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Contraceptive Use: Is it a Wife's Decision? - page 43

From the Editor

The fifth issue this year is rich with a number of papers including one paper dealing with fasting in Ramadan, which is timely with Ramadan in July.

A Paper from Kuwait looked at the effect of Ramadan fasting on Waist Circumference (WC), Body Mass Index (BMI), C-Reactive Protein (CRP), Mean Arterial Pressure (MAP) & Fasting Blood Sugar (FBS) in Type 2 Diabetic Kuwaiti Patients. A total of one hundred type 2 diabetic patients on oral hypoglycemic agents aged between 28-67 years old and men and women willing to fast during Ramadan were randomly selected. Data analysis using standard statistical techniques showed a statistical significant difference between the two measurements of the five variables with high significant P values (P<.0001). The authors concluded that C-reactive protein is an inflammatory marker which predicts cardiovascular risk which is raised in obese and diabetic patients and can be significantly decreased with the 12 hours fasting for a mean of 25 days.

A paper from Gaza looked at consanguinity in Gaza and its possible role in developmental delay and chronic illnesses. Analysis of the information of the families of 546 patients attending the pediatric clinic was carried out. The data of families of 546 patients was analyzed; consanguinity was present in (46%) families. The authors concluded that consanguineous marriages are common in Gaza, and they are an important contributing factor in the etiology of developmental delay, and suspected metabolic disorders.

A paper from India looked at the Double Burden of Nutrition Among Women in the Hilly States in India. The authors stressed that the higher rates of fertility, as well as of infant and maternal mortality contributed to the burden. The study measured women's health status based on their body mass index and levels of anemia. The dual burden of under- and over-nutrition precipitated by substantial socioeconomic disparities was evident in Uttarakhand and Himachal Pradesh, although at different stages of health and demographic transition.

A Paper from Nigeria looked at the diagnosis of Malaria by community health workers. Despite their training and experience many people are skeptical of their competence to diagnose accurately endemic disease like malaria.

The community health technician (CHT) diagnosed malaria cases were examined by a medical laboratory. The number of patients with wrong diagnosis of malaria by CHT was 22 (0.875%). The authors concluded that CHT is useful in the diagnosis and by extension, in the control of, such endemic disease as malaria where there are no laboratory facilities.

A cross sectional study paper from Qatar attempted to assess the knowledge and attitude among university students in Qatar towards HIV/AIDS and its preventive measures, and to identify the most preferred source of obtaining HIV related information among students. The study is based on a self-answered anonymous questionnaire conducted in governmental and non-governmental universities in Qatar. Most of the students (97.6%) were aware that HIV is a serious disease.

More than 86% of the students had the attitude that HIV testing should be conducted compulsorily before marriage through premarital counseling, and supports the awareness campaign toward preventing spread of HIV among colleagues inside or outside college. The authors concluded that lack of knowledge regarding HIV/AIDS transmission among university students with most of them detected as having positive attitudes toward HIV/AIDS preventive measures. Consequently establishing well-structured health education programs addressing misconceptions about the routes of transmission of HIV are needed.

A cross sectional study was conducted from Bagdad among 610 children looking at enuresis. It had been found in 127 (20.8 %) cases 48% were male and 52% were females; the maximum age group with enuresis was 8-9 years (64.5%). The authors concluded that nocturnal enuresis is a common problem among children, especially with low income, smaller age, family history of enuresis and history of urinary tract infection.

A paper from Iraq assessed the extent to which wives in Mosul District, have the decision-power to control their reproductive behaviors within their families. A health institutions-based cross-sectional design has been adopted. The study has inquired of 1302 married women of child-bearing age to specify the decision-maker regarding the use of contraceptive methods by direct interview during their attendance to the chosen primary health care centers. The authors concluded that husbands and husband's parents are the primary decision-makers regarding wives' contraceptive use.

Consanguinity in Gaza and its possible role in developmental delay and chronic illnesses

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Abstract

Aim: To assess the rate of consanguinity in a selected population in Gaza, and its possible role in the etiology of developmental delay, or neurometabolic disorders.

Setting: The study was conducted at the Jordanian field hospital, Gaza during the period from February 2010 to May 2010.

Patients and methods: Analysis of the information of the families of 546 patients attending the pediatric clinic was carried out. A simple random sampling was used in the selection of patients. Information was collected as to the patients' basic information, presenting illness, parent's consanguinity status, presence of chronic illnesses, developmental delay, neurologic or neurometabolic diseases in the family or relatives.

Results: The data of families of 546 patients was analyzed; consanguinity was present in 46% of families, 1st cousin marriages constituted 33.5% of the families, whereas 5% were 2nd cousins, and 7.5% were far relatives, whereas 54% were not related. 32/251 of consanguineous families had a family member who had a chronic illness in the form of developmental delay, proved or suspected metabolic or neurometabolic disorder.

Conclusion: Consanguineous marriages are common in Gaza, and they are an important contributing factor in the etiology of developmental delay, and suspected metabolic disorders.

Key words: consanguinity, Gaza, marriages, 1st cousin

Introduction

Consanguinity means the marriage of parents who share a recent common ancestor, or unions contracted between biologically related couples. In population genetics, consanguinity also includes marriages occurring within population isolates, small villages, and tribes; intra-community or endogamous marriages.

