World Family Medicine Journal

incorporating the Middle East Journal of Family Medicine

ISSN 1448-4196

November / December 2010 - Volume 8, Issue 10

The MEJFM congratulates the WHC on the World Health Congress - Middle East

December 5 - 7, 2010

"Global Best Practices to deliver the Best in Health Care"

From the Editor

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This is the final issue this year. It is a rich and a special issue that will be distributed at the World Health Congress in Abu Dhabi, December 5-7. We would like to thank at the end of the year all our readers, the editorial board and the production team that has led to our further success this year. We aspire to become the number one journal in family medicine in the World, and this is the reason we have changed the name to the World Family Medicine Journal. In this issue a cross-sectional study among patients who attended military family medicine clinics in Tabuk city, Saudi Arabia, looked at referral patterns. They selected ten percent of records of all attending patients through stratified systematic random sampling. There were 14,138 subjects analyzed. The authors concluded that approximately 12% of patients were referred in Tabuk; and most subjects were referred to surgical, obstetrics/gynecological, and internal medicine departments. Only about 13% of referrals received feedback letters from specialists in hospitals, which is an issue that should be addressed administratively and educationally in the undergraduate curriculum and post graduate residency programs for family medicine and other specialties.

In a paper from Libya the author presents the background of EBM origin, and discusses briefly its definition, and the process of EBM development. It looks at issues of Philosophy, myths, ethics and EBM, secondary literature concept and journal clubs.

A case control study from Iraq compared the gender differences in cardiovascular disease (CVD) risk factors among adult diabetic and non diabetic patients. A total of 314 diabetic patients (152 males and 162 females) and 136 non diabetic patients (72 males and 64 females) acted as the control group. All the selected participants were adults (18 - 35) years old. The authors concluded that based on their study the burden of conventional CVD risk factors in the presence of diabetes was greater in women than in men at baseline. Prospectively, hypertension, hypercholesterolemia, and hyperlipidemia, contributed to diabetes-related CVD risk more in women than in men.

A paper from Jordan looked at the Research participation among medical trainees in the Middle East and North Africa. Students, residents and fellows spare little time for research projects ensuring low ratio of trainees with peer-reviewed publications at the time of graduation. Elucidation of “research virginity” among MENA medical trainees is two fold. Firstly, trainees are preoccupied by the stresses, mind-boggling academic demands and overwhelming fund of effort necessary to satisfy program requirements for graduation. Secondly, trainees hold firm certitude that the rigorous and stringent review process will often impede publication of their work. While an exhaustive peer-review is undeniably crucial to the advancement of medical research, it can, at times, be counter-productive towards the participation of junior MENA physicians in the research field.

A paper from Lebanon looked at the Social Impact of a Macrobiotic Lifestyle in the Middle East. The authors were trying to answer whether a new lifestyle like macrobiotics could be accepted by the Middle Eastern people and specifically the Lebanese market and society. This study researched the feasibility and basis of such a lifestyle from a social perspective. Based on the results of this research and the tested statistical hypotheses, the researcher concluded that the social aspect of this region can significantly affect the adoption or continuation of a macrobiotic lifestyle in a negative way.

A paper from the United Arab Emirates assessed the prevalence and pattern of various dental problems in the dentition of 1099 school children from grades 2 - 4 in private schools in Al Qusais area of Dubai in the U.A.E. The sample consisted of 588 males and 511 females ranging in age

from 6 - 11 years. The author concluded that in his present study, there was no significant difference in gender for dental problems. There was a significant difference between untreated teeth with decay and treated teeth indicating concern, awareness for treatment of various dental problems.

A cross-sectional study from Qatar looked at the role Primary care plays in the diagnosis and management of hypertension. The paper investigated the management of hypertension in a primary health center in Ras Laffan Industrial City. The authors found that, the primary care physician performed most hypertension work-up, to around 60 % of subjects, except fundi and body-mass index examinations. More than two thirds of the subjects received only one drug, 21 % received two drugs and the rest of them had three or more drugs. ACE-inhibitors were the most prescribed medication while diuretics were underused. Nearly a half of subjects had no improvement in their blood pressure. Although this performance is comparable or better than that in some other areas, there is still room for improvement.

Referral patterns of military family medicine clinics in Tabuk, Saudi Arabia

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ABSTRACT

Aim : Objective: Our aim was to determine the referral pattern and characteristics of referred patients visiting military family medicine clinics in Tabuk, Saudi Arabia.

Methods: We performed a cross-sectional study among patients who attended military family medicine clinics in Tabuk city during 2003. We selected ten percent of records of all attending patients through stratified systematic random sampling. Data concerning age, sex, diagnosis, referrals, follow up, health education, co-morbidities, and referral pattern were collected from patients' medical records using a pilot-tested data collection form. The extracted data were entered and analyzed using SPSS 17; statistical significance was set at a P value of < 0.05.

Results: There were 14,138 subjects analyzed; approximately 52% were male. Subject age ranged from less than one year to 98 years with a mean of 20.93 17.03 years. 11.7% (1,653) of subjects were referred to the military hospital, from family medicine clinics. Overall, female patients from the nearest clinics were significantly more frequently referred and referrals tended to increase with. The majority of the referrals were routine referrals (56%). Most subjects were referred to the surgical (37%), obstetrics/gynecological (30%), and internal medicine (16%) departments. Patients who were significantly more often referred to surgery, included subjects from the nearest clinics, males, those who received no health education, and those suffering from chronic morbidity. A significant number of referrals to internal medicine included female patients, older subjects, and patients with acute morbidity. Regression analysis showed age and location to be the only significant predictors of referral frequency. Feedback from specialists was received for approximately 13% of referrals, and was significantly higher for infants and patients with chronic co-morbidity.

Conclusion: Approximately 12% of patients were referred in Tabuk; most subjects were referred to surgical, obstetrics/gynecological, and internal medicine departments. Referrals to the surgical department were mostly to ophthalmology and ENT units, while internal medicine department referrals were mainly to dermatology and endocrinology units. Only about 13% of referrals received feedback letters from specialists in hospitals, which is an issue that should be addressed administratively and educationally in the undergraduate curriculum and post graduate residency programs for family medicine and other specialties

Key words: Referral patterns, family medicine clinics, military, Tabuk, Saudi Arabia

Introduction

Referrals from general practice constitute the main route to the hospital for all non-emergency care in Saudi Arabia. Under this system, all patients are first seen by a primary care physician, who then decides whether referral for secondary care is necessary. Only in the case of emergency can this system be bypassed and the hospital accessed directly through the Emergency department.

In order to provide comprehensive and integrated health service for military personnel and their dependents in Tabuk city, the health authority is assessing the referral system as one strategy to make optimal use of services. An understanding of referral patterns is important for hospital and other health service facilities for planning purposes. Extreme variations in the rate of referral from primary care to hospitals in Saudi Arabia and worldwide have been reported, but remain largely unexplained. It has been suggested that the wide variation in the referral rate among general practitioners could be partly explained by chance(1) and partly by context and individual variations in the approach to health care(2). The variability in Saudi Arabia is significantly related to certain doctor and patient characteristics and practice location; it is also attributable to several shortcomings of the referral process, including deficiencies in the process structure(3-5). Some studies have concluded that there is a need to establish guidelines for referrals and for investigations by primary health care (PHC) physicians recruited from various health care models, having a wide spectrum of educational and cultural backgrounds(3). Referral guidelines are being considered in other countries as well to improve the appropriateness of general practitioners' referrals and reduce demand at the interface between primary and specialist care(6).

The clinical reasons for a referral decision include characteristics of the patient's health problem, the burden and severity of co-morbidities, and patient preference for various treatments and outcomes. Morbidity pattern and age, however, are among the most critical determinants of referral. Adults with malignancies were five times more likely to be referred than those with respiratory illnesses(7). There was a more than eight-fold variation among childhood diagnosis groups regarding the likelihood of referral(8). For patients with similar diagnoses, research has found that severe variants are more likely to be referred(9,10). Specialty referral is also influenced by the array and complexity of co-morbid conditions(11). Occasionally primary care physicians refer patients for management of conditions that present infrequently, in order to maintain clinical competence, or because the patient requests a specialist(12,13).

Although physicians are gatekeepers to almost all medical resources, their role in managing referrals to specialists has been the most controversial aspect of gate keeping. Public acceptance of gate keeping is strengthened when there are too few resources to satisfy the demand(14,15). Managing access to specialists, particularly when the physician is acting as an administrative gatekeeper of referrals, can be challenging(16). When doctors and patients disagree on the need for referral, patients may become dissatisfied with their health care and may decide to self-refer to specialty care when possible(17,18).

The present study was conducted to examine patterns of referral from family medicine clinics to the military hospital in Tabuk and to examine factors associated with referrals, such as demographic and morbidity patterns, the frequency and type of referral, and feedback of the referral process. It is our aim to help clarify the current referral situation and determine whether any corrective intervention is needed.

Subjects and Methods

This cross-sectional study was conducted from January 1, 2003 to December 31, 2003. The study population consisted of all patients who attended the military family medicine clinics in Tabuk, Saudi Arabia (20 clinics) during the study period. Tabuk City is the capital of the northwest region of Saudi Arabia, and has a population of approximately 500,000.

Stratified systematic random sampling was used to select 10% (14,694) of the family medicine clinic encounters during the study period from the tally sheets used for daily encounter registration. To ensure selection of a random representative sample, the strata included all working days of the week for the entire study period.

Data collected from patients' medical records using a pilot-tested data collection form included: age, sex, provisional and final diagnosis, referral to specialty clinics in the hospital, reason for and type of referral, feedback, follow up appointments, health education documentation, chronic co-morbidities, smoking status, and frequency of visits per year.

Data collected were checked for completeness and then fed into a personal computer. A double entry method was used to decrease data entry errors. The International Classification of Health Care Problems in Primary Care (ICHPPC-2) was used for disease and health problem classification. Statistical analysis was performed using Statistical Package for Social Sciences (SPSS-17) with the level of statistical significance set at $P < 0.05$.

The research and ethics committee at the North West Armed Forces Hospital in Tabuk approved the study; permission was obtained from the appropriate related authorities.

Operational Definitions:

Referral is the process in which a treating physician who has inadequate skills by virtue of qualifications and/or facilities to manage a clinical condition, seeks the assistance of a better equipped and/or specially trained person to guide the management of, or to take over, a particular episode of a clinical condition.

There are three types of referrals:
1) emergency referral (U) for urgent cases that require emergency treatment and could not be entirely managed at the family clinic,
2) 'as soon as possible' referrals (A) for cases needing to be managed as soon as possible, and
3) 'routine' referrals (R) generally used to seek an expert opinion regarding a patient's condition or seek facilities for investigation or admission and management of a patient.

Nearest Location, represents family medicine clinics attached to the military hospital
Far Location represents locations far from the military hospital.

Results

Of the patient encounters selected (n = 14,694), 556 (3.8%) were excluded due to incomplete information of study variables. These patients did not differ significantly from the included patients in terms of age or sex. All of the remaining 14,138 encounters were analyzed. The study population was approximately 52% male. Patient age ranged from less than one to 98 years with a mean of 20.93±17.03 years; female age was significantly higher than male age (21.61±16.85 compared to 20.88±17.18 years, respectively, $p < 0.0001$). Approximately half the subjects were 15-44 years of age, with significantly more females than males (53.2% compared to 45.6%, respectively).

Table 1 shows the age and sex distribution of referred subjects. Approximately 11.7% (1,653) of subjects were referred from family medicine clinics to the military hospital in the city. The referred subjects were significantly older (age 25.6 ±16.0 years) compared to the non-referred subjects (age 20.3±17.1 years). The referral rate for females (14.9%) was significantly higher than for males (8.9%). There was no significant gender difference in the mean age of the referred subjects except for the age group of 15-44 years, in which females were referred significantly more often. When the females referred to the obstetrics and gynecology clinic were excluded, no significant gender difference was observed. There was a strong significant positive correlation between referrals and increasing age. The referral rate was less than 8% for the age group of less than 15 years, and more than 13% for older age groups. Only 6.3% of children were referred, compared to 15.3% of adults.

Table 2 (page 6) shows referrals according to patients' morbidity and demographics. Patients with bronchial asthma (5.9%) were referred at a significantly lower rate than those without it (12.1%). Subjects with multi-morbidity were referred more often than those with one morbidity, but this difference was not significant.

Table 3 (page 8) depicts referrals according to referral type and department. The majority of the referrals were routine referral (56%) whereas urgent referral constituted just 15%. In Table 4 (page 9), referrals common to both males and females (excluding the 487 ob/gyn referrals)

Age group	Gender			
	Female	Male	Total	P value
< 1 Yr old	15 (6.4%)	27 (9.0%)	42 (7.9%)	0.176
1 - 4	68 (6.2%)	73 (5.3%)	141 (5.7%)	0.201
5 – 14	81 (6.6%)	106 (6.5%)	187 (6.6%)	0.516
15 – 44	748 (20.7%)	350 (10.5%)	1098 (15.8%)	<0.000
45 – 64	67 (13.8%)	71 (12.7%)	138 (13.2%)	0.330
65 +	21 (15.6%)	26 (17.9%)	47 (16.8%)	0.356
Total	1000 (14.7)	653 (8.9)	1653 (11.7)	<0.001

Note: % from the total participants according to age categories and sex
Table 1: Age and sex distribution of referred subjects

Variable	N (% referred)	Chi square	Degrees of freedom	P value
Location:		**92.259**	**1**	**<0.0001**
Nearest location	13.3			
Far location	7.5			
Total	11.7			
Gender:		**115.5**	**1**	**<0.0001**
Female	14.7			
Male	8.9			
Total	11.7			
Age in years:		**2881**	**5**	**<0.0001**
< 1	7.9			
1 - 4	5.7			
4 - 14	6.6			
15 -44	15.8			
45 -64	13.2			
65 +	16.8			
Total	11.7			
Health		**0.400**	**1**	**0.527**
Education:	11.2			
Yes	11.8			
No				
Co-morbidity:		**0.182**	**1**	**0.670**
Acute	11.6			
Chronic	11.9			
Hypertension:		**0.138**	**1**	**0.711**
Yes	12.2			
No	11.7			
Diabetes		2.690	1	0.101
Mellitus:	13.5			
Yes	11.6			
No				
Bronchial		33.475	1	<0.0001
Asthma:	5.9			
Yes	12.1			
No				
Arthritis:		**0.898**	**1**	**0.343**
Yes	13.9			
No	11.7			

Table 2: Distribution of referred subjects according to demographic and morbidity patterns (N = 14,138)

according to sociodemographic status, morbidity, and department, are shown. Referrals to surgery were most common, followed by internal medicine. Those who were significantly more often referred to surgery included subjects from nearest clinics, males, those who received no health education, and those not hypertensive or with a co-morbidity. Significantly higher referrals for internal medicine included females, older subjects, and patients with acute morbidity. Younger ages and subjects with asthma were significantly more frequently referred to the ER. Referral for cardiology was significantly associated with males, older age, and those with chronic morbidities.

