take over the management of a particular episode of a clinical condition in a beneficiary[21].

Results

During the study period of six months (July 1st – December 31st), a total of 4315 employees visited the

employee's health clinic (EHC) and 301 were referred to various specialty care clinics, giving a referral rate of 6.98 %.

Monthly outcome of employees who visited EHC and break up of referrals with regard to gender and nationality is shown in Figures 1 and 2.

Fewer referrals during the month of September was due to the holy month of Ramadan (fasting month), when almost all Saudi nationals and half of the expatriates remain on official leave for about 10 days.

Sick leave certificates were issued on 416 occasions to 377 employees during the study period of 6 months.

A higher proportion of Saudi nationals visited EHC, than expatriates, also population based referrals were higher among Saudis than expatriates. Episode based referral rate among expatriate females was higher than other subgroups of interest. Overall the population based referral rate was 9.66 % during the study period (Table 1).

The correlation of referrals among referred employees was not associated with gender (p = 0.237) or nationality (p = 0.969).

There were a variety of diagnoses of referred patients and because patient's diagnoses were diverse, they were tabulated according to the International Classification of Diseases (ICD 10th revision, version for 2007).

The common diagnostic category presented to EHC was acute upper respiratory infection (31 %) followed by chronic problems (Diabetes Mellitus, Hypertension, Bronchial asthma; 12 %), diseases of the musculoskeletal system (9 %), diseases of the digestive system (6 %), diseases of the ear and mastoid process (5 %), diseases of the skin and subcutaneous tissue (3 %), diseases of the eye and adnexia (3 %) and others.

The types of specialists to whom patients were referred from EHC were varied and the number of times each illness was selected for referral by EHC doctor is shown in Table 2. The specialists to whom employees referred most frequently were ophthalmologist (16.6 %),

Dermatologist (15.9%), General surgeon (14.3 %), Otolaryngologist (11.6 %) and Orthopedician (8.6 %).

The percentage of the top three diseases referred to specialist care were; diseases of the eye and adnexia (82 cases and referred 50; referral rate of 61 %), diseases of the skin and subcutaneous tissue (91 cases and referred 48; 53 %) and diseases of the ear and mastoid process (131 cases and referred 35; 27 %).

Discussion

Referrals facilitate collaboration between family physicians and specialty care clinicians. Referrals from primary to specialty care helps to integrate rather than separate the two.

It is clear from review that the variation of referrals does exist worldwide and that a large proportion cannot be explained easily. However, until the underlying issues are better understood, the use of referral rates to measure the performance of a family physician will be misguided.

Overall referral rate from EHC to specialty care among KKUH employees in the present study is 6.98 %, and appears to be lower than family practice in Israel's[9], Alexandra[5] and MCBS survey[8] but higher than the NAMS survey[10] and ASPN referral study by Christopher Forrest and others[11].

Population based referral rate of 9.66 % in this study of 6 months, was higher than MCBS8 (< 5 %) and UK patients (13.9 % in a year) but much lesse than across the five US health plans[22] (30 – 36.8% in a year).

The present study shows that Saudi nationals visit more frequently due to health related problems than expatriates. Population based referral rate in this study was higher among Saudi nationals than expatriates, which could be due to their pension-able appointments guided by different conditions of service; whereas an expatriate employee's contract is renewable on an annual basis. Hence, expatriates usually avoid administrative sanctions for renewal of contracts, on health grounds.

Although the proportion of female

expatriates had fewer visits, they were higher among episode based referrals. Possible explanations for this finding is that the majority of females work as nurses and are exposed more to occupational hazards and had moderate to severe sprains or strains due to faulty techniques during lifting, moving or changing the position of patients.

Non-medical reasons for referrals were not assessed in this study. Medical reasons of referral were similar to those reported in Israel, Alexandria and elsewhere[5, 9, 11].

Although the most frequent health problems presented to EHC for consultation were acute respiratory tract infection followed by follow up of chronic problems (i.e. Diabetes, hypertension, bronchial asthma), diseases of the musculoskeletal system and diseases of the digestive system; the most referrals were made to ophthalmologists, dermatologists, general surgeons, otolaryngologists, orthopedicians, Obstetricians and gynecologists and dental surgeons. This shows that, family physicians were more likely to send patients with uncommon problems to specialists and retain those with the most common conditions. This finding highlights the responsible judgment of family physicians in recognizing the boundaries of their scope of practice. The types of specialist to whom the most referrals were made are almost the same as in Israeli's family practice, in Alexandria and in other studies[5, 9, 11].

In this study we found that the chance of referral to specialist care for a disease related to eye and adnexia is 61 %, diseases of the skin and subcutaneous tissue 53 % and diseases of the ear and mastoid process 27 %. This shows that, there is a need for further training in these subjects, so that a family physician can minimize the burden on these specialties.

Several limitations in our study's data source warrant consideration. First, we only studied referrals from the perspective of a source (office of a family physician) and did not review the perspective of a target (i.e., a physician receiving a referral).

Secondly, the sample was restricted to visits made at EHC, excluding employees eligible (faculty/teaching staff and high rank administrators) for the VIP clinic, or employees referred to specialty care through the emergency department. Thirdly, the unit of analysis was the visit rather than the patient. The advantage of focusing on the visit is that family physician referral decisions can be examined rather than specialists. Fourthly, we could not study the variation of referrals among family physicians working in EHC. Fifthly, we could not source the opinion of family physicians about non medical causes of their referrals.

Acknowledgement

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Figure 1 Outcome of employees, who visited employee's health clinic during July to December, 2007
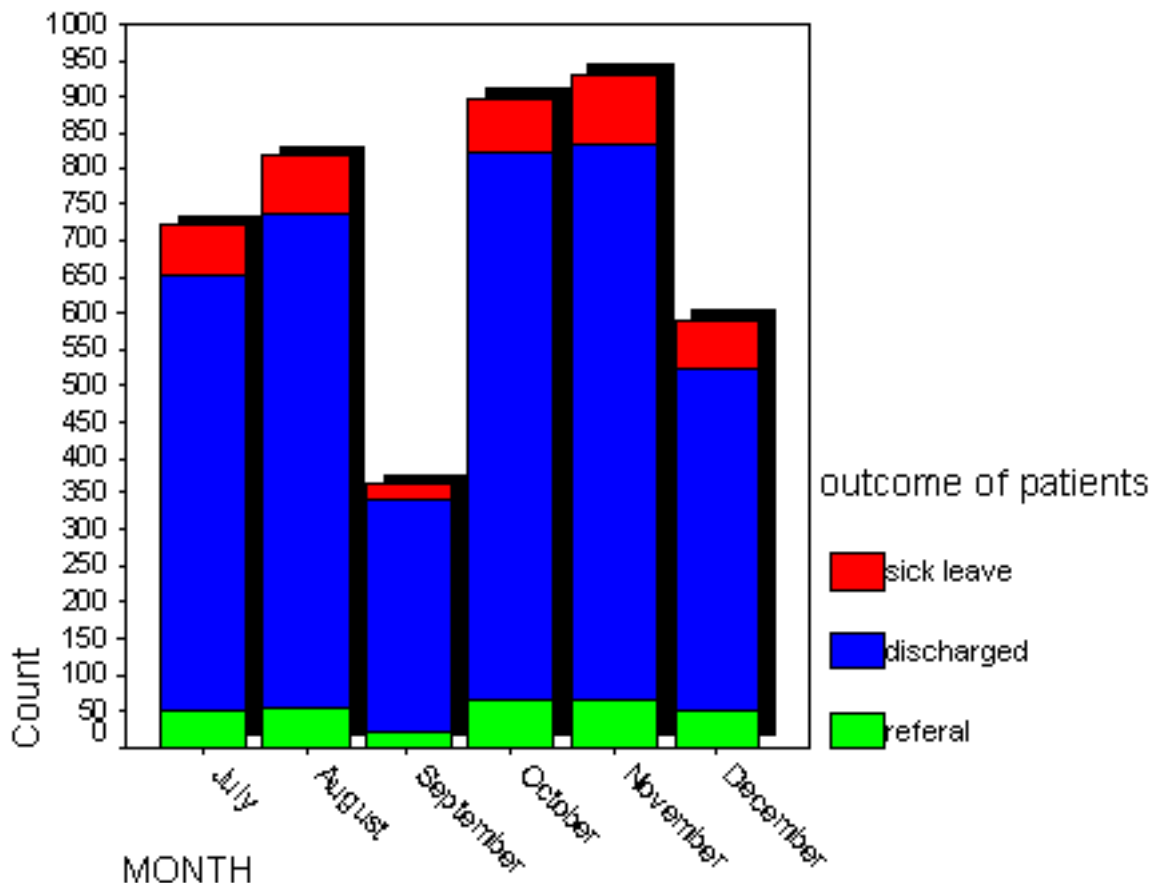
Figure 2 Break up of referrals from employee's health clinic to specialty care by nationality and gender, during July to December, 2007
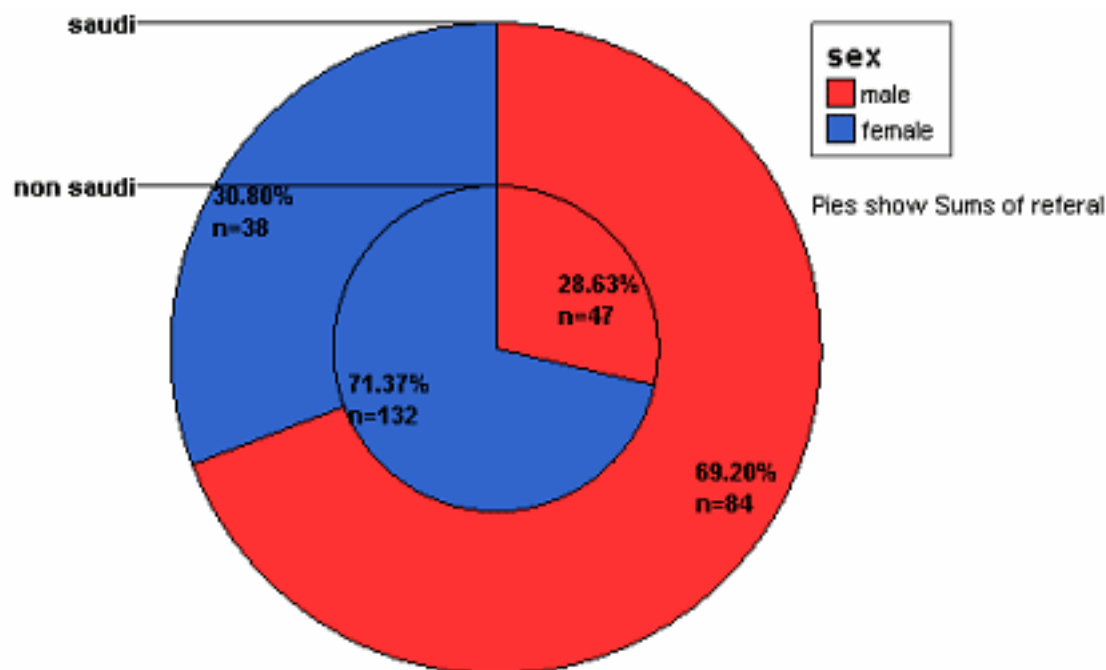
Table 1 Nationality and gender specific referral rates among employees of King Khalid university hospital during July 1st to December 31st, 2007.

A. Gender & nationality	Sample size	Number of consultations (%)	Episode based referrals (%)	Population based referral rate (%)
Saudi male	709	1186 (167)	84 (7.1)	11.85
Saudi female	344	613 (178)	38 (6.2)	11
Non saudi male	642	914 (142)	47 (5.14)	7.3
Non saudi female	1422	1602 (113)	132 (8.24)	9.3
Total	3117	4315 (138)	301 (6.98)	9.66
B. Gender				
Male	1351	2100 (155)	131 (6.24)	9.7
Female	1766	2215 (125)	170 (7.67)	9.63
Total	3117	4315 (138)	301 (6.98)	9.66
C. Nationality				
Saudi	1053	1799 (171)	122 (6.78)	11.59
Expatriates	2064	2516 (122)	179 (7.11)	8.67
Total	3117	4315 (138)	301 (6.98)	9.66

Table 2 Referred specialist and number of times the employees were referred from employee's health clinic, during July to December, 2007.