At present, about 20% of world populations live in communities with a preference for consanguineous marriage (1). Consanguineous marriages are very rare in western societies, whereas they are a common practice in African and Asian countries. They are also variable within the same tribe (2). These marriages have been traditionally preferred in the Arab societies setting with the preferred spouse being the paternal 1st cousin (3,4). Many Arab countries show some of the highest rates of consanguineous marriages in the world, ranging to around 20-50% of all marriages. Unsurprisingly, first cousin marriages make the large proportion, with average rates of about 20-30% (5).

Social, cultural, and economic factors play very important roles in favoring consanguinity in these societies. It is believed that it may promote family stability, offer a greater compatibility between the spouses and other family members, and may help to preserve the family land possessions.

Gaza would not be much different from the neighboring Arab societies in this regard. Figures from Gaza regarding rates of consanguinity are old and scarce with a study showing a very high rate of about 64.5% (6).

As many disorders are more common in these settings, such as autosomal recessive diseases, developmental delay, as well as other problems, this study attempts to

Consanguinity	No	%	Family member with significant illness
1st cousins	183	33.5	25(14%)
2nd cousins	27	5	3(11%)
Far relatives	41	7.5	4(10%)
Not related	295	54	21(7%)
Total	546	100	

Table 1

Country	Consanguinity rate	1st cousins	Year	Reference
Jordan	50%	32.03%	1992	(13)
Jordan (more recent study)	28.4%	18.8%	2005	(10)
Saudi Arabia	57.7%	28.4%	1995	(26)
UAE	50.5%	26.2%	1997	(12)
Kuwait	54.3%	32.2%	1986	(28)
Egypt	20.9%	15.9%	1998	(27)
West Bank	45.4%	27.7%	2004	(26)
Gaza	64.5%	31.6%	1995	(6)
Current study, Gaza	46%	33.5%	2010	Current study

Table 2

estimate the rate of consanguinity among a sample of families in Gaza, Palestine, and to evaluate the presence of significant chronic illnesses in family members, or relatives among these families.

Results

Families of 546 patients were randomly selected and interviewed from the outpatients of the pediatric clinic at the Jordan field hospital, Gaza, during the period of February 2010 to May 2010. Simple random sampling was used in the selection of patients.

Data was collected with regard to patient illness, age, parents' consanguinity, presence of significant illnesses in the family members, with particular emphasis on the presence of mental retardation, developmental delay, metabolic disorders, congenital deformities, or significant neurological diseases. The parents of 183 (33.5%) patients were 1st cousins; of these 102 (56 %) were paternal cousins. Parents of 27 (5%) patients were 2nd cousins, whereas 41(7.5%) were far related, from the same family or tribe. The parents of 295 (54%) children were not related. So 38.5% of the families were consanguineous; an additional 7.5% of parents were also related although they were far relatives which makes an overall rate of 46%.

32 families out of the 251 (13%) consanguineous families had a family member who had a significant illness in the form of developmental delay, metabolic disease, or neurometabolic illness, whereas only 21 families out of 295 (7%) non-consanguineous families had such an affected family member.

Discussion

Consanguinity is a union or marriage between couples who are related as second cousins or closer (7,8). Consanguineous marriages have been a common feature of Arab culture and some Muslim countries for thousands of years; these countries have higher rates of such marriages, although the rates are variable (9). Studies on consanguinity from Gaza and West Bank showed markedly high rates, similar to nearby countries; this could be explained by the similarities in the social structure of the Arab Muslim societies. In this study, the consanguinity rate was slightly lower than those of other Arab countries; the overall rate was 46%. This is slightly lower than rates in nearby Jordan, Saudi Arabia, UAE, and Kuwait.

Recent figures from Jordan showed a remarkably lower rate (10), and that might be related to the changing behavior of the modern urban society. A significant decline in the incidence of consanguinity rates were also found among Muslim and Druze populations of northern Israel (11), which may be due to the changes in life style and socioeconomic status among this

particular group of the population who are living in a markedly different set up. On the contrary figures from the UAE have increased from 39% to 50.5% in one generation (12).

Many factors may be responsible for the trend of decreasing consanguinity rates among the Arab nations and the rate in the current study. Some of these are increasing education levels, especially among females (13), declining fertility rates and family size resulting in less suitable partners from related families, and the increasing awareness about the risks of consanguinity.

Among consanguineous marriages, 1st cousin marriages are the commonest, as shown in Table 2, which was the same in this study as 1st cousin marriages constituted 33.5% of the total percentage of marriages which is just more than one third of total marriages.

In the setting of consanguineous marriages, many disorders are more common including: global developmental delay, where consanguinity was found to be a major risk factor for global developmental delay in a study from Jordan (14). Researchers found that cerebral palsy and metabolic disorders were the main underlying etiological factors causing developmental delay, and consanguinity was markedly high among the parents of these patients. This would be expected as consanguinity was shown to be associated with a high frequency of autosomal recessive disorders (15,16).

Of the autosomal recessive disorders, Inborn Errors of Metabolism (IEM) are the most common. This is particularly true in communities with high rates of consanguinity (17).

A study from Gaza showed that about 60 per cent of phenylketonuria patients in Gaza had consanguineous parents (18). The same was also true in a study from Oman, where consanguinity and positive family history were evident among the study population (19). Consanguinity was also obvious in most cases of IEM in a recent study from the UAE (20).