The ranking of referral morbidities to the departments of surgery and medicine is shown in Table 5 (page 10). Ophthalmology and ENT topped the list for the surgery department while dermatology and endocrinology cases topped the list for the medical department. The lowest ranks were for neurosurgery and for medical chest conditions. Further statistical analysis showed that there were significant differences according to gender and chronic co-morbidity. Males were referred significantly more often for chest and gastrointestinal medical conditions, while females were significantly more likely to be referred for endocrinological conditions. For the surgery department, males were significantly more often referred to urology and neurosurgery while females were significantly more often referred to general surgery compared to males. Regression analysis showed that only age and location were significant predictors of referrals.

Table 6 (page 11) shows demographic, geographic, and morbidity characteristics of subjects with feedback reports. Specialists in the hospital gave feedback reports to family physicians for only 13.2% of the referred patients (219 out of 1,653). Feedback was significantly associated with distant clinics, males, infants, patients with chronic co-morbidity, and asthmatics. Patients suffering from hypertension and diabetes mellitus received a greater number of feedback reports, but the differences were not significant.

Discussion

Primary care physicians make specialty referrals to obtain advice for clinically uncertain diagnostic evaluations or treatment plans, to obtain a specialized service that falls outside their scope of practice, because of patient or third-party requests, or due to a combination of these reasons(15). Overall, 11.7% of the study subjects were referred to specialists in Tabuk. Factors that significantly increased referral were age, female gender, and patients not suffering from bronchial asthma. Previous studies in the Kingdom and international studies reported wide variations in referral rates from primary to secondary health care services, ranging from 2 to more than 15%(19-28). Females were referred more frequently than males in our study, which is in concordance with most published data. However, when specialized maternity cases were excluded the gender difference disappeared in Tabuk, in agreement with results of international studies(21,27,28). A possible explanation for this finding is that as women make more office visits during a one-year period than men, the probability of their referral during any given visit will be lower given roughly equal chances of referral between the two groups during the course of a year(29).

The referral rates positively correlated with age, with less than 8% of patients less than 15 years old being referred; patients older than 15 had a referral rate exceeding 13%. Similar trends were reported from other studies where referral increases steadily by age group, with 7.5% of patients aged 0-15 years referred compared to 21.1% of patients in the ?65 age group(18). Other studies, however, reported different referral rates according to age. The highest referral rate was in the middle-aged group (35-64), with the pediatric and geriatric age groups having rates approximately halve this(27).

In Tabuk, patients not suffering from bronchial asthma were referred significantly more because a special bronchial asthma clinic is conducted within family clinics each week. Specialists from hospitals usually participate in these clinics, thus it is not surprising that referrals of asthmatic patients were very low. No significant relationship between referrals and presence or absence of other morbidities was found, which is in contrast to other studies reporting a stronger association between referrals and chronic morbidity(21).

In Tabuk, the majority of referrals were routine (56%), with approximately 37% of all referrals for surgery, primarily ophthalmology, ENT, and general surgery; 16% of referrals were to the medical department, primarily dermatology, endocrinology, and internal medicine. The types of specialist to whom the most referrals were made are almost the same as in other studies(7,10,29) In this study we found that the chance of referral to specialist care for diseases related to the eye, skin, and ENT were higher than other morbidities. This shows that there may be a need for further training in these subjects, enabling a family physician to minimize the burden on these specialties. Additionally, family physicians were more likely to send patients with uncommon problems to specialists and retain those with the most common conditions. This pattern is comparable with previous national(4,5,19,20) and international studies(7,14,21,26-29).

Primary care physicians develop a greater expertise for health problems with which they are familiar, and thus specialist assistance is sought for uncommon health problems(29). Appropriate referral should be timely in the course of the disease, effective in achieving its objectives, and also cost effective(30). Many studies have attempted to identify the factors explaining the variation in referral rates, and the results point toward four categories: patients, physicians, practice, and system(31-34). Other studies have explored the possible association of referral rates with the socioeconomic status of the patient, the age, education, and years and

Type of referral	Cardiology	Dental	ER	Internal Medicine	Obstetrics/ Gynecology	Pediatrics	Surgery	Total
A	15	18	0	84	137	20	206	480
	3.1%	3.8%	0%	17.5%	28.5%	4.2%	42.9%	29.0%
R	14	59	0	152	332	16	348	921
	1.5%	6.4%	0%	16.5%	36%	1.7%	37.8%	55.7%
U	3	1	130	23	18	22	55	252
	1.2%	0.4%	51.6%	9.1%	7.1%	8.7%	21.8%	15.2%
Total	32	78	130	259	487	58	609	1653
	1.9%	4.7%	7.9%	15.75	29.5%	3.5%	36.8	100%

Table 3: Referral departments and type of referral

type of experience of the doctor, and characteristics of the practice(22,25); however, few meaningful associations have been identified.

Studies nationally and internationally report that the epidemiology of morbidity among a patient population is a critical factor that defines the boundaries between primary care physicians and specialists. The appreciation of these clinical determinants is crucial for any valid assessment of primary care physicians' referral patterns(18). Approximately one-third of referrals in our study were for ophthalmology and dermatology. These commonly referred conditions need to be emphasized in curricula to provide family physicians with the skills necessary to expand their scope of practice, when appropriate, determine when a patient should be referred, and identify the type of practitioner to whom the patient should be sent. A challenge for educators is to assist trainees in determining when to tolerate clinical uncertainty while employing careful observation and when to initiate a more aggressive evaluation, including when to obtain specialty referral. It makes sense in physician training to place the greatest emphasis on conditions for which family physicians commonly refer(21).

Feedback letters from specialists in the hospital to referring physician from family clinic were sent for approximately 13% of patients; feedback was significantly more common with infants and patients with chronic comorbidity and patients from far clinics. Both infants and patients with comorbidity are high-risk groups that may require special handling, thus specialists involvement is often appropriate. Specialists should be encouraged to provide feedback, which is not just common courtesy; communication between general practitioners (GPs) and specialists is important(35). Specialists expect the GP to provide information concerning the problem to be addressed along with adequate patient history; GPs expect a clear response from the specialist regarding diagnosis and management, as well as justification for the course of action, and patients expect clear explanation of the diagnosis, treatment, and follow-up requirements. When these expectations remain unmet, GPs, specialists, and patients end up dissatisfied with the referral process(36). A digital format composed by both parties for both a referral letter and a specialist's report should be developed(37).

Conclusion

Approximately 12% of patients were referred in Tabuk; most of the referrals were routine referrals and most subjects were referred to surgical, obstetrics/gynecological, and internal medicine departments. Referrals to the surgical department were mostly to ophthalmology and ENT units, while internal medicine department referrals were mainly to dermatology and endocrinology units. More investigation is required to find
out whether these areas need more focus during the family physician's training and what referred conditions need to be included in the training curriculum. Only about 13% of referrals received feedback letters from specialists in hospitals, which is an issue that should be addressed administratively and educationally in the undergraduate curriculum and post graduate residency programs for family medicine and other specialties.

Variable/Referral Dept.	Surg	Int Med	ER	Dent	Paed	Card	Chi square	DF	P value
Location:							28.550	5	<0.001
A (Nearest)	55	21.2	10.2	7.2	3.7	2.7			
B (Far)	41.6	25.9	14.8	4.9	9.9	2.9			
Gender:							24.346	5	<0.001
Female	46.4	28.1	11.5	5.7	6.0	2.3			
Male	56.8	17.6	10.9	7.5	4.1	3.1			
Age in years:							256.4	25	<0.001
< 1	54.8	0	23.8	0	19.0	2.4			
1 - 4	44.0	7.8	20.6	7.5	23.4	0.7			
5 - 14	54.8	14.5	10.8	9.7	9.1	1.1			
15 -44	52.0	27.0	10.6	8.6	0	1.8			
45 -64	55.1	31.6	3.7	1.5	0	8.1			
65 +	58.7	21.1	2.2	0	0	13.0			
Health Education:							45.051	5	<0.001
Yes	42.4	38.6	9.8	1.6	2.7	4.9			
No	54.1	19.1	11.4	7.6	5.4	2.3			
Co-morbidity:							1555.48	5	<0.001
Acute	34.2	41.7	9.4	1.9	5.3	7.5			
Chronic	59.0	14.9	11.8	8.5	4.8	0.9			
Hypertension:							94.066	5	<0.001
Yes	37.5	35.9	6.3	0	0	2.3			
No	53.1	21.4	11.4	7.1	5.3	1.7			
Diabetes Mellitus:							50.340	5	<0.001
Yes									
No	39.4	38.4	5.1	3.0	3.0	11.1			
	53.4	20.7	11.7	7.0	5.2	2.0			
Bronchial Asthma:							8.767	5	0.119
Yes									
No	42.0	24.0	22.0	2.0	6.0	4.0			
	52.7	22.1	10.7	6.9	4.9	2.7			
Arthritis:							5.622	5	0.345
Yes	60.0	24.0	4.0	4.0	0	8.0			
No	52.1	22.2	11.3	6.7	5.1	2.6			

Surg= Surgery, Int Med= Internal Medicine, ER= Emergency Room,
Dent = Dental, Paed = Paediatrics, Card=Cardiology, DF=Degree of freedom

Table 4. Distribution of referred subjects among referral departments according to demographic and morbidity patterns (N = 1653)

Rank	Surgery Morbidity	N (%)	Internal Medicine Morbidity	N (%)
1	Ophthalmology	154 (25.3)	Dermatology	90 (34.8)
2	ENT	118 (19.4)	Endocrinology	55(21.2)
3	General Surgery	106 (17.4)	Internal Medicine	28(10.8)
4	Orthopedics	86 (14.1)	Psychology	24(9.3)
5	Urology	48 (7.9)	Neurology	21(8.1)
6	Pediatric surgery	45 (7.4)	Gastroenterology	16(6.2)
7	Physiotherapy	25 (4.1)	Hepatology	13(5.0)
8	Plastic Surgery	16 (2.6)	Chest	12(4.6)
9	Neurosurgery	11(1.8)		
Total	**Surgery Dept.**	**609(100)**	**Medical Dept.**	**259(100)**

Table 5. Ranking of morbidity patterns of patients referred to surgery and internal medicine

ACKNOWLEDGEMENTS

The authors would like to thank the authorities of the North West Armed Forces Hospital in Tabuk for the permission to conduct the study and for access to the information regarding the patient's medical records. Also our thanks go to all military family medicine clinics doctors and to all medical record department staff for their cooperation during the data collection. The support from the research and ethics committee at North West Armed Forces Hospital was highly appreciated. Also, we are grateful to Dr. Tarig Al Sheique and Mr. Gareeb Mutoug for their help in data collection: We extend special thanks to Mr. Abdulmajeed Mohamed Iyoob Khan, total quality management statistician, for data processing and entering besides his valuable advice for data analysis.

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Variable	% of feedback among referred subjects	Chi square	Degrees of freedom	P value
Location:		16.494	1	<0.0001
Nearest location	11.7			
Far location	27.9			
Gender:		16.640	1	<0.0001
Female	10.5			
Male	17.5			
Age in years:		17.613	5	<0.003
< 1	26.2			
1 - 4	18.4			
4 - 14	16.0			
15 -44	11.0			
45 -64	17.4			
65 +	14.9			
Health Education:		2.757	1	0.097
Yes	16.9			
No	12.7			
Co-morbidity:		16.061	1	<0.0001
Acute	11.5			
Chronic	19.8			
Hypertension:		2.125	1	0.105
Yes	19.1			
No	13.0			
Diabetes Mellitus:		3.281	1	0.070
Yes	19.0			
No	12.9			
Bronchial Asthma:		5.019	1	0.027
Yes	23.2			
No	12.9			
Arthritis:		0.067	1	0.541
Yes	11.5			
No	13.3			

Table 6. Feedback from specialists about the referred subjects according to demographic and morbidity patterns (N = 1653)

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Hypertension in primary care: how well are we doing? Study in a worksite in Qatar

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ABSTRACT

Primary care plays a very important role in the diagnosis and management of hypertension. In Qatar, there is little information regarding performance of primary care in the management of hypertension. This study investigated the management of hypertension in a primary health center in Ras Laffan Industrial City, Qatar and compared the management with hypertension guidelines outlined in Seventh Report of the Joint National Committee on Prevention, Detection, Evaluation and Treatment of High Blood Pressure. Through a cross-sectional study, this study utilized the data of 500 hypertensive subjects, which was randomly retrieved from the medical center's electronic database, during the period of one year. In general, the doctors in primary care performed most hypertension work-up for around 60 % of subjects, except fundi and body-mass index examinations. More than two thirds of the subjects received only one drug, 21 % received two drugs and the rest had three or more drugs. ACE-inhibitors were the most prescribed medication while diuretics were underused. Nearly a half of subjects had no improvement in their blood pressure. Although this performance is comparable or better than that in some other areas, there is still room for improvement.

Keywords: worksite, hypertension, Qatar

Introduction

Hypertension remains a major public health concern as it is highly prevalent in the population and has been linked with serious complications and disability. The disease can progress and lead to the deterioration of vital organs, particularly kidney, cardiovascular system, eyes and brain. To prevent the progression and serious complications of the disease, proper diagnosis and management of the disease remains paramount.

