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From the Editor

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In this issue, an international collaboration, with authors from 7 countries looks at strategies to improve the status of family physicians. Proposed strategies fall under the following headings:

1. Family medicine as the foundation for health care systems;
2. Promoting broad based scope for family practice;
3. Promoting Family medicine research and scholarship.

Further discussions relate to strengthening of undergraduate and post graduate education in Family Practice and promotion of quality in family medicine with particular reference to policy and services provision.

A population based cross sectional study paper from Qatar looked at Job Satisfaction and Stress level of Primary Health Caregivers at Primary Health Centers in Qatar. 323 questionnaires were distributed to all the physicians/ General Practitioners (GPs) working in Primary Health Care Centers in Qatar. Out of 323, only 176 (54%) responded. The authors concluded that job satisfaction of primary health caregivers is critical for improvement of health systems. The results of our study showed that Qatari physicians were less satisfied with the rate of pay and the amount of variety in work. Stress was found more in Qatari Health Caregivers than Non-Qatari.

A cross sectional study from Saudi Arabia looked at the prevalence of metabolic Syndrome among type 2 Saudi diabetic patients. The aim of the paper was to determine the prevalence of the syndrome among type 2 diabetic patients attending the diabetic center at Gurayat General Hospital. The population of the study was patients with type 2 diabetes with specific characters. Only 530 patients were eligible to enter the study. Four criteria for diagnosing the syndrome were defined (Fasting Blood Glucose >150mh/dl, Blood Pressure >140/90mmHg or taking drugs, obesity if BMI>30, dyslipidaemia if S.triglyceride > 150mg/dl and HDL<35mg/dl or taking drugs. Abnormal blood glucose plus 2 or 3 criteria were sufficient for diagnosis. The author concluded that the metabolic syndrome may occur in patients with type 2 diabetes. Routine investigations for its components should be done to look for its occurrence.

Dr Droos M looked at the Efficacy of Mitomycin C in Pterygium Management. The author looked at a retrospective study of 37 eyes (30 patients). He concluded that the use of mitomycin c in the management of Pterygium is effective in decreasing the recurrence of pterygia after excision. So it is a simple, safe and successful procedure that they recommend in all pterygium management.

A paper from Turkey attempted to determine the prevalence of intestinal parasites in children and to evaluate its association with socio-economic and environmental factors. Stool samples and cellulose tape slides from children between 1-16 years of ages living in a rural area in Antakya were investigated. The authors concluded that the high prevalence of intestinal parasites in children living in lower socioeconomic conditions showed that parasitosis remains a public health problem in Antakya.

A descriptive-analytical study paper from Iran looked at the etiology, types and associated disorders of cerebral palsy. Iranian children between one and six years of age, with CP, were studied over a two year period were selected from children presenting to the referral neuro-developmental service of the university rehabilitation clinic in the northern and eastern districts of the health centers of Tehran province, with an estimated population of 20 million inhabitants. Children were evaluated at 3 monthly intervals for two years during 2004-2006. 112 children with CP were seen during the study period. The main factors identified were birth asphyxia, pre-term delivery, low birth weight (especially VLBW). The authors suggested that improved maternal and childcare particularly in the ante and perinatal periods may reduce the incidence of CP in this environment.

A review paper from Lebanon looked at the pathophysiology of migraine. The author stressed that Old theories used to focus on the vascular changes and the subsequent blood flow alterations in the brain to explain the different symptoms occurring during migraines. New theories on the other hand are shedding more light on the involvement of the nervous system in the brain, primarily the trigeminal nerve in the brain stem, considering it the primary cause for the initiation of migraine attacks. Changes in blood vessels in the brain are believed to be an epiphenomenon only.

A descriptive study from Jordan looked at 85 cases representing patients with documented cases of maxillofacial injuries during the study period which may reflect under-reporting of the problem. This may necessitate the need for an obligatory special form to be used at the Emergency Department to overcome this problem.

A paper from Bangladesh provides a mathematical model to marriage migration associated with distance, in Comilla district in Bangladesh. It is found that marriage migration associated with distance follows a polynomial model. To verify the stability of the model, cross validity prediction power is employed.

The Prevalence of Metabolic Syndrome Among Type 2 Saudi Diabetic Patients: A particular View in Gurayat Province

ABSTRACT

Introduction: the metabolic syndrome is one of the great challenges facing physicians dealing with diabetes mellitus. The presence of the syndrome increases the direct and indirect cost of care due to cardiovascular disorders. The early surveillance of the components of the syndrome and early intervention, will stopthe occurrence of the syndrome.

Objectives: to determine the prevalence of the syndrome among the diabetic patients with type 2 attending the diabetic center at Gurayat General Hospital and to determine the commonest components among those patients.

Methods: a randomized cross sectional study was designed to detect the magnitude of the syndrome. The population of the study was patients with type 2 diabetes, with specific characters. Only 530 patients were eligible to enter the study. Two hundred and sixty five (265) diabetic patients (118 male and 147 female) were selected by randomized simple systemic method. Four criteria for diagnosing the syndrome were defined (Fasting Blood Glucose >150mh/dl, Blood Pressure >140/90mmHg or taking drugs, obesity if BMI>30, dyslipidaemia if S.triglyceride > 150mg/dl and HDL <35 mg/dl or taking drugs. Abnormal blood glucose plus 2 or 3 criteria were sufficient for diagnosis.

Results: sixty patients were diagnosed to have the metabolic syndrome (22.64%). Twenty three (23) patients were male and thirty seven (37) were female patients. Dyslipidaemia was the commonest component of the syndrome among our patients followed by hypertension and obesity respectively. Dyslipidaemia with obesity were the commonest components among male patients. Dyslipidaemia with hypertension were the commonest components among female patients. The prevalence of metabolic syndrome among male patients was 19.49% and among female patients was 25.17%.

Conclusion: the metabolic syndrome may occur in patients with type 2 diabetes. Routine investigations for its components should be done to look for its occurrence.

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Key words: War, Eastern Mediterranean Region (EMR), Iraq.

Introduction

The metabolic syndrome has started to capture the attention of physicians involved in the care of diabetic patients since the famous lecture of doctor Gerald Revean in 1988 (the famous Banting lecture on the annual meeting of the American Diabetic Association[1]).

The Importance of this syndrome is on its association with high mortality, morbidity and cost of management. The presence of the syndrome increases the risk of cardiovascular disease[8, 13].

Background

Gurayat province is a border province, located in the north west of Saudi Arabia near the Saudi Jordanian border. The estimated number of population is around 125,000 citizens. Ninety percent (90%) were urban and 10% were rural dwellers.

Gurayat General Hospital (GGH) is one of the Saudi Ministry of Health hospitals in Gurayat province. It is the main hospital in the province.

The diabetic center is one of the specialist centers in the province responsible for care of diabetic patients. It started in 1989 as a diabetic clinic at King Faisal Hospital in Gurayat province and developed in 2005 to become a center with multiple clinics.

The diabetic registry in our center showed about 3000 registered diabetic patients (82% with type 2 and 18% with insulin requirements).

Of these 55% were females and 45% were males.

Gurayat community has unique features that separate it from other Saudi communities:

- It has a high incidence of consanguinity (clinical observation from medical records) due to strong adherence to the traditional habits.
- It has less trend of migration (to or from the province). The majority are original inhabitants of specific tribes living in the area (observational findings).
- It has similar social habits and events to the rest of the country although they belong to different tribes.
- There is limitation on transportation. There are no options for public transportation. People are accustomed to use their private cars.
- There is restriction on females' movement due to religious and social barriers.

Objectives of the study

1. To determine the prevalence of the syndrome among patients with type 2 diabetes attending the Diabetic center at Gurayat General Hospital.
2. To determine the prevalence of the components of the metabolic syndrome among the selected participants.

Materials and Methods

A randomized cross sectional study was designed to determine the prevalence of the syndrome among patients attending the diabetic center from month Muharam to month Shawl (10 months) 1427H.

The following are Criteria for patients eligible to enter the study:

1. Patients with type 2 diabetes
2. Patients older than 30 years old
3. Regular attendant (not missing > 2 visits)
4. Receiving treatment regularly
5. Participate in health education programs (A) & (B) {A= Participate cooperatively B= participate with reservationsC=Not Participate.

Five hundred and thirty (530) diabetic patients were eligible to enter the study. From these 265 diabetic patients were randomly selected.

Sample selection: systematic method of selection (2:1)

Sample size: 265 diabetic patients (118 male and 147 female)

Data collection: from the medical records of the patients

The Protocol of follow up in our center recommended evaluation of diabetic patients fully every 3 months, Hence we needed the 10 month duration to collect our data.

We use the ATP-III criteria for diagnosing the Metabolic Syndrome among our patients[10].

The following criteria were looked for:

1. High fasting glucose >=8.3mmol/ L (>=150 mgldL) with or without treatment
2. High blood pressure: systolic blood pressure greater than or equal to 140 mmHg and/or diastolic greater than or equal to 80 mmHg or on treatment for hypertension
3. Obesity: body mass index >= 30
4. Dyslipidaemia:
   A) S.Triglyceride > 1.8 mmol/L (>160 mg/dL)
   B) Serum High Density Lipoprotein -cholesterol (HDL-chol) < 0.9mmol/L (35mg/dL)

Biochemical analysis: All the following tests were done in a fasting state (fasting 8-10 hours).

These tests are:

- Serum Blood glucose
- Serum Total Cholesterol
- Serum HDL-cholesterol
- Serum Tri-Glyceride

Analysis of all tests was performed on the 911 Hitachi Autoanalyzer (Germany).

Data analysis was performed by using home computer statistic soft ware.

Diagnosis was established if: Abnormal blood glucose is present plus 2 or 3 other criteria (3/4 or 4/4)

Results

Two hundred and sixty five patients with type 2 diabetes were included in our study with male: female ratio 0.8: 1 (Table 1).

Sixty patients (60) were found to have the Metabolic Syndrome (23 males and 37 females). The overall prevalence was 22.64%. The prevalence was found to be 19.49% and 25.17% among males and females respectively.

Dyslipidaemia was the commonest component (86%) followed by Obesity (81%) then Hypertension (36%) among diagnosed patients (Table 2 & Table 3).

Dyslipidaemia with obesity was the commonest combination among males with diabetes. (Figure 2)

Dyslipidaemia with hypertension was the commonest combination among females with diabetes (Figure 3).

Low S.HDL-chol was the prominent component in dyslipideamia in both males and females having the Metabolic Syndrome (Table 2).

Discussion

Our study was looking for the prevalence of the metabolic syndrome and its components among patients with type 2 diabetes.

Although, many studies have been done (community or hospital based) to determine the prevalence of DM worldwide, in Saudi Arabia or neighbouring countries[2,3,4], few have been done to determine the prevalence of metabolic syndrome. According to our knowledge there has been one study dine at the national level to evaluate the problem of the metabolic syndrome in Saudi Arabia.

Those studies done to evaluate the magnitude of the problem were small studies with small samples and were hospital based.

The national survey for chronic metabolic disorders done by Abdurrahman El-Nueam et al, showed the relation between obesity ,dyslipideamia and glucose intolerance during data analysis[7]. They did not looke for the prevalence of the metabolic syndrome, but indirectly they had pointed to the presence of a group of abnormalities with glucose intolerance such as dyslipidaemia and obesity.

In our study, there were more female than male participants (147 F, 118 M). This is may due to the high rate of adherence to appointments among female diabetic patients in comparison to male diabetic patients (observational note).

There were no statistical significant differences in the biochemical parameters measured in our patients according to sex except for serum triglycerides and serum fasting blood glucose.

In our study hypertension is more common in males than females.

The overall prevalence of the metabolic syndrome among our patients with type 2 diabetes who participated in our study was 22.64% (19.49% male, 25.17% female). In one study done at King Abdulaziz university hospital in Jeddah, the over all prevalence of the syndrome was found to be 16.5% (17.1.8% males,15.9% females)[15].

In USA, an epidemiological study estimated that the prevalence of Metabolic Syndrome was 24%[12].

Another study done in the southwest

of France estimates the prevalence of metabolic syndrome was 23% in males and 12% in females[11]. Our result was found to be higher than the result done by the view published studies done in Saudi Arabia, but lower than the result of the lonely study done at the national level by Al-Nozha et al. In 2005 Al-Nozha et al in his national survey for risk factors for coronary disease found that the prevalence of the metabolic syndrome was increased significantly among the Saudi population. It was 39.3%, higher among females (42%) than among male (37.2%). Also Al-Nozha pointed to the increase in the prevalence of the syndrome among urban dwellers in comparison to rural populations (44.1% vs 35.6%)[17]. Interestingly our study highlights the high prevalence of low S.HDL-chol among those with metabolic syndrome than those without the syndrome (P-value <0.000). This finding was also mentioned by Al-Nozha in his study.

Our results were not significantly different from the results of some international studies done in different parts of the world (Figure 4)[16]. This may be due to the specific features of the Gurayat community, and hereditary variation or the high rate of community westernization.

Conclusion

The study provides data which supports the presence of the metabolic syndrome among type 2 diabetic patients attending the diabetic center in Gurayat General Hospital.

Recommendations

Similar studies are recommended to compare prevalence of metabolic syndrome in different regions of Saudi Arabia.

National studies are also recommended to determine the prevalence of metabolic syndrome in Saudi Arabia.

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Table 1 Components of the metabolic syndrome among participants

	Age (years)	DM duration (years)	Weight (kg)	Height (cm)	BMI	BP Mm/Hg	S.HDL-chol (mg/dl)	S.TG (mg/dl)	S.FBG (mg/dl)
Male Mean + SD	53+ 8 year	11+2 year	84+15 kg	166+7 cm	30+5	SBP 132+13 and DPB 72+/-5	39+7 mg/dL	195+30 mg/dL	181+57 mg/dL
Female Mean + SD	55+10 year	10+2 year	77+16 kg	155+7 cm	32+6	S 131+13 and D70+6	43+12 mg/dL	202+42 mg/dL	204+65 mg/dL

BMI = Body Mass Index, S.HDL-chol-serum High Density Lipoprotein, S.TG = Serum Triglyceride, S.FBG = Serum Fasting Blood Glucose,BP = Blood Pressure, SBP = Systolic Blood Pressure, DBP = Diastolic Blood Pressure

Table 4: Statistical significance of metabolic syndrome components based on sex

	Height	Weight	BMI	BP	S.HDL	S.TG	S.FBG
P-value	0.9311	0.0555	0.4998	0.1093	0.2387	0.0001	0.0001

Table 2 Prevalence of risk factors in patients with and without metabolic syndrome

	Non-Metabolic syndrome 66.34% (N=205)	Metabolic syndrome 22.64% (N=60)
FBG>150 M F	58% 58.9% 57.2%	100% 100% 100%
BMI>30 M F	37% 35.7% 39%	81% 82% 81%
BP>140/80mmHg M F	37% 35.7% 39%	36% 18% 65.2%

S-TG >160mg/Dl M F	49% 49.4% 50%	48% 47.8% 48.6%
HDL-chol<35mg/Dl M F	19% 21% 18%	86% 100% 65.2%

Table 3 The overall prevalence of metabolic risk factors among all participants (n=265)

BMI>30	47.5% N=126 M 44.9% F 49.6%
BP>140/80	37% N=99 M 41.5% F 30%
HDL-chol<35 mg/dL	34.7% N=92 M 29.6% F 38.7%
Triglyceride>160mg/dL	49.7% N=131 M 49.1% F 49.6%
FBG>150mg/dL	67.5% N=179 M 66.9% F 68.2%

Figure 1: The overall percentage of the metabolic syndrome risk factors among all participants