In a study about Thalassemia in the West Bank and Gaza, most of the couples were consanguineous (21). Another study from the West Bank and Gaza, on blind children, showed very high rates of consanguinity among their families with a positive family history in more than half of the cases (57%) (22).

Consanguineous marriages were also found to be associated with higher low birth weight, prematurity and birth defects (23); they were also found to be a major risk factor for reproductive wastage (24), and epilepsy (25).

The present study showed 32 families out of the 251 (13%) consanguineous families had a family member who had a significant illness in the form of developmental delay, metabolic disease, or neurometabolic illness. Due to the lack of diagnostic facilities in Gaza strip, definite diagnosis could not be established for many cases of developmental delay or metabolic disorders. On the contrary, only 21 families out of 295 (7%) non-consanguineous families had such an affected family member.

To conclude, consanguineous marriages are still common in Gaza, with 1st cousin marriages making up the main percentage.

Consanguineous families have a higher incidence of family members with significant chronic diseases, in the form of developmental delay, metabolic, or neurometabolic illnesses.

It is vital in these settings to carry out proper screening programs for newborns to exclude some important illnesses, and try to start early treatment and management for those with treatable disorders. It is very wise also to encourage couples to select a non-related spouse.

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Double Burden of Nutrition among Women in Hilly States in India

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Abstract

Uttarakhand is a state with mountainous terrain separated from Uttar Pradesh, a state lagging in demographic transition. After separation, dual divergent demographic regimes emerged in Uttarakhand. Higher rates of fertility, as well as of infant and maternal mortality, positioned Uttarakhand with its parent state, Uttar Pradesh. Correspondingly, higher rates of female literacy, sex ratio, and other development indicators confirmed its position with Himachal Pradesh, a state progressively advancing in demographic transition stages. Given this background, the study measured women's health status based on their body mass index and levels of anemia, as well as their covariates in two states of similar geographic structure: Uttarakhand and Himachal Pradesh. The data were retrieved from the 2005-2006 National Family Health Survey. The dual burden of under- and over-nutrition precipitated by substantial socioeconomic disparities was evident in Uttarakhand and Himachal Pradesh, although at different stages of health and demographic transition. With steady progress being made in these processes, Uttarakhand expects to soon be released from the grip of Uttar Pradesh and step forward in a similar way to Himachal Pradesh.

Key words: **health, nutrition, body mass index, anemia, underweight, and overweight**

Introduction

The development of a country depends on a number of socioeconomic factors, nutrition being one of them. Progress in the social, economic, and health components of women's lives truly reflects the all-round development of a country. Women's health is influenced to a great extent by the social environment in which the women live. Nutrition influences women's ability to cope with disease and the rigors of everyday life. A close look at previous research suggested that improvement in women's health status is a serious concern for India. The dual burden of under- and over-nutrition, coupled with widening socioeconomic inequalities, is evident (Dudeja, Mishra, & Pandey, 2001; Gopalan, 1998; IIPS & ORC Macro, 2007; Roy, Kulkarni, & Vaidehi, 2004; Shetty & James, 1994; Singh et al., 1999; Subramanian, Kawachi, & Smith, 2007).

Uttarakhand had separated from Uttar Pradesh, a state lagging in all aspects of socioeconomic development. This state has a spiritual position in primeval Hindu epics and is commonly known as Dev-bhumi, the land of the gods. Uttarakhand is strategically located and forms part of the northern boundary of India with Nepal and China (Tibet). It touches Tibet in the north, Himachal Pradesh in the west and northwest, the Gangetic Plains of Uttar Pradesh in the south, and Nepal in the east (Government of India [GOI], 2009). Uttarakhand is primarily a mountainous and hilly region comprising 13 districts. The state is spread over 53,484 sq km of land, 1.67% of the country's total area. The state has a population of 8.5 million and an average density of 159 persons/sq. km. Eighty-nine percent of the villages have populations of fewer than 500 individuals. About 87% of the state is hilly terrain, and 65% of the land is forested (GOI, 2009; Registrar

Demographic Indicators	Uttarakhand	Himachal Pradesh	Uttar Pradesh
Population[1]	8.5 million	6.08 million	166.2 million
TFR[2]	2.55	1.94	3.82
IMR[2]	41.9	36.1	72.7
MMR[6]	13.7	3.1	41.8
Percent female literate[1]	59.6	67.4	42.2
*NSDP per capita (in Rs)[4]	19652	27485	11477
Sex ratio (F/M*1000)[1]	964	970	898
Population density[1]	159	109	689
Percent hilly area[5]	87	92	-
Area covered in forest (km^2)[3]	34662	37033	16826
% underweight women (15-49)[2]	25.7	24.3	34.1
% overweight/obese women (15-49)[2]	16.0	17.3	11.1
% anemic women (15-49)[2]	47.6	40.9	50.8

*Net state domestic price at current price (base 1993-94)
**The MMR was defined here as the number of maternal deaths to women age 15-44/15-49 per 100,000 women ages 15-44/15-49.
1: RGI, 2001
2: NFHS-3, 2005-06
3: Selected Socioeconomic Indicators, Central Statistical Organization, New Delhi
4: Reserve Bank of India, 2004-2005
5: India 2009: A Reference Manual
6: Das et al., 2007
Table 1: Selected Demographic Indicators of Uttarakhand, Himachal Pradesh, and Uttar Pradesh

General of India [RGI], 2001; World Bank, 2009). The topography of Uttarakhand is similar to the hilly terrain of Himachal Pradesh in India.