The role of primary care is very important in the diagnosis and management of hypertension. Most hypertension work-up, such as diagnosis, treatment and management of cardiovascular risk factors, can be addressed at primary care level. Given their potential role, some argue that the majority of hypertensive patients can be effectively managed in primary care(1) under a coordinating group of family practitioners, clinician nurses, physician assistants and other staff.(2)

In Qatar, there is little data regarding the performance of hypertension management in primary care. This study investigated whether hypertensive patients who presented to primary health centers in an industrial area in Qatar had been treated according to the standard management of hypertension as detailed in the Seventh Report of the Joint National Committee on Prevention, Detection, Evaluation and Treatment of High Blood Pressure (JNC 7).(3)

Methods

This study was conducted at a primary health center situated in Ras Laffan Industrial City (RLIC), Qatar. The health center has been the main health service provider in the city that covers a population of around 85,000 industrial workers. The health center is under Qatar Petroleum Medical

Service administration and has 33 medical doctors who provide general health services to the inhabitants. The average number of patients seen by every doctor was around 30-40 per day.

Through a cross-sectional method, this study utilized the data of hypertensive patients who visited the medical center over a period of one year. 500 samples of hypertensive subjects, coded as K86 for uncomplicated hypertension and K87 for complicated hypertension, were randomly selected from the health center's medical records. From these samples, the following data was collected: sex, age, the level of the disease (duration of hypertension and the presence of associated conditions such as diabetes mellitus, dyslipidaemia, kidney disease and being a smoker), performed work-up (examinations of optic fundi, ECG, blood sugar, kidney and lipid profiles), disease management (pharmacological and non-pharmacological), the outcomes of management (improved or unimproved blood pressure) and the risk assessment of cardiovascular events related to the disease.

A subject was defined as having an associated medical condition if he had at least one of the following conditions: diabetes, dyslipidaemia, kidney diseases and being a smoker. A diagnostic work-up was said to take place if it was performed on a subject at least once during the subject's visits. Pharmacological treatment was termed as the administration of any blood pressure medications to a subject during his visits, while non-pharmacological treatment was defined as the deliverance of life-style advice to a subject at least once during his visits. A subject's blood pressure was said to improve if during the period of study his blood pressure had remained at target level according to his condition: that was < 140/90 mmHg for those without diabetes and < 130/80 mmHg for those with diabetes.(3) Life-style advice deliverance was based on subjects' disclosures; it was categorized as detail if a subject received comprehensive advice on it and classified as general if a subject was only informed to do particular life-style changes without thorough information on how to perform them. Subjects' disclosures were also used to identify whether the doctors informed the subjects regarding their risks of cardiovascular events.

To complete the data, semi structured interviews with patients by means of face to face interaction or phone, were also performed. This interview was intended to elucidate information regarding patients' associated medical condition and risk factors, their understanding and clarity on doctors' instructions and whether they followed and complied with doctors' clinical advice.

The management given to the subjects was compared to the standard diagnosis work-up, follow-up and monitoring as outlined in the JNC 7.

Results

All hypertensive subjects in this study were male. The ages of the subjects were between 21 and 56 years with the mean of 43.6 + 5.2 years (SD). The average duration of hypertension was 3.6 + 0.5 years. The subjects' mean duration of treatment in the RLIC medical centers was 9 + 2 months and the average visit to the medical centers during the period of study was 7 times. Nearly a half of patients had at least one of the associated conditions.

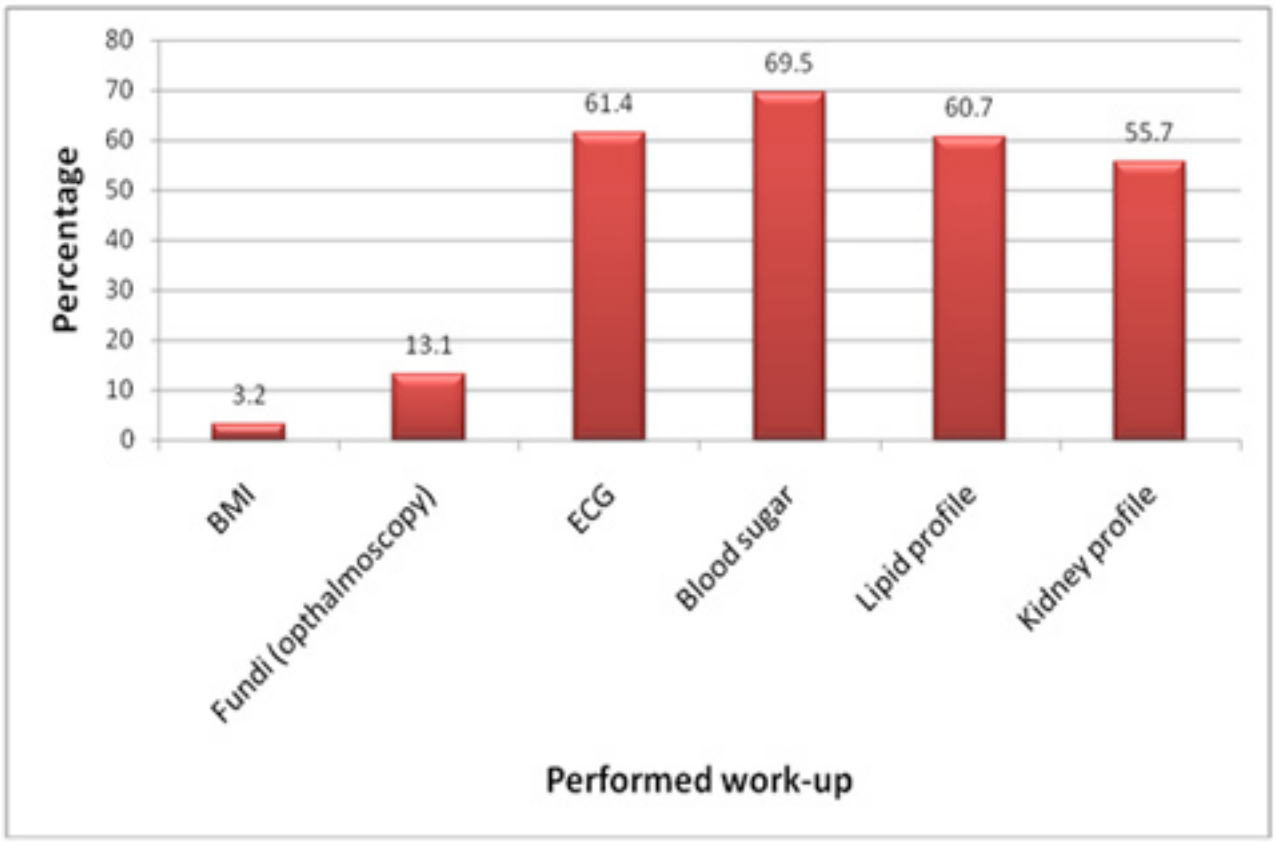

Figure 1: Proportion of performed hypertension work-up

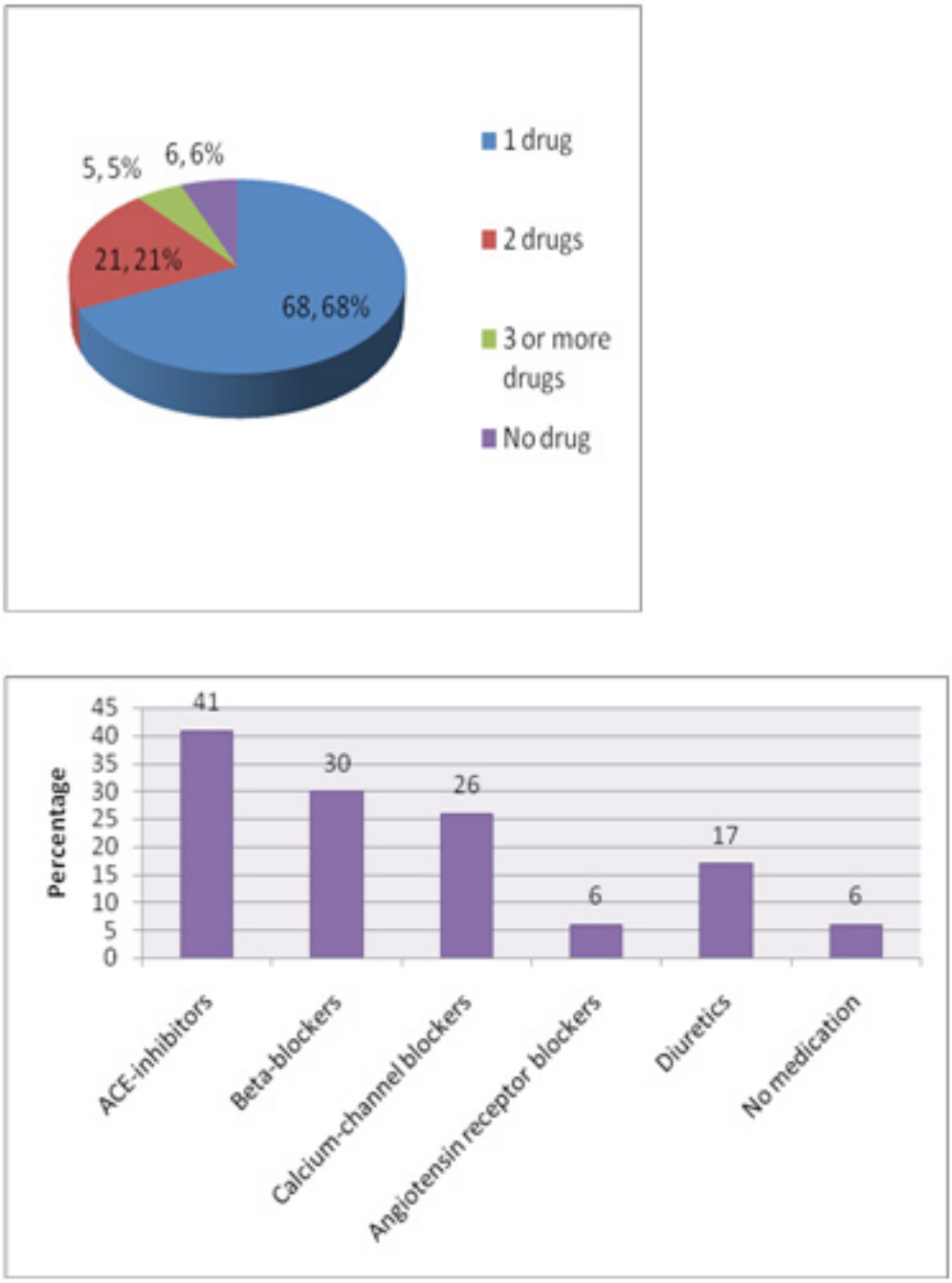

Figure 2: Proportion of prescribed medication

Work-up

The proportion of hypertension work-up performed on the subjects is presented in Figure 1. The examinations of ECG, sugar, lipid and kidney profiles were performed on roughly 60 % of patients and the rest of them had none of these examinations. Fundi examination and body-mass index (BMI) measurement were rarely performed; only 13.1 % and 3.2 % of subjects received these examinations respectively.

Treatment

Pharmacological treatments were given to 94 % of subjects; the rest of them did not receive any blood pressure medication although their blood pressure was above the normal level. The most prescribed medication was ACE-inhibitors, followed by beta-blockers and calcium-channel blockers. Around two-thirds of the subjects received only one medication, 21 % had two medications and the rest of them had three or more medications.

Life-style advice (non-pharmacological treatment) were given to more than two-thirds of subjects. 16 % of them received life-style advice in detail and the rest of them only had general information regarding this.

Around 60 % of subjects were also given treatments for their associated medical conditions, such as diabetes, dyslipidaemia and kidney diseases, and the remainder had no treatment. Only less than 5 % of subjects were informed regarding their risk of developing major cardiovascular

events (myocardial infarction, recurrent myocardial infarction and other coronary events) within the next 10 years.

Outcomes

Of all subjects who underwent hypertension management in the medical centers, almost a half did not show improvement in their blood pressure. Of this proportion, only a third had their medications and/or dose of medications adjusted. The remainder did not get medication adjustment although their blood pressure was poorly controlled.

Performing hypertension work-up - such as the examinations of ECG, blood sugar, lipid and kidney profiles - is very important in elucidating risk factors, treatable causes and target organ damage associated with hypertension. Our study revealed that the doctors in the medical centers performed hypertension work-up on around 60 % of the subjects and only fundi examination and BMI measurement were rarely performed. This figure is comparable or even better than work-up performance in Kuwait. In Kuwait, total cholesterol examinations were performed on 20-40 % of patients, blood sugar tests to 22-70 % of patients and ECG examinations to 10-20 % of patients.(4) Although the identification of risk factors, treatable causes and target organ damage are pivotal in hypertension management, these work-ups have rarely been performed by primary care doctors due to their time constraints when examining patients. This is also true for the doctors in the RLIC medical center. Since every doctor in this center was scheduled to see 30-40 patients a day - with integrated tasks of serving cases in emergency room, performing minor surgery on particular patients and preparing injury/accident reports, referral letters and other administrative tasks - , practically the underlying obstacle here is time factor. Due to time constraints, the doctors did not have sufficient time to perform and arrange necessary hypertension work-up.

In terms of treatment, this study showed that nearly all hypertensive subjects were given pharmacological treatments and more than a half of them had improvement in their blood pressure. This figure is better than treatment performance reported in some hypertension studies. In a study in Saudi Arabia, only a quarter of hypertensive patients had their blood pressure controlled and most hypertension-associated conditions, such as diabetes, smoking and high BMI, were not properly identified and managed.(5) In a primary care study in the UK, only two-thirds of hypertensive patients were treated and only two-thirds of this proportion were controlled.(6) In the US, around 70 % of hypertensive patients did not achieve the target blood pressure of < 140/90 mmHg.(7)
Although the management performance in the RLIC medical center is comparable or better than that in some other areas, it is essential to scrutinize the significant proportion of unimproved outcomes in this study, which were apparently due to the following factors.