Referred Specialist	Number of referrals (%)
Ophthalmologist	50 (16.6)
Dermatologist	48 (15.9)
General surgeon	43 (14.3)
Otolaryngologist	35 (11.6)
Orthopedician	26 (8.6)
Obstetrician and Gynecologist	22 (7.3)
Dental surgeon	21 (7.0)
Urologist	10 (3.3)
Neurologist	7 (2.3)
Infectious diseases	7 (2.3)
Accident and emergency	7 (2.3)
Gastroenterologist	5 (1.7)
Primary care clinics	4 (1.3)
Psychiatrist	4 (1.3)
Nutritionist	4 (1.3)
Cardiologist	3 (1.0)
Nephrologist	2 (0.6)
Miscellaneous	2 (0.6)
Endocrinologist	1 (0.3)
Total	301

An Analysis of High School Students' Knowledge and Attitudes Towards HIV/AIDS in Saudi Arabia: Implications for Health Education

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Key words: Knowledge, attitude, HIV, AIDS, high school, students, Saudi Arabia

ABSTRACT

Objectives: To investigate the knowledge and attitude of high (secondary) school students concerning HIV/AIDS in Riyadh City, Saudi Arabia.

Methods: This is a descriptive study using a questionnaire to investigate students' knowledge of and attitudes to HIV/AIDS. A total of 600 questionnaires were distributed randomly to students at four high schools (two girls' and two boys' schools), of which 567 (94.5%) were returned and valid for analysis. The questionnaire was designed to collect data on a number of variables about HIV/AIDS epidemic including students' general knowledge and attitudes, its mode of transmission and students' source of information about the disease. Data were analyzed in a descriptive fashion.

Results: Despite the majority of high school students correctly identifying the main modes of HIV/AIDS transmission, there was a relative deficiency in their knowledge about the disease. Students' attitudes were consequently defective towards HIV/AIDS infected people. Their main source of information about the infection was the media, particularly TV. The results indicated that the contribution of schools, health staff and relatives in providing high school students with knowledge about HIV/AIDS was minimal.

Conclusion: There is a need to provide students with correct information on HIV/AIDS infection. School teachers and health care providers should work together to help students acquire adequate knowledge and appropriate attitudes towards HIV/AIDS. This will help not only in correcting misconceptions about the disease, but also in preventing the spread of the infection among this young group of Saudi society

Introduction

Acquired Immune Deficiency Syndrome (AIDS) is caused by a human immunodeficiency virus (HIV) that weakens the immune system and makes the body susceptible to and unable to recover from diseases. HIV/AIDS is one of the most complex health problems of the 21st century and has become a pandemic disease that threatens the world population.[1] Since there is no treatment or cure in sight, the disease continues to spread at an alarming rate.[1,2] Recent epidemiological data indicate that an estimated 40 million individuals are living with HIV/AIDS.[3] Over 30 million people have already died from AIDS, with the year 2006 alone seeing 3 million deaths.[4] The disease has reached all age groups and it is estimated that one-third of infected individuals are in the age bracket 15 to 24 years old.[5,6] This health problem has virtually affected all countries around the world and Saudi Arabia is no exception.

In Saudi Arabia the first few cases of HIV infection were reported in 1984. By the end of 2003, the cumulative reported number of HIV patients among Saudi and non-Saudi residents was 1,743 and 6,064 respectively.[6] Of the infected Saudi patients, 237 (14%) of individuals were aged between 15 and 24 years. The government of Saudi Arabia took serious note of the problem and initiated a series of important measures to tackle the epidemic.[7] Generally, the status of the HIV/AIDS epidemic in the Kingdom, as well as in other Islamic countries, is not yet clearly defined and the

reported figures may not reflect the actual number of cases.

In the literature, there are several studies, which assess knowledge and attitudes of the high (secondary) school students towards HIV/AIDS. These studies were conducted in countries with different cultures and values.[8,9,10] One area that has not received a great deal of attention in Saudi Arabia is HIV/AIDS awareness among students in general education. Previous studies on HIV/AIDS in Saudi Arabia were limited and restricted to specific target groups such as physicians,[11] university students,[12] drivers,[13] drug users,[14] children[15] and adult patients.[16] Only one study on high school students' knowledge about HIV/AIDS was conducted in Saudi Arabia. Although valuable, it was conducted a decade ago and was set to evaluate the impact of an educational program on the students' knowledge about the infection.[17]

Since the Saudi population is a very young society, as evidenced by the official statistics,[18,19] it is believed that an important starting point for designing proper prevention strategy among the population is to know how much the young people, such as students, know about HIV/AIDS and what are their attitudes towards this infectious disease. This was the particular aim of this study. Therefore, the present study sought to address the Saudi high school students' knowledge and attitudes about HIV/AIDS and to explore their sources of information about the disease. Such knowledge assumes significance, not only in developing effective strategies for HIV/AIDS prevention in the future,

but also in evaluating the impact of HIV/AIDS awareness measures taken so far by authorities in Saudi Arabia.

Methodology

To serve the purpose of this study, a stratified random sampling technique was used to represent both male and female high school students in different parts of Riyadh city. The sample size equation $n=(p)(1-p)(Z)^2/e^2$ yields that a sample size of 384 is required to represent large populations with 95% confidence level (Z=1.96), an error rate (e) of 5% and a proportion of the target population (p) equals 50%. To ensure a satisfied sample size and to allow for the possibility of non-responses such as refusal or incomplete answers, trained research assistants targeted 600 students in four high schools (two for boys and two for girls) using self-administered questionnaire during May and June 2008. Out of the distributed 600 questionnaires, 567 questionnaires were returned and valid for analysis (94.5% response rate).

The questionnaire was divided into five sections with a total of 40 items. Section I included questions on general knowledge about HIV/AIDS (9 items). Section II included questions about HIV/AIDS mode of transmission (11 items). Section III consisted of statements regarding students' attitude towards HIV/AIDS (7 items). In section IV, students were asked about their source of information about the disease (8 items). Finally, section V included questions about the degree to which respondents had discussed HIV/AIDS with friends, classmates, teachers, health staff and parents or relatives (5 items). The responses for items on the general knowledge and mode of transmission were in "true", "false" and "don't know" form and for items on attitudes a 5-point Likert scale ranging from "strongly disagree" to "strongly agree" were used. Items on respondents' source of information were scored on a 5-point Likert scale ranging from "none" to "very much". The responses for items on discussions of HIV/AIDS were dichotomized into "yes" and "no" responses.

A number of steps were taken to increase the content validity of the questionnaire. Firstly, a review of the relevant literature was carried out. Secondly, two epidemiologists and two school teachers reviewed the questionnaire. Finally, a pilot survey of 50 students (25 boys and 25 girls) was conducted. On the basis of the outcome of the pilot survey, a few questions were reformed and others were excluded. The covering letter of the questionnaire outlined the title and the purpose of the study and the identity of the researcher. Students were informed about the importance of the study and were encouraged to participate. All participants were informed on the issue of anonymity and no identifying information was included on the questionnaire. The data was analyzed in a descriptive fashion using the Statistical Package for Social Sciences (SPSS).

Results

Respondents' profile

The findings revealed that the majority of students were Saudis 559 (98.6%) and unmarried 557 (98.2%). They were between 15 and 19 years old with a mean age of 17.1 years and 1.04 years of standard deviation. The majority 484 (85.4%) were aged 16 to 18 years. 291 (51.3%) were boys and 276 (48.7%) were girls. 199 (35.1%) of the students were in their 2nd grade of the high school and the remainder were split between first and third grades.

Respondents' general knowledge

Table 1 shows that three-quarters of respondents answered correctly that "there is no vaccine for HIV/AIDS that protects a person from getting HIV/AIDS" and more than two-thirds of respondents reported correctly that there is no active treatment for HIV/AIDS. Similarly, about two-thirds of respondents knew that AIDS is an infectious disease and a similar percentage of students reported that it is difficult to tell that a person has HIV/AIDS through appearance. The majority of students answered correctly that HIV/AIDS attacks the immune system. Over one-half of respondents reported that a person can have HIV for several years without knowing it. Only 40.7% of respondents knew that HIV and AIDS are not the same. Approximately one-third of

respondents answered correctly that AIDS stands for the acquired immune deficiency syndrome. Just below 20% of the students answered correctly the statement that "all people who have HIV have AIDS".

Female students responded more correctly in this regard than males. For instance, girls were more likely to respond correctly to such questions as AIDS stand for acquired immune deficiency syndrome (p<0.001), that there is an active treatment for HIV/AIDS (p<0.01) and that a person cannot be known to have HIV/AIDS by his or her appearance (p<0.05). On the contrary, boys were more likely to respond correctly to the statement that HIV and AIDS are the same than girls (p<0.001).

Table 2 shows that the vast majority of students knew that HIV/AIDS could be transmitted through sexual relations (94%), receiving blood transfusions (85.4%) and sharp blades or needles (77.8%). Three-quarters of respondents knew that touching or shaking the hand of infected persons does not transmit the infection and a similar percentage of respondents identified correctly that a person can get HIV infection through "contaminated dentistry tools". The majority of students were able to report correctly that insect bites (71.8%), coughing or sneezing of an infected person (69.5%) and the use of public toilets (63.5%) do not transmit the disease. Similarly, just above half of the respondents knew that food utensils of infected persons do not transmit the disease. On the contrary, about one-third of students reported mistakenly that the infection can be transmitted from pregnant mothers to her unborn baby and more than half of students reported that "tears or mucus of infected person" can transmit the infection.

Male students were more likely to respond correctly to the statements that HIV/AIDS can be transmitted through sexual relations (p<0.01) and that HIV/AIDS can be transmitted by contaminated dentistry tools (p<0.05). Female students showed significantly more knowledge about what cannot transmit HIV/AIDS than male students. They were more knowledgeable about statements

that HIV/AIDS cannot be transmitted through touching or shaking hands (p<0.05), exposure to coughing or sneezing (p<0.05) and through tears or mucus of infected persons (p<0.001).

Respondents' attitudes

Table 3 shows that over 95% of students agreed that the HIV/AIDS-infected students should be supported to cope with their disease and more than 85% of students indicated that HIV/AIDS-related topics should be added to schooling curricula. About 80% of students indicated that HIV/AIDS-infected students should inform others about their disease and a similar percentage reported that they would not sit close to HIV/AIDS-infected students. Over half of the students indicated that they would end their friendship with HIV/AIDS-infected classmates. Only 27% of the students agreed with the statement that students with HIV/AIDS should be isolated in special schools. There were no significant differences between male and female students in all statements about attitudes towards HIV/AIDS disease.

Respondents' source of information

Table 4 shows that more than 90% of the respondents indicated that television (TV) had contributed much to their knowledge about HIV/AIDS while about 73% and 63% of the respondents indicated that radio and newspapers respectively had contributed a little to their knowledge about the disease. About two-thirds of students indicated that none of the brochures or schools had contributed to their knowledge about the disease. The vast majority of students indicated that no health staff and parents (83.2% and 93.1% respectively) had contributed to their knowledge about HIV/AIDS. More than 60% of the students indicated that school has 'no' contribution to their knowledge about the disease. Moreover, Table 5 shows that more than 90% of the students had not discussed HIV/AIDS with their teachers, health staff or parents. The students reported that the major sources of their discussion about HIV/AIDS were friends and classmates (28% and 15.5% respectively).

Male students had a significantly higher mean score than female students in receiving information from newspapers (p<0.001), friends (p<0.01), schools (p<0.01) and health staff (p<0.05). On the contrary, female students had a significantly higher mean score (4.71) than males (4.47) in receiving information from TV (p<0.001). Findings about discussions on HIV/AIDS revealed that there were no significant differences between male and female students in all statements about sources of discussions.

Discussion

The results of the study provide evidence that a considerable percentage of high school students were not knowledgeable enough on basic facts of HIV/AIDS, like the cause, mode of transmission, nature of the disease and its prevention. This yawning gap in knowledge most likely led to a defective attitude and some misconceptions towards HIV/AIDS and the infected people. These findings are in agreement with those reported earlier both from developing countries[20,21,22] and developed countries.[8,23]

In this study, the negative attitudes toward infected persons might not be surprising since some individuals in Islamic communities link HIV/AIDS infection with the stigma of adultery, homosexuality and intravenous drug use.[24] Similar results of negative attitudes were reported in other studies. For example, some studies identified that a considerable percentages of students expressed that they would terminate their friendship with infected persons.[25] Similarly, a study conducted in Iran2 found that approximately half of the respondents expressed that an infected person should not be allowed to enter schools.