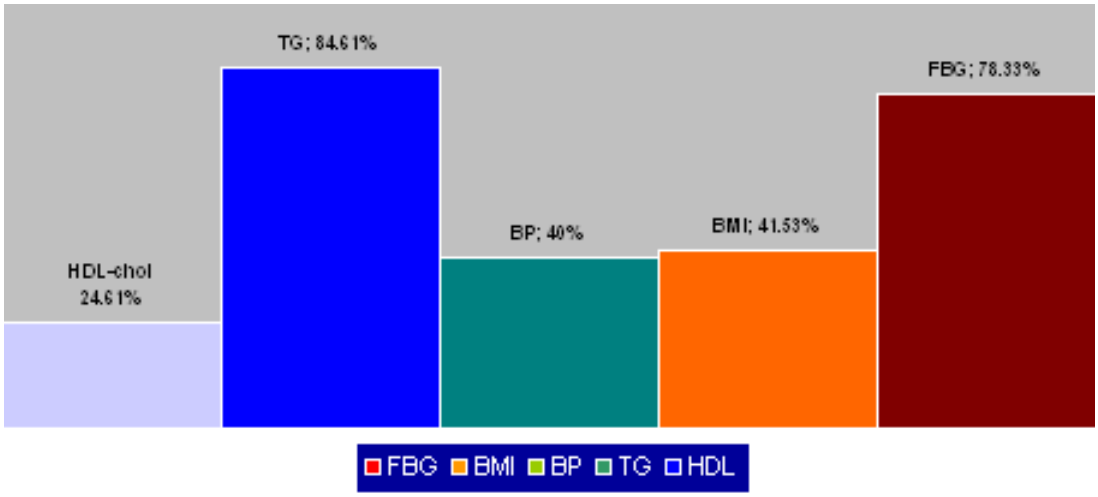


Figure 2: Prevalence of metabolic syndrome components among male patients

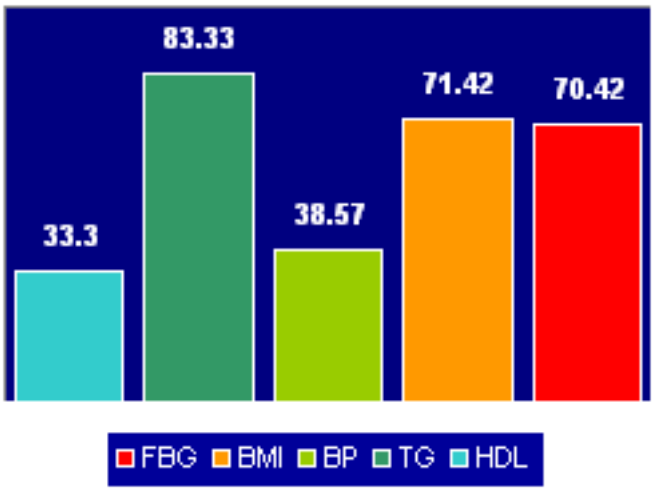


Figure 3: Prevalence of metabolic syndrome components among female patients

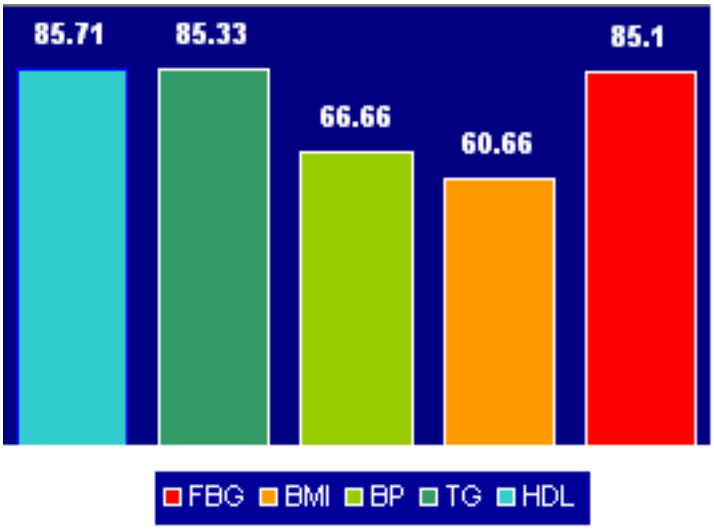
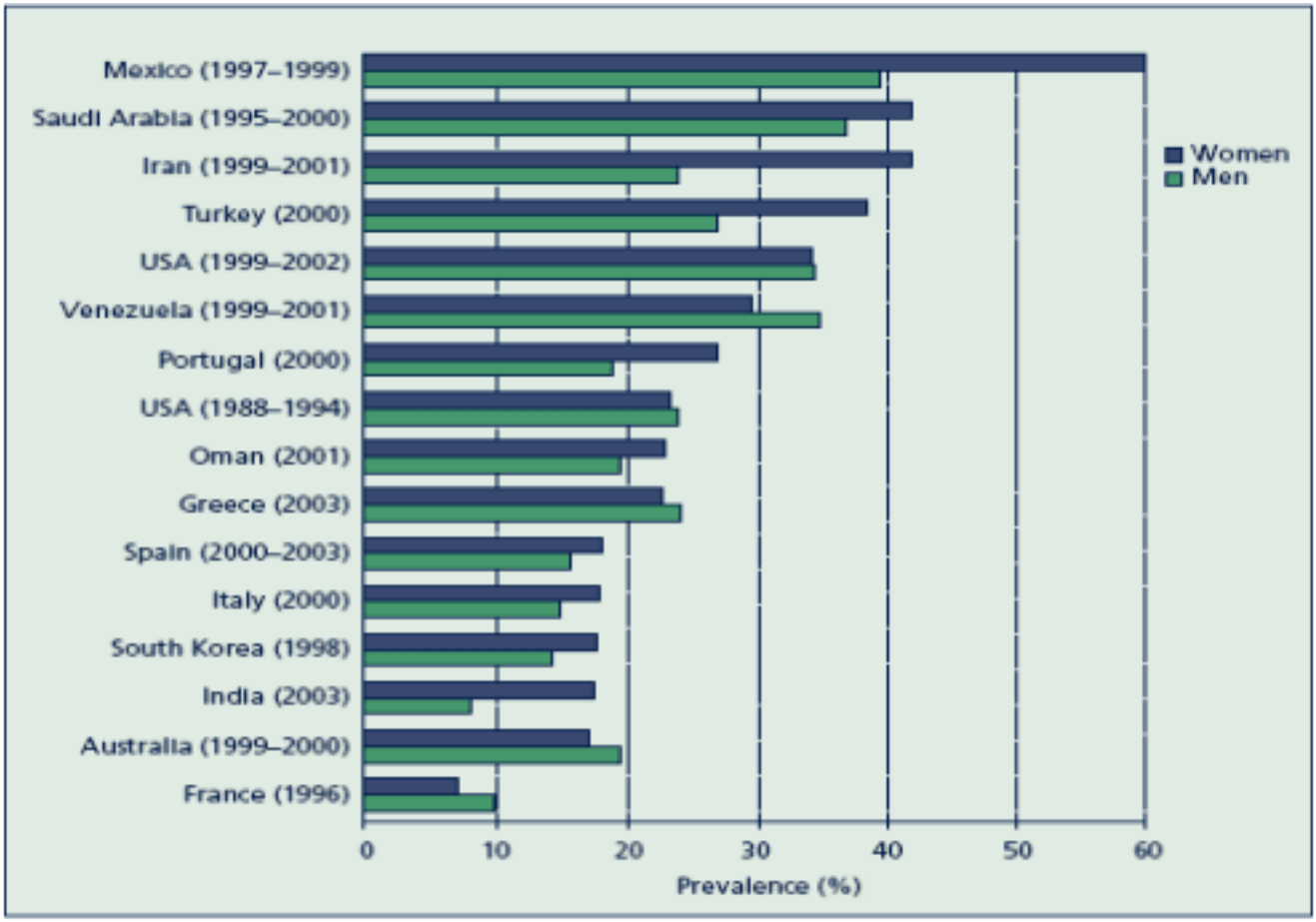


Figure 4: Prevalence of metabolic syndrome in different countries



The Distribution of Intestinal Parasites among Turkish Children Living in a Rural Area

ABSTRACT

Background: The aim of this study was to determine the prevalence of intestinal parasites in children and to evaluate its association with socio-economic and environmental factors.

Methods: Stool samples and cellulose tape slides of children between 1-16 years of ages living in a rural area in Antakya were investigated. Stool samples were examined by using the direct wet mount, iodine method, and sedimentation techniques.

Results: One hundred and ninenty-nine (51.3%) of the 388 children included in the study were male, and the mean age was 6,8±3,4 years (minimum 1, maximum 16). Most of the families (87.4 %) were from the lowest socio-economical level and almost all of the mothers (96.4%) were housewivfes. One hundred and fifty-three (39.4%) stool specimens and 114 (29.4%) cellulose tape slides were considered as positive. The most frequently detected parasites were Enterobius vermicularis (29.4%), Blastocystis hominis (19.8%), Giardia intestinalis (16.5%). No statistical significance was observed in relation to intestinal parasites detected in tape slides and stool samples and; gender (p=0,906 and p=0,751), maternal occupation (p=0,075 and p=0,410), paternal occupation (p=0,355 and p=0,354), conditions of the residence [i.e having a garden (p=0,185 and p=0,733) and stable (p=0,523 and p=0,851), water supply (p=0,675 and p=0,218), having pets or animals (p=0,856 and p=0,429), having a separate room for each sibling (p=0,927 and p=0,079)] and, having symptoms indicating intestinal parasites (p=0,126 and p=0,611).

Conclusion: High prevalences of intestinal parasites in children living in lower socioeconomic conditions showed that parasitosis remains to be a public health problem in Antakya.

Key words: childhood, intestinal parasites, prevalence, personal hygiene, socio-economical status.

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Introduction

Intestinal parasitosis is still an important public health problem in underdeveloped or developing countries.[1] Incidence of intestinal parasitosis is affected by various factors, such as personal hygiene, dietary habits, education level of the community, socioeconomic conditions, climate and environmental factors. Also non-hygienic living conditions give rise to parasitic infections in children[2]. Intestinal parasites are more frequently encountered during childhood, since hygenic habits have not been fully developed [3,4].

The World Health Organization estimates that more than one billion people of the world's population is chronically infected with soil-transmitted helminths and 450 million are ill as a result of these infections, the majority being children [5,6]. Non-hygienic living conditions give rise to parasitic infections in children. These infections are regarded as serious public health problems, as they cause iron deficiency anemia, growth retardation in children and other physical and mental health problems.[7]

Previous studies at various institutions in Turkey revealed high prevalances of intestinal parasitic infections among the following populations: 6-16 years old (10.8%), 12-16 years old (48.0%), 7-15 years old (55.1%), and 6-12 years old (88.0%) [8,9].

Hatay province is in an underdeveloped region of southern Turkey. A number of studies indicate that G. intestinalis and E. vermicularis were endemic in children[10,11]. But there is no study revealing association between intestinal parasitic infections and sociodemographic factors.

In this study we aimed to investigate intestinal parasitic infections among children between 1-16 years of ages, and relation with the sociodemographic, environmental factors, behavioral habits and complaints in a small village near to Antakya, where the sanitary conditions are very poor, and most of the children studied reside near pools of sewerage.

Methods

Setting

This study was performed in rural areas of Antakya, which is located in southern Anatolia. Antakya is a big city with a population of 140 thousand and has a mild climate whereby as temperature arises to about 35-40 C degrees in summer days. Sanitary conditions are insufficient in large parts of the city. We randomly selected a village representing a rural area of the city. We calculated the sample size as 369 (CI: 95%, predicted

prevalence 40%). Six hundred and ten children between 1-16 ages living in the village comprised the study sample.

Data Collection

The 388 stool samples and cellulose tape slides of all children between 1-16 years of ages living in the study area were collected. Educational material explaining how to supply a stool specimen and a cellulose tape slide, was given to parents of each child. Sociodemographic data including age, gender, residence, parental occupation, number of siblings, environmental factors, housing conditions, and quality of water supply were noted. Complaints of abdominal pain, nausea / vomiting, lack of appetite, abdominal distention, intestinal dismotility, salivation during sleeping, headache, irritability in sleeping, perianal itching, teeth grinding and, history of parasitic infections were also noted. An informational document about the study, including how tohe supply a stool specimen and cellulose tape slide, was given to every mother.

Laboratory Methods

The cellulose tape slides were prepared in our laboratory. Two slides were prepared for each child. All the mothers collected slides for examination in the early morning prior to bathing or defecation. On the same day a nurse practitioner collected the slides for microscopic examination. All plastic vials were also labeled in our laboratory. All 388 stool specimens (0.5-1.5 gr) were collected and transported to the laboratory within the same day. Stool samples were examined for the presence of parasites by direct wet mount, Lugol's iodine solution and formaline-ethyl acetate sedimentation techniques.[6]

Results

Total number of children included in the study was 388. 199 (51.3%) of them were male, mean age was 6,8±3,4 years (minimum 1, maximum 16). Three hundred and fifty five (91.5 %) of the children have at least one sibling. Most of the parents (87.4 %) reported that they have very low income. Almost all of the mothers (96.4%) were housewives. No statistical significance was observed in relation to intestinal parasites detected in tape slides and stool samples and gender (p=0.906 and p=0.751), maternal occupation (p=0.075 and p=0.410), paternal occupation (p=0.355 and p=0.354), conditions of the residence [i.e having a garden (p=0.185 and p=0,733) and stable (p=0.523 and p=0.851), water supply (p=0.675 and p=0.218), having pets or animals (p=0.856 and p=0,429), having a separate room for each sibling (p=0.927 and p=0.079)] and, having symptoms indicating intestinal parasites (p=0.126 and p=0.611) (Table 1). 153 (39.4%) stool specimens and 114 (29.4%) cellulose tape slides were positive. The most frequently observed parasites were Enterobius vermicularis (29.4%), Blastocystis hominis (19.8%), and Giardia intestinalis (16.5%). The frequencies of parasites in the age groups are shown in Table 2.

Discussion

In the present study, we aimed to determine the prevalence of intestinal parasites in children between 1-16 living in a rural area of our region, and to evaluate its association with socio-economic and environmental factors. It was found that 153 (39.4%) stool specimens and 114 (29.4%) cellulose tape slides were positive. The most frequently observed parasites were Enterobius vermicularis (29.4%), Blastocystis hominis (19.8%), and Giardia intestinalis (16.5 %). Enterobiasis occurs worldwide mostly in schoolchildren. E. vermicularis infection is transmitted by hand to mouth or person to person directly. In the study area, children are living in low hygiene conditions. Lack of enough sanitary knowledge, behaviour and attitudes such as handwashing, bathing, food preparation were thought to be possible causes of auto infection. The higher prevalance of E. vermicularis could be explained by the highly infectious nature of parasites. Non-hygienic living conditions give rise to parasitic infections in children; socioeconomic status is the best indicator for prevalence of such infections. Intestinal parasites are transmitted either directly through the contamination of water, soil and food by feces, or indirectly through poor hygienic and living conditions.[12,13]

G. intestinalis was a common intestinal parasite among our study participants. This protozoa was the common intestinal parasite living in the contaminated water, an important risk factor for the Giardiasis in Hatay region. This may be a reason for the high prevelance of G. intestinalis in our study population.

The rate of intestinal parasitosis ranges from 23.8% to 80%, based on the geographical region. According to the studies from western Anatolia (Aegean region), prevalance of intestinal parasites is between 18.5%and 48.7%. This ratio ranges between 18.4% and 62.9% in different countries[8,9].

It is well known that parasitic diseases are more common in communities with low socio-economic conditions[4]. These infections deteriorate the psychological and physical development of the children. The majority of the positive cases were from underdeveloped countries and developing regions where a sewerage system was not present and using natural spring water for drinking[14-16].

The rate of E. vermicularis mostly depends on socioeconomic situations, education level, and personel hygiene and dietery habits. Çulha has investigated the prevalance of E. vermicularis in 70 children between 0-7 years of age and 60 boys and 55 girls between 7-17 years in three different institutions of Hatay Orphanage. Prevalence of E. Vermicularis was found to be 71.4 % in 0-7 age group, 0.08 % in boys and 0.14 % in girls between 7-17 age group. This is the only study which has been done for more than ten years for the determination of the prevalance of E.vermicularis in Hatay region[11]. The infection rate was similar in both sexes (p=0.906 and p=0.751). In infected groups the mean age of the children was found to be 7.7±3.2 years and in uninfected groups 6.4±3.4 years. Although there was no association between age of the children and prevalence of

intestinal parasites detected in stool samples (p=0.769), E. vermicularis were significantly more prevalent in elder children.

Infections with intestinal parasites and malnutrition are common in developing countries and with the exception of hookworm; intestinal parasites affect mostly children[17]. The accelerated and unplanned growth of many cities in developing countries has created, in urban slums and shanty towns, sanitary conditions which may be as favorable for transmission of some intestinal parasites as those found in most poor and remote, rural areas[1,14,18].