Firstly, the doctors did not initiate or intensify treatment although it was needed. Of all subjects in this study, only around one-third received two or more medications, and the rest of them only had one medication during their visits. Even in those who had no improvement in their blood pressures, only one-third had their medications and/or dose of medications adjusted. This condition is not compatible with JNC 7 guideline that emphasizes the need to use combined medication (two drugs or more) rather than a single agent for the effective control of hypertension.(3) In fact, this less aggressive management or clinical inertia has been reported in many hypertension studies. A hypertension study in hospitals, for instance, revealed that despite the wide availability of hypertensive drugs and an increased awareness of hypertension's menace, patients' blood pressures remained poorly controlled, their treatments were not aggressive and the doctors often failed to increase and adjust medications.(8) Our study also disclosed that the most prescribed medication was an ACE-inhibitor, while diuretics were underused. In fact, in the JNC 7 guideline, diuretics are regarded as the basis of anti-hypertension drugs that should be used as initial therapy in most cases of hypertension.(3)

Secondly, almost 80 % of subjects in this study received general life-style modification advice from the doctors. This performance is comparable to that from other studies reporting that life-style modifications advice was delivered to around 70-90 % of patients.(9,10) Apart from this, however, only 16 % of subjects in our study were given thorough advice and the rest of them were only given general advice or no advice at all. In fact, life-style modification is a cornerstone management of hypertension and its importance has been evidenced by a great number of studies.(11,12) In order to yield effects, however, this measure should be addressed in a structured, detailed and proper way. A study revealed that of 10 sessions of life-style counseling delivered by physician, each had duration of 15-20 minutes, and resulted in significant improvement.(13) Such regular sessions might be difficult to perform by RLIC doctors' due to time factors. Alternatively, tasks to deliver this life-style counseling can be rendered to other health care professionals like nurses and pharmacists. This task-sharing can spread the doctors' load and to some extent overcome the doctors' time constraints.

Our study also revealed that only less than 5 % of subjects were informed about their potential risks to develop cardiovascular events and none of the doctors articulated precisely the patients' risk percentage of contracting the events. While this condition is disadvantageous, this in fact occurs in many primary care practices. A study reported that when treating hypertensive patients, doctors in primary care did not confer much attention to the patients' risk of cardiovascular events and this potential risk was not taken into their consideration when providing and intensifying treatments for patients.(14)

In conclusion, although hypertension management in RLIC Qatar is comparable or better than that in some other areas, there is still room for improvement. The establishment of a hypertension clinic in the medical centers, which is staffed with a patient-centered, multi-disciplinary and community based health team, is recommended as this will ensure the standardization of hypertension management and monitoring and relieve the load of doctors. Staff in this clinic are expected not only to perform some regular hypertension work-up, such as BMI measurement and measuring risk of cardiovascular events, but also to actively enhance health promotion activities using multi-media behavior change communication tools, to conduct opportunistic screening and to perform a regular audit with feedback to the clinic.

Acknowledgements
The authors would like to thank IT Department, Qatar Petroleum for the use of MIMS data. Special thanks to Dr Tristan Evely, former Senior Medical Officer in Ras Laffan Medical Centers, for his support to this study.

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Screening of Oral Health in school children of Al Qusais, U.A.E 2009 - 2010 : A survey

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ABSTRACT

The purpose of the study was to assess the prevalence and pattern of various dental problems in the dentition of 1099 school children from grades 2 - 4 in private schools in Al Qusais area of Dubai in the U.A.E . The sample consisted of 588 males and 511 females ranging in age from 6 - 11 years.

In the present study there was no significant difference in gender for dental problems. There was significant difference between untreated teeth with decay and treated teeth, indicating concern, and need for awareness of treatment of various dental problems.

Keywords : Dental problems, school children, prevalence

Introduction

Oral health is vital to an individual's ability to perform daily activities like eating, reading, speaking, studying etc . Tooth decay is said to be the most chronic childhood oral disease. The prevalence pattern of tooth decay varies with age, sex, race, geographic location, socioeconomic status, diet and oral hygiene.

Burt(3) has argued that the principal benefits of surveys of dental caries are in:
(a) monitoring trends in oral disease when the surveys are repeated periodically; and
(b) giving dental health a visibility it might otherwise not get among policy- makers.

Materials and Methods

The oral screenings were visual only, using penlights, tongue depressors, gauze, hand disinfectant/wipes, and powder free gloves. The armamentarium was disposed of after each screening.

The school superintendents and principals were informed and consent letters were provided to each school to be completed by parent/guardian prior to the date of survey. Dental screening was performed by one examiner and the findings recorded. During the screening process oral screening forms were filled in after each child's examination. Information on age, sex, and ethnic background, was also collected.

After the completion of the screening, post screening recommendations were also provided. Healthy Smile Certificates were provided to children who had good oral hygiene with no dental problems.

The sampling frame consisted of 1099 students from schools in the Al Qusais area of Dubai. The final study population consisted of all grade 2-4 students who were enrolled in selected private schools, and who were present on the day of the screening and who consented to participate.

Dental caries diagnosis was based on WHO criteria. Dental caries were only diagnosed when the lesion had reached cavitations level and radiographs were not used. Clinical data were recorded on screening forms. The examination recorded tooth status as falling into one of the following categories: untreated cavities, caries experience, sealants, missing, restored, non-restorable/extraction, one surface decay, two surface decays, three surface decays, more than three surface decays, secondary caries, orthodontics, and stains/calculus.

Assessment of treatment needs of each child was recorded according to three categories as follows:
0 = No obvious problem,
1 = Early dental care,
2 = Urgent dental care.

The urgency of the treatment was based on the presence of abscess, pulpal exposures, multiple carious lesions with root stumps and the need for space maintainers. The screening form with the assessement and recommendation letter were also provided to the parents with regards to high caries activity, bleeding gums, crowding of permanent teeth, thumb sucking habits and when the child has knocked out their tooth.

Variable	Number of children	Percent
Gender		
male	588	53.5
female	511	46.5
Age		
6 years	36	3.3
7 years	234	21.3
8 years	474	43.1
9 years	322	29.3
10 years	31	2.82
11 years	2	0.18

Table 1: Demographic description of children undergoing health screenings

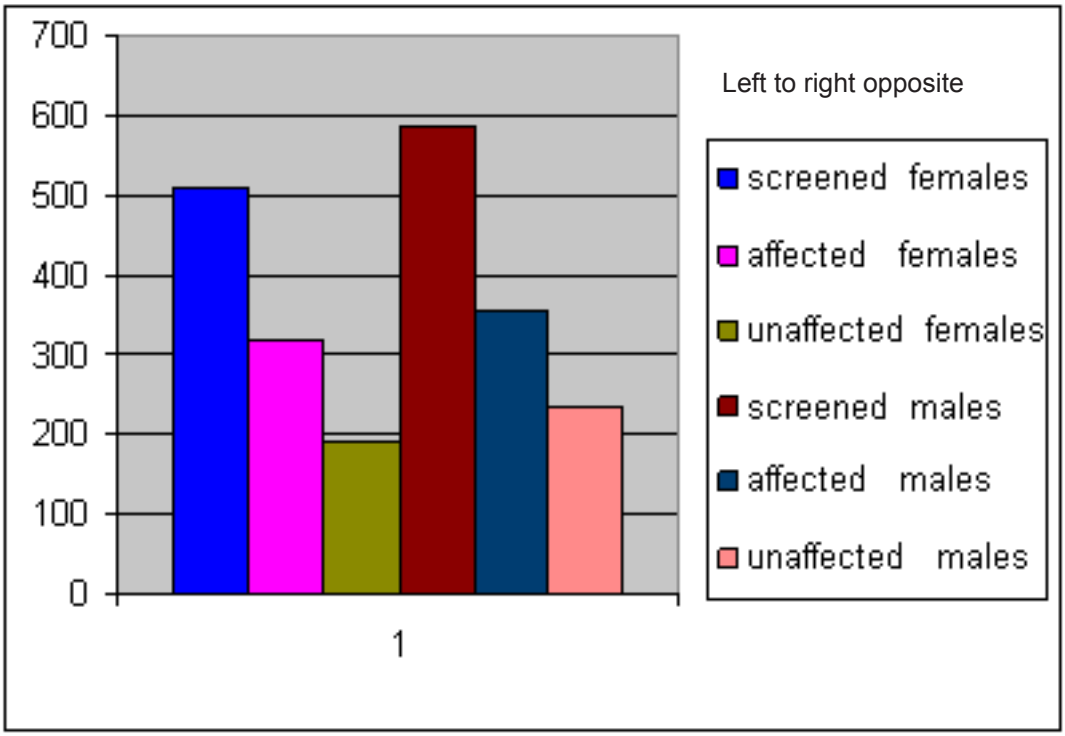

Figure 1 shows prevalence of dental problems in the study population. The sex wise comparison of screened, affected and unaffected population.

Results

The sample size consisted of 1099 students.

Table 1 shows the distribution of the total sample by age and sex.

53.5 percent of the population comprised males and 46.5 percent comprised females. The ages of the sample population varied from 6 - 11 years of which the 8 year old age group formed the highest population at 43.1 percent and the 11 year olds the lowest at 0.18 percent. Their mean age was 8.5 years.

The number of females affected with dental problems was 320 whereas the number of males affected with dental problems was 356.

The sample of affected females was 63 percent and unaffected females was 37 percent. The sample of affected males was 61 percent and unaffected males was 39 percent. The Z value for the affected group equals 0.456 & $P > 0.05$.

By conventional criteria, this difference is considered to be not statistically significant. Hence, among the study population, dental problems were insignificantly less prevalent in girls than in boys. Caries prevalence

Variable	Number of children	% of total sample
Decay experience	676	46
Dental sealants	28	2
Missing teeth	87	6
Restored teeth	304	21
Secondary caries	103	7
Need orthodontics	75	5
Poor oral hygiene	72	5
To be extracted	117	8

Table 2: Prevalence of tooth decay experience, dental sealants, treatment urgency

NOP - No obvious problem found in 38 percent of the population
EDC - Early dental care required by 54 percent of the population
UDC - Urgent dental care required by 8 percent of the population
Figure 2 shows absence and prevalence of dental problems in the study population

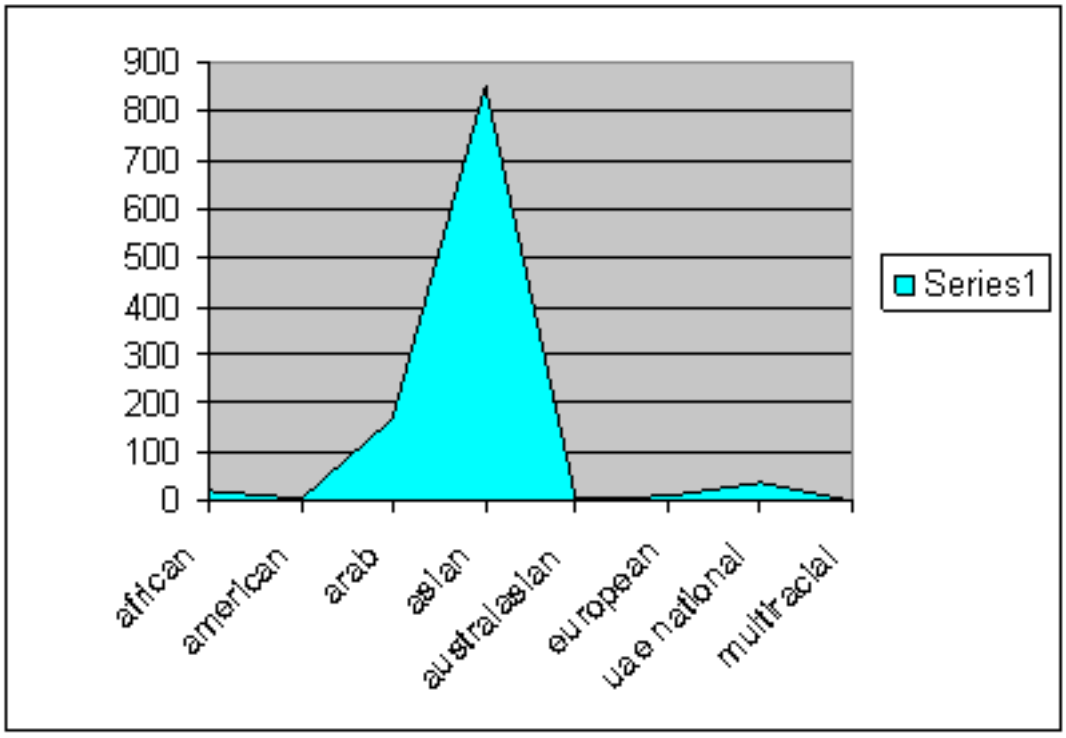

Figure 3 shows racial variation in the study population

was higher in posterior teeth compared to anterior teeth in both the sexes.

A comparision between decay experience and restored teeth was done where the Z - value was 7.386. The two-tailed P value is less than 0.0001. By conventional criteria, this difference is considered to be extremely statistically significant.

Note that each child could have more than one variable condition. For example, a screened child could have tooth decay, restored teeth and need teeth to be extracted.

The percentage of children with no obvious dental problems in this study was found to be at 38 percent versus children requiring dental care at 62 percent.

The variation ranged from African, American, Arab, Asian, Australasian, European , UAE national, and multiracial. The maximum population was of asians at 77 percent.

The results of this survey can be used in various ways : monitoring the trends in the data collected, assessing the extent of children's oral health requirements and conducting educational and preventive programs.

Data was collected only on students attending the private schools and cannot be generalized on those attending public schools or those who are home schooled. Additionally only those students consenting were assessed by this survey; it is not known whether students who did not consent to participate, experience dental problems.

Discussion

This study was carried out to assess oral health status in grades 2 - 4. The results cannot be generalized for all children in these age groups since the sample was a sample of children aged 6 - 11 years old attending some of the schools in Al Qusais area. Many studies have indicated that children who experienced caries in the primary dentition may be considered at greatest risk to experience caries in permanent dentition. Studies of this type provide the opportunities to investigate the relevance of preventive measures for the future development of oral health services in the area. The findings suggested that effort to develop caries intervention for children with primary dentition might have considerable effect in reducing the need for future dental treatment.(10)

In the present study there was no significant difference in gender for dental problems. There was significant difference between untreated teeth with decay and treated teeth indicating concern, and need for awareness of treatment of various dental problems. It is noteworthy that 23 percent of the population had undergone restorations on teeth and placed dental sealants.

Conclusion

The importance of oral health must be understood; oral disease, mainly dental caries, is the most common pediatric disease and can lead to physical and psychological disabilities and morbidity in adulthood. Parents of children identified in high-risk categories should be educated about the repercussions in permanent dentition.

Medical practitioners and nursing staff should also be trained to identify young children in the high risk group. We need to increase our attention to children's oral health in family medicine, pediatrics and in dentistry. We need to re-structure training programs in both the medical and the oral health world because we need an interconnected integrated health care delivery system. We should have interprofessional training initiatives so that the next generation of health professionals understands each other's language and culture and has the skills and mutual respect to work together as part of a larger health team to benefit children, their families, and the community.