Uttarakhand recently celebrated 8 years of independence; however, there has been scant research on the social, cultural, and economical aspects of Uttarakhand. Available current evidence has suggested that a conflicting dual demographic regime exists in Uttarakhand. On one hand, the state has a high total fertility rate (TFR) of 2.5; a relatively higher infant mortality rate (IMR) of 42 (National Family Health Survey-3 [NFHS-3]); and a maternal mortality rate (MMR) of 13.7 (Das, Shah, & Patel, 2007), which shows a system identical to its parent state, Uttar Pradesh. On the other hand, 60% of females are literate in Uttarakhand, and the male-female ratio is 1,000:964 (RGI, 2001), illustrating significant progress in socioeconomic development (see Table 1).

The data in Table 1 illustrates that Uttarakhand is steadily advancing through demographic and health transition stages. Given the proportion of under- and over-nourished women, the researchers focused this analysis on two states of similar topography for a comparative perspective: Uttarakhand and Himachal Pradesh. The NFHS-3 provided an opportunity to undertake a comparative demographic assessment of Uttarakhand and Himachal Pradesh. The objective of this paper was to compare women's health status in the areas of anemia, and under- and over-nutrition to determine how they vary in two states with similar geographic profiles.

Data and Methods

The NFHS-3 is a rich source of health information in India. The wide coverage of this survey and the information collected facilitated the assessment of socioeconomic disparities in nutritional health between two hilly provinces of similar geographic and demographic profiles. The study utilized data from the NFHS-3, 2005-2006. The analysis was based on unit level records of 2,953 and 3193 women in the reproductive age group of 15 to 49 from Uttarakhand and Himachal Pradesh, respectively.

This study employed the information available on two standardized measures of nutritional health, namely, body mass index (BMI) and anemia. These indicators of women's nutritional health were measured based on parameters defined by the World Health Organization (as cited

in IIPS & ORC Macro, 2007). The NFHS-3 provided information on BMI, defined as weight in kilograms divided by height in meters squared (kg/m2). As per the WHO definition, a cut-off BMI of 18.5 was used to define underweight, and a BMI of 25 or above indicated overweight/obesity. A BMI between 18.5 and 24.99 was defined as normal weight. The sample for analysis of BMI excluded women who were pregnant at the time of the survey and those women who gave birth in the last 2 months prior to the survey.

As per the WHO definition, anemic women were identified, and appropriate adjustments were made for respondents who lived at altitudes above 1,000 meters and those who smoked because both of these groups require more hemoglobin in their blood. The NFHS-3 report provides a detailed description of the procedures and equipment used to collect the nutritional data (as cited in IIPS & ORC Macro, 2007). Multivariate logistic regression models were estimated to assess the effect of different socioeconomic and demographic factors on BMI and the prevalence of anemia among women. Previous research has suggested that anemia and the under- and overweight prevalence among women vary remarkably based on sociodemographic factors (Ravindran, 1992; Roy et al., 2004; Subramanian et al., 2007). In accordance with extant evidence, the researchers considered a wide range of individual, household, women's status, and health-related covariates. Following is a description of the categorization of these predictor variables:

Dependent variables
BMI in kg/m2: < 18.5, 18.5-25.0, > 25.0
Anemia: Yes, No

Independent predictors
Age:
15-24 (reference category [RC]), 25-34, and 35-49.
Residence:
Rural (RC), Urban
Social group: Scheduled caste/scheduled tribes (SC/ST), Other backward class (OBC), General (RC)
Religious affiliation:
Hindu (RC), Non-Hindu
Educational level:
No education (RC), Primary, Secondary, Higher education
Marital status:
Currently married (RC), Not currently married.
Standard of living index (SLI):
Low, Medium, High (RC)
Fuel used for cooking:
Smoke-producing fuel (RC), Smokeless fuel
Faced spousal violence:
No (RC), Yes
Mass media exposure:
Yes, No (RC)
Occupation:
Not working (RC), Agriculture, Non-agriculture
Children ever born (CEB):
0 (RC), 1-2, 3+

Background of Respondents
This section provides a comparison of the socio-demographic nature and status of the sample between Uttarakhand and Himachal Pradesh (see Table 2). In a cursory look, the distributional compositions for a range of socio-demographic factors in both provinces had similar patterns. For example, the sample was almost equally distributed in three age groups, that is, a tercile point distribution. About 89.4% of the women live in rural areas in Himachal Pradesh, a slightly higher percentage than the 72.3% in Uttarakhand. About 70% of the women in both states were currently married.

The distribution of the female population into different social class categories was more or less similar, except that OBC constituted a marginally higher share of 15.5% in Uttarakhand, compared to the 13.5% of OBC in Himachal Pradesh. The percentage of women having three CEB was marginally higher in Uttarakhand (39.7%) than in Himachal Pradesh (32.9%), indicating a slightly higher fertility level in Uttarakhand.

Both states have populations that are more than 85% Hindu. Household SLI and educational distribution among the women suggested that both states are in a progressive stage of socioeconomic development, although Himachal Pradesh is slightly ahead in this regard. In both the states, smoke-producing fuel was reported a major source of cooking fuel in the household, with 73.2% of the women in Himachal Pradesh living in households using smoke-producing fuels and 61.7% in Uttarakhand doing the same.