Consistent with findings in previous research,[26] the principle students' source of information about HIV/AIDS was TV. In this study, students claimed that the contribution of other sources of information was either "none" or "little". Generally, studies showed the importance of visual media in increasing people's knowledge about HIV/AIDS. Surprisingly, the

contribution of sources, which should play a major role in acquiring students with necessary information about the disease, such as school and health staff, were minimal. A suggestion that would be of benefit is that teachers and health care providers should enhance students' knowledge and diminish the misconceptions about HIV/AIDS infection.

The results showed that more than 90% of the students did not discuss HIV/AIDS infection with their teachers, health staff and parents. This finding might not be surprising since discussions on sexual matters and related topics in Islamic countries, as well as in other countries, are taboo and diseases such as HIV/AIDS are stigmatizing. A study reviewed knowledge and attitudes of students about HIV/AIDS reported that sexual intercourse is perceived to be one of the most intimate and spontaneous behaviours about which verbal communication is often unacceptable in most societies.[27]

The results of this study revealed significant difference in knowledge, attitudes and source of information about HIV/AIDS according to students' gender. It has been reported that there should be no difference between individuals in knowledge about a disease that is transmitted to all, not respecting race, color or gender.[28] Therefore, efforts should be given to remove inequalities in knowledge about this infectious disease among male and female students.

The findings of this study have several implications in terms of health education and HIV/AIDS prevention among students. Firstly, educational efforts and prevention programs targeting adolescents and high school students are needed in Saudi Arabia. Secondly, there should be an active involvement of teachers and health care providers in acquiring students with appropriate knowledge about the disease. Thirdly, information on HIV/AIDS, its mode of transmission and prevention should be integrated in the high schools curricula. In the absence of an effective treatment or vaccine for HIV/AIDS at present, health education remains the best format to prevent infection among the young generation.

Although the findings reported here may be influenced by the inevitable limitations of the study design and the available data, it is believed that the results provide a valuable insight into student's knowledge and attitudes towards HIV/AIDS in Saudi Arabia. One major limitation with this study is that the researcher was restricted in asking questions concerning students' behaviors and beliefs on matters such as sex and drug use. Secondly, this study took place in Riyadh city only. Accordingly, the results may have limited applicability to other cities in Saudi Arabia. Thirdly, the results reported here are based on information collected by questionnaires and are subject to the usual problems of bias in reporting health care events. However, the questionnaire was anonymous, which should have encouraged accurate and honest self-disclosure. Future research should attempt to address some of the concerns indicated in the limitations.

Source of support

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T able 1 - Frequency and percentages of correct responses about HIV/AIDS general knowledge (n = 567)

General knowledge	Frequency	
	n	%
There is a vaccine for HIV/AIDS that protects a person from getting HIV/AIDS	429	75.7
There is an active treatment for HIV/AIDS	385	67.9
AIDS is an infectious disease	379	66.8
I can tell that a person has HIV just by looking at him/her	373	65.8
HIV/AIDS attacks the immune system	344	60.7
A person can have HIV for several years without knowing it	327	57.7
HIV and AIDS are the same	231	40.7
AIDS stands for acquired immune deficiency syndrome	177	31.2
All people who have the HIV have AIDS	112	19.8

Table 2 - Frequency and percentages of correct responses about HIV/AIDS mode of transmission (n = 567)

Mode of transmission	Frequency	
	n	%
Sex relations	533	94.0
Blood transfusions	484	85.4
Sharp blades/needles	441	77.8
Touching or shaking hand of infected persons	426	75.1
Contaminated dentistry tools	408	72.0
Insects' bites	407	71.8
Coughing or sneezing of an infected person	394	69.5
From infected mother to her unborn baby during pregnancy	386	68.1
Use of public toilets	360	63.5
Food utensils of infected person	326	57.5
Tears or mucus of infected person	238	42.0

Table 3 - Students' attitudes towards HIV/AIDS (n = 567)

Statements	agree[a] %	Mean ± SD
HIV/AIDS related topics should be added to schooling curricula	86.1	4.47 ± 0.73
HIV/AIDS-infected students should be supported, treated and helped	95.1	4.40 ± 0.65
Testing for HIV/AIDS should be made before entering the school	72.3	4.22 ± 0.89
Students with HIV/AIDS should inform others about their disease	81.3	4.16 ± 1.07
I would not sit close to an HIV/AIDS-infected student	81.1	4.13 ± 1.09
I would end my friendship with infected classmates	50.8	3.48 ± 1.37
Students with HIV/AIDS should be isolated in special schools	27.0	2.51± 1.18

[a] Percent agreed was calculated by points 4 and 5 of the Likert scale

Table 4 - Students' responses on source of information about HIV/AIDS (n = 567)

Source of information	None		Little		Much		Mean ± SD
	n(%)		n(%)		n(%)		
Television	6	1.1	34	6.0	527	92.9	4.59 ± 0.71
Radio	53	9.3	418	73.7	96	16.9	2.64 ± 0.87
Newspapers	197	34.7	356	62.8	14	2.5	1.86 ± 0.80
Friends	195	34.4	356	62.8	16	2.8	1.85 ± 0.78
Brochures	381	67.2	138	24.3	48	8.5	1.65 ± 1.12
School	347	61.2	194	34.2	26	4.6	1.53 ± 0.83
Health staff	472	83.2	71	12.5	24	4.2	1.33 ± 0.84
Parents (or relatives)	528	93.1	39	6.9	-	-	1.07 ± 0.27

Table 5 - Students' responses on source of discussion about HIV/AIDS (n = 567)

Source of discussion	Yes		No	
	n	(%)	n	(%)
Friends	159	28.0	408	72.0
Classmates	88	15.5	479	84.5
Teachers	51	9.0	516	91.0
Health staff	39	6.9	528	93.1
Parents (or relatives)	30	5.3	537	94.7

Efficiency of Seminal Fructose Estimation As A Marker of Seminal Fluid Colonization with Bacteria

ABSTRACT

Background and objectives: Infertility is generally defined as the inability of a couple to conceive after 1 year of unprotected intercourse. This study included semen fructose estimation in two groups of men; fertile controls without significant bacteriospermia and nonazoospermic infertile men with significant bacteriospermia.

Materials and methods: A prospective study was carried out from March 2003 to January 2004 by collaboration between clinical biochemistry and clinical microbiology departments in the College of Medicine, Hawler Medical University on eighty five infertile men, and the results were compared with twenty six fertile men.

Results: The results obtained revealed the isolation of different species of microorganisms from asymptomatic infertile men. Fructose level was unaltered in the two groups of males. Thus the measurement of the concentration of fructose in the semen fluid was found to be non-discriminatory.

Conclusion: Estimation of seminal fluid fructose is not an efficient marker for the presence of bacterial colonization in the semen.

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Introduction

Infertility is generally defined as the inability of a couple to conceive after 1 year of unprotected intercourse. Approximately 10 to 15 percent of couples in the United States are affected[1]. One of every four Polish married couples is infertile[2]. In approximately 30% of cases, pathology is found in man alone and in another 20% both the man and woman are abnormal, therefore, the male factor is at least partly responsible in about 50% of infertile couples[3].

It is certainly appropriate for semen analysis to be the first step on evaluation of the male, besides a detailed history and physical examination[4]. Other suggested procedures include chemical analysis of the seminal fluid, i.e: determination of fructose level, hormonal assays, immunological investigations of testicular biopsy[3]. According to the guidelines of (WHO, 1999)[5], the parameters of seminal fluid can be classified into four classes[5]:

1. Azoospermia: i.e: The seminal fluid with no sperm and the condition may be caused either by obstruction or by defects in spermatogenesis or due to congenital azoospermia.

2. Marginal seminal fluid: the defect is in one of the principle parameters like morphology, motility or number. It may or may not cause infertility.

3. Abnormal seminal fluid: Most or all parameters are abnormal. It causes infertility.

4. Normal seminal fluid.

Fructose is the principle source of the motility of the sperm under anaerobic conditions. It is secreted by the seminal vesicles under the effect of androgen hormone[6].

Microorganisms can be isolated from most seminal samples, but the significance of bacteriospermia is uncertain because many males lack symptoms associated with the bacterial infection of the reproduction tract[7].

In many cases, opportunistic microorganisms cause such classical infections of the urogenital tract such as epididymitis and prostatitis, as well as sub-clinical reproductive tract infection[8]. Thus such silent sub-clinical infection of the reproductive tract could be one of the causes of male infertility[9].

Asymptomatic inflammation is difficult to diagnose, therefore investigations for different biochemical markers e.g.; zinc, citric acid, acid phosphatase and fructose are achieved to facilitate the diagnosis of asymptomatic inflammation[10].

Materials and Methods

A-SUBJECTS

The studied group included eighty-five selected infertile men who attended the laboratory department at the infertility Care and IVF center in Erbil city. This group were selected

after exclusion of other variables like genitourinary infection, medical, surgical, and anatomical causes. Also taking into consideration, they were not heavy smokers and were non -lcoholics. Azoospermic semen was extracted from this study. The control group consists of twenty-six fertile men. This work was carried out between March and January 2004.

B-COLLECTION OF SPECIMENS.

A semen specimen was collected after 3 days of sexual abstinence, in a wide-mouthed clean and sterile container. Then after liquifection, one drop of the semen was taken to determine the number of the sperm and then after that, the semen sample was divided into two parts; one for fructose estimation and the other for culture.

C- DETERMINATION OF SEMINAL FLUID FRUCTOSE

The method is adopted from that of Seliwanoff[11]. The principle depends on the presence of fructose (ketoses), which produce hydroxyl methyl furfural by the action of concentrated HCl. The intensity of the red complex is proportional to the fructose concentration and absorbed at 490 nm.

D-METHOD OF SEMEN CULTURE

Because seminal plasma has a rather strong bacteriostatic capacity, it is recommended to be diluted before innoculation. This was done by adding 0.2 ml of sterile physiological saline to 0.2 ml of semen. After mixing 50ul of the mixture was homogenously spread on blood MacCoukeg, chocolate agars, and incubated for 24 - 48 hours at 37c. The number of colonies is counted and multiplied by 40 to give the number of colony forming unit CFUs per ml. Growth of 1000-3000 CFU/ml is considered borderline. While CFUs fewer than 1000 suggest contamination[12].

E-STATISTICAL ANALYSIS

Statistical analysis was carried out by using:

1. Mean standard deviation and standard error of the mean SEM.
2. t-test to find out the significant difference of the semen parameter in infertile as compared to fertile men.

Results

From the eighty five infertile semen samples cultured, sixty five yielded positive growth of bacteria, while the remaining twenty five yielded no significant growth. Regarding the control group, the results of all culturing the twenty six semen samples showed non significant growth.

Table (1) revealed the mean levels of fructose in these four groups i.e.: control, infertile group as a whole, infertile group with significant growth and infertile group with non-significant growth. The mean levels were: (10.2 ± 1.3), (13.3 ± 0.55), (14.05 ±o.6), (15.02± o.998) respectively.

Tables (2, 3) demonstrate the results of the sixty-five seminal fluid cultures. Six different species of bacteria were isolated, with one or two different bacteria from some samples. The most frequently isolated bacteria was Diphtheroid 32 (49.23%), and this bacteria was isolated alone and in combination. The other positive isolated growths were: Staphylococcus epidermidis 28 alone, and in combination 43.07%.

Escherichia coli 16 (24.6%) alone and in combination.

Staphylococcus awreus 7 (10.8%) alone and in combination, and one (1.5%) for each of Proteus mirabilis and Pseudomonas aeuroginosa.

Table (4) demonstrates the frequency distribution of fructose level in the two groups (infertile and the control).

Discussion

It has been found that prostate and vesicle infection, and sub-clinical reproductive tract infection may lead to dysfunction of sperm and changes in semen parameters, and the latter may consequently lead to infertility. Some possible pathophysiological mechanisms of the development of infertility linked either to inhibition of spermatogenesis resulting from testicular damage or autoimmune process (Bukharin, 2000[7], Khalili, 2000[13], Omer, 1985[14], Huertra, 2002[15]).