Acknowledgement

I would like to thank all the participating schools, our management, dentists , nursing assistants and marketing co-ordinator and all those who participated in the success of the screening program.

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A Gender-Based Approach to Cardiovascular Disease Risk Factors among Adults with Diabetes Mellitus

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ABSTRACT

Background : Despite the fact that women face a lower risk of cardiovascular morbidity and mortality than men before menopause, they have the same or a higher risk if they develop diabetes.

Objective : To compare the gender differences in cardiovascular disease (CVD) risk factors among adult diabetic and non diabetic patients

Design : Case control study

Setting : The specialized center for Endocrinology and Diabetes (SCED) and outpatient Medical Clinic at Al-Kindy Teaching Hospital, for the period January to December-2008

Participants : 314 diabetic patients (152 males and 162 females) and 136 non diabetic patients (72 males and 64 females) as the control group. All the selected participants were adults (18 - 35) years old.

Data collection: All participants were assessed for CVD risk factors, including family history, smoking status, physical activity, Body Mass Index, central obesity, hypertension, hypercholesterolaemia, hyperlipidaemia and uncontrolled hyperglycemia. The gender difference between men and women, in both diabetic and non diabetic patients, was studied.

Results : Gender difference in CVD risk factors (hypertension, hypercholesterolaemia, hyperlipidaemia, smoking and leisure physical activity) had been found to be statistically significant among non diabetic subjects. This significant difference was diminished in diabetic patients for all the risk factors exceptfor smoking habits and leisure physical activity habits.

Conclusion: The burden of conventional CVD risk factors in the presence of diabetes was greater in women than in men at baseline. Prospectively, hypertension, hypercholesterolaemia, and hyperlipidemea, contributed to diabetes-related CVD risk more in women than in men.

Key words: DM, Gender, CVD

Introduction

Cardiovascular disease (CVD) is equally important in men and women (1) , yet the incidence and progression rate of cardiovascular diseases is markedly higher in men than in age-matched premenopausal women (2). In the middle aged general population men have two to five times higher risk for CVD than women (3). The relative protection from CVD among premenopausal women is assumed to be hormones (4). The role of sex hormones in modulating the activity of several regulatory systems including the renin - angiotensin system has been suggested (5). Diabetes mellitus (DM) confers a markedly increased risk of CVD events in both women and men and eliminates the protective effect of female gender on the risk of CVD(6). Besides, DM enhances the effect of the major CVD risk factors; smoking, hypertension, and dyslipidemia. Hyperinsulinemia promotes the atherogenic changes in blood lipids and blood coagulability and raises arterial blood pressure (4). The pathological changes associated with atherosclerosis in diabetic patients are similar to those in the non diabetic population but occur earlier in life and are more extensive and severe (1).

Among individuals with diabetes, CVD is the leading cause of morbidity and mortality. Adults with diabetes have a two to four fold higher risk of CVD compared with those without diabetes and account for up to two thirds of all deaths in the diabetic population(6). According to Barrett-Connor et al (7) pre-menopausal women who have diabetes are at a higher risk for CVD than diabetic men.

Framingham was the first to underline that women with diabetes seem to lose their relative protection against CVD compared with men (8) , and as reported by the Framingham cohort study, the risk of CVD in a diabetic woman is increased by 5.4-fold, in comparison to a 2.4 fold increase in a diabetic man and the trend demonstrates a modest decline in heart disease mortality in men with diabetes and an increase in heart disease mortality in women with diabetes (9).

Risk assessment is an approach to predict and estimate the risk of CVD or the effect of treatment after developing diabetes / CVD. A number of CVD risk factors have been shown to be closely related to diabetes and CVD; hyperglycemia, overweight/ obesity, elevated systolic and diastolic blood pressure and dyslipidemia (6). This assessment and identification in gender difference has made it possible to develop more effective health promotion and prevention strategies that have improved women`s health in many countries (10).

In light of these recommendations and the possibility of gender disparities in CVD risk factors, this study aimed to determine whether there were differences in the distribution of CVD risk factors in adult women compared with adult men with DM and matched the results with corresponding non-diabetic adult males and females.

Patients and Methods

A case-control study was conducted at The Specialized Center for Endocrinology and Diabetes (SCED) and at the outpatient clinic of medicine of Al Kindy Teaching Hospital both of which are in the Al Russafa directorate in Baghdad, from January to December 2008. A convenience sample of 314 adults (aged from 18-35 years) diabetic (type 1 and 2) patients who were registered at the SCED center and 136 non-diabetic patients attending the outpatient clinic of Al-Kindy Teaching Hospital, were included in this study. Both groups were matched regarding their socio demographic characteristics (age, gender, residence. level of education) in order to validate the comparison process between diabetic (cases) group and non diabetic (control) group as shown in Table 1.

A structured questionnaire including demographic information, family history , personal history, medical history and risk factors, was completed for each subject in the study group and control group. Demographic data collected included: gender, age, residence (rural, urban), level of education (primary, secondary, college, higher education), Family history of hypertension and diabetes in first-degree relatives (yes, no), Personal history; leisure physical activity (classified as active, moderately active, and inactive based on the reported average leisure physical activity per week), and smoking habit (classified as never smoked, ex smoker, and current smoker) (11); Medical history of diabetes mellitus and hypertension.

Anthropometric measurements were calculated for all participants. Height was calculated using standing height measurement (CMS weighing equipment LTD, England). The patient stood shoeless with the heels and back in contact with the vertical column of the scale. Weight measurement with indoor clothes was done using a digital weight scale, (Seca, Australia). Before each measurement the digital scale was adjusted to zero and the weight was taken to the nearest fraction of a Kg (to the closest 0.1 Kg).

Body mass index (BMI) was then calculated as weight (kg) divided by height squared (meter2) and was used as the criteria for diagnosis of overweight and obesity. Participants were divided into 3 groups: normal weight (B MI < 25 kg/m2), overweight (25 kg/m2 <BMI < 30 kg/m2) and obese (BMI >30 kg/m2) (12).

The circumferences of waist and hip were measured and used for calculation of the waist to hip ratio (WHR). Central obesity was defined as a WHR >0.85 for women and >0.95 for men. (13).

Assessment of controlled hyperglycemia by testing HbA1C% level for diabetic patients. Patients whose HbA1C % level was 6.5% or below were considered to have controlled HG (14).

Blood pressure was measured for all participants and evaluated using a mercury sphygmomanometer and a

Variable	DM		No DM		Total (N=450)		P value
	No	(%)	No	(%)	No	(%)	
Age							
18-26	148	(47.13)	76	(55.88)	224	(49.78)	0.088
27-35	166	(52.87)	60	(44.12)	226	(50.22)	
Gender							
Male	152	(48.41)	72	(52.94)	224	(49.78)	0.377
Female	162	(51.59)	64	(47.06)	226	(50.22)	
Residence							
Urban	259	(82.48)	108	(79.41)	367	(81.56)	0.44
Rural	55	(17.52)	28	(20.59)	83	(18.44)	
Educational level							
Primary	111	(35.35)	46	(33.82)	157	(34.89)	0.796
Secondary	168	(53.50)	77	(56.62)	245	(54.44)	
Highjer education	35	(11.15)	13	(9.56)	48	(10.67)	

Table 1: The distribution of the studied sample regarding occurrence of DM and some sociodemographic criteria (age, gender, residence and education)

standard clinical protocol according to the Joint National Committee (JNC-VII) report. After 10 minutes of resting, two readings of the systolic and diastolic BP separated by 5 minutes were averaged to the nearest 2 mmHg from the top of the mercury meniscus. Systolic BP was recorded at the first appearance of sounds, and diastolic BP at phase V at the disappearance of sounds. Hypertension was defined as systolic BP >140 mmHg and/or diastolic BP >90 mmHg. The validity of the weight scales and sphygmomanometers was ensured by calibration prior to their use (15).

Criteria for dyslipidaemia were according to National Cholesterol Education Program adult treatment panel guidelines, and total cholesterol >200 mg/dL was considered as hypercholesterolaemia. Patients with triglycerides > 150 mg/dL, low-density lipoprotein cholesterol (LDL-C) >160 mg/dL and high-density lipoprotein cholesterol (HDL-C) <40 mg/dL were defined as having dyslipidaemia (16).

Data were collected in a personal computer and statistical analysis was conducted using Minitab statistical software package. Chi- square test was used to find the significance of variables" association in DM and non Dm groups. The test with p value of <0.05 was considered significant, while odds ratio (OR) with its 95% confidence interval (CI) was used to find the association between DM and non DM groups with the risk factors in both gender.A Confidence Interval less than one was considered significant(17).

Results

There were 152 diabetic and 72 non-diabetic men and 162 diabetic and 64 non-diabetic women in this study. The only significant gender differences among diabetic patients regarding their CVD risk factors aggregation were in their leisure physical activity (p = 0.01) and smoking habits (p = 0.00), (Table 2). Among the non-diabetic patients, representing the control group , a significant gender difference had been found not only in the leisure physical activity (p = 0.03) and smoking habit (p =0.00) but also it included other CVD risk factors ; hypertension (p = 0.027), hypercholesterolaemia (p = 0.05) and hyperlipidemia (p = 0.042), (Table 3). Family history (for DM and HT), obesity and central obesity seem to be unique risk factors for developing CVD among both genders in diabetic and non diabetic patients, (Tables 2 and 3).

In DM versus non DM comparison (Table 4), and in male gender, the only significant odds ratio (OR) was found in family history and smoking variables, while it was not significant in all others. In female gender, the OR was significant in family history, as well as , hypertension, hypercholesterolemia, and hyperlipidemia variables.

Discussion

Although CVD is equally important in men and women, gender differences in the aggregation and progression of risk factors of the disease have been demonstrated (18). The understanding of these differences is of crucial importance for the prediction of cardiovascular diseases and for the development of possible new gender-specific preventive options. This approach is also of especial importance in adult diabetic

Risk factors	Male (n=152) No.	(%)	Female (n=162) No.	(%)	P value
Family history of DM					
Yes	54	(35.53)	59	(36.42)	0.869
No	98	(64.47)	103	(63.58)	
Leisure physical activity					
Active	51	(33.55)	34	(20.99)	0.010
Moderately active	68	(44.74)	72	(44.44)	
Inactive	33	(21.71)	56	(34.57)	
Smoking status					
Never smoked	54	(35.53)	103	(63.58)	0.000
Current smoker	85	(55.92)	21	(12.96)	
Ex smoker	13	(8.55)	38	(23.46)	
Obesity					
Normal wt	61	(40.13)	47	(29.01)	0.116
Over wt	59	(38.82)	74	(45.68)	
Obese	32	(21.05)	41	(25.31)	
Central obesity					
Yes	35	(23.03)	43	(26.54)	0.471
No	117	(76.97)	119	(73.46)	
Uncontrolled hyperglycemia					
Yes	53	(34.87)	69	(42.59)	0.161
No	99	(65.13)	93	(57.41)	
HT					
Yes	46	(30.26)	37	(22.84)	0.136
No	106	(69.74)	125	(77.16)	
Hypercholesterolaemia					
Yes	35	(23.03)	26	(16.05)	0.118
No	117	(76.97)	136	(83.95)	
Hyperlipidemia					
Yes	42	(27.63)	38	(23.46)	0.396
No	110	(72.37)	124	(76.54)	

Table 2: The distribution of the DM patients regarding sex and CVD risk factors

patients as DM is an important known risk factor for CVD which might help to identify the similarity in potential risk among men and women.

As expected, the results of this study showed significant differences in the main CVD risk factors (hypertension, hypercholesterolemia and hyperlipidemia) among men and women without DM, and because of the tradition and norms of the Iraqi population, gender differences were also found in another two of these risk factors. Firstly smoking, as our community viewed smoking as an unusual habit among women, and secondly leisure physical activity. The reason for the second exception might be explained by the restricted number of clubs and facilities where physical activity could be practiced for women and the limited activity of most women which is restricted to indoor activity only. Although a similarity in anthropometric measurements of the studied participants (men and women) manifested by obesity and

Risk factors	Male (n=152) No.	(%)	Female (n=162) No.	(%)	P value
Family history of DM					0.493
Yes	12	(16.67)	8	(12.50)	
No	60	(83.33)	56	(87.50)	
Leisure physical activity					0.038
Active	21	(29.17)	16	(25.00)	
Moderately active	36	(50.00)	22	(34.38)	
Inactive	15	(20.83)	26	(40.62)	
Smoking status					0.000
Never smoked	14	(19.44)	39	(60.94)	
Current smoker	41	(56.94)	17	(26.56)	
Ex smoker	17	(23.62)	8	(12.50)	
Obesity					0.284
Normal wt	42	(58.33)	29	(45.31)	
Over wt	18	(25.00)	19	(29.69)	
Obese	12	(16.67)	16	(25.00)	
Central obesity					0.162
Yes	13	(18.06)	18	(28.13)	
No	59	(81.94)	46	(71.87)	
HT					0.027
Yes	17	(23.61)	6	(9.38)	
No	55	(76.39)	58	(90.62)	
Hypercholesterolaemia					0.05
Yes	14	(19.44)	5	(7.81)	
No	58	(80.56)	59	(92.19)	
Hyperlipidemia					0.042
Yes	16	(22.22)	6	(9.38)	
No	56	(77.78)	58	(90.62)	

Table 3: The distribution of the Non-DM individuals regarding gender and risk factors

central obesity could be explained by the worldwide epidemic of obesity (fostered by the modern lifestyle characterized by lack of physical activity and an energy-dense diet) (17). In Iraq a survey on Non Communicable Diseases (NCDS) risk factors conducted in 2006 revealed 66.9% of the Iraqi population were overweight while obesity was prevalent in one third of the population, being higher among females (38.2%) as compared to males (26.2%) (19)

Among diabetic subjects, the significant gender differences for hypertension, hypercholesterolemia and hyperlipidemia were lowered and became not significant. This might explain why diabetic women have the same or higher risk for CVD if they develop diabetes. According to a prospective study carried out in Finland they found that elevated blood pressure and atherogenic dyslipidemia contributed more strongly to diabetes related CHD risk in women than in men, besides they concluded that diabetes almost completely abolished the female protection from CHD(20).