Prevalence of Anemia among Women
Table 3 presents the odd ratios (ORs) from logistic regression analysis showing the effect of socioeconomic and demographic determinants on anemia prevalence among the women in Uttarakhand and Himachal Pradesh. With increasing age, the women in Uttarakhand were less likely to be anemic than the women in Himachal Pradesh.

The predictors of caste, religion, marital status, fuel used for cooking, residence, mass media exposure, violence, and BMI had shown a similar direction of impact in both the states. The SC/ST and OBC women had greater likelihood of reporting anemia. In both states, the urban women were less likely to report anemia than their counterparts in rural areas, perhaps because the urban women were more aware of and had more accessibility to health care facilities than the rural women. The non-Hindu women (the majority of them were Muslim) had more likelihood of being anemic. There has been emerging evidence on the reverse causational effect of fertility on nutrition (Griffiths & Bentley, 2001; IIPS & ORC Macro, 2007). This could be one possible reason for the greater prevalence of anemia among non-Hindu women, who are well known for high-fertility choices. In both states, women who had mass media exposure were less likely to be anemic because of their greater awareness of health aspects and better health-seeking behavior. As a result of improved nutrition, the women in the high BMI categories showed a lower likelihood of being anemic. Experience of spousal violence also showed an expected positive impact on anemia prevalence among women.

Background characteristics	Percentages of women	
	Uttarakhand (*N* = 2,953)	Himachal Pradesh (*N* = 3,193)
Respondent's age		
15-24	38.6	35.5
25-34	31.0	30.7
35-49	30.3	33.8
Residence		
Rural	72.3	89.4
Urban	27.7	10.6
Social class		
General	59.9	61.5
SC/ST	24.5	25.0
OBC	15.5	13.5
Religious affiliation		
Hindu	86.2	97.4
Non-Hindu	13.8	2.6
Current marital status		
Currently married	70.4	71.4
Not currently married	29.6	28.6
Education		
No education	32.6	18.5
Primary	13.6	15.3
Secondary	40.5	56.2
Higher education	13.3	10.0
SLI		
Low	13.8	6.3
Medium	28.1	29.9
High	58.1	63.8
Children ever born (CEB)		
0	32.7	31.9
1-2	27.6	35.2
3 and above	39.7	32.9
Occupation		
Not working	55.2	70.5
Non-agriculture	11.6	10.5
Agriculture	33.1	18.9
Fuel used for cooking		
Smokeless fuel	38.3	26.8
Smoke-producing fuel	61.7	73.2

(Left) **Table 2: Percentage Distribution of Respondents' Ages 15 to 49 by Background Characteristics**

In Himachal Pradesh, women who faced spousal violence were 1.4 times more likely to suffer from anemia. Correspondingly, the odds of experiencing anemia were less significant among women in Uttarakhand. The use of biomass fuel for cooking is a major household environmental pollutant in India and has many health hazards. Women in India are greatly exposed to the resultant indoor environmental pollution and are thus likely to report poor health outcomes such as anemia in our study.

Surprisingly, education and SLI did not show any significant impact on the prevalence of anemia among the women in both states. Exceptionally, women in Himachal Pradesh with primary level of education were more likely to suffer with anemia compared with women with higher education levels. With the increasing number of children, women were at greater risk of suffering from anemia. The working women in both states had lower odds of reporting any anemia. Contrastingly, women engaged in agricultural activities in Uttarakhand were 10% more likely to suffer from anemia.

Table 4 (page 13) summarizes the socioeconomic differentials in women's nutritional health between Uttarakhand and Himachal Pradesh. Predictors of residence, social class, marital status, faced spousal violence, and mass media exposure showed the similar direction of impact on the prevalence of anemia among women in both states. Age did not indicate the same direction of impact on the prevalence of anemia. Religious affiliation had a positive effect on the prevalence of anemia, but it was significant only in Himachal Pradesh. Surprisingly, SLI, education, and CEB had not shown any clear pattern. The use of smokeless fuel and BMI had a negative effect on the prevalence of anemia; however, it was statistically significant only in Uttarakhand.

Independent predictors	OR (S.E.) Uttarakhand (*N* = 2,953)	Himachal Pradesh (*N* = 3,193)
Age of women (RC = 15-24)		
25-34	0.9(0.12)**	1.0(0.13)
35-49	0.7(0.11)	1.3(0.14)**
Residence (RC = rural)		
Urban	0.9(0.11)	0.8(0.15)
Social class (RC = general)		
SC/ST	1.4(0.14)*	2.0(0.09)*
OBC	1.4(0.16)*	1.5(0.11)*
Religious affiliation (RC = Hindu)		
Non-Hindu	1.2(0.15)	2.6(0.26)*
Current marital status (RC = currently married)		
Not currently married	1.2(0.18)	1.0(0.14)
Education (RC = no education)		
Primary	1.0(0.13)	1.6(0.14)**
Secondary	1.0(0.12)	0.9(0.13)
Higher	0.8(0.14)	1.1(0.19)
SLI (RC = high)		
Low	1.0(0.14)	0.9(0.18)
Medium	0.9(0.10)	1.1(0.18)
CEB (RC = 0)		
1-2	0.7(0.12)**	1.1(0.16)
More than 2	0.9(0.09)	0.8(0.18)**
Occupation (RC = not working)		
Agriculture	1.1(0.14)**	0.8(0.13)**
Non-agriculture	0.8(0.08)	0.9(0.10)
Faced spousal violence (RC = no)		
Yes	1.03(0.12)	1.4(0.22)
Mass media exposure (RC = no)		
Yes	0.9(0.10)	0.8(0.14)
Fuel used for cooking (RC = smoke-producing fuel)		
Smokeless fuel	0.7(0.08)*	0.9(0.11)
BMI (RC = < 18.5)		
18.5-24.9	0.9(0.07)***	0.9(0.09)
> 25	0.8(0.11)***	0.9(0.14)
Log-likelihood	-2555.24***	-3700.11***