Okyay et al[8] collected 456 stool specimens from 7-14 year old schoolchildren from Aydın to identify an association between socio-demographic and environmental factors, behavioral habits and also related complaints. 145 students (31.8%) were infected with one or more intestinal parasites. 29 (6.4%) of the students were infected with more than one parasite, 26 (5.7%) with two parasites and 3 (0.7%) with three parasites. The result of this study revealed that the three most common parasites were E.vermicularis, G.intestinalis, and

Table 1 Intestinal parasites, socioeconomic factors, and related symptoms

Features	Cellulose tape slide		Stool specimen	
	n (%)	p	n (%)	p
Gender		0.906		0.751
Male	59 (29.6)		80 (40.2)	
Female	55 (29.1)		73 (38.6)	
Family Income		0.421		0.048
Very low	102 (30.1)		140	
Low	12 (24.5)		13	
Maternal occupation		0.075		0.410
Worker	1 (7.1)		7 (50.0)	
Unemployed	113		146 (39.0)	
Paternal occupation		0.355		0.354
Worker	106 (30.5)		137 (39.4)	
Food	4 (23.5)		9 (52.9)	
Unemployed	4 (17.4)		7 (30.4)	
Sleeping outside		0.064		0.538
Yes	6 (54.5)		3 (27.3)	
No	108 (28.7)		149 (39.4)	
House with a garden		0.185		0.733
Yes	95 (28.2)		134 (39.5)	
No	19 (37.3)		19 (37.3)	
Having a separate room		0.927		0.079
Yes	43 (29.7)		49 (33.1)	
No	71 (29.2)		104 (42.8)	
Stable around the residence		0.523		0.851
Yes	80 (31.8)		110 (39.1)	
No	34 (28.5)		43 (40.2)	
Water supply		0.675		0.218
Tap	113 (29.6)		149 (39.0)	
Well	1 (16.7)		4 (66.7)	
Keeping animals (domestic or pet)		0.856		0.429
Yes	31 (28.7)		46 (42.5)	
No	83 (29.6)		107 (38.2)	
Enuresis		0.344		0.799
Yes	34 (27.4)		48 (38.7)	
No	78 (32.2)		97 (40.1)	
Diarrhea		0.253		0.377
Yes	10 (22.2)		15 (33.3)	
No	104 (30.5)		137 (40.2)	
Symptoms		0.126		0.611
Yes	51 (33.8)		62 (41.1)	
No	62 (26.5)		90 (38.5)	

E.coli. They also found that intestinal parasite prevalence was higher in rural areas, in children with less than primary school educated mothers, in children who use hands for washing the anal area after defecation, and in children who seldom or never use toilet paper.

Çeliksöz and colleagues reported that E.vermicularis were positive in 15.6% of participants with cellophane slides and Taenia spp eggs were positive in 1.6% of participants in a study comprising 2,200 school children in 6 schools in Sivas[19].

Ulukanlıgil et al[15] investigated intestinal parasites in a total of 1820 schoool children in three primary schools between 7-14 years of age. The prevalance of helminthic infections were 77.1% of the schoolchildren in shanty towns, 53.2% in apartment districts and 53.1% in rural areas. They found that Ascaris lumbricoides was the most prevalant

species and that was followed by Trichuris trichura, Hymenolepis nana and Taenia species in three schools. Sanitation surveys indicated that the tap water was limited in shantytown schools, in shantytowns and rural areas, whereas the school in the apartment area was well sanitised.

In our study we found that 153 (39.4%) stool specimens and 114 (29.4%) cellulose tape slides were positive. The most frequently observed parasites were Enterobius vermicularis (29.4%), Blastocystis hominis (19.8%), Giardia intestinalis (16.5%).

In the present study no relation was observed between water supply and parasites identified. Thus we think that parasites were transmitted either directly through the contamination of soil and food by faeces, or indirectly poor living conditions. We investigated the relationship between sociodemographic data and environmental factors. No relation was identified between the presence of intestinal parasites and gender, maternal and, paternal occupation, housing conditions, keeping animals, and parasite related symptoms. Very low family income was found to be a risk factor for having parasites. As a matter of fact all the participants were from a low socio-economical status, but we dichotomised the group as low and very low income according to their reports.

We have so many limitations. We select a low socio-economical group of patients from a rural area of our region. Their living conditions are almost homogenous. The study group represents their socio-economical class but homogenity of the participants may lead low statistical significance between the risk factor previously reported. Our study may actually have underestimated the true prevalence of parasitic infections because we carried out the study in a relatively small sample and observed one stool sample and a tape slide.

To our knowledge the present study is the only study in Hatay region about intestinal parasites in children. Thus the present study will provide information about prevalence of intestinal parasites in children living in lower socioeconomic conditions, risk factors and alert health authorities to the matter. In conclusion, parasitic infections remain a serious health problem in our region.

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Table 2 Parasites according to age groups

Parasites	Infant n=22	Toddler n=166	School Child n=163	Adolescent n=37	Total n (%)
E. vermicularis	2	37	60	15	114 (29.4)
B.hominis	6	31	32	8	77 (19.8)
G.intestinalis	1	25	34	4	64 (16.5)
E.coli		10	9	4	23 (5.9)
D.dentriticum *	1	3	3	1	8 (2.1)
E.hystolytica		3	3	1	7 (1.8)
H.nana		3	3		6 (1.5)
A.lumbricoides		1	1		2 (0.5)
C.mesnili			1		1 (0.3)
I butchii			1		1 (0.3)
Total	9	76	87	18	189 (47.7)
Stool Specimen positive	8	63	70	12	153 (39.4)

* False positive

Strategies to Improve The Status of Family Physicians: A Perspective from An International Collaboration

Key-words: Family doctors; improve status; family medicine; primary care

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ABSTRACT

Background: A need exists to improve the status of family doctors globally. Strategies to ensure the proper place for family doctors in health care delivery systems and health care development requires discussion, identification and implementation
Methods: This paper is a collaborative effort at international level, based on work by an interested group of family doctors, who have examined the strategies required to ensure family doctors get their due position in the health care delivery system. This effort involved write-up based on extensive literature search by all the participating authors.
The lead author collected all the observations and compiled a draft manuscript. The draft was reviewed by all authors prior to final submission of the manuscript for publication.

Results: Proposed strategies are discussed under following headings:
i) Family medicine as the foundation for health care systems;
ii) Promoting broad based scope for family practice;
iii) Promoting Family medicine research and scholarship.
Further discussions relate to strengthening of undergraduate and post graduate education in Family Practice and promotion of quality in family medicine with particular reference to policy andservices provision.

Conclusions: A multiprong approach involving efforts in promotion of family medicine in areas of education, research, and service with particular emphasis on ensuring quality of highest level, is proposed as a strategy to improve the status of family doctors.

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Introduction

Family physicians practice medicine in a variety of roles, including competent and compassionate caregiver, patient advocate, teacher, and professional generalist[1]. The "family physician" is a generalist physician who "takes professional responsibility for the comprehensive care of unselected patients with undifferentiated problems"[1]. Key values guiding family practice include continuing, comprehensive, compassionate, and personal care provided within the context of family and community[2]. Primary care consists of primary medical care and primary health care, and is the essential foundation for any sustainable healthcare system, and family physicians play a central role in its provision[2, 3].

Health care systems consisting of health service provision, harnessing human and physical resources, collecting data to inform planning, policy development through the financing of their resources and services have essentially lacked the evidence that family medicine is the cornerstone specialty for improving this system.

From developing world perspective, with Nigeria and Turkey[4] as an example, primary health care has collapsed, secondary health care has little focused direction, and tertiary care is struggling to keep up with the pace of technological advancement in the absence of basic infrastructure that exists in the developed world. Given the inadequacy of primary health care services, they often are bypassed by patients who decide to seek better care at fully-fledged hospitals. As a result, overqualified staff and expensive facilities are used in ways their planners did not contemplate.

Most Secondary care hospitals commonly provide primary and preventive health care services, becoming in effect direct competitors of lesser facilities. In addition to longer

travel time to, and longer waiting time at these hospitals, patients are deprived of the personal attention and the more frequent follow-up visits that could be provided by a local facility.

Current health care systems often fail to recognize the value of family physician care and fail to support a health care model based on primary care. The resulting inadequacies in recognition of family medicine by the general public and by medical institutions, accompanied by lack of adequate reimbursement for family physicians, have demonstrated the need to debate, identify and implement strategies to improve the status of family physicians in global health care systems.

Objectives:

1. To look at strategies that can ensure a proper place for family doctors in health systems and health care development.
2. To share knowledge and experiences on how to promote quality and excellence in family medicine issues in policy and services provision.

Methodology

This paper is a collaborative effort at international level, based on an effort by an interested group of family doctors, who looked at the strategies required to ensure family doctors get their proper position in the health care delivery system. This effort involved write-up based on extensive literature search by all the participating authors.

The lead author collected all the observations and put together a draft manuscript for publication consideration. The draft was reviewed by all authors prior to submission of final paper for publication.

Proposed Strategies

A strategy based on an approach that focuses at different levels is suggested.

Family medicine as the foundation for health care systems

We should foster development of systems that integrate family medicine into a foundational role in health care systems around the world. Appropriate primary care is associated with improvements in all-cause mortality, heart disease mortality, stroke mortality, infant mortality, low birth weight, and life expectancy. Furthermore, patients reporting better primary care experiences are likely to report better health[3]. Specific characteristics of primary care associated with improved health include: first-contact care, longitudinal care, comprehensive care, co-ordination of care, family-centered care, and a community orientation[5].

The practice of medicine is to impart safe, effective, efficient, timely, patient-centered, and reasonable care. This can be achieved by strengthening primary care. In most countries, majority receive formal medical care in primary care, and it is in the setting most episodes of illness are treated. Clinical decisions made on first encounter influence correct use of health care resources. Effort to improve the knowledge base in primary care will lead to better medical care.

Family medicine and primary care are not identical concepts. Family physicians in different countries work with other primary care professionals in a variety of arrangements. Family medicine has to be the backbone and the foundation of new health care system. A health care system that will put the human value ahead of health economics and cost effectiveness. Family physicians work in the communities for the common good. As the trainers of the next generation of family physicians, we need to start put together the groundwork of a better health care system.

Implementing the characteristics of primary care will vary around the world, depending on factors such as health-care financing, the relationship between publicly supported and privately funded health care, and the medical infrastructure. In Uganda, traditional healers, nurses, and non-residency trained physicians all provide “primary care” due to the low doctor-patient ratio, with more trained family physicians functioning as medical superintendents or clinical supervisors. In Turkey, inline with the need of the hour, “socialized” primary health care is converted to family practice-based health system[6]. Family medicine has the potential to offer a higher level of primary, generalist care in collaboration with front-line professionals, but further challenges remain[7]. We need development of state-funded primary care, with emphasis on health promotion at the local level in coordination with public health and primary care services and accessibility of care for the disadvantaged[8].

Family medicine has the opportunity to engage with partners and policy makers to guide development of chronic care systems, at the same time emphasizing the centrality of the patient’s journey for individual patients, and working to collaborate with the multiple health-care systems a chronically ill patient may interact with[19]. The family physicians need to take the lead in collaborating with other medical and non-medical partners in the development of community health partnerships[10].

The world population is getting older and the burden will be higher in developing countries for example in India, China. Lack of infrastructure for care of chronic conditions and the care of elderly will be a serious challenge. Initiatives of WHO and WONCA (SIG Elderly Care) can address this issue.

The methods for developing family-medicine based systems will vary from place to place. Nevertheless, opportunities exist for advocating policy change and engaging in local initiatives. It will lead to further integration of family medicine into the local health care system as the foundational source of primary health care. Such integration should help improve the status of family medicine both through measurable improvements in health-care outcomes and cost efficiency, and through demonstration that family medicine can and does provide the longitudinal, patient-centered, comprehensive care that patients seek when they ask “who is my doctor?

Promoting broad based scope of practice

Family medicine has conventionally included a very broad-based training. Although individual family physicians often tend to narrow the scope of their practice over the years, they begin equipped for a wide range of practice possibilities. These "pluripotent stem cell[11]. of the medical profession may later be found staffing emergency rooms, serving as hospitalists, and practicing occupational medicine, as well as in the outpatient clinic. Family medicine is becoming a basis for global health activities, where a broad scope of clinical skills and knowledge are imperative. We need a clear definition of our specialty. Are we to be "full-spectrum" physicians, or are we to be chronic disease specialists? Or perhaps family medicine is destined to be a discipline divided into two subspecialties: Comprehensivists and Outpatientists (acute; Hospitalists)?[12] Comprehensiveness has been distorted for family physicians with increases in specialization. Canadian family physicians, for example, are becoming less likely to deliver babies, give anesthetics, provide care in emergency departments and nursing homes, or make house calls[13]. Other changes have expanded the role of the family physician, such as the recent recognition of the importance of primary care in provision of mental health in Bosnia[14].

The environment in which family medicine is practiced can have a great effect on specifics of clinical and organizational practice. Many local drivers for these differences involve not only economics and social geography but also the wider political context. Differences in health care funding can result in an additional variation. As an example, American family physicians are much less likely than their Canadian counterparts to provide psychotherapy or formal counseling for their patients. The difference is in part due to training, but American physicians are also heavily influenced by major restrictions to reimbursement for this service by their insurance companies. Family physicians who find themselves in situations in which financial structures provide a disincentive to practicing preventive medicine may find it difficult to fulfill this core role.

The methods of family medicine are also changing in response to the ongoing explosion in medical knowledge. Fortunately, this unprecedented growth has been accompanied by huge improvements in access to that knowledge through technologies, such as the Internet, and through the availability of careful systematic reviews, such as those provided by the Cochrane Collaboration. As a result, it has actually become easier for a properly trained family physician to access the latest evidence and to apply it to patient care.

The wide variation in the scope of family physician practice leads to confusion over the nature of family medicine on the part of the public, physicians in other specialties, and policy makers. Additionally, physicians of other specialties may feel that a narrower scope of practice or lack of procedural care by family physicians implies a lower level of training, skill, or expertise.

One USA family medicine residency surveyed graduates from 1998 to 2004 regarding their current scope of practice. By 2004 there was a significant decline in the percent of graduates practicing hospital care (71 to 56%), obstetrics (40 to 23%), or emergency care (25 to 13%)[15]. In contrast, family physicians practicing in rural areas tend to maintain a broader scope of practice, and provide a more diverse range of procedural care as well[16]. An additional challenge to the scope of family medicine practice in some countries is a policy-driven demand for an increasing population health role for the family physician. While health promotion may seem an intuitive extension of continuity care, there is also concern that this merging of disciplines obscures the primary focus in family medicine on person-centered care and inappropriately introduces policy imperatives into the clinical relationship[17].

Research has called into question the assumptions behind some motivations for family physicians to reduce their scope of practice. One study has questioned the assumption that maternity care causes an undue drain on personal time, and suggests that failure to provide maternity care may in fact adversely affect practice revenue and viability[18]. Another study found that hospitalist care actually does not provide any cost savings compared to family physician care for managing patients with common inpatient diagnoses[19]. In many rural areas the family physician commonly provides care for diagnoses that may be managed by specialists in urban centers. Thus, training family physicians for a broad scope of practice is essential to support the needs of rural or underserved areas[20].

One response to the tensions in family medicine over scope-of-practice issues was the Future of Family Medicine (FFM) project in the USA. A central FFM recommendation was the development of a "New Model" of practice emphasizing a "Basket of Services" to be offered by family physicians including: health care for children and adults, health promotion and disease prevention, acute and chronic care, maternity care, and hospital care[2]. While the FFM recommendations provide more of a conceptual model than an agenda for change or specialty re-organization, this project is one example of a country-level effort by family physicians to define their specialty and specify a vision for a comprehensive scope of practice.

In order to help increase the stature of family physicians, it will be important to work to define the place of family medicine as a primary care field within health care systems, and to develop a consensus on the appropriate scope of practice that is both general enough to apply to family medicine world-wide, yet also sensitive to local contexts, systems and needs. An international FFM type project, conducted by an organization such as WONCA, could help establish an international consensus as to the core scope of practice essential to family medicine.

Family medicine research and scholarship

Family medicine's fundamental base of knowledge and skills draws on a long tradition of general practice "wisdom and pragmatic knowledge." Stange, Miller and McWhinney have

conceptually described the "knowledge base of family practice" as an integration of inner and outer realities with both individual and collective knowledge[21]. Family medicine is not just about managing straightforward manifestations of common diseases. Rather, family medicine depends on understanding both health and disease, an understanding of how to manage uncertainty and an ability to deal with individuals both on their own and as parts of larger family or social systems. Furthermore, in rural areas and in developing nations, family physicians may need to be competent at providing first-line emergency care and surgical services[22].

Family medicine research goes beyond the basic and clinical science aspects of disease to include research into health services and health systems, and also research into medical education and professional development. In order for an effective family medicine research enterprise to be established in a given country, an academic home for family medicine is necessary, as is collaboration with other disciplines and explicit efforts to link or translate the results of research directly to clinical practice[23].

Strategies to help establish family medicine research include both "top-down" efforts to establish family medicine training programs and academic departments, and "bottom-up" efforts to include front-line family physicians in research endeavors5,[23]. Practice-Based Research Networks (PBRNs) provide a way to meaningfully connect front-line family physicians with primary care researchers. PBRNs allow research into the care of unselected primary care patients typical of family medicine[24]. PBRNs also create an avenue for including community members into family medicine research, thus fostering engagement of the surrounding social systems in further understanding the nature of family medicine[25], and they can allow for networking amongst family physicians to identify questions of relevance to front-line care that are in need of exploring.