In this study, it had been taken into account only positive semen culture

with 1000-3000 and more CFU/ml (Combaire, 1996[12]) in which this amount of bacteria was postulated to be effective for inducing genital tract infection and affect semen parameters producing male infertility.

Gregoria (1989[16]) had taken the count of 100-1000 and more into consideration, thus our results depending on this basis of numbering of bacteria is considered perfect.

Numbering of the bacteria in the semen is of importance because as Keck (1998) concluded, detection of bacteria in semen does not necessarily signify infection. Since bacteriospermia may represent contamination, colonization or infection.

According to Susan (1999[17]), colonization of the host is also an infection, but it is one in which the host and organism evolve a commensual relationship without the development of disease (asymptomatic).

Therefore these microorganisms isolated in this study were not contaminant. They were in colonizing state because all the patients were asymptomatic. More than one kind of microorganism had been isolated from asymptomatic patients in different percentages. The result of this study is in accordance with the studies below which showed that mixed bacteria were isolated in 98%, 59.1%, 64.7% and 47% of the cases respectively (Khalili, 2000[13], Huertra, 2002[15], Swenson 1980[18], Corradi, 1992[19]).

Regarding fructose estimation, it was noted from this study that fructose concentration did not differ significantly between the whole infertile group and the control group, beside that, there was no significance difference between the positive growth and the non-significant growth groups within the infertile group.

This result is in accordance with the studies below that indicate the measurement of seminal fluid fructose does not contribute to the diagnosis of infection, because its discriminating power is lower than that of the ejaculate volume which is equally dependent on seminal vesicle function (Andrade,1999[6], Grizard,E;etal,1985[20])

The result of this study is in accordance with the study of (Vicari,E;etal, 2006 [21]) which pointed out that seminal fructose levels did not reflect the extension of prostate-vesiculo-epididymitis. Therefore, in conclusion, estimation of seminal fluid fructose is not an efficient marker for the presence of bacterial colonization in the semen.

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Table (1): The mean level of fructose in both the control and the infertile groups.

	Control 26	Infertile group 85	Infertile significant growth 65	Infertile no significant growth 20
Fructose level mmol/L	10.2mmol/L±1.3	13.3±0.55	14.05±0.6	15.02 ± 0.998
Statistical analysis	N.S	N.S	N.S	N.S

N.S   Non significant

Table (2): Results of the seminal fluid culture of 65 infertile men.

One bacteria	N	%	Two bacteria	N	%
E-Coli	7	10.8	E.Coli &st.epid	6	9.2
Diphtheriod	21	32.3	E.Coli &st.anurus	3	4.6
S.epidermides	11	16.9	Diphtheriod&st.epid	11	16.9
S.anurus	4	6.2			
P.valgaris	1	1.5			
Pseud.aeurogenism	1	1.5			
Sum	45	69.2		20	22.5

Table (3): Bacteria isolated from the 65 infertile semen samples alone or in combination.

Bacteria isolated	N	%
Diphtheriod	32	49.2
S.epidermides	28	43.07
E-Coli	16	24.6
S.anurus	170	10.8
P.valgaris	423	1.5
Pseud.aeurogenism	513	1.5

Table (4); Frequency distribution of fructose in different groups.

Fructose level	Fertile	Non sign. growth	Infertile								
			Significant growth								
			One bacteria						Two bacteria		
			E. coli	St. epid	St. merues	Dipth	Prot Valg.	Pseudo Aruo.	E.coli+ St,epid	E.coli + St. merues	Dipth+ St.epid
3.5-8.4	8	2	2	1	_	3	_	_	1	_	1
8.4-13.3	2	5	3	4	3	6	_	_	1	1	5
13.3-18.2	10	8	1	2	1	8	1	1	2	1	2
18.2-23.1	6	5	1	3	_	4	_	_	2	1	3
23.1-28	_	_	_	1	_	_	_	_	_	_	_
Sum	26	20	7	11	4	21	1	1	6	3	11

Health promotion practice among primary care physicians in Qatar

ABSTRACT

Cervical cancer is a common type of cancers that affects women worldwide. It is considered to be the second most seen cancer among women, and sometimes at younger ages it can be life-threatening. It is closely linked to HPV infection; especially HPV 16 and 18 strains which cause the lining of the cervix to change from normal to precancerous lesions, which if not detected and treated can change to cancer. Also HPV is associated with development of skin-coloured growths (genital warts). It is a very preventable disease due to the Pap screening test, which is still missing in developing countries sadly, and therefore many cases go undetected or present at a late stage whereby no further actions can be done. And this is considered a total tragic loss and waste of women.

This review article will highlight a simple, and general overview about HPV epidemiology, Pap screening in the era of HPV vaccination, and the proposed and approved Gardasil vaccine to combat cervical cancer in terms of effectiveness, tolerability, safety and pricing; and including Gardasil dosing, and administration, and its importance as a life-saving vaccine against cervical cancer. The vaccine is considered to be currently a great advancement for women's health however there still remains unanswered questions.

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Epidemiology

As the patterns of disease in many societies have been shifted from communicable diseases to chronic disease, the importance of lifestyle has increasingly been addressed as an important determinant of health.[1] Certain behaviors have been identified as risky behaviors and linked to a range of chronic diseases (e.g. coronary heart disease, stroke, diabetes, and cancer. These behaviours include tobacco consumption, poor diet (high in fat and sugar), lack of physical exercise, use of recreational drugs (e.g. Cannabis, heroin), and use of alcohol.[2] Nowadays evidence is increasing about the role of healthy lifestyle choices such as eating a prudent diet, exercising regularly, managing weight, and not smoking, in reducing the risk of these chronic diseases.[3,4]

Promoting healthy lifestyle to restore health and prevent disease has been considered as the new public health or "Health Promotion".[1] The World Health Organization (WHO) defines health promotion as "the process of enabling people to increase control over and improve their health".[5,6] At individual level, health promotion can be described as the application of methods that foster physical and emotional well-being and that increase length and quality of life.[7] Primary health care and hospitals provide an important setting for health promotion because it offers an opportunity for health professionals to integrate health promotion into their practice.[2,8] However, primary care provides unique advantage of easy access compared to hospitals due to the high patient contact rates.[9]

Because of their perceived creditability by public, the primary care physician has been identified as an important and cost-effective contributor to promoting healthy lifestyle, such as smoking cessation, healthy diet, and physical activity.[2,8] Therefore disease prevention and health promotion became important tasks in the daily practice of all general practitioners (GPs).[10-12] And many health care organizations in developed countries have recommended clinical guidelines for promoting healthy lifestyles in primary care as a part of prevention and treatment of chronic diseases such as cardiovascular disease and diabetes.[13-14]

In Qatar, chronic diseases related to unhealthy lifestyle are increasing, putting burden on health care services. As Family Medicine or General Practice becomes an attractive specialty among young physicians in Qatar, health care planners expect that primary care physicians can provide preventive health and health promotion services in their practice in order to tackle chronic disease. In this study we aim to describe the health promotion practices among primary care physicians' in Qatar.

Methodology

State of Qatar, located in Arabian

Gulf, one of the GCC countries with a population of more than 796, 000 estimated last census in 2005. Primary heath care in Qatar is provided through a network of 24 primary health care centers distributed all over the country. There are 253 physicians working at these centers. This cross-sectional survey has recruited primary care physicians working in primary health care centers in Qatar in the last 3 months. Sample size is calculated using 253 physicians. These include family medicine board certified and other non-family medicine certified physicians. Assuming 10% losses due to refusal and other reasons, we arrived at 136 physicians. The following formula was used

$$N= Nz^2p (1-p) \text{ I } [d^2(N-1)+z^2p (1-p)]$$

In which; N= total population (253); z= value corresponding to the confidence level (1.96²=3.84); d=absolute precision (0.05²=2.5); p=proportion of the population with the studied characteristics (0.2). Subjects will be recruited by using "Simple random sampling Technique". A list of Primary Health Care physicians will be considered as the sampling frame and each physician will be considered as a unit. 136 physicians were randomly selected from the list.

A structured self-administered questionnaire was used to collect data from the primary care physicians. The questionnaire was in English and had covered the two parts: personal data which includes age, gender, position, last qualification and year of graduation, and health promotion practice over the last 3 months which includes 20 questions about screening, advice, and different ways of management (as a part of comorbidity management or prevention), referral, receiving training in promoting smoking cessation, healthy diet, and physical exercise. Answers were categorized into (always, sometimes, rarely, and not at all).Data were coded and entered into Statistical Package of Social Science, version 13.00 for windows (SPSS-13).

Results

Of the 136 questionnaires distributed, 118 were returned; representing a response rate of 86.7 %. Table 1 presents the profile of GPs

who participated in the survey. Mean age was 42.2 years (SD 7.2, range 30–59). Sixty four physicians were females (54.2 %) and 54 (45.8%) were males. Among these categories, only 28% were Qatari and 39 % were family board certified physicians. Regarding experience in clinical practice, 28 % had less than ten years and 26.3 % had more than 20 years. In terms of receiving health promotion training only 16 (13.6%) received training in obesity management counseling. While almost 90 % GPs reported that they had not received any training or education in promotion of smoking cessation, all GPs have not received any training in physical activity promotion counseling.

Table 2 presents the smoking cessation practice of physicians. About 15.2% of the GPs reported that they always ask their patient about their smoking habits and 25.4 % of them advise their smoker patient to quit on regular bases. While 43.2% of GPs reported that they tend to advise their smoker patients to quit if they present with illnesses related to smoking. Besides advising, only 13.6% of GPs said they gave out a leaflet about smoking cessation.

Only 11.9 % of GPs reported that they always provide personal smoking cessation counseling for their smoker patients, while 16.1% said that they always referred their patients to specialized smoking cessation clinics. Regarding smoking cessation medications, nicotine replacement therapy (NRT) was prescribed on regular bases by two physicians and there were no physicians prescribing bupropion for smoking cessation.

Table-3 shows that 23 of the 118 respondents (19.5%) stated that they always ask their patients about their physical activity status and 18.6 % GPs reported that they always advise patients about physical activity. This percentage is increased to 32.2 % if the patients presenting with diseases related to physical inactivity are included. Only 10 of the all surveyed GPs (8.5%) said that they gave out leaflets promoting physical activity on regular bases, while no one of the GPs reported regular referral to exercise practitioners.

Out of 118 GPs who participated in this study, the majority gave their patients advice on dietary habits (82.2%) and physical activity (80.5%). Ninety nine of 118 GPs (83.9%) stated that they always offer weight control advice for patients with chronic illness e.g. DM or Dyslipidemia, as part of their management. About two third of GPs (67.8%) reported that they used at least one method of obesity screening methods. Twenty one physicians (17.8%) reported that they always refer their obese patients to others who specialize in obesity management. More than one quarter(28.8%) of the physicians stated that they always give their obese patient leaflets on weight reduction.

Discussion

This survey provides insight into health promotion practice during clinical consultations among GPs working in Qatar. The practice in this study involves range of activities like providing advice, information, counseling, screening, and providing treatment or referral. The first striking finding in this study was the level health promotion training received by GPs in Qatar, as most of them are under trained in this area. Therefore, practicing little health promotion in their daily clinical practice compared to other GPs from different countries is expected outcome.