*p < .1, **p < .05, ***p < .001

Table 3: Logistic Regression Analysis of Anemia Prevalence

Independent predictors	Uttarakhand (*N* = 2,953)	Himachal Pradesh (*N* = 3,193)	Differentials between states (*t* test)
Age of women (RC = 15-24)			
25-34	(-) s	(+) ns	ns
35-49	(-) ns	(+) s	s
Residence (RC = rural)			
Urban	(-) ns	(-) ns	ns
Social class (RC = general)			
SC/ST	(+) s	(+) s	s
OBC	(+) s	(+) s	ns
Religious affiliation (RC = Hindu)			
Non-Hindu	(+) ns	(+) s	s
Current marital status (RC = currently married)			
Not currently married	(+) ns	(+) ns	s
Education (RC = no education)			
Primary	(+) ns	(+) s	s
Secondary	(-) ns	(-) ns	ns
Higher	(-) ns	(+) ns	ns
SLI (RC = high)			
Low	(+) ns	(-) ns	ns
Medium	(-) ns	(+) ns	ns
CEB (RC = 0)			
1-2	(-) s	(+) ns	s
More than 2	(-) ns	(-) s	s
Occupation (RC = not working)			
Agriculture	(+) s	(-) s	s
Non-agriculture	(-) ns	(-) ns	ns
Faced spousal violence (RC = no)			
Yes	(+) ns	(+) ns	ns
Mass media exposure (RC = no)			
Yes	(-) ns	(-) ns	ns
Fuel used for cooking (RC = smoke-producing fuel)			
Smokeless fuel	(-) s	(-) ns	ns
BMI (RC = < 18.5)			
18.5-24.9	(-) s	(-) ns	ns
>25	(-) s	(-) ns	ns

S = statistically significant; ns = not significant

Table 4: Differential in Prevalence of Anemia in Uttarakhand and Himachal Pradesh

Background characteristics	Uttarakhand (N = 2,829)			Himachal Pradesh (N = 3,067)		
	Underweight	Normal	Overweight	Underweight	Normal	Overweight
Age of women						
15-24 (RC)	15.9	79.1	5.0	22.1	69.8	8.1
25-34	17.7	72.2	10.1	21.0	64.4	14.6
35-49	16.9	61.7	21.4	11.2	60.1	28.7
Social group						
General (RC)	16.2	73.7	10.1	18.2	65.0	16.8
SC/ST	20.7	69.8	9.5	17.3	68.7	14.0
OBC	15.7	73.9	10.4	16.0	71.1	12.9
Residence						
Rural (RC)	20.0	70.8	9.3	20.9	65.4	13.7
Urban	11.9	76.5	11.6	11.5	67.8	20.7
Education						
No education (RC)	17.3	75.4	7.3	18.0	69.0	13.0
Primary	18.8	70.6	10.6	19.7	63.8	16.5
Secondary	19.1	69.3	11.6	18.0	65.5	16.5
Higher	10.2	73.5	16.3	14.6	69.5	15.8
SLI						
Low (RC)	23.4	68.4	8.2	20.9	69.0	10.1
Medium	19.7	73.5	6.9	20.3	70.3	9.4
High	14.8	72.9	12.3	16.5	64.4	19.2
Religious affiliation						
Hindu (RC)	16.9	73.9	9.3	17.7	66.6	15.7
Other	18.5	66.1	15.4	19.7	67.9	12.5
Mass media exposure						
Yes (RC)	17.2	72.6	10.1	17.7	66.3	16.0
No	16.8	73.9	9.3	18.1	70.8	11.0
CBE						
0 (RC)	11.5	78.6	9.9	16.6	70.2	13.2
1-2	20.7	69.5	9.7	18.9	66.1	15.0
More than 2	20.2	69.7	10.1	17.5	63.4	19.1
Occupation						
Not working (RC)	16.3	71.9	11.9	19.0	65.0	16.1
Non-agricultural	17.5	70.8	11.8	12.6	63.8	23.7
Agricultural	18.5	74.6	6.9	16.8	74.3	9.0
Fuel used for cooking						
Smoke producing fuel (RC)	20.2	72.1	7.7	19.6	67.0	13.4
Smokeless fuel	13.2	72.5	14.4	15.2	65.6	19.3
Faced spousal violence						
No (RC)	16.7	72.9	10.4	17.6	66.6	15.8
Yes	20.0	72.0	8.0	23.0	67.6	9.4

Note: The sample size for BMI analysis does not include pregnant women and those who gave birth in last 2 months.