The variety within the discipline offers both an opportunity and a challenge for family medicine research. Family medicine research facilitates the correct operation of health care systems and secures access to health care on the basis of individuals' needs in a framework of equity of access for all persons.

A need exists to promote awareness among health care funders, planners, and publishers, of the current input of family medicine research and of its potential to ameliorate health. In order publicize family medicine research in the medical research community; family medicine research must be more widely disseminated.

Wonca, as an international body of family medicine can play a major role in promoting and highlighting the scholarly activities of family doctors. Research achievements in family medicine should be displayed to policy makers, health (insurance) authorities, and academic leaders in a systematic way. Practice systems should be developed to provide surveillance reports on illness and diseases that have the greatest impact on the population's health and wellness in the community. A clearinghouse should be organized to provide a central repository of knowledge about family medicine research expertise, training, and mentoring. National research institutes and university departments of family medicine with a research mission should be developed. Practice-based research networks should be developed around the world. Family medicine research journals, conferences, and Web sites should be strengthened to disseminate research findings internationally, and their use coordinated. Improved representation of family medicine research journals in databases, such as Index Medicus, should be pursued. Funding of international collaborative research in family medicine should be facilitated. International ethical guidelines, with an international ethical review process, should be developed in particular for participatory (action) research, where researchers work in partnership with communities. When implementing these recommendations, the specific needs and implications for developing countries should be addressed. Despite the lack of a research tradition in family practice, there has been a growing consensus among family medicine educators that research training is an important component of residency training curriculum. There are several elements that help implementing a successful research program including support of the program director, dedicated time for research, faculty involvement, access to research professionals, and opportunities for presenting papers at scientific meetings.

Family medicine scholarship can improve the stature of family physicians in three ways:

1. Enhance the generalist knowledge base of family medicine,
2. Develop appropriate generalist research methods and practices, such as PBRNs, and
3. Define and advance family medicine scholarship in order to promote the institutional academic standing of family medicine departments and individual family physician scholars.

Undergraduate Medical Education

In its 1993 document 'Tomorrow's Doctors', the UK General Medical Council emphasized an important educational paradigm shift asking medical schools to ensure students acquire knowledge and solid understanding of:

1. Health and its promotion,
2. Disease and its prevention, and
3. Management, in the context of the whole individual and his or her place in the family and society[26].

It underpinned the need to learn in biomedical, psychological and social contexts, based on firm epidemiological foundations in all medical schools.

Today, key questions remain. How many hours of family medicine (general practice) should be included in the curriculum? And in what content? Who will be responsible for the teaching? And finally, what are the settings for delivering the principal teachings of general practice (family medicine)?

Health centre and family medicine surgeries provide excellent opportunities for medical students to learn and develop skills in clinical problem solving, simply because of the frequency with which patients present

with undifferentiated problems across the entire spectrum of disease[27]. As a consequence, students learn to make cautious diagnostic assumptions and have to approach presenting problems with an open mind. This provides students with repeated opportunities to integrate and apply knowledge and skills learned from basic, behavioural and clinical sciences in a discriminating way[27,28]. Medical students can also gain unique insights into the true prevalence and nature of disease through the exposure to the clinical epidemiology of the community[29]. Family medicine / general practice is also the context in which anticipatory and continuing care, and the social and psychological aspects of illness and disease, can be best observed and understood[27].

Generally speaking, hospitals provide medical students with the best learning opportunities to recognise and manage serious conditions. However, this provides them with a misleading picture of society's medical and health problems since they are mainly exposed to a highly selected population. In the hospital context students are often exposed to a restricted bio-medical model which principally views the body as a machine, disease as a consequence of breakdown of the machine and the doctor's task as repairer of the machine[27,30]. Furthermore, with more sub-specialisation and increased throughput in hospital care, its suitability for teaching medical students about the society's health problems and the whole spectrum of illnesses is questionable. There is plenty of convincing research evidence that the basic clinical skills can be taught as effectively or even better, in family practice than in a hospital setting[31,32].

The key question which must be addressed for any health system which would like to introduce family medicine education and training (both under and post graduate): Do we have the infrastructure in primary care services in the health system to introduce the curriculum for example?

Postgraduate Training in Family Medicine

Supervised by the Postgraduate Medical Education and Training Board (PMETB) the UK curriculum for post graduate general practice (family medicine) training is based on 3 years of vocational training. In line will all medical, surgical and public health specialties, the training contributes to achieving the highest standards and quality of learning. The curriculum is designed to address the wide-ranging knowledge, competences, clinical and professional attitudes considered appropriate for a doctor intending to undertake practice in modern health systems[33]. The GMC publication Good Medical Practice and the UK Royal College of General Practitioners document Good medical practice for General Practitioners provided a framework against which doctors can judge their own performance and by which they can also be judged[34,35].

However, entering the vocational training scheme (VTS) for general practice in the UK is part and parcel of wider programme of undergraduate medical education, foundation school and postgraduate higher medical training, under Modernizing Medical Career (MMC)[30]. In this programme, all junior doctors who are starting their first year after medical school (previously known as the pre-registration house officer year) will have to demonstrate explicitly that they are competent in a number of areas including communication and consultation skills, patient safety and team working, as well as the more traditional clinical skills. The two-year Foundation Programme will give trainees exposure to a range of career placements across a broad spectrum of specialties. All trainees will also have access to an educational supervisor, as well as a clinical supervisor for each placement. The programme has as its focus patient safety; progression through the programme is based on the achievement of competence, rather than time served. At the heart of this new training programme is quality of medical care. By making the continuous development of skills and knowledge central to training and by making explicit the standards of competence those doctors reach before they progress, the Foundation Programme will improve patient safety as well as medical careers36.

Figure 1 sketches the new training programme for all specialties (medical, surgical, public health, general practice) in the UK under the new MMC programme.

Reinventing Graduate Education and Preparing a New Generation of Leaders

Graduate students are emerging scholars and professionals whose curiosity, open minds, and fresh perspectives will launch new ways of thinking and problem solving. If we adopt a spirit of experimentation, collaboration, and an unwavering commitment to push the frontiers of knowledge, the practice of family medicine will prosper worldwide.

As the issues facing the delivery of health care services become more complicated, their solutions must also be multifaceted. Leaders in family medicine must be able to approach problems from multiple dimensions and leverage the expertise of people in different fields to forge effective and sustainable answers. Problem solving and innovation are necessarily becoming more multidisciplinary in today's complex world.

Family Medicine program need to incorporate a clear leadership curriculum into graduate education programs to help students develop the practical skills they will need to contribute to and transform their fields, their organizations, and the world.

Promotion of quality in family medicine

Issues in policy and services provision

Many health care challenges in the 21st century will place a great demand on primary care, which can serve its purpose only if it is of high quality and evidence based. Family medicine research can contribute to many areas of primary care, ranging from early diagnosis to equitable health care[37,38].

New Rules for the 21st Century Health Care System could be summarized as the following[37]:

- Care is based on continuous healing relationships.
- Care is customized according to patient needs and values.
- The patient is the source of control.
- Knowledge is shared and information flows freely.
- Decision making is evidence-based.
- Safety is a system property.
- Transparency is necessary.
- Needs are anticipated.
- Waste is continuously decreased.
- Cooperation among clinicians is a priority.

Family physicians and their health professional colleagues must assume responsibility for the constant assessment and improvement of their care. Working together on behalf of patients requires teamwork that occurs within a complex set of relationships and services. It requires skillful management with appropriate authority and collaboration as well as a mindset of vigilance and continuous process improvement[39].

Emphasis on quality and safety Systems is considered as one of the important characteristics of the new model of family medicine, and is fully described as: "Systems are in place for the ongoing assessment of performance and outcomes and for implementation of appropriate changes to enhance quality and safety[38].

Quality Improvement (QI) is a practical approach to systems or process change. A growing body of literature shows how QI principles can help create much-needed improvements in a variety of health care situations.

The goal of "rapid cycle quality improvement" is to allow teams to

1. identify what they want to accomplish
2. develop a measure for evaluating change, and
3. determine a change or an action that a QI team believes will result in an improvemen[t40].

Quality Improvement in Family Practice

A new recipe is presented, splitting quality improvement into 4 levels. The Q1 level corresponds to the everyday processes that guide our daily work flow. Q2 corresponds to commonly thought of outcome measures. Q3 relates to the executive functions that permit seasoned clinicians to draw generalizations about care for individual patients by synthesizing large amounts of data. Finally Q4 reflects more population-based quality improvement activities.

Each of these levels requires a different approach for improvement activities. Each must be seen in the context of an expanded "quality compass" and in the paradigm of the QI cycle. Finally, a practical application of how this could be instituted at a Family Practice residency is given[41].

So, Practices will document quality and safety through ongoing analyses of practice patient care data. 36 Patient feedbacks will be solicited to ensure that the practice is meeting patients' expectations, satisfying their needs for access to the practice, and responding to the needs of increasingly diverse populations. Each practice will develop and use a structured, recurring administrative mechanism to examine the measurements of the practice and the patients under its care. Practice staff, along with representative patients, will be included in these quality improvement processes. A high priority will be on taking steps to ensure patients' safety within the practice, including the use of electronic data and decision support systems[42].

GP and FM practices that use electronic medical records and receive regular performance reports can improve their adherence to clinical practice guidelines. But, on the other side, no intervention to improve data quality has been put to rigorous enough tests. We still lack empirical knowledge as to how improvement can be brought about[43].

A roadmap for quality improvement in physician offices (Practice Management)

Population-based medicine targets interventions at discrete subpopulations of patients within the medical practice and anticipates needed services according to evidence-based guidelines using quality measures to track results and make adjustments.

Physicians integrate care management into their routine clinical care by using these guidelines and quality measures to assess patients' needs, create care plans and coordinate and monitor services for their patients.

In order to meet the need for better chronic care management successfully, a medical practice will need to progress through nine discrete steps[44].

1. Define the subpopulation of patients in need of care management.
2. Choose a physician performance measurement set of quality measures.
3. Use a clinical information system to track quality measures.
4. Establish patient goals for quality improvement.
5. Analyze the current workflow processes to identify areas for improvement.
6. Implement a change in the workflow process.
7. Measure and analyze results[38].
8. Repetitively implement workflow changes and measure results until goals are reached.
9. Sustain the improvements.

Promotion of Quality

As the number of physicians who enter residency training in family practice gradually increases, so does the need to evaluate the effect of their training and postgraduate education on the quality of care in their practices. Quality of care provided by family physicians can be measured using administrative data.

A group from the European Working Party on Quality in Family Practice (EQuiP), working with over 20 European colleges of primary care, has assessed what, in their view, is needed to improve the quality of care at the interface between general practice and specialists. Experiences and ideas from a wide range of people were gathered through focused group discussions. From these it was clear that, for real improvement at the interface of care, changes are needed

in the system of care and in the ways that doctors view their roles and their performance. All providers of care need to be able to see the care system from the patients' perspective if they are to help their patients make sense of and benefit from an increasingly complex system. Cooperation between general practitioners and specialists might be improved. This includes strategic perspectives and both targets for improvement and methods for teaching, training and development that are all independent of country and health care system. The 10 targets for development identified by the group are: leadership, initial shared care approaches, task division, mutual guidelines, patient perspective, informatics, education, team building, quality monitoring systems, and cost effectiveness. Working towards these targets could provide an effective approach to improving the cooperation between the interfaces of care. Getting effective leadership is a necessary first step as implementation of such a strategy will involve significant change. Responsibility lies primarily with the medical profession.

Conclusions

A multiprong approch involving efforts in promotion of family medicine in areas of education, research, and service with particular emphasis on delivery of high quality in all areas is proposed as a strategy to improve the status of family doctors.

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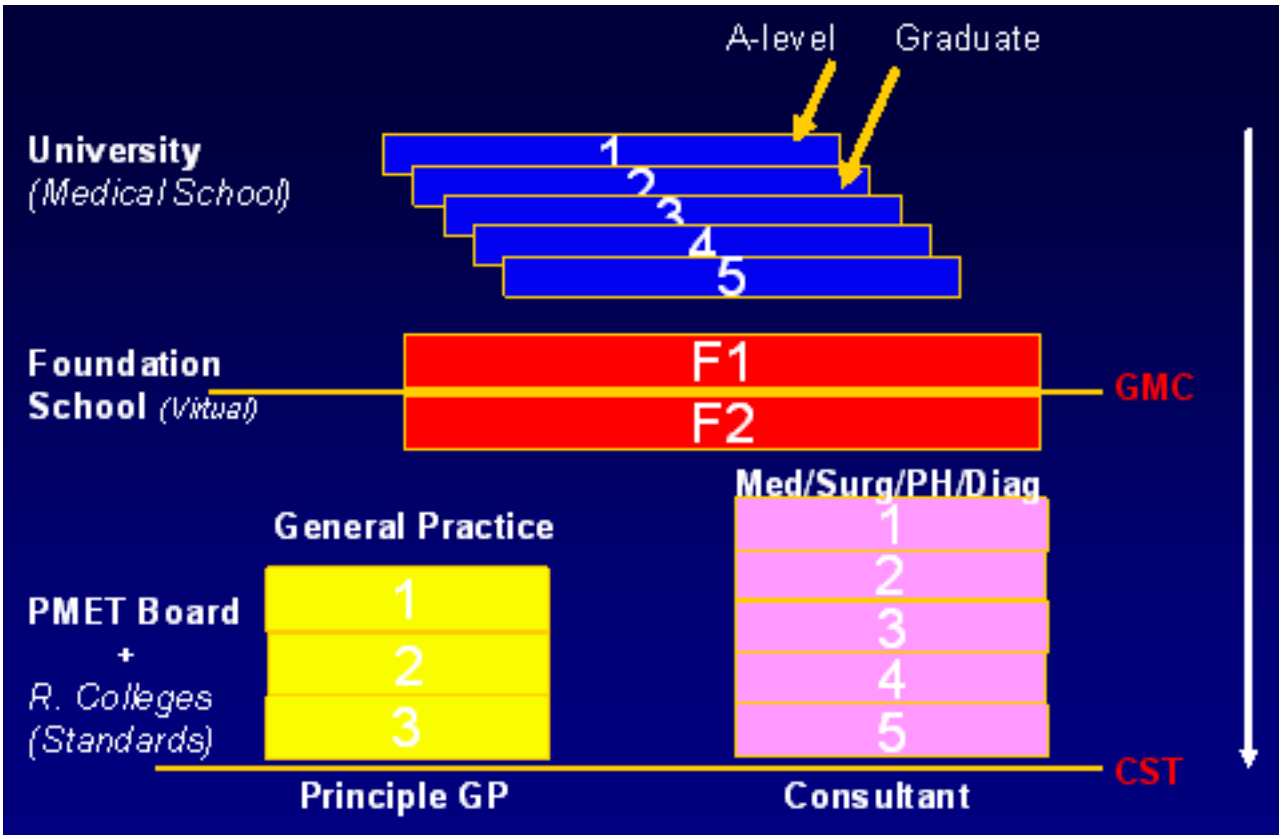
Figure 1: Medical Career, UK 2007.



Job Satisfaction and Stress level of Primary Health Caregivers at Primary Health Centers in Qatar

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Key words: **Health Caregivers, Job satisfaction, Stress.**

ABSTRACT

Objective: Our aim was to evaluate the extent of job satisfaction and stress of Primary Health Care givers in Qatar.
Subject and Methods: A population based cross sectional study was conducted in July 2007. 323 questionnaires were distributed to all the physicians/General Practitioners (GPs) working in Primary Health Care Centers in Qatar. Out of 323, only 176 (54%) responded. Data on socio-demographic characteristics and job satisfaction and stress were collected on self-administered English forms developed by Warr-Cook Wall (5).
Results: Out of 176 participants 85 (48%) were nale and 91 (52%) were female. Most were non-Qatari of age between 30-45 years and married withchildren. The overall job satisfaction and stress were below average. There were no significant differences in overall job satisfaction for nationality, sex, marital status and number of children whereas female Qatari Health Caregivers were found to be more stressed than their counterparts. There was negative correlation between job satisfaction and stress (r =-0.29, p=0.01).
Conclusion: Job satisfaction of primary health caregivers is critical for improvement of health systems. The results of our study showed that Qatari physicians were less satisfied with the rate of pay and the amount of variety in work. Stress was more in Qatari Health Caregivers than Non-Qatari.

Introduction

Primary Health Caregivers are responsible for providing medical care to the larger extent of the Qatar population. They play a pivotal role in medical care and medical care could be improved by facilitating them in working conditions, improving rate of pay and other peripheral facilities at work. The World Health Organization (WHO) has also recognized the importance of Primary Health Caregivers in 1978 in Alma Ata Declaration[1].

Ibrahim S Al-Eisa[2] published a study on job satisfaction of Primary Health Care (PHC) Physicians at Capital Region Kuwait in 2005. The authors concluded that attention should be given to income, variety in work and practice conditions in order to improve overall Physician satisfaction.