Although a significant gender association for smoking and leisure physical activity factors was also present in diabetic patients, this might be explained in the same way as in those who are non diabetics. But this assessment for CVD risk factors among diabetic and non diabetic adult patients reflects the similarity in having most of these risk

Risk factors	Male (n=152)			Female (n=162)			OR1 \ OR2
	DM	No DM	OR1 (CI)	DM	No DM	OR2 (CI)	
Family history of DM							
Yes	54	12	2.76	59	8	4.50	0.61
No	98	60	(1.36-5.57)	103	56	(1.92-10.52)	
Leisure physical activity							
Active	51	21		34	16		
Moderately active	68	36	1.23	72	22	0.79	1.56
Inactive	33	15	(0.66-2.26)	56	26	(0.40-1.57)	
Smoking status							
Never smoked	54	14		103	39		
Current smoker	85	41	2.23	21	17	1.12	1.99
Ex smoker	13	17	(1.17-4.47)	38	8	(0.62-2.03)	
Obesity							
Normal wt	61	42		47	29		
Over wt	59	18	0.32	74	19	0.49	0.65
Obese	32	12	(0.17-0.59)	41	16	(0.27-0.89)	
Central obesity							
Yes	35	13	1.36	43	18	0.92	1.48
No	117	59	(0.67-2.76)	119	46	(0.48-1.76)	
HT							
Yes	53	17	1.14	69	6	7.17	0.16
No	99	55	(0.59-2.23)	93	58	(2.93-17.58)	
Hypercholesterolaemia							
Yes	46	14	1.78	37	5	3.49	0.51
No	106	58	(0.91-3.54)	125	59	(1.31-9.34)	
Hyperlipidemia							
Yes	35	16	1.05	26	6	1.85	0.57
No	117	56	(0.54-2.05)	136	58	(1.22-4.73)	

Table 4: The distribution of risk factors in both genders regarding the presence or absence of DM

factors among both men and women diabetic patients compared with non diabetic patients which might explain why women have the same or higher risk of CVD if they develop diabetes. The two prospective population-based studies in the United States, (Framingham and Evans County), that address diabetes as an independent risk factor in men and in women, both suggest that diabetes predicts heart disease only in women, after adjustment for covariates (21).

The results of this study concluded that major risk factors for CVD (hypertension, hypercholesterolaemia and hyperlipidemia) are aggregated in women with DM, which is also an important risk factor for CVD, as compared with non diabetic women and appears to have the same risk factors in CVD as adult diabetic men. This gender difference had been found among non diabetic adult patients which provides a tool for prediction of developing CVD among diabetic patients versus non diabetic patients. Thus more action is needed to enhance health promotion and health protection of women among the general strategies of women's healthcare , and the need for lifestyle modification in both male and female diabetic adult patients as primary and secondary prevention measures to prevent cardiovascular disease which is the leading cause of morbidity and mortality among diabetics.

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The Social Impact of a Macrobiotic Lifestyle in the Middle East

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ABSTRACT

In a previous study, the health impact of macrobiotics in preventing and curing diseases was investigated. In this study, the researcher investigates some of the social effects of macrobiotics on the people in the Middle East region.

The purpose of this research is to find out whether a new lifestyle like macrobiotics could be accepted by Middle Eastern people and specifically the Lebanese market and society. This study researched the feasibility and basis of such a lifestyle from a social perspective. Based on the results of this research and the tested statistical hypotheses, the researcher concluded that the social aspect of this region can significantly affect the adoption or continuation of a macrobiotic lifestyle in a negative way.

Keywords: **Macrobiotics, Middle East, Social**

Introduction

On a social level, the disappearance of the family meal is a principal cause of lack of communication and understanding within the modern family today. The macrobiotic way of life, based on underlying principles of family respect, has begun to reverse this trend. Family members have started to enjoy preparing and eating their meals together. There is also a possibility of introducing macrobiotic natural foods in school lunch programs and in employee cafeterias (Kushi & Jack, 2001).

Materials and Methods

In a previous study, the health impact of macrobiotics in preventing and curing diseases was investigated. In this study, the researcher investigates the social effects of macrobiotics on the people in this region: dining out, their relationships with friends and family, eating at work and their religious practices. The research follows a quantitative approach which consists of a questionnaire and the analysis and interpretation of the generated data with the help of Statistical Package for the Social Sciences (SPSS).

a. Research variables

The researchers covered the necessary variables needed in order to form a clear understanding about the subject. And as clearly stated in the analysis below, two or more of these different variables together with the help of SPSS were linked. The set of independent variables investigated in this study are:

1. PROFESSION
2. AGE
3. GENDER
4. EDUCATION
5. NATIONALITY
6. MARITAL STATUS
7. NUMBER OF MEMBERS LIVING IN THE SAME HOUSEHOLD
8. DURATION ON MACROBIOTICS
9. NUMBER OF MEALS CONSUMED PER DAY
10. INFLUENCE OF MACROBIOTICS ON ACCEPTING AND GIVING OUT INVITATIONS
11. EFFECT OF MACROBIOTICS ON EATING OUT
12. EFFECT OF MACROBIOTICS ON PARTICIPATING IN SOCIAL EVENTS
13. EFFECT OF MACROBIOTICS ON RELATIONSHIPS WITH FRIENDS
14. EFFECT OF MACROBIOTICS ON RELATIONSHIP WITH FAMILY
15. EFFECT OF MACROBIOTICS ON RELIGIOUS BELIEFS AND PRACTICES
16. RELATIONSHIP OF MACROBIOTIC FOOD TO TRADITIONAL FOOD

b. Data Collection and Analysis

The most common source of data for such research is communicating with respondents. Thus, this study used a set of questionnaires filled out by a random sample of respondents. Since the percentage population who follow macrobiotics, or have sufficient knowledge of it, is very small (less than 1%), only individuals that have been exposed to this lifestyle were studied. A subject data-gathering technique would provide a deeper and wider range of information. For this reason, a one-on-one survey was used. In addition, the sample size was limited to 156 individuals. The samples were collected from two major places in Beirut, Lebanon: Salam Center and Beit Al Afiyah.

c. Research Question and Hypotheses

Q1: How are macrobiotic people in the Middle East affected from a social perspective?
All of the hypotheses discussed below are based on people who live in the Middle East who have a macrobiotic lifestyle.
H1: Less than 50% limit eating out at restaurants.

H2: More than 60% change their food and restaurant choices when eating out.
H3: Less than 50% manage to convince friends or family members to join this lifestyle.
H4: More than 90% have religious beliefs that comply with the macrobiotic principles.
H5: More than 60% have few traditional foods that comply with macrobiotic food.

d. Scope and Limitations
There were several limitations to this study ranging from time, to places from which samples were collected. The first major limitation of this study was the fact that the researcher had limited time to gather information. This is because the high season for people from all over the Middle East to visit Lebanon is in August. So the time frame was limited to only one month.

Another limitation was the sample size. The fact that choosing a random sample of respondents to gather data from, and then checking/ organizing the gathered data would cost even more time, the researcher was bounded by a set of 156 questionnaires.

Results and Findings

According to the "normal distribution theory", the sample size of 156 respondents will lead results that have a 7.8% margin error and 95% confidence interval (Churchill, 2001). All the results are presented in charts and tables obtained from the output files of the SPSS software

a. Data Analysis and Testing
As illustrated in the bar chart below:
- 69.9% of the sample makes certain food choices at social events (Chart 1).

It is clearly illustrated in the tables below how macrobiotic lifestyle people can convince other family members to join this lifestyle and how macrobiotics complies with their religious beliefs.

- 43.8% of the sample managed to convince familymembers to join their macrobiotic lifestyle (Table 1).

- 38.6% of the sample believed that macrobiotics complied with their religious beliefs (Table 2, page 32).

b. Multiple Responses of Data
There were some multiple responses to several questions targeted. Thus, some information was drawn based on those responses, one of which is:

- 51.6% of the sample limited eating out at restaurants (Table 3, page 32).

c. Cross Tabulation of Data
Cross tabulation is extremely important, since it gives clear information and comparison between any two variables. Below, the four tables that are used later on in the conclusions may be checked.

- Within nationality, 30.5% of the Lebanese people believe that most of their traditional food complies with macrobiotic food principles; while 70.4% of the Gulf believes that only a few of their traditional meals complied with macrobiotic principles (Table 4, page 33).
- Within marital status, both married and single people (45% each) managed to convince family members to join their macrobiotic lifestyle (Table 5, page 34).

d. Hypothesis Testing
- H1: Less than 50% limit eating out at restaurants.
According to Table 3, 51.6% of the sample limits eating out at restaurants. Thus, this hypothesis is rejected.
H1- reject

- H2: More than 60% change their food and restaurant choices when eating out.
According to table 6, 21.7% of the sample changes the restaurants, while 39.4% change their food choices. Therefore, this hypothesis is accepted.
H2 - accept

- H3: Less than 50% manage to convince friends or family members to join this lifestyle.
According to Table 1, 43.8% of the sample managed to convince family members to join their macrobiotic lifestyle. Therefore, this hypothesis is accepted.
H3 accept

- H4: More than 90% have religious beliefs that comply with the macrobiotic principles.
According to Table 2, 38.6% of the sample believed that macrobiotics complied with their religious beliefs. Thus, this hypothesis is rejected.
H4 reject

- H5: More than 60% have few traditional foods that comply with macrobiotic food.
According to Table 4, 59.7% of the sample believes that they have few traditional foods that comply with macrobiotic food principles. Therefore, this hypothesis is rejected.
H5 reject

Discussion

Q: How are macrobiotic people in the Middle East affected from a social perspective?
This question is tackled in hypotheses H1 through to H5. The social life of Middle Eastern people represents a major facet in their daily lives. Therefore, the above research question (Q1) was elaborated on using 5 hypotheses to be tested.

According to Table 6, more than half of the sample limits eating out at restaurants. Of those who dine out, 21.7% changed restaurants and 39.4% made different food choices that suit their macrobiotic lifestyle.

In regards to how a macrobiotic lifestyle affects one's relationship with others, 21.2% of the sample wasn't affected at all, while 11.5% of the sample stopped eating meals with the rest of the family. Only 22.4% of them ate their own macrobiotic food while seated with the rest of the family or friends. While 42.9% were able to convince family members and friends to join a macrobiotics lifestyle. This is further understood in Table 4 which shows that around 60% of the sample think that a few of their traditional foods comply with macrobiotic principles; while 24% think that most of their traditional food is very close to what macrobiotics teaches.

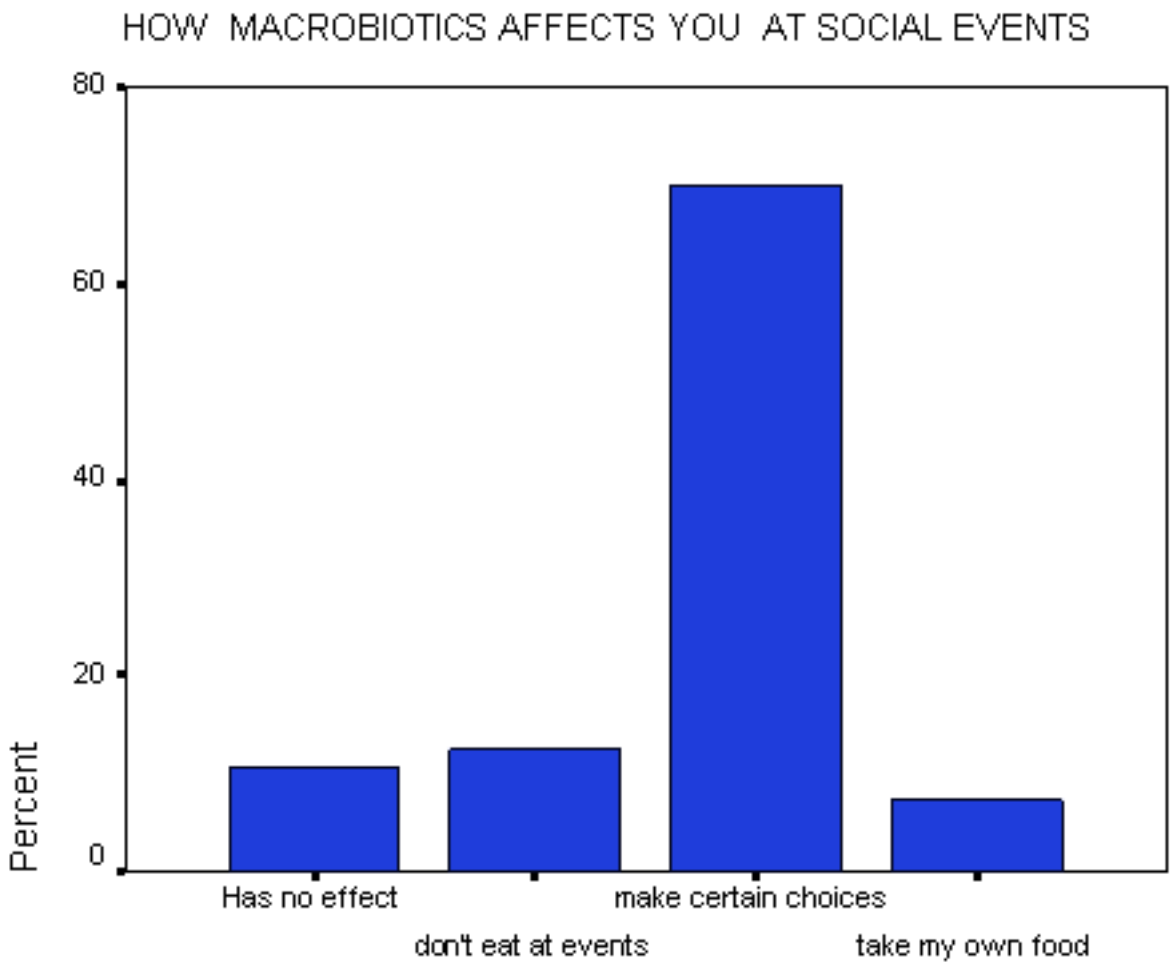

Chart 1. Percentage of sample responses to macrobiotics effects on social events

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Has no effect	33	21.2	21.6	21.6
	I stopped eating with them	18	11.5	11.8	33.3
	Some family members joined macrobiotics	67	42.9	43.8	77.1
	When eating with the family, I eat my own macrobiotic food	35	22.4	22.9	100.0
	Total	153	98.1	100.0	
Missing	N/A	3	1.9		
Total		156	100.0		

Table 1: Sample responses to macrobiotics effects on family sharing a meal/dining together

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Has no effect	44	28.2	28.8	28.8
	Improves my ability to practice my religious beliefs	48	30.8	31.4	60.1
	Complies with religious beliefs	59	37.8	38.6	98.7
	Negates with my religious beliefs	2	1.3	1.3	100.0
	Total	153	98.1	100.0	
Missing	N/A	3	1.9		
Total		156	100.0		

Table 2: Sample responses to macrobiotics effects on religious practices and beliefs

Category label	Code	Count	% of Responses	% of Cases
Has no effect	1	40	20.8	26.0
Limit eating out at restaurants	2	99	51.6	64.3
Limit the acceptance of invitations	3	39	20.3	25.3
Limit your invitation to friends at home	4	14	7.3	9.1
Total responses		192	100.0	124.7

2 missing cases; 154 valid cases

Table 3: Group SOCIAL: Macrobiotics effect on Social life

Religion is also a very sensitive issue in the Middle East. So, this research also tried to study the impact of macrobiotics on religious beliefs or practices. Table 2 shows that 70% of the sample believes that this lifestyle is positively related to religion since it complies with their beliefs and improves their ability to put their religious beliefs into practice.