For instance in smoking cessation while only one fourth of GPs in Qatar offer smoking cessation advice regularly, two-third GPs in the UK 15 and half of family physicians in the US do this.[16] Compared to one third of GPs working in New Zealand[17] asking about smoking status of their patients which is another important step in smoking cessation, only 17.8% of GPs in this study do. According to international guidelines, it has been well known that GPs should address smoking habits every time a smoker visits their practice.[18,19] Giving out leaflet about quit smoking is considered as another way of promoting smoking cessation, in this study this practice was reported by 13.6 % of GPs which is also lower than what reported by GPs in the UK (57%).[20]

Moreover, this study has shown that level of providing smoking cessation counseling and therapies in Qatar is far low from the international level of practice. For instance only 11.9% of GPs provide smoking cessation their clinics compared to 41% of GPs in the UK.[20] On the other hand the rare prescription of NRT and bupropion by GPs in Qatar compared to in this study can be attributed to unavailability of theses dugs in primary health care centers although there is strong evidence showing that NRT can increase chances of successful quit smoking attempts and increase the rate of quitting by 50-70%.[21]

Promoting physical exercise for improving health and preventing diseases is another important issue in health promotion; and guidelines recommend GPs to ask about the physical activity status of their patients and advice them accordingly.[3,4,6] Number of trials confirm the acceptability and efficacy of advising patients to be active at least 30 minutes of at least moderate intensity physical activity, like brisk walking or digging the garden is accumulated on five or more days per week (PA30×5).[22-24] However our finding is in agreement with previous studies from different countries GPs are not promoting physical exercise sufficiently. Less than one fifth of GPs in Qatar are asking about the physical exercise status and advising for physical exercise which is less than what reported in the UK (31%).[25,26]

In consistent with other literature, in physical exercise promotion among GP in this study is increased if the patient presenting with a disease related to physical inactivity.[27] This can be referred to the known behavioral observation in some primary care based surveys which have shown that GPs less likely to recommend all apparently health adult patients take moderate exercise as apart of their health promotion practice compared to other primary care professionals practice nurses and health visitors even though GPs were more likely to discuss physical activity if they perceived it as relevant to a patient's presenting condition especially if the patient obese or hypertensive.[27]

One of the interesting finding in this survey was that there was no GP doing referral to exercise practitioners in Qatar. Such result was expected that the neither primary health care centers nor secondary care facilities provide physical exercise class. Although such services is growing in number of countries. For instance in England Since the late 1990s there has been a massive expansion of GP exercise referral schemes. In these schemes, GPs refer patients to exercise classes and specialist support outside the Practice.[28,29]

Our findings in this survey suggest that GPs are giving advice on healthy diet (82%) more than health areas like smoking and physical activity. However, the high percentage of promoting healthy eating obtained in this survey remains lower than percentage reported in German and American GPs (92% & 97% respectively).[30,31] Previous researches revealed that GPs have a unique opportunity for promoting healthy diet the benefits of good nutrition to patients; advise them about desirable dietary practices as a part of obesity prevention or managing obesity comorbidities.[32,33] Such lifestyle modification advice can be a valuable source of motivation for the patient and considered as a suitable therapeutic choice in the GP management of obesity.[34]

Consistent with the previous researches GPs participated in this study tend to give advice to those who are obese and have obesity-related comorbidities such as type 2 diabetes, high cholesterol, or arthritis as apart of their management for the chronic illness.[32,35]

It has been previously thought that lack of time was a key factor in preventing GPs from routinely promoting health at their clinical practice. However number qualitative researches revealed that low level of health promotion activity in primary care clinics can be attributed to several factors such as lack of confidence in efficacy of health promotion in changing patient behavior which acts as a barrier to GPs practicing health promotion activity.[36-38] Lack of confidence can be related to lack knowledge and skill due to lack of training in health

promotion counseling for GPs.[39] Also lack of reimbursement is considered as an important barrier to encourage GPs to practice health promotion regularly.[40-42] Lack of guidelines in promoting health is regarded as another barrier, as introduction of such guideline can enhance practice.[43,44] A part from lack of training which is reported in our results, All theses factors should be considered as barriers of promoting health in primary care clinics in Qatar, as there is no guidelines for promoting health in practice and no reimbursement policy for those whom prompting health in their clinics in addition to

In conclusion this survey indicate the of health promotion interventions practiced by GPs in Qatar and level of training received in this field are apparently lower than that reported in different countries. Strategies such as health promotion training, formulating guidelines for promoting health, and providing incentives are recommended to increase level of health promotion practice in primary care clinics.

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Table-1 Demographic characteristics of physicians participated in the survey.

Variable	n	%
Sex		
Male	54	45.8
Female	64	54.2
Nationality		
Qatari	33	28
Non-Qatari	85	72
Years of experience in primary care		
< 10 years	33	28
11-20 years	54	45.7
>20 years	31	26.3
Specialization		
Family Medicine certified physicians	46	39
Non Family Medicine physician	72	61
Health promotion training received:		
Smoking cessation counseling	12	10.2
Physical activity counseling	0	0
obesity management	16	13.6

Table -2 Practice of smoking cessation counseling among primary care physicians in Qatar

Statement	Response in % n (%)			
	Always	Sometimes	Rarely	Not at all
How frequent do you ask your patients about their smoking history?	18 (15.2)	21(17.8)	37(31.4)	42(35.6)
How frequent do you advise smokers to stop during consultations	30(25.4)	39(33.1)	21(17.8)	28(23.7)
Do you advise smokers to cut down if they are unwilling or unable to stop	51(43.2)	36(30.5)	12(10.2)	19(16.1)
Do you offer smoking cessation advice for your patients if the presenting illness related to smoking?	51(43.2)	11(9.3)	10(8.5)	13(11.0)
Have you given your patients out leaflets on how to stop smoking?	16(13.6)	20(16.9)	22(18.6)	60(50.9)
Have you provided counseling to smokers wanting to stop?	14(11.9)	21(17.8)	28(23.7)	55(46.6)
Have you referred patients to a smoking cessation clinic?	19(16.1)	31(26.3)	25(21.2)	43(36.4)
Have you prescribed some form of Nicotine Replacement Therapy (NRT) such as gum, patch. lozenges	2(1.7)	12(10.2)	12(10.2)	92(78.0)

Have you recommended that patients to buy NRT?	0(0)	14(11.9)	12(10.2)	92(78.0)
Have you prescribed bupropion?	0(0)	1(0.8)	2(1.7)	115(97.5)

Table -3 Practice of physical activity counseling among primary care physicians in Qatar

Statement	Response in % n (%)			
	Always	Sometimes	Rarely	Not at all
How frequent do you ask your patients about their physical activity status?	23(19.5)	30(25.4)	34(28.8)	31(26.3)
How frequent do you advise patients about physical activity	22(18.6)	20(16.9)	33(28.0)	43(36.5)
Do you advise patients about physical activity only if linked to their presenting problem?	38(32.2)	40(33.9)	15(12.7)	25(21.2)
Have you given your patients out leaflets on physical activity?	10(8.5)	33(28.0)	26(22.0)	49(41.5)
Have you referred patients to physical exercise practitioner?	0(0)	0(0)	8(6.8)	110 (93.2)

Table -4 Practice of obesitey management counselingamong primary care physicians in Qatar

Statement	Response in % n (%)			
	Always	Sometimes	Rarely	Not at all
Do you advice your patients to do physical exercise as part of weight reduction scheme?	95(80.5)	11(9.3)	7(5.9)	5(4.2)
Do you advice your patients to do dietary change as part of weight reduction scheme?	97(82.2)	10(8.5)	7(5.9)	4(3.4)
Do you screen your for overweight and obesity by recording BMI or waist circumference?	80(67.8)	20(16.9)	9(7.6)	9(7.6)
Do you refer your obese patient to others who specialized in obesity management?	21(17.8)	71(60.2)	21(17.8)	5(4.2)
Would you only offer advice regarding weight control when patient ask for it?	33(28.0)	31(26.3)	18(15.3)	36(30.5)
Do you offer weight control advice for your patients with chronic illness e.g. DM or dyslipidemia as part of the management?	99(83.9)	13(11.0)	1(0.8)	5(4.2)
Have you given your patients out leaflets on weight reduction?	34(28.8)	47(39.8)	20(16.9)	17(14.4)

Survey of Knowledge, Attitudes and Practices: Enhanced Response to TB ACSM, Iraq

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Backgrounds

Iraq is one of the high TB burden countries in the Eastern Mediterranean region with the highest tuberculosis burden. The estimated incidence of all TB forms accounted for 56/100,000 population in 2006 (Global TB report 2008).

According to the latest Global TB reports, the case detection rate (TB-CDR) is 47% for all kinds of tuberculosis, and 40% with sputum smear positive cases. The National Tuberculosis Program (NTP) is aiming to reach the global target (70% CDR).

Iraq has implemented its National TB Program (NTP, according to WHO guidelines, since the late seventies. This program included BCG compulsory vaccination for infants, DOTS strategy in treatment of active cases with screening, prophylaxis and treatment of latent TB cases. There are some areas of Iraq, such as Al Sadre City, where the population is at higher risk due to low socio-economic status and conflict. This project will cover Alsadre area (the two health districts, Alsadre and Albaladyat district health) where the peoples of Al Sadre City suffer from extreme poverty, worsened by the effects of high migration from the neighboring Diala governate, due to security. The average family size per household varies from 3-10 persons. Houses are made of blocks, with poor ventilation systems, and problems exist regarding access to clean water and electricity.

Al Sadre and Baladyat City have a population of 1,776,587 and are served by:

5 Hospitals, 32 PHCC's (with 5 labs), 1432 Health staff in the public health care system, 356 Doctors, 153 Pharmacists, and 130 Lab technicians serving in the private health sector. Despite the relatively wide range of health facilities regarding tuberculosis care and control, these areas are suffering from low public awareness, poor access to TB care, an inadequate network of laboratories, an inadequate supply of TB drugs and inadequate recording, reporting, monitoring and evaluation. It must be further noted that the unstable security situation in Al Sadre City (such as the near shut out of services in the turbulent March-May period of 2008) has the ability to negatively affect health care service delivery in the area.

Aims and Objectives

The overall objective of the study is to have the baseline to understand and measure attitudes, practices and levels of knowledge about TB among the general population in Al Sadre and Baladyat Districts.

The study is a cross sectional community based survey. The data will guide evidence based medium term strategic direction to communication of TB including Above the Line (ATL) and Below the Line (BTL) activities. More specifically, the KAP data is expected:

1. To identify population/s and their potential of acquiring and transmitting TB;
2. To obtain estimates of the KAP from the population that can defensibly be construed as population from poor and vulnerable areas.
3. To examine variations in the above across major strata of population.

Subject and methods

Survey area and sampling plan

Families in Al Sadre and Baladyat districts of different age groups and from both genders

Inclusion criteria:

Age: Fifteen years and above.

Gender: Both males and females

Residency: Al Sadre and Baladyat districts

Individual education: Any level

Housing: All types.

Socio-economic status: Any.

As those populations are reachable, and there is a good opportunity to generalize the following KAP study to the community, thus both feasibility and external validity can be guaranteed.

A direct interview through a well-constructed questionnaire was applied.

Sample size and sampling technique

The sample size was detected at a power of 80% and alpha 0.05; the design effect (which takes into account the increase in standard errors due to clustering) is set at 1.25.

As the city has a population of 1,776,587, 32 clusters and the mentioned degree of precision and level of significance and assuming that the least frequent KAP item was reported from 10% of the population, allowing for 2% error, the sample size that will be able to detect prevalence ranging from 8-12% will be 864. Adjusting for a non-response rate of 15%, and design effect of 1.25, the final sample size was 1271, at 95% confidence level.

Sample surveys of men inevitably record lower participation than surveys of women, because men are less likely to be contactable at home. Although interviewers could not be

instructed to call back during the nighttime due to the security situation, participation in behavioral interviews is expected to be up to 85%.

The sampling technique was of probability proportions to population size sampling (PPS sampling). Each cluster (locality, which was considered as a district) had an estimated population; we prepared a list of districts in the city and their population, then calculated the cumulative population size. Then we estimated the Class Interval (CI).

Dividing the total number of population into the number of clusters (1,776,587/32) with the class interval around (55,000), and selecting the 1st district (cluster) as a (starting point) in a random way was less than SI. Then the sampling interval was added or selected to the next clusters until all the 32 clusters were selected.

The sample size that was enrolled from each cluster was: 1271/32=39 individuals.

From each cluster, one big building was chosen (e.g. a mosque) and participants from the houses were included in a clockwise direction until completing the 39 individual sets of data.

Data Analysis

Analysis was performed at the univariate and bivariate level using SPSS or SAS. The univariate analysis included percentage distributions of all variables and new variables constructed, based on the information gained from the data. The bivariate analysis included percentages according to cross-tabulations, of background characteristics of populations and two or more indicators of KAP. The bivariate analysis also included Chi-Square test of association.