Al Mari S.A.[3] in 2002 from Qatar suggested improving job satisfaction of PHC Physicians by giving incentives, reducing workloads and providing vocational training for improving the quality of PHC services.

Khalid A Kalantan[4] published a similar study in 1999 on factors influencing job satisfaction among PHC Physicians in Riyadh suggested to provide vocational training, adequate incentives as well as administrative support to PHC Physicians.

Although, few studies are published in Qatar on job satisfaction for Physicians working in PHCs in past, and giveing no clues to improve job satisfaction of PHCs Physicians, recent changes in incentives and other facilities in PHCs are warranted to look into this matter again.

Our aim is to determine job satisfaction and stress levels of Primary Health Center Physicians and GPs in Qatar.

Materials and Method

A total of 323 questionnaires were sent to all primary health care physicians of 24 Primary Health Centers in the state of Qatar. Out of a total only 176 (54%) Care Givers responded. The questionnaire was adopted from Warr -Cook Wall[5] specially designed for job satisfaction and stress level in caregivers. The data were collected on demographic, job satisfaction and stress characteristics during July 2007. Responses were collected on satisfied, not satisfied and cannot tell or cannot say, for job satisfaction and stress characteristics. Variables, age, gender, religion, nationality, marital status, specialty, number of years working in primary health care and number of households were collected for demographic characteristics of the participants.

Job satisfaction and stress scores were calculated for each participant in the study. One value was assigned for satisfaction or agree, 0 for cannot tell or cannot say, and -1 for no satisfaction or disagree for quantification of the given responses by the participants on job satisfaction and stress simultaneously. All the items were added for each individual and divided by total numbers of items for respective scores on job satisfaction and stress.

Frequency distribution with percentage for categorical variables and mean and standard deviations for continuous variables were calculated. Student t test and One-Way ANOVA with post-hoc analysis by Bonefirroni were applied to see significant differences in continuous variables (Job satisfaction and stress scores) between and among categories for categorical variables. Chi-square tests were applied to see the association between categorical variables. Two-tailed probability 0.05 has been considered as a statistical significance

level. SPSS 14.0 statistical package has been used for the analysis.

Results

A total of 176 questionnaires were collected from Physicians and General Practitioners from all the Primary Health Centers. Most were of 30-45 years of age. There was 1:1 ratio of male to female. There were 80% non-Qataris in the study. More or less all the participants were married and had 5 or more children. There were 119 (68%) participants from the General Practitioner community and 49 (27.8%) from Physicians whereas 8 (4.5) participants didnot mention their discipline. The distribution of demographic data has been described in Table 1.

Table 2 described the distribution of job satisfaction items. More than 75% of participants from both specialties were satisfied with physical working conditions, colleagues and fellow workers and working hours. 60-70% satisfaction was for freedom to choose own method of work, variety of jobs and job satisfaction of today in comparison to the past. Below average satisfaction was for rate of pay whereas above average satisfaction was for two shifts at work and appointment system in subspecialty.

Table 3 described the stress level at work in Primary Health Centers for Physicians and General Practitioners. 87.5% were of the opinion that there was increased demand from patients and 80% agreed there was insufficient time to do justice with patients during consultations. 104 (59%) participants were of the opinion they were interrupted by emergency cases during consultation. Out of 176, 103 (58.5%) were of the opinion that thet were not getting sufficient time to update themselves. There was no disturbance of family life for 52% of participants in the study.

Overall job satisfaction score was below average in the study with mean level 0.36± 0.39. There was no statistical difference in job satisfaction score for all the demographic variables included. The results have been displayed in Table 4.

Stress level at work was also of the same level with mean 0.38±0.42. The study suggested that there was more stress in females than males (p =0.001) and more stress in Qatari participants than non-Qatari participants (p=0.02). Qatari female proportion was higher than the Qatari males in Health Caregivers (Chi-square= 16.7, p=0.00). Other demographic and professional variables like age, specialty, numbers of years working in practice and number of households in the study did not have a statistical difference at stress level. The results have been shown in Table 5.

Discussion

Most of the Caregivers in PHCs were non-Qatari; a similar proportion was described in a previous study done in 2002[3]. It may be due to the demand of PHCs services or Qatari Care Givers may have an inferior sotiation in comparison to other specialties. Our data showed a significant negative association between derived job satisfaction score and stress score. The study showed more stress in Qatari Health Care Givers than non-Qataris in PHCs. It may be due to more female Qataris working in PHCs than males. Qatari Health Caregivers might have household jobs at home. Our study also showed more job satisfaction compared to past experience in PHCs Caregivers. It may be due to increases in salary, increases in numbers of doctors, and other facilities in PHCs.

More thrust is warranted to update ithe medical education system, as Caregivers are not able to update themselves with new developments in their fields due to workload.

C.L. Cooper[6], Bonnie Sibbald[7], and Barbara[9] showed that job satisfaction has increased whereas Bruce E. Landon[8] demonstrated job satisfaction did not change dramatically.

Similar results have been described and suggested regarding demographic and professional variables in studies [1],[2],[4].

CONLCUSION

Our study showed that job satisfaction and stress are both are below average. More facilities, incentives and suitable working conditions should be provided to increase job satisfaction and to reduce stress. Further, it suggested a large study on job satisfaction, stress and mental health be undertaken to generalize the results in the region.

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Table 1:Distribution of Demographic and Professional Variables

Variable	Category	N (%)
Age	30 years 30-45 years 45 years No response	11 (6.3) 97 (55.1) 67 (38.1) 01 (0.6)
Sex	Male Female	85 (48.3) 91 (51.7)
Religion	Muslim Non Muslim	167 (94.9) 09 (5.1)
Nationality	Qatari Non Qatari	32 (18.2) 144 (81.8)
Marital status	Single Married Widow	07 (4.0) 168 (95.5) 01 (0.6)
Specialty	Family Physician GP No-response	49 (27.8) 119 (67.6) 08 (4.5)
Years in practice	5 years 5-10 Years 10 years No-response	40 (22.7) 61 (34.7) 74 (42.0) 01 (0.6)
Number of house holds in family	5 5-10 10 No-response	75 (42.6) 89 (50.6) 8 (4.5) 04(2.3)

Table 2: Distributions of Job Satisfaction According to Professional Variables

Variable	Category	N (%)
Q.1 Satisfaction with the physical working conditions	Not Satisfactory Cannot say Satisfactory No-response	31 (17.7) 5 (2.9) 139 (79.4) 01 (0.6)
Q.2 Satisfaction with the freedom to choose your own method of working	Not Satisfactory Cannot say Satisfactory No-response	50 (28.7) 7 (4.0) 117 (67.2) 02 (1.1)
Q.3 Satisfaction with your colleagues & fellow workers	Not Satisfactory Cannot say Satisfactory	8 (4.5) 9 (5.1) 159 (90.3)
Q.4 Satisfaction with your rate of pay	Not Satisfactory Cannot say Satisfactory	78 (44.3) 25 (14.2) 73 (41.5)
Q.5 Satisfaction with your hours of work	Not Satisfactory Cannot say Satisfactory No-response	13 (7.4) 5 (2.9) 157 (89.9) 01 (0.6)
Q.6 Satisfaction with the two shifts at work	Not Satisfactory Cannot say Satisfactory No-response	68 (39.1) 10 (5.7) 96 (55.2) 02 (1.1)
Q.7 Satisfaction with The incentives you get for your good work.	Not Satisfactory Cannot say Satisfactory No-response	100 (58.8) 21 (12.4) 49 (28.8) 06 (3.4)
Q.8 Satisfaction with amount of variety in your job.	Not Satisfactory Cannot say Satisfactory	45 (25.6) 22 (12.5) 109 (61.9)
Q.9 Satisfaction with the appointment system in subspecialty clinic in decreasing the problem of patients load.	Not Satisfactory Cannot say Satisfactory No-response	55(31.8) 24 (13.9) 94 (54.3) 03 (1.7)
Q.10 Compared with a year ago how you would describe your overall job satisfaction today.	Not Satisfactory Cannot say Satisfactory No-response	27 (15.5) 24 (13.8) 123 (70.7) 02 (1.1)

Table 3: Distribution of Stress According to Professional Variables

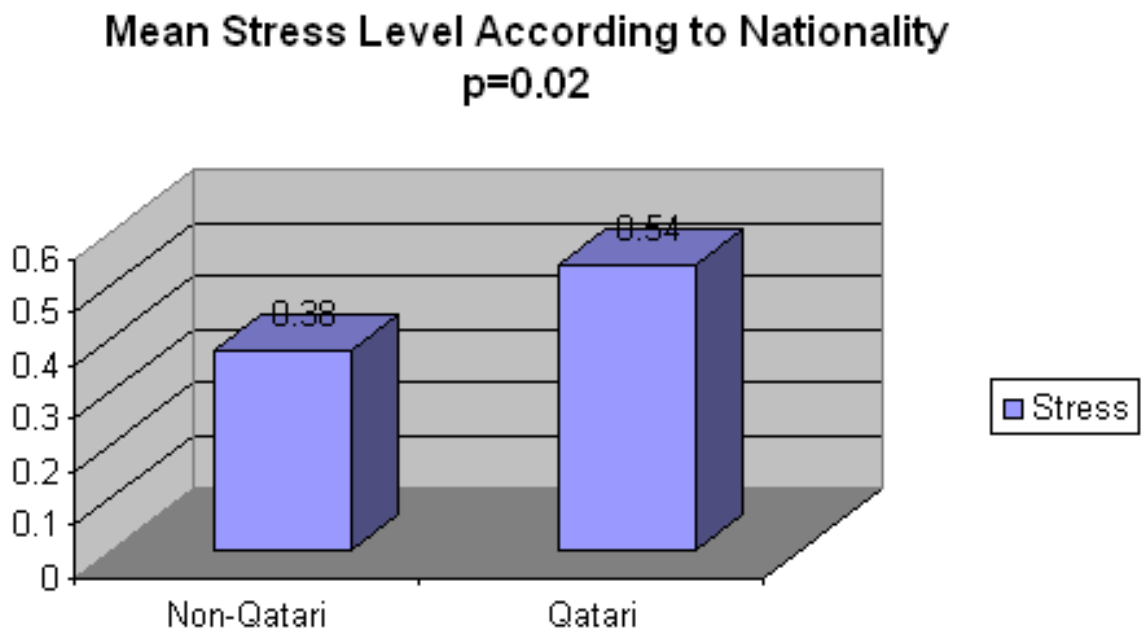
Variable	Category	N (%)
Q.1 Increased demands from patients	Disagree Cannot tell Agree No-response	12 (6.8) 04 (2.3) 154 (87.5) 06 (3.4)
Q.2 Insufficient time to do justice &preventive medicine during consultations	Disagree Cannot tell Agree No-response	26 (14.8) 05 (2.8) 140 (79.5) 05 (2.8)
Q.3 Interruptions by emergency cases during consultations.	Disagree Cannot tell Agree No-response	45 (25.6) 20 (11.4) 104 (59.1) 07 (4.0)
Q.4 Disturbance of family life by GP working	Disagree Cannot tell Agree No-response	92 (52.3) 26 (14.8) 51 (29.0) 07 (4.0)
Q.5 There's insufficient time to update your self	Disagree Cannot tell Agree No-response	61 (35.7) 07 (4.1) 103 (60.2) 05 (2.8)

Table 4: Mean levels and Comparison of Characteristics of Variables According to Job Satisfaction Score.

Variable	Category	N, Mean, SD	P value
Age	30 30-45 45	10, 0.34±0.39 91, 0.36±0.4 61, 0.37±0.38	0.97
Gender	Male Female	78, 0.38±0.36 85, 0.34±0.42	0.48
Religion	Muslim Non Muslim	154, 0.35±0.46 09, 0.47±0.38	0.41
Nationality	Qatari Non Qatari	29, 0.33±0.45 134, 0.37±0.39	0.70
Specialty	Family physician GP	46, 0.33±0.43 110, 0.39±0.38	0.44
Number of years working in practice	5 years 5_10 years 10 years	36, 0.38±0.39 58, 0.34±0.39 68, 0.36±0.41	0.89
Number of households	5 5-10 10	69, 0.43±0.33 83, 0.32±0.43 07, 0.33±0.29	0.22

Table 5: Comparison of Different Characteristics of Variables According to Stress Score.

Variable	Category	N, Mean, SD	P value
Age	30 Yrs 30-45 Yrs 45 Yrs	10,0.40±0.38 92, 0.37±0.44 63, 0.38±+0.42	0.96
Gender	Male Female	80, 0.26±6.46 87, 0.48±0.37	0.01
Religion	Muslim Non Muslim	158 , 0.38±0.43 09, 0.29±0.28	0.53
Nationality	Qatari Non Qatari	31 , 0.54±0.39 136 , 0.34±0.43	0.02
Specialty	Family physician GP	07, 0.38± 0.50 112 , 0.38 ±0.40	0.90
Number of years working in practice	< 5 years 5-10 years 10 years	39 , 0.48 ±0.45 60 , 0.31±0.43 67 , 0.39±0.41	0.15
Number of households	< 5 5-10 10	68 , 0.35±0.45 87 , 0.38±0.41 08, 0.58±0.33	0.36


Mean Stress Level According to Nationality
p=0.02
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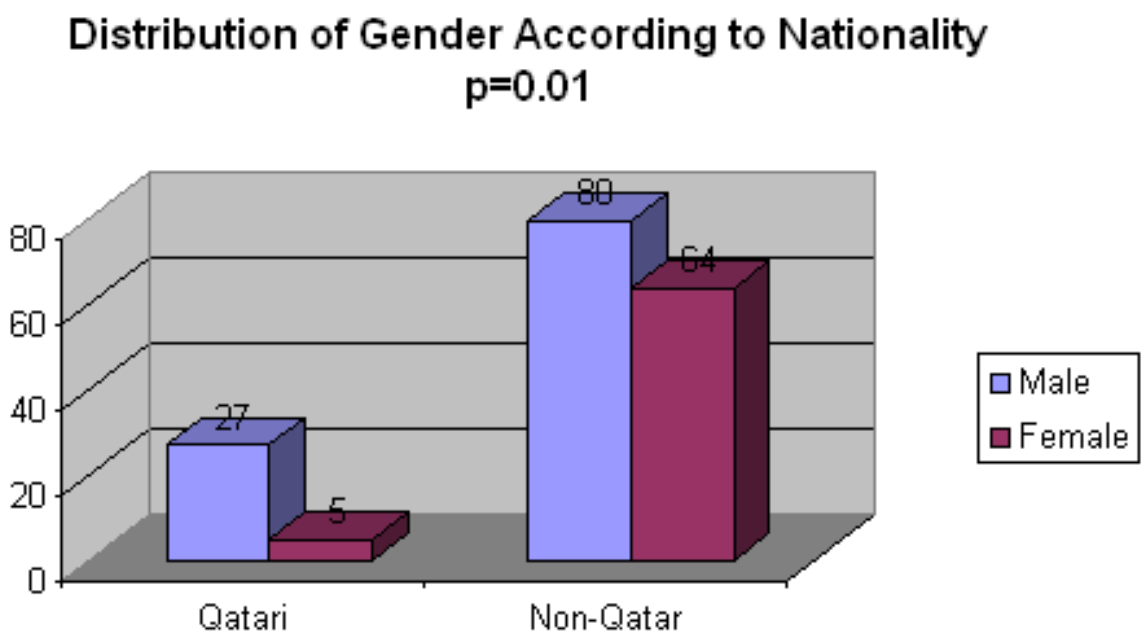
0.5
0.4
0.3
0.2
0.1
0
0.38
0.54
Non-Qatari
Qatari
Stress


Distribution of Gender According to Nationality
p=0.01
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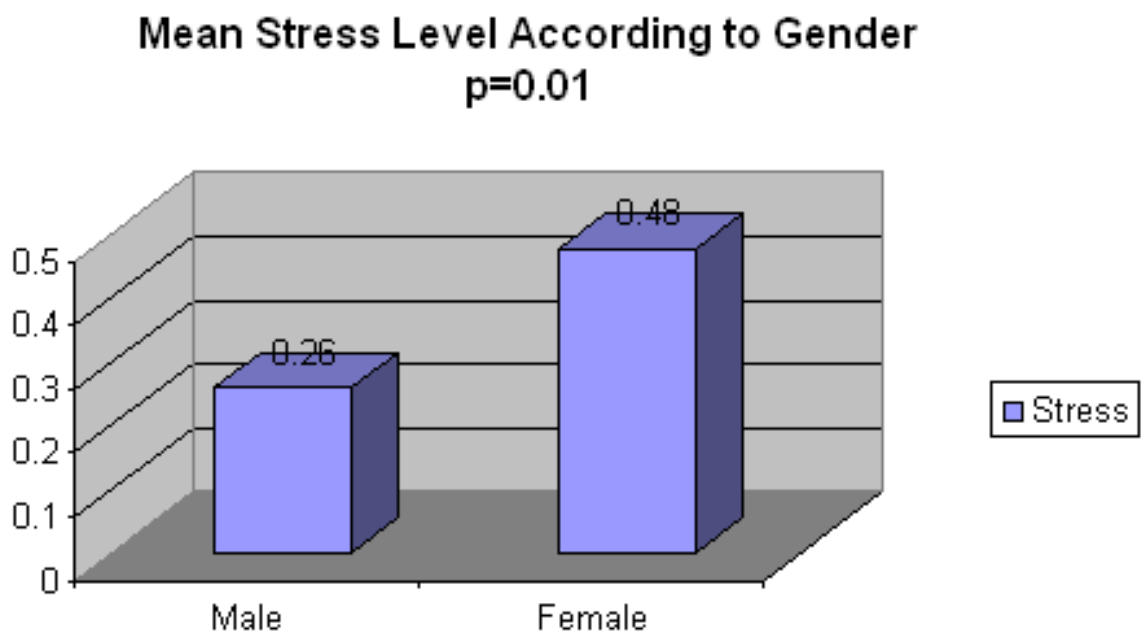
60
40
20
0
27
5
80
64
Qatari
Non-Qatar
Male
Female


Mean Stress Level According to Gender
p=0.01
0.5
0.4
0.3
0.2
0.1
0
0.26
0.48
Male
Female
Stress

Cerebral Palsy in Iranian Children: Etiology, types and associated disorders

ABSTRACT

Objectives and Background: Cerebral Palsy (CP) is a non-progressive encephalopathy that may be accompanied by speech, auditory or visual abnormalities; seizure or learning disorder, and mental retardation. CP occurs as a result of injury in each phase of brain growth and usually the motor pathways are involved. We decided to investigate this problem, because there is limited study on CP (with respect to etiology, types and associated disorders) in Iran.