Table 5: Adjusted BMI of Women Ages 15 to 49: Results from Multinomial Logistic Regression Analyses

Determinants of Under- and Overweight Prevalence

Table 5 presents the adjusted prevalence rate (%) of underweight and overweight/obesity among women in Uttarakhand and Himachal Pradesh. Overall, there were marginal differences in the prevalence of under- and overweight/obesity between Uttarakhand and Himachal Pradesh, with 26% and 16% of the women reporting under- and overweight/obesity, respectively. Comparatively, the prevalence of under- and overweight/obesity in Himachal Pradesh was reported at 24% and 17%, respectively.

In both states, rural-urban differentials were evident in the prevalence of underweight and overweight/obesity among women. Underweight prevalence was greater among women from the rural areas. Comparatively, prevalence of overweight/obesity was greater in the urban areas. The prevalence of underweight was considerably higher among women belonging to religious groups other than Hindu. The women who had exposure to mass media reported greater prevalence of overweight/obesity in both states. By caste, the SC/ST women reported significantly higher prevalence of underweight compared to the women of general and OBC caste groups. On the contrary, the women from the general caste group reported greater prevalence of overweight/obesity in Himachal Pradesh.

The predictors of age, education, and SLI showed a similar direction of impact on the prevalence of under- and overweight/obesity. With increasing levels of education and age, the prevalence of underweight declined among the women in both states. Correspondingly, age and education were positively associated with the prevalence of overweight/obesity among women. The prevalence of underweight declined with increasing levels of living standards. In both states, women with high SLI reported a lower prevalence of underweight and a comparatively greater prevalence of overweight/obesity.

The analysis identified a plausible relationship between fertility and the nutritional status among women. The women with higher parity reported greater prevalence of under- and overweight/obesity. In both states, the women who were engaged in agricultural activities reported a greater prevalence of under-nutrition. Comparatively, women working in non-agricultural sectors reported lower prevalence of underweight and greater prevalence of overweight/obesity.

The women exposed to cooking smoke from solid fuel use reported considerably greater prevalence of underweight. On the other hand, women using smokeless fuel for cooking reported greater prevalence of overweight/obesity. Not surprisingly, women who faced spousal violence reported greater prevalence of underweight than the women who never faced spousal violence. In contrast, women who never faced violence reported better nutrition levels.

Conclusion

This paper presented critical evidence that the women living in the hilly regions of Uttarakhand and Himachal Pradesh are facing the dual burden of under- and over-nutrition. The prevalence of underweight and anemia were comparatively greater in Uttarakhand than in Himachal Pradesh. The prevalence of overweight/obesity was marginally greater in Himachal Pradesh. The evidence suggested that Uttarakhand is making greater health and demographic progress than Himachal Pradesh. With the steady progress in these demographic and health transition stages, Uttarakhand will soon come out from the shadow of Uttar Pradesh and can be expected to accomplish socioeconomic development similar to that of Himachal Pradesh.

Substantial disparities in nutritional levels by age, residence, and socioeconomic conditions were found among the woman in Uttarakhand and Himachal Pradesh. The risk of reporting anemia and underweight decreased as the levels of education and SLI for the women increased. The proportion of women who reported overweight/obesity was significantly greater in the urban areas than in the rural areas.

Better socioeconomic conditions led to improved levels of nutritional health among women (Mazumder, 2007; Subramanian et al., 2007). The reporting of overweight/obesity was positively associated with educational level and SLI. Likewise, the women belonging to higher social classes reported greater prevalence of overweight/obesity. The women who faced spousal violence were more vulnerable to being underweight and anemic than those women who never faced spousal violence. Smoke from cooking fuel is a major health concern for Indian women and is often responsible for poor health outcomes among them (Arokiasamy, Karthick, & Pradhan, 2007). Consequently, the women who were exposed to cooking smoke reported greater prevalence of anemia and underweight. One may conclude that the observed differences in the effects of various socioeconomic and demographic determinants of nutritional health between Uttarakhand and Himachal Pradesh are the result of an apparent lag in the health transition stages of the two states.

The outmigration of the population, particularly males, is one of the most important demographic events of Uttarakhand (Belwal, 2007). The high rate of outmigration of able-bodied males from the hilly areas increases the burden of domestic and outdoor work among the females who are left behind in the areas. At the same time, these women have endured hard work and heavy workloads since childhood.

Consequently, the women in this study who were engaged in agricultural industries reported greater prevalence of anemia and underweight than the women who were working in non-agricultural industries. On the other hand the women who were engaged in the non-agriculture sector reported greater prevalence of overweight/obesity as the result of their sedentary lifestyle practices.

In spite of so many years of government efforts, the status of women has not improved much in India. With several states advancing in their stages of health transition, the country is likely to face the challenge of dealing with the dual burden of problems related to under- and over-nutrition (Agrawal & Arokiasamy, 2009; Subramanian et al., 2007). In view of this, there is an urgent need for a comprehensive review of existing health policies for women and their effective implementation.

Moreover, issues related to women's health and nutrition, particularly in remote hilly areas where access to basic health facilities is dubious, need to be addressed adequately. With the rising burden of over-nutrition, coupled with the existing burden of under-nutrition, interstate disparities and similarities become important and should be addressed while framing a comprehensive social and health policy for women.