Summary and Conclusion

Macrobiotics is the natural, common sense way for humans to live on this planet. Its origin is in traditional cultures.

Social-level macrobiotic practice focuses on society rather than the individual. Systems of distribution are sought, economics and ecology are considered, and common good is a goal.

Adherence to macrobiotic principles and practice may be narrow or wide depending on the person's understanding and condition. Many people who identify themselves as macrobiotic practitioners occasionally eat foods generally excluded from macrobiotic dietary practice in a temperate climate such as meat, poultry, dairy, eggs, sugar, chemicals, and simple carbohydrates. They consider their macrobiotic practice wide. Other people consistently eat grains, beans and vegetables yet do not identify themselves as macrobiotic because they do not embrace its world view. Because we have all abused food at some time, we need to find variety within balance. Ideally we need to regain the center on a daily basis. There is always variety, never narrowness. This requires simple eating.

In spite of the positive results from this research, the researcher prefers to simplify macrobiotics and address it to Arabs as a healthy nutritious lifestyle, and avoid any detailed religious discussions. People have different views on religion in this area and are not always encouraged to debate any philosophical issues which would complicate macrobiotics for many in this region.

			No they are very different	Yes a few traditional foods comply with macrobiotics	Yes most traditional foods comply with the macrobiotic	Total
Nationality	Lebanese	Count	12	45	25	82
		% within nationality	14.6%	54.9%	30.5%	100.0%
	Syrian	Count	3	9	4	16
		% within nationality	18.8%	56.3%	25.0%	100.0%
	Jordanian	Count		1	1	2
		% within nationality		50.0%	50.0%	100.0%
	Algerian	Count		4		4
		% within nationality		100.0%		100.0%
	Moroccan	Count	1	2		3
		% within nationality	33.3%	66.7%		100.0%
	Gulf countries	Count	6	19	2	27
		% within nationality	22.2%	70.4%	7.4%	100.0%
Total		Count	22	80	32	134
		% within nationality	16.4%	59.7%	23.9%	100.0%

Table 4: Cross tabulation between "Nationality" and "Traditional food may be consumed as a part of the macrobiotic lifestyle"

The people who get involved in macrobiotics are coming to it from a compulsion to heal, philosophical interest or because of celebrity driven PR that promotes well-being. That is all fine and well, but ultimately, the most inspiring factor that can sustain macrobiotics will be truly healthy converts that do not become fanatical, condemning or arrogant about their philosophy or other healing modalities (Varona, 2004).

Social and practical drawbacks of following a macrobiotic diet include the requirement of extensive home cooking, conflicts with family and friends, difficulty finding balanced meals in restaurants, and the awkwardness of refusing food when invited to dinner in someone's home (Colebin, 2002).

The researcher believes that organic food has to be made more accessible and affordable in the region, to encourage following macrobiotics or any other healthy lifestyle. Now is the time to do so, since the media has been highlighting recently the negative effects and health hazards of consuming some of Lebanon's agriculture (fruits and vegetables using excess chemical fertilizers, herbicides, etc.

For people who eat out frequently when traveling, busy or on social events, making the best available food choices is crucial. The researcher believes that macrobiotic people can't always get away with this for an extended time. They might start to develop small symptoms that may be adjusted by fasting and chewing well. Macrobiotic people should enjoy restaurants when they are there, but shouldn't look forward to them. Always try to choose the best quality restaurant and the most appropriate food when eating out.

It is not easy to practice any healthy lifestyle on your own. Participating

			Has no effect	I stopped eating with them	Some family members joined macro.	When eating with family I eat my own food	Total
MARITAL STATUS	Single	Count	13	6	23	9	51
		% within MARITAL STATUS	25.5%	11.8%	45.1%	17.6%	100.0%
	Married	Count	16	9	36	19	80
		% within MARITAL STATUS	20.0%	11.3%	45.0%	23.8%	100.0%
	Divorced	Count	2	2	4	2	10
		% within MARITAL STATUS	20.0%	20.0%	40.0%	20.0%	100.0%
	Widowed	Count	1		2		3
		% within MARITAL STATUS	33.3%		66.7%		100.0%
Total		Count	32	17	65	30	144
		% within MARITAL STATUS	22.2%	11.8%	45.1%	20.8%	100.0%

Table 5: Cross tabulation between "Marital Status" and "How Macrobiotics affects one's relationship with family members during a meal"

Category label	Code	Count	%of Responses	%of Cases
Has no effect	1	12	6.7	8.0
Decreased the number of times eating out	2	58	32.2	38.7
Change restaurant choices	3	39	21.7	26.0
Change food choices at restaurants	4	71	39.4	47.3
		---	---	---
Total responses		180	100.0	120.0

6 missing cases; 150 valid cases

Table 6: Macrobiotics effect on eating out

in a macrobiotic community or forming one would be helpful. Some people are lazy and may not want to make the effort needed for macrobiotics. Nevertheless, the more "healthier" family members and friends one has, the easier to socialize. Learning how to serve appealing healthy appetizers and meals would encourage people to socialize at eating events.

Many people in this region do not like to be labeled as "macrobiotic", causing confusion, linking them to certain groups or discouraging people around them. Just follow a healthy lifestyle and be a good and happy example to others.
Being an example can influence others, hopefully to also let go of the many sugared, processed, chemicalized and otherwise adulterated foods. An individual could start with his/her household by easily avoiding processed food and enjoying a well balanced diet rich in seasonal fruits, vegetables and legumes.

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Putting knowledge into action - The sculpture of doctoring

'We have met the enemy, and he is us'

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ABSTRACT

EBM is a process of learning how to sort out medical issues encountered while practicing. EBM is the most recent challenge in medicine and it is considered to be the most successful tool to apply in clinical diagnosis.

This article shall present briefly the background of EBM origin, and discuss briefly its definition, process of EBM development, its Philosophy, myths, ethics, secondary literature concept and journal clubs.

Key words: Art and science of medicine, clinical judgment, clinical practice guidelines, decision making, knowledge, medical education, medical epistemology, meta-analyses, misrepresentation, public relations, systematic reviews, curriculum development, evidence-based practice, evidence-based medicine, philosophy of science, research tradition

Introduction

Literature survey on historical background, Definition and when and how the notion of EBM was introduced.

It is very important to consider medical knowledge and applying it according to the case presentation and the situation to solve the problem encountered. Recently EBM has become the new model for medical work and research. It replaces the former medical model application where clinical experience was the main issue.. It should on the other hand rely on a systematic review of the whole data (Kulkarni, 2005, Marjan Kliakovic, 2006). Lack of resources is a major problem for clinicians (Upshur, 2005). A single major hazard to the performance of evidence-based medicine is the lack of assembled, and high-quality graded evidence on which to base practice, in many areas (Wally 2007).

Most EBM is about cause-effect relationships, and therefore it is a challenge to make a proper medical based medical decision (Rao and Genova, 2003, Jenicek, 2006). It is sometimes a practical solving issue based on clinical observations of the patient and not research based evidence per se (Rao and Genova, 2003, Jenicek, 2006). EBM remains an unfinished tale; it remains open to many debates, such as interpretations, and applications (Jenicek, 2006). EBM is a process of reasoning to apply and follow rules without evaluations. Finding a solution to the health problem is a daunting task itself to achieve completely. Critical approach to EBM does not imply denial but finding a better way to improve. On the other hand, you can ask what else can I do and add, and do you suggest something to make it better, or to comfort the patients (Jenicek, 2006). The only goals are to make it better, and therefore EBM is evidence only in its modern meaning (cause-effect relationships).

It is important to consider "personalized medicine" which involves considering a genetic foundation, with the disease in the process of diagnosis, prognosis, and the predication of treatment with its outcome (Lawler et al. 2007). It starts with a molecular analysis of the disease, and knowing the patient genetic composition whereby a further subtype can be found accordingly. It integrates a reasonable body of knowledge about the pathology of the disease, genetics, and pharmacology in order to find a better treatment option for the patients (Lawler, et al. 2007).

Definitions of EBM:

EBM is nowadays an important means of learning and teaching medicine (Martin, 2006). EBM is well established as an important tool in healthcare. Its aim is to become a better physician (Timmermans, 2005, Upshur, 2005).

EBM roots were found dated back to 1960s, but it is still in its infancy however. By 1992 a medicine working group in Canada released a new model of medical practice with an influential, controversial polemic published in JAMA.

EBM has undergone a series of definitions; for instance in 1990, it was defined as "a systematic approach to analyze published

research as the basis of clinical decision making", and the most common accepted definitions by Sacket et al. in 1996 is:

"The conscientious, explicit and judicious use of current best evidence in making decisions about the care of the individual patient. It means integrating individual clinical expertise with the best available external clinical evidence from systematic research" (Upshur, 2005, Claridge and Fabian, 2005, Siwek and Merriman, 2007).

A more recent updated definition is applying a set of tools, and resources for finding the best EBM in order to be applied for the best care of individual patients (Upshur, 2005).

There is more rhetoric than reality in applying EBM in practice (Treasure, 2006). The first EBM appeared in 1992 with two publications, and then about six citations in 1993, 12 in 1994, and then 10 years later increased to about 3000 in 2004 (Treasure, 2006). EBM is supposed to rely on systematic, productive, unbiased observation and accepts basic patho-physiological beliefs, it is however in some cases, according to expert judgment deficient, and inaccurate, in making clinical decisions (Kulkarni, 2005).

EBM is based mainly on randomized clinical trials (RCTs) and systematic reviews (Treasure, 2006, Pang, 2007, Howland, 2007). Earlier in the 1960s medicine was seen as a scientific, as well as a logical expansion of the basic science, and was investigated in clinical research and clinical laboratories, but now it has moved to a new concept in terms of outcome; in other words does the patient benefit in terms of living longer, and in a better living situations without complications or with minimal risks.

A common expression can be applied that if the physician with their pens bankrupt the community, then the community shall no longer accept those physicians' visions, and that is absolutely right (Treasure, 2006).

Process of EBM:
EBM is a dogma. It is a set of rules formulated to satisfy clinical care needs, to improve the practice of medicine, by enhancing the cognitive skills of clinicians based on the question being asked of the patients, and the problem addressed, in order to sort it out efficiently, and then come up with answers to those patients' complaints, by using electronic databases, and then applying them, and see the outcomes with their impacts (Upshur, 2005).

For therapeutics effectiveness, purposes, and treatment decisions; RCTs (randomized controlled trials), and meta-analysis of RCTs are applied, which call for the best a provisional warrant, and they provide the strongest data (Upshur, 2005, Weinfeld and Finkelstein, 2005, Pang, 2007). In most cases it is not very clear how much solace will be provided to the patients to answer their raised questions (Upshur, 2005). In those critical terminally-ill patients, they always count on a living option which is worth pursuing (Upshur, 2005), therefore learning those fundamental bases for medical practice is essential and should be respected and understood well as well (Upshur, 2005). So it is essential to learn about your patient by allocating proper time, listening well, and having a chat with, in order to approach the desired target of giving the proper care and management to those in need.

Previously the idea of EBM was to assess the outcome on the basis of statistical analysis, rather than describing each case. Nowadays it is accepted it be carried out in that concept (Kulkarni, 2005).

Philosophy of EBM:
Philosophy is a critical study of basic principles of medicine to improve our and generate progress (Jenicek, 2006). Therefore be your own philosopher and use your medical senses to help and comfort your patients (Jenicek, 2006). In other words, you need to provide the newest methods, and study designs with good critical thinking, and interpretation of data with the available knowledge; to provide the patient needs of best care, and the lowest possible cost. EBM has been known for about thirteen years and it has reached its adolescence and so hopefully will reach its future development (Jenicek, 2006).

Myth of EBM:
Statistically it is very difficult to trace all the required information, as there is copious information on websites, and technology is becoming faster every day, and billions of articles are relevant and released monthly, and if it is estimated how much time should be devoted to such articles to read, it will be many hours. (Upshur, 2005). For instance a paper in the British Medical Journal (BMJ) claimed in 2000 that: not all trainees or clinicians are interested in achieving the highest level of EBM skills. They only use the EBM summary generated by others (72%), and EBM practice guide (84%), and 95% believe that learning the skills of EBM is not an appropriate method for moving on and forward to Evidence Based Medicine (Upshur, 2005). On the contrary they like to be told where to go and where to find information (spoon feeding), and that is a real problem.

Ethics and EBM:
The growth of EBM raised the issue of ethics (Goodman, 2005). When the physician needs to make an uncertain decision which might carry risks, then ethics should be an integral part of continuous medical education (CME) (Goodman, 2005). So informed consent of patients is very important to consider when to provide health care and treatment. Therefore that should state clearly the benefits, and the possible risks which might be encountered. So, a medical decision is a shared decision between the clinicians, and the patients by providing the patient best level of understanding, because the unknown does no good to any one (Goodman, 2005). So, patients concerns, preferences and expectations should be dealt with, with great care to achieve the best standard of care provision (Goodman, 2005).