Method: A descriptive-analytical study was carried out to investigate the etiology, types and associated disorders. Iranian children with CP, between one and six years of age, were studied over a two year period and were selected from children presenting to the referral neuro-developmental services of university rehabilitation clinics in the northern and eastern districts of the health centers of Tehran province with an estimated population of 20 million inhabitants, and evaluated at 3 monthly intervals for two years during 2004-2006.

Results: 112 children with CP were seen during the study period. The main symptoms were delay milestones (91.1%), inability to walk independently (52.7%), delayed speech (41.1%) and seizures (30.4%). The main neurological features were motor weakness (63.4%), spasticity (55.4%), language dysfunction (33%), loss of head control (23.2%) and mental retardation (8.5%). Cranial computerized tomography abnormalities were mainly cerebral atrophy (18.8%). MRI abnormalities (18.7%) were mainly cerebral atrophy, demyelination and ventriculomegaly. The results showed that the perinatal factors were the most frequent causes of CP among which asphyxia was present in 52 (46.4%), and included low birth weight and very low birth weight with 51(45.4%), pre-term deliveries with 42 (37.5%), and neonatal seizure in 28 (25%) which were the most outstanding factors. Spastic hemiplegic CP was recorded as the most frequent type (36.6%).

Conclusions: The main factors identified were birth asphyxia, pre-term delivery, low birth weight (especially VLBW). Our findings suggest that improved maternal and childcare particularly in the ante and perinatal periods may reduce the incidence of CP in this environment.

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Key words: Cerebral palsy, perinatal factors, birth asphyxia, low birth weight.

Introduction

Cerebral palsy, a persistent, non-progressive disorder of movement and posture which occurs during a period of cerebral growth and development (infancy and childhood)(1,2) remains a globally common cause of pediatric morbidity despite the technological advances in neonatal intensive care and improved maternal care over the last two decades(3,4). All of the children with CP suffer from a kind of brain damage and this usually involves motor pathways. More than 100 years have elapsed since the publication of Little's classic paper linking abnormal parturition, difficult labor, premature birth, and asphyxia neonatorum with a "spastic rigidity of the limbs(2), the pathogenesis of cerebral birth injuries is far from completely understood. This is not because of lack of interest. The evolution and ultimate neurologic picture of cerebral palsy has been recorded in innumerable papers. Today it is known that most of the high risk pregnancies will have normal children. Indeed, many of the patients with CP have had extra CNS anomalies, which have been led to increased risk of asphyxia during delivery.

The etiologies of CP can be grouped into three categories: Prenatal (genetic, intrauterine infections), Perinatal (asphyxia, LBW, birth trauma), Postnatal (hemolytic disease of neonate that leads to kernicterous, metabolic derangements like hypoglycemia, hypocalcaemia, hypoxia, and inborn errors of metabolism, CNS infections such as meningitis and encephalitis)(5,6).

Different types of CP can be grouped according to physiologic, topographic and functional capability. In this study different types of CP were grouped according to physiologic, spastic and non-spastic (hypotonic and atonic, attetoid or dyskinetic and mixed), and topographic (hemiplegia, diplegia, quadriplegia, monoplegia, triplegia paraplegia, double hemiplegia) parameters.

Concomitant disturbances, which are observed in this study are: communication and learning difficulties, epilepsy, mental retardation, speech, auditory, swallowing and visual disorders(7-8).

The reported prevalence of CP ranges from 1.5 - 2.5 per 1,000 live births, and a higher ratein the lowest birth weight groups has been

attributed more to the increased number of survivors as a result of improved care in itself(9,10). The need for resuscitation and presence of congenital abnormalities were also identified as risk factors for CP(11).

More recent studies showed that the Apgar score equal or lower than 3 in the 5th minute of birth in many observed infants did not lead to CP; but the study of Apgar score in minutes 10th and 20th of birth is important(5). In another study it was defined that in more than 50% of patients, asphyxia was not the sole reason of CP and a concomitant etiology also existed. It should be mentioned that in considering the etiology of CP the percent of asphyxia is not absolute and it is in conjunction with other factors such as LBW, prematurity, respiratory distress syndrome(RDS), NICU admission >3 days and environmental stresses and procedures(12).

According to the WHO report 2006 , in Iran " perinatal factors " are the fourth common cause of mortality in all ages, and cause 10 years of life lost (YLL), which is the third most common cause for lost years in the country (after ischemic heart disease and road traffic accidents)(13). According to the same report until 2004, the under 5 - mortality rate in Iran was 38 per 1000 live births, 63 percent of which was due to neonatal mortality which in comparison to 43 percent in the regional average

Eastern Mediterranean countries, is a significant figure. The same source has reported that among all etiologies for neonatal mortality in Iran, preterm birth (31%, in comparison to 22% in the Eastern Mediterranean area), congenital anomalies (15% in comparison to 9% in the Eastern Mediterranean area with high child and adult mortality), birth asphyxia (22%), and severe infections (22%) are the most common(13).

One can conclude that congenital anomalies aside, the three other most common etiologies of neonatal mortality in Iran are somehow related to the perinatal period, and thus under 5 mortality, which as said before is mainly due to neonatal causes and occurs mainly in the neonatal period, is also strongly related to perinatal factors.

When considering years of life lost in Iran, one can also presume that childhood long-term morbidities and handicaps may be significantly related to the perinatal period as well(13).

One report supporting this presumption suggests that in developing countries, among all etiologies of cerebral palsy, prematurity and intrauterine growth rate restriction (40 -50%) and birth asphyxia or birth trauma (25-30%) are the most common causes(14).

In order to prevent neuro-developmental disorders, one of the most effective strategies universally, is early intervention following early detection of the most subtle and earliest signs of neuro-developmental disorders. Thus the early signs and symptoms for primary physicians is very important for referral for the second level of assessment which is performed by experts and with professional tests.

On the other hand, cerebral palsy is a common cause of disability in Iranian children. Because there has not been any research about the most frequent etiologies and kinds of CP and its associated disorders, this research has been done to specify the most frequent causes for better management and prevention for reducing incidence in Iran and developing countries such as Iran. Since prevention is superior to treatment especially for disease such as CP, the importance of this research will be noted.

Materials and Method

This study was carried out in the years 2004-2006, on 112 one to six-year old children, who were referred from different health-care centers in the northern and eastern districts of Tehran to the child neuro-development service at the University Rehabilitation Clinic in the eastern and northern Tehran provinces of Iran and were evaluated at 3-monthly intervals for at least two years.

The reason for choosing the northern and eastern districts was easier geographical accessibility to this center for the referred children and their families. The gender and socio - economic status were the same of Tehran province, the capital city of Iran, with 20 million inhabitants, (all coming from the same districts in Tehran city).

In order to detect etiology, a questionnaire was completed for each child, including the prenatal, perinatal, neonatal and infantile medical history, with the aid of the mother and the child's medical and health records. At the initial assessment, information on their demographic characteristics, clinical data including the duration of gestation and labor, place and method of delivery, number of fetuses and outcome, birth weight, maternal past and current medical and social histories, complications during pregnancy and labor was collected. In addition, information on stillbirths, abnormal children, ante partum hemorrhage, and exposure to drugs, exanthemata, and febrile illness severe enough to warrant admission to the hospital in the mother during the current pregnancy, was also obtained.

Baseline investigations included complete blood count, serum electrolytes, renal, thyroid and liver function tests. Organic acid screen, TORCH study, serum lactate and pyruvate, electroencephalography (EEG) and cranial computerized axial tomography (CT) or MRI, visual and hearing evaluation were obtained on clinical suspicion and were not performed in any of the children. Information on intrauterine growth and details of monitoring of fetal growth for any of the children was also not available.

The questionnaire had been previously evaluated for content validity and pilot studies had been carried out.

The diagnosis of CP was reached using predefined criteria for the study. CP was defined as a chronic disability characterized clinically by non progressive aberrant control of movement that appears early in life and is not caused by a recognized progressive disease or identified etiology such as encephalitis or

meningitis.

These patients were grouped according to physical examination and standard protocols.

For study of concomitant disorders a group of developmental pediatrician, neuro-rehabilitation pediatrician, ophthalmologist, pediatric neurologist and psychiatrist was used. Assessment of severity of motor, mental retardation, speech and swallowing disorders, was carried out by a professional rehabilitation team including occupational and physical therapist, speech and language pathologist and special psychologist.

In this study, the term perinatal restricts itself to the period extending from the onset of labor to the end of the first week of postnatal life.

The collected data was verified and entered into a standard database file and analyzed using the statistical package for social sciences.

Results

During the study period, 112 CP patients (53 males, 59 females) aged 12 to 72 months were seen with an overall male: female ratio of 0.89: 1. The mean age +standard deviation (SD) for males was 33.3 ±35.2 months and females 24.8±22.5 months. The mean head circumference + SD for males was 45.30 + 3.5 cm and females 43.93 + 3.7 cm. Microcephaly (head circumference <5th percentile using NCHS reference chart) was found in 40 (35.1%) of the patients during examination and 12(10.7%) at birth; that was a skewed pattern.

The initial presenting symptoms and signs are shown in Table 1. None of the patients had numeric chromosomal abnormalities, or hypothyroidism. The total number of EEG that was obtained was 37 (33%), of which 16 (14.3%) was abnormal. The total number of cranial CT that were obtained was 51 (45.6%), of which 36 (32.2%) were abnormal with predominant cerebral atrophy in 21 (18.8%); hydrocephalus (2.7%) and porencephaly (0.9%), but agenesis of the corpus callosum was not detected. The total number of MRIs that were obtained was 26 (23.2%), of which 21 (18.7%) were abnormal with predominant cerebral atrophy(6.3%), demylination (2.7%) and ventriculomegaly (2.7%). There was no attempt made to correlate the EEG findings or cranial CT and MRI abnormalities with the spectrum or clinical presentation or severity of the handicap in this study.

The mothers were generally healthy with history of hypertension (1), epilepsy (1), gestational diabetes (3), depression (1), uterine structural abnormalities (4), and renal disease (2) noted in 12 mothers only.

The main etiologies in the perinatal period are shown in Table 2, and Table 3 shows the different types of cerebral palsy in this study.

The majority of pregnancies were singletons and 9.2% were twin pregnancies. Preterm delivery was found in 42 (37.5%) and post term delivery in 6 (5.5%). Breech delivery was noted in 4 (3.6%) and antepartum hemorrhage in 10 (8.9%). Birth asphyxia was encountered in 52 (46.6%). The overall mean birth weight was 2.49 + 0.88 kg and low birth weight (<2500 gms) was found in 51 (45.4%) patients. This distribution is shown in Table 4.

Discussion

Whereas in the past mechanical damage to the brain contributed significantly to mortality during the neonatal period and to subsequent persistent neurologic deficits, mortality and neurologic deficits are now more commonly the consequences of developmental anomalies and hypoxic-ischemic encephalopathy (HIE), acting singly or in concert.

HIE is the consequence of a deficit of oxygen supply to the brain. This can result from a reduced amount of oxygen in the blood (hypoxia) or a reduced supply of blood to the brain (ischemia). No generally accepted definition exists for asphyxia(2). It can be inferred on the basis of indirect clinical markers: depressed Apgar scores, cord blood acidosis, or clinical signs in the neonate caused by HIE such as neonatal seizure and meconium-stained amniotic fluid (ASMF). The most traditional of these has been the Apgar score, even though it is now evident that a low Apgar score does not indicate the presence of asphyxia in either term or premature infants(15).

Nelson and Ellenberg have calculated that in the National Collaborative Perinatal Project, the proportion of cases of cerebral palsy owing to intrapartum asphyxia ranged between 3% and 13% and did not exceed 21%(16). In an Australian study, intrapartum asphyxia produced cerebral palsy in 4.9% to 8.2% in infants(17). Whereas the predictive value of the 1- and 5-minute Apgar score in terms of subsequent neurologic deficits is limited, term infants with 5-minute Apgar scores of 6 or less are three times as likely to be neurologically abnormal at 1 year of age as those with scores of 6 to 10(18). The likelihood of permanent brain damage increases even more significantly when depressed Apgar score persists. Of infants with scores of 3 or less at 10 minutes of age, 68% die during the first year of life, and 12.5% of survivors are neurologically damaged. The prognosis is even worse when an Apgar score of 3 or less persists for 20 minutes. Of those infants, 87% die, and 36% of survivors have cerebral palsy(18).

About postnatal etiologies, septicemia and meningitis with 20% had the highest frequency(7). In other reports the most frequent etiology is LBW and if this is accompanied with other risk factors like asphyxia, the risk for CP will be higher.

Limited research has been done about the etiology of CP in Iran. In one study in a rehabilitation center in Tehran in 1993, prevalence of still birth was shown to be more than fifty, in comparison with other reports that blame unknown factors in creating non suitable and insecure environment for growth of fetus and also can be a predictor of non adequate prenatal care(19) In another study in Tehran in 1992 over 83 cases, of hypertension and UTI of mother were the most frequent prenatal etiologies(19). Also in 53% of cases there was history of neonatal icter, which 80% of were of medium and severe type, and in 38.7% blood exchange has been done. In another study in Tehran the most frequent causes of CP

were perinatal etiologies, of which 29% were asphyxia, 24.5% were prematurity and 13% were LBW(19).

The other studies report that, different types of CPs are as follows:

Hemiplegic (25-40%), diplegic (10-23%), mixed (9-22%), quadriplegic (9-43%), extra pyramidal (9-22%) which is similar to our study(1,6), but in another study in Iran, frequency of different types of CP were spastic diplegic, mixed spastic quadriplegic, extra pyramidal and hemiplegic(19).

In our study it was observed that 97.3% of patients were delivered in hospital and 46.4% had birth asphyxia with persistent low Apgar score, 25% neonatal seizure and 5.4% ASMF, that is according to the recent studies that indicate the role of intrapartum events and CP(20). Thus, maternal factors during pregnancy and labor appear to play a major role in the etiopathogenesis of CP in our patients.

The clinical characteristics of our 112 CP children are similar to those reported in other studies(21-23). Our findings of low birth weight (45.4%), prematurity (37.1%), (8.8% with <28 weeks and 28.3% with 28-37 weeks of gestational age), SGA (33.9%), and breech delivery (3.6%), which have been identified as risk factors for CP are consistent with the results from other studies(24-25). In a study of 187 Saudi children with cerebral palsy, 73% had microcephaly, 34% LBW, 30% pre-term delivery, 88% birth asphyxia and breech presentation in 8%(23).