In depth interviews with the health care providers and TB patients were conducted. Written and verbal informed consent for the in depth interviews was obtained immediately prior to the interviews. The interviewer is expected to ensure that the informed consent document had been read by the participant, and that the participant had agreed to the interview. Consent forms were kept

with the "Interview Log" in a secure file of a computer at the Iraqi Anti TB society. Interview tapes, records and data remained confidential and were kept anonymous.

A. Data from the following was analyzed and examined for six specific knowledge, attitude and practice dimensions identified for a priori investigation. These were:

1. Socio-economics
2. Knowledge and source of TB information
3. Health Seeking Behavior
4. Health Care
5. Stigma
6. Gender

B. Perceptions of TB patients on behavior of the Health Care Providers

Qualitative information from the Focus Group Discussions was sought to determine the attitude and behavior of the health care providers towards TB patients. Data was analyzed and examined, and attitudes and perceptions of specific dimensions identified for a priori investigation.

Results

I-Socio-demographic criteria

The results of the study were based on the analysis of the answer sheets of 1271 respondents (742 females and 529 males) as shown in Figure 1.

The mean age was 34.467(±6.865) years. Only 9.76% had tertiary level of education (Figure 2).

The majority of the participants were from an urban area, and had not migrated previously (Figures 3 & 4).

Those married or ex-married constituted 58.77%. The length of marriage for the majority was less than 10 years and more than 11% of the women were widowed (Figures 5 & 6). 624 out of 747 (83.5%) had 1-5 children (Figure 7).

Housewife was the dominant job for women (73.2%), while paid employment was the dominant job for men (49.5%). The majority of the participants had a monthly income less than $500(Figures 8 & 9).

Only 31.39% of the study subjects owned houses (Figure 10). Although 70.57% had 4-9 family members (Figure 11), only 18.49% had four or more rooms in their houses.

II Knowledge of TB

Although TB is an important public health problem in Iraq 22.66% of the participants had not heard about it. For those who knew about it teachers, newspapers and television were the main sources. (Table 1 & 2).

The answers of the respondents regarding the seriousness of the disease varied in 73.01% between very serious and somewhat serious. Regarding the seriousness of the problem in Iraq, the answers varied in 69%. Approximately 30% did not recognise either the seriousness of the disease or its impact on the Iraqi health system. (Tables 3 & 4).

Coughing blood was the most mentioned sign for the disease followed by fever and chest pain. 15.58% did not know these signs (Table 5).

About one half of the study subjects didn't recognize the modes of TB transmission. (Table 6).

Consequently, a considerable fraction of the participants did not know of ways to prevent TB or who is at risk of developing the disease or even some simple facts about the disease (Tables 7, 8 & 9).

III- Health seeking behaviours

The participants had different methods in seeking healthcare from health care settings. The majority had 1-3 visits every five years, but only 14.56% had twice-yearly visits (Tab 10).

Almost all participants liked to talk with the doctor (or health workers), spouse, parents, or close friend respectively about their illness in cases of contracting TB. Out of the total studied population, only 63.41% preferred to attend government hospitals, among them, 51.85% were satisfied regarding services provided in those hospitals while 49.72% preferred private hospitals. (Tables 11, 12, 13 and 14).

Places attended if TB suspected TV, Newspapers/magazines and radio

are believed by the participants to be the best mass media to send out TB information and increase awareness of the population about the disease. (Tab 15)

III- TB Stigma

Feeling shamed from the stigma of having TB constituted 41.31%, while the other 58.69% varied between either not ashamed or don't know, which means that less than one third of the studied population believe that TB should not be considered as a stigma. On the other hand 54.92% of the participants confessed that they would hide the disease if they had had it, once upon time. Also 50.59% of the studied subjects believed that it affects their relationships with others and 44.69% wanted to live in isolation in case they have TB (Tab 16, 17, 18 and 19).

The majority of respondents (80.41%) either thought that TB treatment is not costly or they don't know about the cost. Regarding work performance, 59.48% believed that it does affect it; the study found that 43.12% believed that the disease will affect marital relationships, and 39.18% believed that it will affect family responsibility, which means that about 27% only, believe that tuberculosis will not affect the marital state. On the other hand 20.38% thought that TB would affect relationships with friends and others (Tab 20, 21, 22, 23 and 24).

Although 56.33% of the participants believed that TB affects the chance of marriage, only 15.18% recognize that TB can cause female infertility; 16.60% % thought that it might affect breastfeeding; 11.49% know that it might cause serious complications during pregnancy and only 9.60% have the information that TB affects pregnancy outcome (Tab 25, 26, 27, 28, and 29).

VI- TB and Gender

The participants agreed in 65.38 % of respondents that females face difficulties in seeking TB treatment; the difference in the answers regarding gender is statistically significant (Tab 30), although their answers are directed towards different levels of agreement regarding certain statements about female gender

and TB disease. The differences in agreement regarding gender were statistically significant in two items (Tab 31).

Discussion

This study's aim was to document knowledge and to have the base line to understand and measure the attitudes, and practice surrounding a diagnosis of tuberculosis.

The population sampled was generally urban, suffering from poverty and at high risk due to their low socio-economic and educational status and the repeated conflicts that characterize those areas.

Those populations were found to be of large family size and small number of rooms per house which are mostly rented, and what was interesting is the high number of widows (more than 11%) of the sampled population, which reflects the impact of this social problem in the Iraqi community in general, and those areas specifically, regarding the related health situation.

The sampled population was predominantly lacking proper knowledge about tuberculosis in general. The response about nature and mode of transmission among respondents was not based on reality and scientific knowledge as a significant number of the respondents did not correctly identify the fact that it is an infectious disease (and exceeding the expectations when compared to previous figures)[1]; its mode of transmission, seriousness, cost of treatment and how to prevent infection.

There following 4 factors are most commonly cited as causes of tuberculosis and known risk factors for infection:

living conditions, socioeconomic status, nutrition[2,3], and having a family member with tuberculosis[4,5]. Thus popular beliefs in this instance corresponded to empirical knowledge of the distal causes of tuberculosis.[6]

The results show that Knowledge is not the only determinant of health-seeking behavior and as regards Compliance with treatment among possible future tuberculosis patients,

stigma seems to be a very important main barrier to proper and timely health-seeking behaviour (less than 1/3rd of the sample population does not consider the disease as a kind of stigma and many respondents believe that they are better to be avoided if they have the disease.

The results of this study provided the necessary information upon which behavioural models would be built in order to modify the behaviour of the community regarding health-seeking and treatment completion, and they support the growing evidence that psycho-social aspects of tuberculosis will need more attention when dealing with such a vulnerable community.

Conclusions

- The sampled population was predominantly from urban, poor, vulnerable areas that are more likely lacking proper knowledge about tuberculosis disease in general.
- The study results exceeded expectations about the lack of knowledge and attitude regarding tuberculosis disease among family members of the sampled population, when compared to previous data.
- More than 2/3rds of the study subjects stated that women will face difficulties seeking health services regarding tuberculosis.
- Significant numbers of the studied population were of large family size, inadequate numbers of rooms per house and of low to moderate monthly income.
- There is still a strong community attitude regarding tuberculosis as a stigma, mainly among women, and toward avoiding patients with tuberculosis, in addition to the belief that the disease has a bad impact on social relations with other family members.
- The psycho-social implication of tuberculosis and health education should have due attention, taking into consideration the cultural aspects of the community.
- Lack of proper knowledge regarding tuberculosis is clearly evident in spite of the enthusiastic efforts attributed to NTP, mass media and other educational activities that are delivered equitably across the

country.

- The result of this study indicates the enormous need to encourage and maintain health education to the community and family members, mainly about the seriousness of the disease, its mode of transmission and the impact of the disease on the community

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Figure 1: Gender distribution of the study sample

Figure 2: Educational levels distribution

Figure 3: Residence distribution

Figure 4:Migration history

Fig 5: Current marital status

- 1 to 24 months
- 2 to 5 years
- >5 to 10 years
- > 10 years

Figure 6: Length of marriage

Figure 7: Number of children for married or ex-married participants

Figure 8: Job distribution

Legend:
- Employed
- Unemployed
- Housewife
- Farmer
- Unskilled worker
- Daily wages
- Student

Figure 9: Monthly income ($)

Legend:
- <$300
- $300 to $500
- $500 to $1000
- >$1,000

Figure 10: Accommodation of the participants

- Own house
- Rented
- Government
- Other

Figure 11: Number of family

Table 1: Heard about TB

Heard about TB	No	%
Yes	983	77.34
No	288	22.66

Table 2: Source of TB information

Source of information about TB	No.	%
Television	143	14.55
Radio	76	7.73
Newspapers/magazines	275	27.98
Doctor	86	8.75
Friends/relative	157	15.97
Teachers	246	25.03

Table 3: Seriousness of TB

Thoughts on seriousness of TB	No.	%
Very serious	532	41.86
Somewhat serious	396	31.16
Not very serious	149	11.72
Don't know	194	15.26

Table 4: Seriousness of TB as a health problem in Iraq

Thoughts on seriousness of TB in Iraq	No.	%
Very serious	493	38.79
Somewhat serious	384	30.21
Not very serious	183	14.40
Don't know	211	16.6

Table 5: Expected signs for TB

Possible modes of acquiring TB	No.	%
Handshaking	87	6.85
Eating from the same dishes	84	6.60
From the air - when a TB patient coughs or sneezes	632	49.72
Sharing a sheesha pipe	0	0.00
Smoking	65	5.11
Touching items in public places	153	12.03
From other's blood	72	2.52
Don't know	178	14

Table 6: Possible modes of acquiring TB

Possible modes of acquiring TB	No.	%
Handshaking	87	6.85
Eating from the same dishes	84	6.60
From the air - when a TB patient coughs or sneezes	632	49.72
Sharing a sheesha pipe	0	0.00
Smoking	65	5.11
Touching items in public places	153	12.03
From other's blood	72	2.52
Don't know	178	14

Table 7: Possible modes of preventing TB

Possible modes of preventing TB	No.	%
Avoid shaking hands	112	8.81
Covering mouth and nose when coughing or sneezing	485	38.16
Avoid sharing dishes	213	16.76
Washing hands after touching items in public places	296	23.29
Closing window at home	65	5.11
Good nutrition	94	7.4
Others (avoid contaminated syringes)	35	2.75
Don't know	68	5.35

Table 8: Persons at risk of acquiring TB

Persons at risk of acquiring TB	No.	%
Anybody	653	51.38
Only poor people	259	20.38
Only homeless people	34	2.68
Only alcoholics	69	5.43
Only drug users	35	2.75
Only people with HIV/AIDS	42	3.30
Only people in prison	211	16.60
Others	0	0.00
Don't know	56	4.41

Table 9: Agreement with some facts about TB.

Statements	Strongly agree		Some extent agree		Some extent disagree		Strongly disagree		Don't Know	
	No	%	No	%	No	%	No	%	No	%
TB is a hereditary disease	95	7.47	377	29.66	471	37.06	142	11.17	186	14.63
One gets TB by touching TB patients	433	34.07	296	23.29	274	21.56	125	9.83	143	11.25
TB is a disease of long duration	187	14.71	568	44.69	293	23.05	92	7.24	131	10.31
One can get vaccine against TB	552	43.43	381	29.98	153	12.04	83	6.53	102	8.03
Longterm treatment of TB harms health	112	8.81	493	38.79	385	30.29	167	13.14	114	8.97
Good TB drug available for treatment	541	42.56	428	33.67	95	7.47	121	9.52	86	6.77

Table 10: Frequency of clinic or hospital visits.

Frequency of clinic or hospital visits	No.	%
Twice a year	185	14.56
Once a year	378	29.74
Less than a year but twice in the past	211	16.60
Once in the past 5 years	222	17.47
Not in the past year	275	21.64

Table 11: People you are talking with about TB

People you are talking with about TB	No.	%
Doctor or other medical workers	621	48.86
Pharmacy	13	1.02
Spouse	357	28.09
Parent	144	11.33
Child(ren)	0	0.00
Other family member	0	0.00
Close friend	136	10.70
No-one	0	0.00

Table 12: Places attended if TB suspected.

Places attended if TB suspected	No	%
Government hospital	736	57.90
Private clinic	442	34.77
NGO clinic	31	2.43
Herb sellers	10	0.78

Pharmacy	35	2.75
Don't know	17	1.33

Table 13: Satisfaction with government TB services.