Recently a concept about EBM was developed by Daniels and Sabin; which stated the accountability for reasonableness in decision making process (Ash and Jo, 2005). It carries three main conditions, namely, publicity, relevance and appeal. Public accessibility nowadays is enforced by the (United Kingdom) freedom of information act 2000. It involves the public and patients through consulting them regarding the service provided and developing a proposal for changes to take place. It indicates that in case the decision was unsatisfactory, then you have the right to call for appeal and review that proposed decision (Ash and Jo Samanta, 2005, McGuire, 2005).

The main aim of EBM is to improve clinical and scientific understanding of the nature of the provided medical data, and how it can be interpreted, collected and understood, in order to use that knowledge to make a proper scientific decision based on the collected facts by searching the literature, and helping patients with their medical problem, through using a proven effective remedy without prioritizing the financial interests (Scherrer, Dorsch and Weller, 2006, Miles, Loughlin, and Polychronis, 2007, Loewy, 2007). This involves two main points to be considered and taken forward; population based decisions, and individual medical decisions (Howland, 2007).

It is mandatory to consider the concept of EBM, which has been around some time , and it has a huge implication re implementing effective clinical practice, scholarly resolution and addressing clinical query (Kliakovic, 2006, Miles, Loughlin, and Polychronis, 2007). This is the only way to approach medicine, and view it in the future (Siden, Burns, et al., 2005, Kliakovic, 2006).

It is also vital to bear in mind that evidence would not be entirely applicable, for instance evidence that works for 2a 2-year-old female would not work for a 66-year-old female (Greenhalgh 2006, Loewy, 2007,). Also in the case of drugs, one would metabolize quickly and the other slowly, and therefore evidence would be different (Loewy, 2007). So to define evidence and on what bases is, a hard indeed (Loewy, 2007). Also sometimes a new discovery was tested, and applied after validity which may no longer be correct, and the example for that is Vioxx, and now it is abandoned and not used anymore and other examples are many (Loewy, 2007).

Sometimes it is mandatory to publish those negative findings which have been proved by hypothesis to be untrue, and so to not repeat the cycle again (Loewy, 2007). After all, EBM can be learnt by personal experience, and training, because EBM does not control all variables, but what it does give is the personal experience (Loewy, 2007). Also it is mandatory to impose an expiry date for EBM to be re-examined and re-evaluated from time to time, and see if it is still legitimate for CME (continuous medical education), because after all medicine is dynamic and changes from time to time and what was working in the past may not work now (Loewy, 2007). Thus this implies the call for a new look at EBM, and encourage practicing physicians to be involved in collaborative research (Miles, Loughlin, and Polychronis, 2007).

Also with experience, many clinicians have developed what is called a “sixth sense”, and make their decisions from that, for example, despite evidence to the contrary, a patient lives which may depend on the patient’s will to live and has the capability to fight against harsh conditions (not all patients react the same) (Loewy, 2007). Due to those discrepancies, we all do not live or die equally (Loewy, 2007). Therefore physicians can by their nature, be a therapeutic tool; they can weigh things up, and apply them according to their hunches, which is a highly individualistic and non-mystical approach, but it is however sometimes difficult to go against what is known (standard of care), (Loewy, 2007). Although it is not right to practice by hunches, you also cannot reject them totally, for instance if the patient is known to be in demise, it is wise to apply those hunches, which, if they do not work, it also would not harm the patient(Loewy, 2007).

A proper medical practice necessitates a full understanding of the nature of science, and wisdom, in order to formulate a concept to apply forward (Miles, Loughlin, and Polychronis, 2007). It is not only what you find in the book or a protocol, because if it was then the physician’s thinking will be suppressed (Loewy, 2007). EBM generally tends to narrow our creative imaginations within a limited border, and so there is no further speculation which is necessary for any scientific progress, as any progress is an art or a philosophy made by raising a question about any status encountered, and applying the new. In one way or another, it is true that we cannot create a single protocol that can be applied everywhere, because we cannot predicate what is following. In that concept this is an anti-intellectual way of practicing medicine. For instance if we ask our selves why we gave this or that, the answer would simply be because this is written in the books, or a protocol (Loewy, 2007).

On that concept EBM is regardless of personal, social and psychological factors as it deals with the disease, and not the patients who happen to be worried regarding a particular disease. EBM is a check sheet by nature and of what society expects of physicians, while expectation does not create an obligation, and the physician always had the obligation to be the patient’s advocate. In making treatment routine, this will lower the physician’s curiosity and ignore the secondary findings in the disease faced (Loewy, 2007).

A study was carried out by Tonelli who addressed the alternative to EBM in his thesis, and after which about twelve explanations were made from various intellectual resources. It is the idea of making an assumption, or a decision supported by an argument with reference (Miles, Loughlin, and Polychronis, 2007). He also stated the point made by Geanellos and Wilson; who said that due to the complexity of the

clinicians and patients relationship, goals were to achieve the optimal patient care.

Tonelli's main point is to apply a thorough argument in clinical decision making which stimulates further examination. Clinicians should make their decision on current best evidence, by using best scientific evidence as well as resources. Patient specific evidence is neither always straightforward nor clear enough (Kliakovic, 2006). Other scientists such as Cohen and colleagues stated clearly that EBM typically ignores the critical relationship between theory and observations, and from that he mentioned that observation is an adequate basis for medical knowledge, whereas Miles and Charlton debated it is removed from scientific foundations, and they referred to EBM as being both unscientific and antiscientific (Miles, Loughlin, and Polychronis, 2007). Jenicek suggests that most EBM definitions are motivational rather than operational, and that would not add a basis for practice (Miles, Loughlin, and Polychronis, 2007). EBM will continue to exist as a practice without a theory and as an impossible one (Miles, Loughlin, and Polychronis, 2007).

Autonomous thinking and practice call for critique, to accomplish conditions of knowledge and truth (Miles, Loughlin, and Polychronis, 2007). For instance the truth is sometimes well-known sometimes, but ignored to take on a defensive position from moral values, to satisfy the worldview.

It is important to learn the skill of searching medical articles and to learn the skill of evaluating the quality of medical journals. EBM is considered to be complementary and alternative medicine (CAM); it is one of the hottest topic nowadays (Jackson, 2006, Scherrer, Dorsch and Weller, 2006).

EBM is a collection of evidence-based guidelines on more than 100 health topics. Each guideline has a separate section for provider and patient, and each provider guideline is arranged in 14 sections. This has been developed from various institutions such as Duke, Emory, Oregon, and Vanderbilt University medical schools. The 14 sections are summarized as the following; key points about the major information of the condition, EBM highlights such as links, websites, tables, figures and clinical indicators, decision making, definition of the condition being faced, significant information of the condition for patients, potential causes, symptoms and signs, screening and diagnosis, prevention and treatment, complementary and alternative medicine with their potential benefits and risks, prognosis, research frontiers of any ongoing current study, and any treatment that might affect future therapy strategies, reference, and background of author (Judkins, 2006).

In EBM, a physician asks a clinical question, and searches the medical literature and evaluates answers found, and applies it to the patient. Once it was difficult, but having fast internet access in the training practice is a vital issue to achieve EBM, as it makes you check the journal article online, references and bibliographic searches, but pays attention to the unfiltered data (Weinfeld, Finkelstein, 2005, Claridge, Fabian, 2005, knight, Usherwood, and Adams, 2006).

Besides understanding EBM it is also vital to comprehend our patient's own complaint, and moreover to discuss their fears, and worries, cost, and its impact on their views (Mäkelä, 2004, Pector, 2007).

Sometimes patients blame certain associations for certain occurrence, and that is not true at all, for example, viral warts and touching a road (Pector, 2007).

A doctor well-informed about his/her patients is, however the best source of information to bear in mind (Pector, 2007).

It is essential to critically appraise any clinical research article as part of EBM. The E stands for evidence. The key issue of EBM is to recognize the implications of practice in dealing with patients, which indicates the general patient's features and health-care environment per se (Urschel, 2005).

EBM's main aim is to teach the medical student, and the practicing physicians the fundamental search techniques for medical literature, to find answers for the question addressed, with good criticism, in order to improve the clinical practice by making a proper medical decision (Borgerson, Bluhm, 2005, Upshur, 2005, West, Ficalora, 2007).

Nowadays EBM is not only for medical practice, it is extended widely to include many fields; such as nursing, dentistry, social, public, political, veterinary, mental and the list grows longer. Stated EBM drawbacks are that it is not addressing the main difficulties that doctors encounter, and that arise in utilizing its guidelines in the care of individual patients (Borgerson, Bluhm, 2005).

EBM improves quality of medical care, generally speaking (Lowenhaupt, 2005, Rundall, 2007). In order to promote and accept EBM, it is been framed into four main strategies; firstly it is important to make a decision and foresee the consequences. Decisions should be made clear and based on the best available facts, secondly, it establishes a knowledge centre, and distributes it for reuse and awareness, thirdly build-up questions and challenges for important decisions, and to participate in journal clubs, and comparing research findings. Finally training is mandatory, as it also establishes a linkage, networks and exchange relationship between research centers, that do thorough research before making a decision in order to get the answer (Lowenhaupt, 2005, Rundall, 2007).

It is important to deliver EBM skills earlier in the education and teaching process. EBM can be practiced and divided into two main phases; 'early introductory' which covers thorough systematic reviews and searches, with appraised evidence resources,

and the later advanced phase; which should point to therapeutic strategy and statistic measures (Yousefi-Nooraie, Rashidian, et al., 2007).

Sometimes evidence is not there and cannot be found, because science occasionally is vague and incomplete (Mäkelä, 2004). Incomplete knowledge can be of useful and of interest to patients generally speaking, however. Sometimes it is better to have some evidence than none, because if you cannot explain then you are cheating your patient (Mäkelä, 2004).

Secondary literature:
This includes ACP journal clubs, InfoPOEMs, and collected review articles, which all help busy clinicians to save time and find answers to their questions (Weinfeld, Finkelstein, 2005). It has to answer two questions generally speaking; firstly a background question, such as who, what, when, why, where and how? All of which are about the disease process, or the drug applied, or any intervention applied, and the side effects. Secondly the foreground question, such as; compare two things, for example two drugs, or two treatments, with their prognosis; in terms of benefits and risks, and it should be formulated within the word concept “PICO” which stands for patients problem/ Disease, Interventions (drug/ test), Comparison (other drugs, placebo/ test) and Outcome consequently (Weinfeld, Finkelstein, 2005, Schardt, Adams, et al., 2007). In fact it is a specialized framework that facilitates search work to find out answers (Schardt, Adams, et al., 2007). It is also been extended to the work concept PICOTT, which adds Type of the question being asked, e.g. therapy, diagnosis, prognosis, harm, etc., and the best Type of study design for that addressed question (Schardt, Adams, et al., 2007).

On many occasions there are still some unanswered questions, and that can be attributed to the lack of skills in formulating questions, and defective search means to get access to the best type of evidence (Schardt, Adams, et al., 2007).

Journal clubs:
EBM journal clubs can be an alternative to the search engine on busy working days. It can be of help in sharing some questions and finding out solutions and answers to those patient needs (Doust, Mar, et al., 2008). It’s approach is to choose a recent journal to discuss, - or a topic can be chosen due to some questions raised during the clinical practice. The advantage of this is critical appraisal of the topic between the participating groups, and to trace the possible potential bias during their clinical practice, and find how that can be managed properly for the sake of comforting patient with the least possible risks. It is an active learning process, whereby the participants can judge the relevance of the information and its quality (Doust, Mar, et al., 2008).

The successful basic EBM journal club elements are, critical appraisal skills, reading through previous worked up examples by previous groups, developing skills in asking questions, trying to retrieve the literature from some sources such as Pubmed, and the Cochrane library, and also seek those sites which provide free access to some articles by email or fax through their system, and lastly being a part of such a group activity is a privilege itself in developing such skills and practice for continuous professional development (CPD). It is not possible always to attend such group activities due to time zone differences, and commitment, but that can be sorted if such discussions can be passed on with their results to be updated (Doust, Mar, et al., 2008).

It is always useful when generating questions to access the internet immediately searching for an answer. It is also important to look for any barriers in order have a successful journal club (Doust, Mar, et al., 2008).

It is also important to keep those unanswered questions at your desk, and when the journal club is held to raise such questions, and explore them with colleagues. Also search the literature for those questions, so that when the club is held, you can present those findings and distribute them (Doust, Mar, et al., 2008).

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Research participation among medical trainees in the Middle East and North Africa

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Middle Eastern and North African physicians spend 10 years, on average, from the start of medical school to the conclusion of clinical training. Amidst this enduring journey, students, residents and fellows spare little time for research projects ensuring a low ratio of trainees with peer-reviewed publications at the time of graduation.

Elucidation of "research virginity" among MENA medical trainees is two fold. Firstly, trainees are preoccupied by the stresses, mind-boggling academic demands and overwhelming fund of necessary effort to satisfy the program requirements for graduation. Secondly trainees hold firm certitude that the rigorous and stringent review process will often impede publication of their work. While an exhaustive peer-review is undeniably crucial to the advancement of medical research, it can at times be counter-productive towards the participation of junior MENA physicians in the research field.

Thus far, rewarding research accomplishments during early stages of training are attained through windows of full-time dedication via research fellowships or clinical fellowships with pre-set research allocation. Disappointingly, such positions are consistently limited by scope and availability. Moreover, most clinical fellowships do not adequately address the issue of research participation. As such, thousands of MENA medical graduates are ordinarily concluding clinical training with little if any research exposure.

Clearly, involvement of junior MENA physicians in research projects is neither imperative nor cardinal to the future of medicine. Nonetheless, premier participation implies continued research activity throughout the upcoming career. Currently, the level of participation relies mainly upon trainee initiative and enthusiasm. Encouragement and praise by professors, staff physicians and program directors frequently arrives short of achieving universal participation. This holds true in the education, residency and fellowship stages.

Tackling the poor level of research participation among trainees is difficult. At one level, it is essential to re-evaluate the workload and academic pressure during medical training in an attempt to establish strategies for encouraging fruitful research participation among trainees. Similarly, frameworks advocating active research participation at an early stage of medical training have to be further reviewed. More importantly however, MENA medical journals are compelled to lay foundation for applauding young researchers by allocating journal space and, at times, invited editorials devoted to the promotion of active research participation in the early stages of their medical career.

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Publishers: medi+WORLD International 11 Colston Avenue, Sherbrooke, Victoria 3789, Australia
Phone: +613 9005 9847; Fax: +614 9012 5857; Email: admin@mediworld.com.au