It is notable that a high proportion of our patients are microcephalic (35.7%) with no abnormally shaped skull and 32.2% have CT abnormalities with prominent brain atrophy, except in cases of premature closure of the sutures (craniosynostosis), size of the brain that determines the presence of mental retardation, rather it is the underlying structural pathology of the brain. An abnormally small brain results either from anomalous development during the first 7 months of gestation (primary microcephaly), or from an insult incurred during the last 2 months of gestation or during the perinatal period (secondary microcephaly). Hack and coworkers believe that perinatal growth failure, as reflected in a subnormal head circumference at 8 months of age, predicts impaired cognitive function and academic achievement(26). In our study most children had a normal head circumference at birth, and predominant brain atrophy in CT scan and MRI, perinatal events are responsible for impairment in head growth, and, by inference, brain maturation. The studies more recently published continue to show similar results(27,28).

The CT and MRI abnormalities are comparable to those reported in other studies(29). It is suggested that further studies are required in this environment to correlate the different types of cranial CT abnormalities with the various forms of CP, underlying cerebral pathology and the possible mechanisms involved in their respective pathogenesis. The relative rarity of identifiable etiologies such as meningitis and encephalitis reflects selection bias as cases with identifiable etiologies were excluded from the study. In addition, it was not possible to validate any presumptive diagnosis of meningitis or encephalitis in the absence of accurate information on the clinical presentation or ancillary laboratory investigations particularly cerebrospinal fluid analysis.

Coexistence of seizure with CP in different reports is between 25-33%, which was 34(30.4%), in this study. The frequency of seizures in our patients is comparable to the reported overall prevalence of epilepsy in patients with CP(19,30,31).

Delay in speech development has been mentioned in extra pyramidal CP because of lack of coordination of muscle engaged in speech which is resolved with time and speech ability is regained(32,33). In this study speech disorders was 41.1%.

In other studies the most frequent visual disorder is strabismus (which is the same as in our study with 16.1% frequency)(34).

The observation that some of the cases had a positive history of previous CP and disability 18(16.1%) in the family is worthy of note. The pattern of seen presentation and the associated clinical features, particularly the absence of associated urinary bladder dysfunction and peripheral neuropathy does not conform to any of the various clinical forms of hereditary spastic paraplegia described in the literature, even though molecular genetic studies were not carried out in any of the cases. These factors with a high rate of consanguity 35(42%) suggest the need for further clinical and genetics studies on CP in Iran.

Conclusion

In this study the most frequent type of CP was spastic hemiplegia, which had the least motor problems, and not suitable for early diagnosis, so it seems that the primary physicians should pay more attention to early signs and symptoms and risk factors for CP especially asphyxia, prematurity and low birth weight.

Significant numbers of children with CP (92%) had normal IQ or were educable, therefore with early diagnosis and determination of those with normal IQ and use of specialized educational programs (with special attention to their functional disabilities), they can have a normal life like others and enjoy themselves.

According to this study seizure is observed frequently in CP children, so good treatment of it can prevent the accentuation of mental retardation.

The pattern of identified risk factors for CP in our study suggest that preventive measures directed at improving maternal ante and perinatal care might effectively reduce the incidence of CP in this environment.

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Table 1: Frequency of major symptoms and signs in Iranian children aged 1-6 years with cerebral palsy (N=112)

	Frequency		
	Male N=53	**Female N=59**	**Total N (%)**
Presenting symptoms			
Delayed Milestones	50	52	102(91.1)
Inability to Walk	31	28	59 (52.7)
Delayed speech	21	25	46 (41.1)
Seizure	18	16	34 (30.4)
Poor head control	12	14	26 (23.3)
Physical signs			
Motor Weakness	30	41	71(63.4)
Spasticity	31	31	62(55.4)
Microcephaly	20	20	40(35.7)
Speech disorders	17	20	37(33)
Sensory disorder	10	11	21(18.8)
Strabismus	10	8	18(16.1)
Hearing Loss	5	4	9(8.9)
Mental Retardation	5	3	8(8)

Table 2: Frequency of main associated factors in Iranian children aged 1-6 years with cerebral palsy (N=112)

Etiology	**Male N=53**	**Female N=59**	**Total N(%)**
Prenatal & Intra uterine			
Small for Gestational Age	22	16	38 (33.9)
Intra Partum Hemorrhage	4	6	10 (8.9)
PROM	9	8	17 (15.2)
Multiple pregnancy	7	4	11 (9.8)
Breech presentation	1	3	4 (3.6)
Preeclampsia	3	1	4(3.6)
Intra Uterine Infection (TORCH)	3	5	8(7.1)
Structural Uterine Abnormality	1	2	3(2.7)
Using Drug	5	5	10(8.9)
Infertility Treatment	4	5	9(8)
Repeated Abortion	9	10	19(17)
Perinatal & Early postnatal onset			
Low Birth Weight	26	25	51 (45.4)
Neonatal seizure	11	17	28 (25)
Preterm delivery	25	17	42 (37.5)
Depressed Apgar score	25	27	52 (46.4)
NICU Admission > 3 days	25	22	47 (42)
Meconium-stained Amniotic fluid	2	4	6(5.4)
Prolong Labor	0	2	2(1.8)
Postnatal onset			
Severe hyperbilirubinemia	2	4	6(5.3)
Pneumonia type II	13	8	21(18.8)
Metabolic Disorder	12	10	22(19.6)
Infantile Seizures	14	12	26(22.3)

Table 3: Types of Cerebral Palsy in 112 Iranian children

TYPE		**Frequency N**	**Percent**
spastic	Hemiplegia	41	36.6
	Diplegia	35	31.3
	Quadriplegia	14	12.5
non-spastic	Hypotonic & Atonic	15	12.5
	Attetoid or Dyskinetic	5	4.5
	Mix	2	1.8
Total		112	100

Table 4: Frequency of birth weight of 112 Iranian cerebral palsy children.

Birth Weight	**Frequency N**	**Percent**
> 4000 gm	2	1.8
2500-4000 gm	59	52.8
1500-2500 gm	36	32.1
<1500 gm	15	13.3
Total	112	100

Pathophysiology of Migraine

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ABSTRACT

Migraine is a neurovascular disorder characterized by a unilateral mild or severe headache lasting from a few hours to as long as three days. It has been recently shown in many studies that this disorder has a firm and complicated genetic background that exposes individuals to a higher susceptibility to migraine attacks. Old theories used to focus on the vascular changes and the subsequent blood flow alterations in the brain to explain the different symptoms occurring during migraines. New theories on the other hand are shedding more light on the involvement of the nervous system in the brain, primarily the trigeminal nerve in the brain stem, considering it the primary cause for the initiation of migraine attacks. Changes in blood vessels in the brain are believed to be an epiphenomenon only.

In this article, the pathophysiology of a migraine attack is explained on the basis of the unified theory that tries to integrate all the available scientific data about migraine.

Pathophysiology of migraine:

Migraine is best defined as a chronic disorder of the central nervous system. It is characterized by a series of events beginning with the abnormal over-excitement of certain nerve cells in the brain. These neurons release a pool of chemicals that stimulate the brain's blood vessels to swell (vasodilation), and create an inflammatory reaction in the affected area. As a result, the person suffers from a severe and pulsating unilateral headache, accompanied by nausea, vomiting, visual and auditory problems, tingling of the face and extremities, as well as fatigue, drowsiness and yawning[1].

Migraine attacks may be triggered by many different factors, including hormonal changes (observed in menstrual cycles, with oral contraception or estrogen replacement therapy, which explains why nearly 74% of migraine sufferers in the United States are females[2]). Other triggers involve dietary factors (like chocolate; alcohol; cheese; yoghurt; fermented, decayed or marinated meat and anything that may contain tyramine, a monoamine which is produced by the decarboxylation of tyrosine during fermentation or decay and that causes the release of stored monoamines (dopamine, epinephrine or norepinephrine)[3]. Changes in sleep patterns, emotional disturbances (like excitement, fear, anxiety, anger, and stress), allergic reactions, and environmental factors (like weather changes, bright light, loud noise, certain odors and perfumes) may also trigger migraine attacks[4]. Each person, with his/her unique genetic background, is at a certain threshold of neuronal excitability in his/her brain. In fact, specific allele mutations have been recently discovered to be involved in exposing the individual to higher risks to migraine attacks: four different missense mutations in the α_{1A} subunit of the P/Q – type of voltage-gated Ca^{2+} on chromosome 19 affect the release of serotonin, a vasoconstrictor, in midbrain[5][6][7]. ATP1A2 gene, found on chromosome 1q23, is also linked to migraine attacks. This gene codes for the α_2 subunit of the Na^+/K^+ ATPase[8]. Moreover, the dopamine D2 receptor gene is found to be responsible also for increasing the susceptibility to migraine recurrence[9].

When exposed to the migraine triggers listed above, the ones with low threshold (i.e. higher susceptibility to migraine attacks) will experience a short wave of neural depolarization in the brain due to the initial release of potassium and glutamate in the occipital lobe and then propagate throughout the whole cortex at a speed ranging between 3 and 6 mm/min. This wave is followed by a longer one of neural depression known as cortical spreading depression, or simply CSD[1]. These consecutive alterations in the neural activity in the brain stimulate the vasoconstriction of specific blood vessels in the brainstem. If the decrease in the blood flow goes below a critical value, the different symptoms observed during the aura phase (e.g. blurred vision, weakness, tingling or numbness of the face and extremities) may be initiated[10].

It should be noted that one third only of migraine sufferers pass through the aura symptoms. The rest two third, despite the electrical wave disturbances, have what we call migraine without aura because the decrease in blood flow in their brain is not so critical[11]. Some studies have shown that the disruption of the normal electric status of the brain might affect the performance of the hypothalamus causing the different prodromal signs observed several hours (or even days) before the migraine, like mood disturbances, food cravings, drowsiness, thirst, and yawning[12].

Once the CSD is terminated, the brain cells synthesize many vasodilators but most importantly nitric oxide (NO), which diffuses to the cortical area and stimulates the peripheral blood vessels at the meninges to swell. These vessels are highly innervated by the peripheral trigeminal nerves; also know as the trigeminal afferents. Once the stretch receptors found in the walls of the meningeal vessels are activated upon the dilation of these vessels, the trigeminal afferents will send specific sensory input to the trigeminal nucleus in the brain stem[13]. In a pseudo-reflex pathway, motor trigeminal nerves release at their axonal terminals many neurotransmitters and neuropeptides near the dilated vessels. The most important chemicals are substance P, which is mainly responsible for mediating the pain impulses to the appropriate nociceptors in the brain, and neurokinin A which promotes protein extravasations from the blood plasma to the neighboring tissue. Both of the latter, with the neuropeptide calcitonin gene-related peptide (CGRP) induce vasodilation of more peripheral arteries, worsening the pain. Other chemicals like the vasoactive intestinal peptide (VIP), nitric oxide (NO), serotonin (5-HT), and dopamine (D) are also involved. This pool of chemicals will cause a local inflammatory reaction, termed sterile neurogenic perivascular inflammation[13].

It is suggested as well that the thalamus plays an important role in directly stimulating the cortical pain areas situated in higher centers of the CNS, which produce pain of the headache[11]. Note also that several aminergic brain stem nuclei are directly involved in the migraine attack. Dorsal Raphe nucleus for instance is involved in changing the levels of serotonin in the brain[12]. This neurotransmitter is crucial for mood control, pain sensation, sexual behavior, sleep, as well as dilation and constriction of the blood vessels, which might trigger a migraine[14]. Locus Ceruleus causes changes in epinephrine level, which explains the activation of the sympathetic nervous system in the body during or around a migraine attack. This activity in the intestine causes nausea, vomiting, and diarrhea. Sympathetic activity also delays emptying of the stomach into the small intestine and thereby prevents oral medications from entering the intestine and being absorbed. The impaired absorption of oral medications is a common reason for the ineffectiveness of medications taken to treat migraine headaches. The increased sympathetic activity also decreases the circulation of blood, and this leads to pallor of the skin as well as cold hands and feet. The sensitivity to light and sound as well as blurred vision are also consequences for the increased sympathetic activity[15].

Till now, the complete phenomenon of migraine initiation was not well understood. In fact more research and studies are required in order to reveal the whole pathway triggering this disorder. Once this stage is reached, the “perfect” treatment for migraine would be easily synthesized.

Results

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The Etiology and Patterns of Maxillofacial Injuries At A Military Hospital in Jordan

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ABSTRACT

Objective: To describe the cases of maxillofacial injuries that attended the Emergency Department at Queen Alia Military Hospital.
Methods: A descriptive study of 85 cases representing patients with maxillofacial injuries who attended the emergency department at Queen Alia military hospital during a 3 year period (January 2002 till January 2005) were analyzed in relation to age, gender, cause of injury and need for referral to other specialties for better management.
Results: Out of the total 85 cases that were reviewed, there were 65 (76.4%) males and 20 (23.6%) females. The mean age of the patients was (24.5) and their age range was between (3-50) years. The majority of the maxillofacial injuries were due to car accidents 69 (81.17%). Regarding the need for referral, 14 (16.4%) cases had associated serious head and eye injuries, therefore they were referred to Neurosurgery and Ophthalmology Departments. The majority of cases 71 (83.6%) had maxillary and mandibular fractures, which required referral to the department of maxillofacial surgery.
Conclusion: The number of documented cases of maxillofacial injuries during the study period may reflect under-reporting of the problem. This may necessitate the need for an obligatory special form to be used at the Emergency Department to overcome this problem.
Keywords: Oral Injuries, Maxillofacial injuries, Mandibular fracture.

Introduction

Maxillofacial trauma is presented in Accident and Emergency Department of the hospital either as isolated injury or part of multiple injuries to the head, neck, chest and abdomen[1]. The etiology of these injuries is variable from one country to another and even within the same country depending on prevailing socioeconomic cultural and environmental factors[2]. These injuries not only affect the function of the patient but also cause serious psychological, physical and cosmetic disabilities. Most of our patients were involved in road traffic accidents[2], while in developed countries like the United Kingdom it was found that violence is the commonest cause of maxillofacial injuries, while car accident injuries were declining, maybe because of improvement in car design and safety equipment and rapid management of the patients[5]. Epidemiologically, studies of maxillofacial trauma have classically shown that young adults are the main victims[3,4,5]. The aim of this study was to investigate the incidence, etiology, management, age and sex distribution of maxillofacial injuries.

Materials and Methods

This descriptive study was conducted at Emergency Department at Queen Alia Military Hospital during a 3year period from January 2002 till January 2005. The data were collected by reviewing 85 medical records representing patients with maxillofacial injuries who attended the Emergency department at that period, analyzed in relation to age, sex, cause of injury and need for referral to other specialties for better management. The management started with (ATLS) Advanced Trauma Life Support including the maintenance of airway control of bleeding, antibiotic coverage and head elevation. Regular mouthwash was advised. In all cases plain x-rays and CT scan were obtained when possible. Patients who needed surgical intervention were referred for admission to be managed accordingly.

Results

Out of the total 85 cases that were reviewed, there were 65 (76.4%) males and 20 (23.5%) females.

More than 90% were between the age of 5 years and 35 years, mean age was (24.5). 69 cases (81%) were due to car accidents and the rest were either due to quarrels or other types of trauma as seen in Table 1 and Table 2.

Regarding the need for referral, 14 (16.4%) cases wereassociated with seriousheadandeyeinjuries;therefore they were referred to neurosurgery and ophthalmology departments, and the rest were referred to the oral and maxillofacial surgery department for further management.

The mandible was the most common site of injury in about 69% followed by maxilla which represents 14% of the cases, then the other bones as shown in Table 3.

Discussion

Maxillofacial injury is injury to the facial soft tissues, facial bones and associated specialized soft tissue within the head and neck as a result of wounding or external violence. Regarding the etiology of maxillofacial injuries, in this descriptive study road traffic accidents were the cause of 81% of the injuries which agrees with other studies done by S.shahid Hussain[1] and Ansari MH[8] and comparable to two other studies done in Jordan by Qudah MA et al and Jasser K[7,11]. In contrast, studies in developed countries reported that violence is the main cause of maxillofacial injuries which was found by Ogundar BO et al, Laski R et al and BuchananJ et al[3,4,6], as well as in the UK, as reported by Tefler M et al[13]. Males were involved more than females, which can be justified by the fact that men are working outdoors more than women, especially in this society. Some results about male predominance were reported in other studies in Pakistan and Jordan as well as in developed countries[3,4,13]. The pattern of maxillofacial injury varies with the severity of trauma. The most common bone to be injured is the mandible, in about 69% of the cases, maybe because it is the most prominent bone in the face, compared with the middle third of the face. This was followed by the maxilla in 14% of the cases. These observations are parallel to those of other studies. Another study in Jordan reported 75% of the cases as mandibular injury[11] so as in Ansari MH study who recorded 52% of the injuries are in the mandible[8]. The severity of injury varies from simple soft tissue laceration to more complicated fractures of the maxillofacial bones. Some patients have associated other injuries so they need to be treated by active participation by neurosurgeon or ophthalmologist or orthopedic surgeon[1,9].