Satisfaction with government TB services	No.	%
Yes	659	51.85
No	514	40.44
Don't know	98	7.71

Table 14: Satisfaction with private TB services

Satisfaction with private TB services	No.	%
Yes	632	49.72
No	553	43.51
Don't know	86	6.77

Table 15: Best source for TB awareness.

Best source for TB awareness	No.	%
Television	289	22.74
Radio	182	14.32
Newspaper/Magazine	258	20.30
Doctor	219	17.23
Friends	123	9.68
Relative	54	4.25
Medical Store	0	0.00
Information booklets	24	1.89
Cassette	0	0.00
Pharmacy	0	0.00
Don't know	122	9.60

Table 16: Shame of having TB

Shame of having TB	No.	%
Yes	525	41.31
No	397	31.24
Don't know	349	27.46

Table 17: Concealing TB status

Concealing TB status	No.	%
Yes	698	54.92
No	291	22.90
Don't know	282	22.19

Table 18: Does TB affect relationships with others?

Does TB affect relationships with others?	No.	%
Yes	643	50.59
No	382	30.06
Don't know	246	19.35

Table 19: Living alone in case of TB

Living alone in case of TB	No.	%
Yes	568	44.69
No	289	22.74
Don't know	414	32.57

Table 20: Cost of TB treatment

Cost of TB treatment	No.	%
Yes	249	19.59
No	441	34.70
Don't know	581	45.71

Table 21: Does TB affect work performance?

Does TB affect work performance?	No.	%
Yes	756	59.48
No	145	11.41
Don't know	370	29.11

Table 22: Does TB affect marital relationships?

Does TB affect marital relationships?	No.	%
Yes	548	43.12
No	344	27.07
Don't know	379	29.82

Table 23: Does TB affect family responsibility?

Does TB affect family responsibility?	No.	%
Yes	498	39.18
No	348	27.38
Don't know	425	33.44

Table 24: Does TB affect relationships with others?

Does TB affect relationships with others?	No.	%
Yes	259	20.38
No	577	45.40
Don't know	435	34.23

Table 25: Chance of marriage with TB

Chance of marriage with TB	No.	%
Yes	716	56.33
No	295	23.21
Don't know	260	20.46

Table 26: Does TB cause female infertility?

Does TB cause female infertility?	No.	%
Yes	193	15.18
No	486	38.24
Don't know	592	46.58

Table 27: Does TB affect breastfeeding?

Does TB affect breastfeeding?	No.	%
Yes	211	16.60
No	634	49.88
Don't know	426	33.52

Table 28: Does TB cause pregnancy complications?

Does TB cause pregnancy complications?	No.	%
Yes	146	11.49
No	683	53.74
Don't know	442	34.78

Table 29: Does TB affect pregnancy outcome?

Does TB affect pregnancy outcome?	No.	%
Yes	146	11.49
No	683	53.74
Don't know	442	34.78

Table 30: Do females have difficulty obtaining TB treatment?

Do females have difficulty obtaining TB treatment?	Answers		Total	
	Male	Female	No	%
Yes	345	486	831	65.38
No	68	96	164	12.90
Don't know	116	160	276	21.72
Total	529	742	1271	100
P value less than 0.05				

Table 31 Level of agreements regarding different statements on TB and female gender.

Statements	Strongly agree		Some extent agree		Some extent disagree		Strongly disagree		Don't Know	
	No	%	No	%	No	%	No	%	No	%
Women usually go to the HCF alone	112	8.81	146	11.49	371	29.19	566	44.53	76	5.98
The risk of getting TB for men & women is the same	93	7.32	145	11.41	274	21.56	213	16.76	546	42.96
If a wife gets TB, her husband may not take her to the HCF	122	9.60	245	19.28	661	52.01	157	12.35	86	6.77
If a daughter gets TB, the husband's parents may not take her to the HCF	134	10.54	189	14.87	569	44.77	197	15.50	182	14.32

An Ethical Business Approach to A New Equitable Era in Medical Education and Healthcare Delivery

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With the inevitable international financial crisis and the debasement of global standards, the era of 'new (ethical and sustainable) business' is surely overdue. Even wealthy countries are finding healthcare delivery increasingly unaffordable and unviable and doctor shortages are increasing everywhere.

A pragmatic approach to quality medical education is an urgent requirement. In the new era, we finally have the opportunity to do things better and to rethink the way we do things on a global scale and with community needs in mind.

In the current world, a few people have many opportunities to advance themselves, and most people have none. This situation affects education and training and consequently the delivery of vital community services, such as healthcare.

Under these circumstances education must meet community requirements and expectations. Lack of affordability must not prevent countries from having properly trained doctors. It is a universal human right for all populations, and if education of doctors is limited due to commercial costs of education, then a new way must be found.

The question then is, how to improve parity of opportunity, parity of access to education, affordability of medical education, the building up of national professional classes, and stop the brain drain of health professionals from low income to high income nations, given the inbuilt inequity of the world.

A further aspect is the inherent unaffordability of the system yet we still follow the old failed approaches to medical education and require 'financial profit margins'. This also

needs to be re-appraised to keep the system affordable and of highest quality as currently the quality deteriorates with decreased money in the education system and makes the quality products even more elitist.

Should vital areas of education, such as medical education, rely on outdated unethical systems? The system currently caters to a protocol, of privilege and power, not need and equity.

Every country, including wealthy western countries do not have enough doctors, and healthcare is barely affordable to most. Increased stress on doctors, due to patient numbers/ratios and continuing educational and other requirements are putting increasing stressors on medical professionals. The current system is failing most people of the world.

How do we approach these problems when postgraduate training and medical education processes are either non-existent or not meeting the health needs of the world's people – rather they are becoming more scarce and unavailable.

The issues

Lack of access

This involves the financial ability to pay for that education, and physical /geographical access (e.g. distance to facilities, possibly requiring accommodation, and the requirement therefore for even more financial outlay).

Lack of access can also include issues of lack of access to quality education where the local product may be inferior due to less money in the system, and less ability to pay for top educators, thereby putting higher quality educational products out of geographical and financial reach.

Affordability

This is really one of the two most important points as it encompasses the main problems and the ethical concerns. Should not all countries have well-qualified and competent doctors. If the country is poor and has limited facilities – both educational and in professional classes – is it right that students cannot afford to attend university locally even with its limited facilities, due to economic constraints, or to be able to afford to travel overseas to gain better education.

Universal healthcare is surely everyone's right and if the current system is not meeting the government and population needs of countries we need a new global approach that allows for a viable system. This must also focus on the current 'brain drain' when practitioners in poor countries find work in wealthier countries that also have shortages of medical personnel. So the strategy also has to include ways to prevent this brain drain, and solutions for both the wealthy and unwealthy countries, as well as their populations. Some form of national incentive may be required, as you cannot blame doctors from looking for a better life for themselves and their families.

Relevance to global practice (medical education currently stops at national borders)

In the author's experience in providing national CME to various low income nations we have identified that up to 30% of educational topics are missing from global medical curricula.

This includes specific disease more prevalent in low income nations that does not make it into the general educational literature e.g. leprosy, TB,

Ebola. It also includes disease that is normally prevented by public health programs in wealthier countries, and the relevance of 'western' medical education when doctors have no access to modern diagnostic equipment and when patients cannot afford the treatment prescribed.

It is vital in a world of global warming and climate change, of increased travel, tourism and migratory workforces, that all primary care doctors of the world have a complete knowledge of international medical education. It is also vital in terms of parity and equity of medical education resources.

The launch of the Nepal CME program, by World CME and the Nick Simons Institute has both identified some of the missing 30% and gone some way toward filling that void. Lessons learned will be included in MMU – a new postgraduate multimedia medical university, which attempts to address these issues, particularly the issues of affordability and access to quality medical education.

MMU will provide skills training (short courses), as well as International Diplomata in International medicine across four departments: General Practice/Family medicine; Surgery – for both GPs/FPs and Surgeons, Geriatrics and Integral medicine.

All educational programs are written by top global medical academics and are delivered in a Quality Assurance framework which allows the doctor/student to self evaluate the worth of the educational programs.

Level of content (ESL), local terminology, local facilities, local drugs/prescribing practices, and government policy are all additional aspects that have been addressed.

Geographical, climatological (outbreaks are moving into different latitudes due to global warming), socio-economic, cultural, psychosocial issues (motivation to improve

standards, to retain doctors where they are needed etc) are further issues that need to be addressed both nationally and internationally.

Emergence of resistant strains of TB, outbreaks such as SARS and avian flu, and antibiotic resistant

organisms also show the need for a global approach to human health and continuing medical education.

Where does evidence base and best practice fit, if the primary care doctor cannot afford diagnostic equipment and the patient cannot afford prescribed treatment? How does a doctor who earns less than $US 200 a year, afford 'international medical education'?

Under the current system doctors in both developed nations and developing nations have inadequate CME due to these inequities.

Professional/Adult learning techniques

It must be recognised that the practising doctor has a different set of skills to the student and a wider appreciation of healthcare. There are also many cases in medical topics where there is no defined pathway for a particular patient's set of health problems. A systems approach is encouraged and diagnostic decisions must be made relevant to each particular patient. Professional learning whereby the participant assesses him/herself against the author or provider of education is a better approach as is patient focused medical education.

The use of ICT is now a recognised strategy to cut costs of delivery of medical education but the technology itself should always be used to provide better ways of teaching than done originally on paper. With education delivered by electronic media, medical education topics can be improved, especially where the data shows that students and doctors have specific problems. The variety of media in multimedia provides enhanced learning platforms as well as interactivity and immediate feedback. Video and animation allows you to 'get under the skin' as does simulation.

World data for example, shows that less than 5% of GPs/FPs worldwide can perform spirometry well so the MMU course on the same provides time/space animations of 'real patient lungs' and the student can compare them against normal lung patterns for a range of (real) patients.

All education therefore will be delivered in multimedia format on CD and DVD, for both strategic reasons of affordability, but also because multimedia provides more enhanced learning methods and process.

CD or DVD, provides better platforms than the internet and quicker response times for interactive components. It also requires no further outlay of money, given that the doctor has a PC in the first place.

The quality Board of MMU has been drawn from around the world and includes committed people who have devoted their life to medicine and who have a genuine interest in seeing equity and parity of quality medical education for all countries.

Board members include **Dr. Tawfik A M Khoja**; Director General Executive Board, Health Ministers' Council for Corporation Council States, Kingdom of Saudi Arabia; **Professor Nabil Kurashi**; Professor of Family Medicine, College of Medicine, King Faisal University, Pro tem Regional President, WONCA EMRO, Vice-Chairman, Arab Development Institute, Vice-President, Arab Development University of Bahrain,

Dr Abdulrazak Abyad' Chief Editor of MEJFM. ME-JIM,. MEJN and MER-JAA MEAMA - Middle East Academy for Medicine of Ageing, as well as MENAR, MEPCRN, MEAAA; Lebanon; **Professor John Murtagh**, Author of world best selling reference book General Practice, and medical educator at Monash University, The University of Melbourne, University of Notre Dame and the Royal Australian College of General Practitioners (RACGP) Australia. John brings a lifetime's quality teaching experience to the project. **Mr Brygel** a General Surgeon and surgical educator is the author of the original 'Video Book of Surgery' and works with organisations such as the Royal College of Surgeons (RACS) and medi+WORLD International (mWI) and World CME (WCME) to provide surgical education for Surgical trainees and family doctors/GPs. Mr Brygel lectures at Monash University, The University of Melbourne, Royal Australian College of Surgeions (RACS) and runs various surgical

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MMU is a genuine attempt to provide parity of medical education resources and is launching all Departments in February 2009. Further detail is available at:

www.multimediamedicaluniversity. com

How to Visualize Public Health Data?
Part Two: Direct and Indirect Standardization Methods

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ABSTRACT

Spatial data visualisation is the accurate description of data taking into account the component of space. Although plots of data such as box plot are among the fundamental tools for data visualisation in general, for spatial data, visualising maps are the most important tools. One necessary step in producing a map is to standardise the rates of disease mortality and morbidity. The aim of the present article, which is the second article in a series of two, is to discuss the pros and cons of two most important ways of standardisation i.e. direct and indirect methods using a hypothetical example.