Young people were the main victims in this study compared with other studies maybe because they are the most active age group physically[2,3,9,10,12].

The oral and maxillofacial surgeon is an essential part of comprehensive Accident and Emergency Services in the management of these injuries, both primary and secondary. In the more severe injuries, the OMF Surgeon works in close collaboration with many other specialists, in particular neurosurgical and ophthalmologic colleagues. Most of the patients in our study had associated injuries treated concomitantly. Facial wounds and lacerations were closed primarily; bone injuries like mandible and zygomatic arch fractures were treated by reduction, fixation and elevation accordingly. Patients having an element of head injury were observed and treated by the neurosurgeon. an intra-oral approach was used to prevent facial scarring.

Conclusion

The number of documented cases of maxillofacial injuries during the study period may reflect under-reporting. This may necessitate the need for an obligatory special form to be used at the Emergency Department to overcome this problem.

Maxillofacial injuries may cause serious cosmetic and functional deformities; patients with these injuries are candidates for a number of operations. We conclude that early intervention including reduction, stabilization of fractures as well as bone or cartilage grafting will reduce the time of healing and number of surgeries done.

The oral and maxillofacial surgeon is an essential part of comprehensive Accident and Emergency Services in the management of these injuries, both primary and secondary.

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Table 1: Etiology of maxillofacial injuries in relation to age groups.

Age(years)	Car accidents	Violence	Falls	Sports	Total
3-9	11	0	3	0	14
10-19	13	0	3	0	16
20-29	24	3	1	3	31
30-49	21	2	0	1	24
Total	69	5	7	4	85

Table 2: Number and percentage of cases related to etiology.

Etiology	Number of patients	%
Car accidents	69	81%
Violence	5	6%
Falls	7	8%
Sports	4	5%

Table 3: Site of fracture of maxillofacial bones.

Site of Injury	Number of patients	% of patients
Mandible	59	69.4%
Zygomatic arch	8	9.4%
Maxilla	12	14%
Orbit	2	2.3%
Temperoparietal	2	2.3%
Frontal	2	2.3%
Total	85	99.7%

Efficacy of Mitomycin C in Pterygium Management

ABSTRACT

Aims: To determine the efficacy and safety of using Mitomycin C in the management of Pterygium.

Methods: A retrospective study of 37 eyes (30 patients), with the mean age of 43 years (30 -55 yesar) attending the ophthalmology clinic. 17 eyes (17 patients) were treated by using Mitomycin C; 14 eyes had primary pterygia and 3 eyes had recurrent pterygia. 20 eyes (13 patients) were treated without use of Mitomycin C; 15 eyes had primary pterygia and 5 eyes had recurrent pterygia. All eyes received the same medications post-operatively.

Results: In the Mitomycin C treated eyes we noted that only 2 eyes (11.7%) had recurrent pterygia, after 14 months follow-up, but the recurrence in the non-Mitomycin group were higher than that of Mitomycin group 9 eyes (45%) after the same period of follow-up. Also we noted that the healing of conjunctiva was delayed when we use Mitomycin C in comparison to the other group; which is a known side effect of Mitomycin C.

Conclusion: From these results we conclude that the use of Mitomycin C in the management of Pterygium is effective in decreasing the recurrence of pterygia after excision. So it is a simple, safe and successfully\ procedure that we recommended in all pterygium management.

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Introduction

A pterygium is an abnormal (non-cancerous growth of the conjunctiva) a triangular fibrovascular subepithelial ingrowth of degenerative bulbar conjunctival tissue over the limbal onto the cornea[1]. The conjunctiva is a thin membrane lining the inside of the eyelid and part of the eyeball (located between the sclera, or the "white of the eye" which surrounds the eyeball).

Excessive growth of the conjunctiva leads to a pterygium, which appears as a fleshy spot; pterygia are nearly always preceded and accompanied by pingueculae[2].

The exact cause of pterygium is unknown. The most common factors that contribute to pterygium include:

- Excessive exposure to sunlight
- Sex: Male
- Increasing age
- Working outdoors
- Excessive exposure to harsh environmental conditions such as dust, dirt, heat, wind, dryness, and smoke.
- Excessive exposure to allergens such as industrial solvents and chemicals.

The symptoms of pterygia include the following: redness, irritation, tearing, foreign body sensation, dryness, sometime blurring of vision especially when it causes corneal astigmatism[11].

Management of pterygium can be divided into:

Observation

- Periodic eye examination, usually when the pterygium causes no or minimal symptoms
- If symptoms increase, additional treatments may include:
  - Medications: prescription antibiotics to prevent infection; corticosteroids to reduce inflammation; ocular lubricants.
  - Radiation therapy to stop pterygium cells from reforming[7].
  - Mitomycin C to aid in healing and to prevent recurrence[8].

Surgery

Indications for pterygium excision include[12]: persistent discomfort, vision distortion, and restricted ocular motility. Microsurgical excision of a pterygium aims to achieve a normal, topographically smooth ocular surface[3].

Mitomycin (mitomycin C; MMC) is an antibiotic isolated from Streptomyces caespitosus. The drug is a bioreductive alkylating agent that undergoes metabolic reductive activation, and has various oxygen tension-dependent cytotoxic effects on cells, including the cross-linking of DNA. It is widely used systemically for the treatment of malignancies, and has gained popularity as topical adjunctive therapy in ocular and adnexal surgery over the past 2 decades[6], its use has been described in the management of ocular surface neoplasias[4], conjunctival malignant melanoma and primary acquired melanosis with atypia[5], and in conjunctival intraepithelial neoplasia[10].

Complications of topical Mitomycin C have been described in the literature include the following: scleral necrosis and thinning, perforation, endophthalmitis, endothelial decompensation, glaucoma, iritis[9].

Materials and Methods

A retrospective study of 37 eyes (30 patients), with the mean age of 43 years (30 -55 years) attending the ophthalmology clinic.

We divided the patients into two main groups; in the first group we used Mitomycin C, in the second we excise the pterygium.

17 eyes (17 patients) were treated by using Mitomycin C; 14 eyes had primary pterygia and 3 eyes with recurrent pterygia. 20 eyes (13 patients) were treated without use of Mitomycin C; 15 eyes had primary pterygia and 5 eyes had recurrent pterygia. All eyes received the same medications postoperatively.

The examination included:

- Visual Acuity-a test to measure the ability to see and read the smallest letters on an eye chart (by using Topcon chart projector (visiontester VT-SE; Topcon Co, Japan) with E letters at a distance of 6 meters.
- Slit Lamp Examination - a bright light with magnification used to view the eye.
- Photo Documentation - Photography to record the degree of growth of a pterygium.

The cornea and conjunctiva were examined by using binocular slit lamp microscope with magnification, and we chose the patient that had pterygium indicated for surgical excision (one that caused one of these; visual impairment, persistent discomfort, and restriction of ocular motility).

We excluded from this study; pingueculae, simple pterygia that causes no or minimal symptoms.

In this study we applied 0.4 mg/ml Mitomycin C intraoperatively for 3 minutes following pterygium excision.

Results

Of the 37 eyes (30 patients) Mitomycin C treated eyes (17 eyes) we noted that only 2 eyes (11.7%) had recurrent pterygia, after 14 months follow-up (see Table 1) , but the recurrence in the non-Mitomycin group (20 eyes) was higher than that of the Mitomycin group 9 eyes (45%) after the same period of follow-up (see Table 2) . Also we noted that the healing of conjunctiva was delayed when we use Mitomycin C in comparison to the other group; which is a known side effect of Mitomycin C; and it is not a significant complication because we use it in a minimal dose for a short period of time.

The postoperative recurrent pterygia in the Mitomycin group were not from the primary pterygia , but only from the recurrent pterygia (preoperative). The recurrent pterygia in the non-Mitomycin group were from both primary and recurrent pterygia.

Discussion

Pterygium is a common disorder affecting conjunctiva and cornea especially in hot and dry environmental areas. It is insignificant when it is simple and not causing discomfort to the patient and dies not need aggressive management except observation and some medications such as antibiotics to prevent the infections, corticosteroids to reduce inflammation; and ocular lubricants.

Pterygium is significant when it causes patient discomfort (persistent), visual impairment, and restriction of ocular motility; these are indications for excision of pterygium which can be either excision alone or excision with using adjunctive therapy such as Mitomycin C, 5 fluorouracil , etc

The former studyhad a high recurrence rate which is annoying for the patient, in opposition to the latter.

In this study we use Mitomycin C intra-operatively with the excision , and we follow up these patients, with good results; recurrence of pterygia was decreased and with minimal complications. From these results we recommend to use Mitomycin C in pterygium management because it is a simple, safe and successful procedure.

Table 1: Recurrent rate in Mitomycin Group

	Pre-op. Primary	Recurrent	Post-op. Primary	Recurrent
Males	9	2	0	1
Females	5	1	0	1
Total	14	3	0	2
Recurrence rate			2 eyes (11.7%)	

Table 2: Recurrence rate in Non-Mitomycin Group

	Pre-op. Primary	Recurrent	Post-op. Primary	Recurrent
Males	10	3	2	3
Females	5	2	1	3
Total	15	5	3	6
Recurrence rate			9 eyes (45%)	

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Marriage Migration Associated with Distance in Bangladesh: An Application of Polynomial Model

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ABSTRACT

In this study an effort has been made to fit mathematical model to marriage migration associated with distance of Comilla district in Bangladesh. For this, data have been taken from Yadava, Soni and Sabina (2002) but the data is also available in Hosain (2000). It is to be noted that Hossain (2000) applied pareto exponential model (Morril and Pitts, 1967). Yadava, Soni and Sabina (2002) also applied exponenial distribution to the same data and they showed that exponential distribution provided good approximation. In this study an attempt has been given attention to show that the polynomial model is also applicable to the same data set. It is found that marriage migration associated with distance follows polynomial model. To verify the stability of the model, cross validity prediction power is employed to the model.

Keywords and Phrases: Marriage migration Mathematical modeling Polynomial Variance explained (R^2) Cross validity prediction power (CVPP) F-test.

Introduction

It is to be mentioned here that mathematical modeling in Population Studies especially in Demography (Fertility, Mortality, Migration) in Bangladesh have been worked very limited scale. In the era of globalization, mathematical models are very realistic and sophisticated mechanisms to express data in Mathematics. Mathematical models are of great useful to demographers in realizing the process in differentiating among various variables to find out the functional relationships and their dynamic behaviors among various demographic phenomena. Finally, model is important for prediction purposes Mathematical models in demography are mainly two groups: stochastic and deterministic.

Deterministic model has only been discussed in the present study. Deterministic models are used to describe the functional relationship between variables that take definite values. Traditionally, one can draw graphs of the demographic parameters but very few of us know in the context of Bangladesh which models are more appropriate for the parameters.

Islam and Ali (2004) found that age specific fertility rates (ASFRs) follows slightly modified biquadratic polynomial model where as forward and backward cumulative ASFRs follow quadratic and cubic polynomial model, respectively in the rural community of Bangladesh. To observe the distribution or pattern of marriage migration associated with distance in Bangladesh, India and other countries of the world a number of models have been fitted to the data set (Libbee and Sopher, 1975; Morril and Pitts, 1967; Perry, 1969a and 1969b; Samuel, 1994; Sharma, 1984; Yadava et. al. 1988). Hossain gave an atention to build up the model of Sharma (1984) and Yadava et. al (1988).

But these models did not supply good fit and then Hossain used the Pareto-Exponential model proposed by Morril and Pitts (1967) to present the marriage migration related to distance for his data of Bangladesh. Although Pareto-Exponential model supplied better approximation than the models of Sharma (1984) and Yadava et. al. (1988) but not significantly fit to the utilised data set. It is to be noted that proposed models of Sharma (1984) and Yadava et. al (1988) are suitable for Hinda community in India. For this, Yadava et. al. (2002) tried to show that exponential distribution provides a better fit to the distribution of marriage migration associated with distance than pareto-Exponential function as applied by Hossain (2000). Also Yadava et. al (2002) compared with pareto-exponential functin applied by Yadava et. al (1998).

In this study an effort has been given attention to build mathematical model to total marriage migration associated with distance, that is, the same data aggregate which was already used by Yadava et. al. (2002). For this purpose, a polynomial model is chosen to applied here. A brief discussion about polynomial model is given below:

A general expression of the form

$y = f(x)=a_0+a_1x+a_2x^2+a_3x^3+...+a_nx^n$ $(a_n \neq 0)$ (Waerden, 1948)

where a_0 is the constant term; a_i is the coefficient of x^i (i =1, 2, 3, ..., n) but a_1, a_2,..., an are also constants but these belong to a field (field means a nonempty set in which group for

addition, group for multiplication and left as well as right distributive law hold) and n is the positive integer,

is called a polynomial of degree n and the symbol x is called an indeterminate.

An effort has been made here to find out what types of models are more appropriate to total marriage migration by distance in Comilla of Bangladesh. Thus, the fundamental objectives of this study are briefly mentioned below:

i) to build up mathematical models to total marriage migration by distance and

ii) to apply cross-validity prediction power (CVPP), ρ^2_{cv}, to the model to verify how much the model is valid or not.

Data and Methodology

Sources of Data

The data on total marriage migration associated with distance of Comilla district in Bangladesh have been taken from Yadava et. al. (2002). This data was also available in Hossain (2000) and prohibited in Table 1.

Mathematical Model Fitting

Using the scattered plot of marriage migration associated with distance of Bangladesh (Fig. 1), it is observed that marriage migration can be fitted by polynomial model with respect to distance. Therefore, an nth degree polynomial model is considered and the form of the model is

$$y = a_0 + \sum_{i=1}^{n} a_i x^i + u$$

(Gupta and Kapoor, 1997)

where, x is distance; y is marriage migration; is the constant; is the coefficient of (i =1, 2, 3, ..., n) and u is the stochastic error term of the model. Here a suitable n has been selected for which the error sum of square is minimum.

The software STATISTICA was used to fit the mathematical model.

Checking Model Validation

To check how much the model is stable, the cross validity prediction power

(CVPP), ρ^2_{cv}, is applied. Here,

$$\rho^2_{cv} = 1 - \frac{(n-1)(n-2)(n+1)}{n(n-k-1)(n-k-2)}(1-R^2)$$

where, n is the number of cases, k = the number of regressors in the model and the cross-validated R is the correlation between observ(1-R²); predicted values of the dep variable (Stevens, 1996). The shrinkage of the model is the absolute value of the difference of and R^2. The stability of R^2 of this model is equal to 1- shrinkage.

F-test

To verify the measure of the overall significance of the fitted model as well as the significance of R^2, the F-test is employed to this model. The formula for F-test in mathematics is as follows:

$$F = \frac{R^2/(k-1)}{(1-R^2)/(n-k)}$$

where k is the number of parameters to be estimated, n is the number of cases and R^2 is the coefficient of determination in the model (Gujarati, 1998).

Applicationof the model and results

The polynomial model is assumed for marriage migration due to distance in Comilla of Bangladesh and the fitted equation is

$y = 1025.557 - 169.5126x + 9.613215x^2 - 0.182286x^3$

t-stats- (105.562) (-47.561) (27.80423) (-19.2117)

p-value- (0.000) (0.000) (0.00001) (0.0000)

providing R^2=0.999714324 and ρ^2_{cv} = 0.998875. This is the polynomial of degree three i.e. cubic polynomial.

From this statistics we see that the fitted model is highly cross-validated and its shrinkage is 0.000839. These imply that the fitted model is 99.8875% stable. Moreover, all the parameters of the fitted model are also highly statistically significant with 99.9714324% of variance explained.

Moreover, the stability of R^2 of this model is also more than 99%.

In this study the calculated value of F-test is 4665.96, that is, large quantity which means that the fitted model is overall highly significant at 1% level of significance. Therefore, from these statistics we see that the fitted model and corresponding R2 are highly statistically significance. As a result, the model is good fit. Thereafter, the prediction is dine and the predicted values of the model are also demonstrated in the last.

Conclusion

In this paper it is found that third degree polynomial model is fitted to the distribution of marriage migration associated with distance of Muslim community in Bangladesh. The results show that this model is also applicable or suitable even if Hossain fitted pareto exponential model and Yadava et. al. showed that exponeutial distribution provided better approximation than Hossain. Hence it is concluded that the pattern of marriage migration due to distance follow 3rd degree polynomial model.

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Table 1 Distribution of Marriage Migration Associated with Distance of Comilla in Bangladesh

Distance (in miles)	Number of Migrants	Predicted Values
0-3	792	792.3030
3-6	442	440.8074
6-9	219	218.0541
9-12	87	94.5130
12-15	48	40.6537
15-18	29	26.9459
18-21	18	23.8593
21-24	4	1.86360

Fig. 1 Observed and Fitted Marriage Migration Associated with Distance of Comilla in Bangladesh