Introduction

Spatial data visualisation is the accurate description of data taking into account the component of space[1]. One of the most important parts of spatial data analysis is data visualisation[2]. Although plots of data such as box plot are among the fundamental tools for data visualisation in general, for the spatial data visualising maps are the most important tools[1].

Nowadays, the use of mapping in the medical context has developed so rapidly[3] that the presentation of maps is established as a basic tool in the analysis of public health data[4&5]. However, it should be noted that there are two main classes of disease maps. They are maps of standardised rates, and maps of statistical significance of the difference between disease risk in each area and the overall risk averaged over the entire map[6].

It has been emphasised that mapping standardised rates in small areas might create a misleading picture. Furthermore, employing statistical significance instead of standardised rates, especially in areas with large populations, might produce small values of 'P', which are statistically significant but not scientifically interesting[7].

Given the above facts, it is now generally acceptable, to map standardised rates rather than 'P values'[8]. However, there is one more important question remaining to be answered. What kind of standardisation is the best choice in the area of disease mapping? The aim of the present article is to discuss the pros and cons of two most important ways of standardisation i.e. direct and indirect standardisation methods using a hypothetical example.

Direct and indirect methods of standardisation

Age and sex influence the risk of most diseases and therefore, comparisons of risk in the form of maps must take this important issue into account. Otherwise, observed differences could be confounded by these variables. As a result the process of age and sex adjustment has an important role to play in producing disease mortality and morbidity maps. The aim of an adjustment process is to produce a single summary value, which is unaffected by differences in age and sex distributions[9].

The two most common approaches of age adjustment are by direct and indirect weighting of stratum-specific rates[10]. In the direct approach a weighted average of the age-specific rates from a study population is created based on the age distribution of a reference population[11]. The corresponding formula is

Direct age adjustment =

$$\frac{\sum_{i=1}^{k} N_i \frac{d_i}{n_i}}{\sum_{i=1}^{k} N_i}$$

in which capital letters represent values that come from the reference population and small letters represent values from the study population. For instance, N_i denotes the number of people in stratum of the reference population. Similarly, n_i and d_i, respectively represent the number of people and the number of cases

in stratum i in the study population. Finally, $\sum$ represents the summation sign[11].

It is also possible to obtain an easily interpreted ratio from the directly standardised rate. This is achieved by dividing the expected number of deaths in the reference population by the observed number of deaths in the reference population over the same period of time[12]. This ratio is termed either the comparative mortality figure (CMF), or equivalently the standardised incidence rate ratio (SRR)[13].

$$SRR = \frac{\sum_{i=1}^{k} N_i \frac{d_i}{n_i}}{\sum_{i=1}^{k} D_i}$$

in which D_i represents the number of cases in stratum i of the reference population. Other symbols in this formula are the same as in the previous one. Furthermore, the approximate standard error (SE) of the SRR can be achieved by using the following formula

$$SE(SRR) = \frac{\sqrt{\sum_{i=1}^{k} N_i^2 \frac{d_i}{n_i^2}}}{\sum_{i=1}^{k} D_i}$$

The skewed distribution of the SRR may make logarithmic transformation of it more preferable. Therefore, the approximate standard error for the transformed SRR can be obtained by using the following formula

$$SE(\ln SRR) = \frac{SE(SRR)}{SRR}$$

and the 95 per cent confidence interval can be taken from[12]

95% CI = exp (ln (SRR) $\pm$ 1.96* SE(ln(SRR))

In order to adjust the rate using the indirect method, the crude rate in the study population is multiplied by a ratio known as the standardised mortality ratio (SMR)[11]. The SMR is given by dividing the observed number (O) by the expected number (E) of cases:

$$SMR = \frac{O}{E}$$

and the expected number of cases is given by:

$$E = \sum_{i=1}^{k} n_i \frac{D_i}{N_i}$$

using the symbols as previously described[11]. The approximate standard error (SE) of the SMR is given by

$$SE(SMR) = \frac{\sqrt{O}}{E}$$

As with SRR it may be better to use the log transformed SMR to take into account its skewed distribution. Therefore, the approximate standard error for the transformed SMR can be obtained by

$$SE(\ln SMR) = \frac{SE(SMR)}{SMR} = \frac{1}{\sqrt{O}}$$

and the 95 per cent confidence interval can be taken from[12]

95% CI = exp (ln (SMR) $\pm$ 1.96* SE(ln(SMR))

Direct and indirect adjustment techniques could apply equally to adjustment by factors other than age or in combination with age. For instance, one might adjust rates by sex and age to derive sex and age-specific rates. Therefore, the comparison can be made without concern for confounding by these factors.

The pros and cons of direct and indirect methods of standardisation

It has been argued that if the age distributions of two regions differ, the comparison of their SMRs suffers from the possible bias comparable to statistical confounding. Take, for example, the following hypothetical regions (Table 1).

It should be noted that the stratum-specific incidence rate ratios are all equal to 1. Therefore, the SMR of region one versus region two is also equal to 1, as are all other weighted

incidence rate ratios. However, when one compares these two regions with a large reference population, one certainly will find two different SMRs. For instance, take the following hypothetical reference population (Table 2).

Based on this reference population SMR for region one equals 70, while for region two it equals 177.14. However, the directly standardised rate ratios for two regions are identical and equal 42.66. Therefore, when comparing to an external reference population, the SMR yields different rate ratios for regions with a different demographic structure even though the incidence rates within strata are identical[14].

It should be also noted that applying directly adjusted rates also has its own problems. For instance, in this approach the standard error depends on variations in the age specific number of cases rather than the total number of cases, which may provide less stable estimates. As a result the standard error is generally larger than that of indirectly adjusted rates [12]. Nevertheless, this advantage of the SMR is easily outweighed by its disadvantage in terms of validity[13]. Finally, it is usual to use the national population as the standard population in summarising age- and sex- specific rates for geographical regions within a country[15].

Conclusion

Based on the above discussion it has been concluded that morbidity and mortality maps can be misleading when based on indirectly adjusted rates or a function of them. Therefore, the use of the direct method of age adjustment for mapping purposes, accompanied by an examination of age-specific rate patterns is recommended[16].

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Table 1. The demographic characteristic of two hypothetical regions

Age Band	Region one		Region two	
	Deaths	Person years	Deaths	Person years
15-29	2	2500	1	1250
30-44	3	1500	2	1000
45-59	6	1000	9	1500
60+	10	500	50	2500

Table 2. The demographic characteristic of the hypothetical reference population

Age Range	Deaths	Person years
15-29	50	500,000
30-44	100	1,000,000
45-59	150	1,000,000
60+	150	1,500,000

FNA As An Indication for Thyroid Surgery Without the Need for Further Investigations

ABSTRACT

Content: palpable solitary thyroid nodule is a common reason for thyroid surgery.
The recent investigations, namely fine needle aspiration (FNA) decrease dramatically the number on whom it is mandatory to do surgery.

Objective: to evaluate FNA as an indication for thyroid surgery.

Patients and method: 100 patients with clinical thyroid nodules were studied over 4 years. The study included thyroid function test, thyroid ultrasound and F.N.A.

Results: 95% were euthyroid, 5% had hyperthyroidism. Ultrasound showed solid nodule in 44 patients, cystic nodule in 35 patients, Multinodular goiter in 15 patients, diffuse enlargement in 6 patients.
FNA showed follicular neoplasm in 11 patients, hurthle cells in 3 patients, Papillary carcinoma in 13 patients, benign in 58 patients, autoimmune in 13 patients and not diagnostic in 13 patients. Thyroid surgery has been done for 88 patients.
Post-operative histopathological examination was studied which proved that F.N.A had a sensitivity of 96% and specificity of 98%.

Conclusion: F.N.A is reliable, highly accurate and aids in selection of patients for thyroid surgery and decreases also the need for other investigations, namely thyroid isotope scan.

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Introduction

Palpable solitary thyroid nodule is a common reason for seeking medical advice all over the world[6]. The incidence is 5% in the general population[7].

Thyroid nodules are more common in women; the incidence increases with age, a history of radiation exposure, and a diet containing goitrogenic material.

Solitary thyroid nodule has been considered by many clinicians as an absolute indication for surgical resection. Only recently has this policy been changed to a rather more selective approach. Availability of more practical easily performed and well accepted procedures to obtain tissue diagnosis is a consideration on one side as well as the low incidence of thyroid cancer which ranges from 11-20% (8). On the other side it is more reasonable to select certain patients with thyroid nodules for surgery. In addition, thyroid surgery is associated with a definitive morbidity and should not be undertaken lightly.

Conservative management of the thyroid nodules is appropriate when malignancy can be safely excluded.

Neoplasms of the thyroid encompass a wide spectrum of phenotypes, which range from benign follicular lesions to violently aggressive anaplastic cancers[3].

Papillary carcinoma is the most common malignancy of the thyroid, and its pathologic diagnosis is based on demonstration of characteristic cytohistologic features[2].

The commonest presentation of medullary thyroid carcinoma is a painless lump in the thyroid gland and might be mistaken for a primary thyroid tumor[5].

Total thyroidectomy is considered the preferable initial surgical approach for papillary thyroid cancers when there is no evidence of lymph node metastases[4].

The overall morbidity of total thyroidectomy included temporary hypocalcaemia 23%, permanent hypocalcaemia 1%, temporary recurrent nerve palsy 3%, permanent recurrent nerve palsy 1%, haemorrhage 3%, tracheomalacia 5% and wound infection 3%[1].

Materials and Methods

One hundred patients with clinical thyroid nodule were retrospectively studied over a period of 4 years. Mean age was 45 years with a female to male ratio of 5:1.

Each patient had the following investigations:

1. Thyroid function test: free thyroxine, free triiodo-thyronine and thyroid-stimulating hormone. 95% were euthyroid and 5% were hyper thyroid.

2. Thyroid ultrasound.

Ultrasound diagnosis	Number	Surgery	Cancer
Solid nodule	44	41	14(31%)
Cystic nodule	35	31	1
Multi nodular goiter	15	12	1
Diffuse enlargement	6	4	0

3.Fine needle aspiration (F.N.A).

This was done by the pathologist and the specimen was examined by the medical cytologist and cytopathologist. The results are shown in the table below.

F.N.A-diagnosis	Number	Surgery	Histopathology
Follicular neoplasm	11	11	3 Follicular carcinoma
Hurthle cell tumor	2	2	Same
Papillary carcinoma	13	13	1 Benign
Benign	58	49	1 Follicular carcinoma
Auto immune	3	0	-------
Not diagnostic	13	13	All benign
Total	100	88	Cancer =16 Benign =72

Surgery was done as hemithyroidectomy in 54% of patients and total or subtotal thyroidectomy in 34% of patients.

Results

Revision of the accuracy of the thyroid ultrasound and fine needle aspiration (F.N.A) revealed that the finding of a solid nodule by ultrasound had a sensitivity of 98% but a higher specificity of 31%.

(F.N.A) had a similar sensitivity; however. Its specificity was 98%. There was one patient diagnosed to have benign neoplasm by F.N.A. who proved to have follicular carcinoma at surgery; still the majority of patients sent for surgery had benign lesions (72%).

Discussion:

Although Fine Needle Aspiration (F.N.A) is the best investigation we depend on for selection of patients for surgery and has the highest sensitivity and specificity in comparison with isotope SCAN and ultrasound[9]; however, there are certain pitfalls.

Firstly, it is a cytological examination; so patients diagnosed as having Follicular neoplasm had to be sent for Surgery because Follicular – carcinoma couldn't be excluded.[10] Secondly, it is person dependent, so certain centers can achieve excellent results compared to others.

Thirdly; the potential for false negative diagnosis is still there and can be maintained as low as 6 %.

Reviewing our policy at (King Hussein centre). Strict policy for selection of patients with thyroid nodule for Surgery is not well established. This can be attributed to the fact that some surgeons still have not been acquainted with the reliability of (F.N.A). A second reason may be that most of the patients who do not need surgery remain under the care of their physicians.

Conclusion

From our study it is evident that fine needle aspiration is:

1. reliable.
2. aids the selection for surgery of patients with thyroid nodules.
3. reduces the overall number of individuals subjected to surgery and consequently increases the proportion of cancer among those undergoing thyroidectomy.
4. decreases the need for other investigations.

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