In the hilly areas of Uttarakhand and Himachal Pradesh, access to health care in the rural parts of the mountainous districts continues to be inadequate. Given the constraints of terrain and topography, as well as the small and scattered nature of rural settlements, improving the access to health care facilities in these states is a major challenge for policymakers and service providers. Although private sector investment in the health care system is rising sharply, it has had its own limitations. The private sector usually concentrates on curative facilities, but those are expensive. At the same time, the private health sector is mainly concentrated in the urban areas, and the poor are unable to afford the high cost of private medical care. Innovative solutions to this problem are necessary. The development of partnerships with community welfare organizations, nongovernmental organizations, and committed private enterprises could be fruitful. The challenge for policymakers is to develop institutions that can offer cost-effective solutions to the problems of access to and the availability of health care facilities in the rural mountainous regions of Uttarakhand and Himachal Pradesh.

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University Students' Knowledge and Attitude towards HIV/AIDS in Qatar

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Abstract

Introduction: The aim of the study was to assess the knowledge and attitude among university students in Qatar towards HIV/AIDS and its preventive measures, and to identify the most preferred source of obtaining HIV related information among students.

Methodology: The study was a cross-sectional study based on a self-answered anonymous questionnaire conducted in governmental and non-governmental universities in Qatar among 781 students selected randomly. The questionnaire addressed basic knowledge about human immunodeficiency virus (HIV), its modes of transmission, prevention, and attitudes towards HIV/AIDS.

Results: Most of the students (97.6%) were aware that HIV is a serious disease, despite the majority of the students correctly identifying the main modes of HIV/AIDS transmission such as sexual intercourse, sharing injection needle or surgical operation devices of an infected person ,while information such as mosquito bites, toilets and swimming pools and sharing food utensils of an infected person were incorrectly identified as routes of transmission. More than 86% of the students had the attitude that HIV testing should be conducted compulsorily before marriage through premarital counseling, and support the awareness campaign toward preventing spread of HIV among their colleagues inside or outside college. Their main source of information about the infection was the media, particularly TV. The results indicated that the contribution of schools, health staff and relatives in providing university students with knowledge about HIV/AIDS was minimal.

Conclusion: There was a lack of knowledge regarding HIV/AIDS transmission among university students but most of them were detected as having positive attitudes toward HIV/AIDS preventive measures. Consequently there isa need for establishing well-structured health education programs addressing misconceptions about the routes of transmission of HIV.

Key words: HIV, AIDS, Qatar, knowledge, attitude

Introduction

Human Immunodeficiency virus/ Acquired Immunodeficiency Syndrome (HIV/AIDS) is one the most complex health problems of the 21st century. (1) There are 33.2 million people living with HIV, of which 2.5 million people were newly infected with HIV by the end of 2007.(2) Most of them have younger age. (3) It has caused increased morbidity and mortality and led to a negative effect on national economies.(4) The causes of HIV infection include unprotected sexual contact, injection drug use, contaminated blood transfusion, mother-to-child transmission (prenatal and while breastfeeding), and occupational exposure among health care workers.(5) University students are mainly vulnerable to HIV, as over half of all new infections worldwide are among young people.(6) There are factors that put university students at risk for HIV infection such as peer pressure, lack of maturity, alcohol and drug use.(7) Young people are more likely to engage in high-risk behaviors, such as unprotected sex. (8) If these individuals lack adequate information regarding HIV knowledge and behavior, they might be at risk to HIV. Therefore, it is essential to assess the knowledge, attitudes and practices of students regarding HIV and AIDS before planning appropriate preventive measures.

Since an accessible, affordable and complete cure for HIV/AIDS or an effective vaccine to prevent HIV infection may not be available in the near future, primary prevention to control the spread of HIV infection through awareness and changing behavior remains the highest priority for HIV/AIDS control programs.(9) Health education is still the best method to prevent infection through changing level of knowledge and attitude of young people toward HIV/AIDS that leads to establish protective health-behavior patterns in young people.(1, 10, 11)

In Qatar, the recent national openness to rapid development has led to an influx of expatriates of many nationalities, races, cultures, and religions mainly from Asia and Africa, together with the promotion of the State of Qatar as an educational center in the region has lead to a large influx of youths from different cultures to study in Qatar so the Government has committed to HIV/ AIDS prevention among populations living in the country. The Committee needs to assess the national situation including filling the gaps in knowledge, attitude and practices among young people(12) and there are no studies on HIV/AIDS related knowledge and attitudes conducted among the university students living in Qatar.

The purpose of the study was to assess the knowledge and attitudes among university students in Qatar towards HIV/AIDS and its prevention measures, and to identify the most preferred source of obtaining HIV related information among university students in Qatar.

Methodology

A cross sectional study based on self-administered anonymous questionnaire was conducted on 924 students (477 students in governmental university (Qatar University) and 447 students in the non-governmental universities (Qatar Foundation Universities and College for North Atlantic Qatar) were randomly selected from 11,177 students registered for the academic year in 2008-2009.

The questionnaire used in this survey, based on the WHO AIDS program knowledge, attitudes, beliefs and practices (KABP) survey in 1988,(13) as well as literature,(14,15) was modified to suit the Qatari culture and norms.

The questionnaire was divided into six sections. Section I included questions on demographic characteristics. Section II consisted of questions on general knowledge about HIV/AIDS. Section III consisted of questions about HIV/AIDS mode of transmission. Section IV, consisted of knowledge about preventive measures for HIV/AIDS.

There were three possible response options of “Yes,” “No,” and “I don’t know” for each item. Each correct statement answered Yes was a correct answer and “No,” and “I don’t know” were incorrect answers, and the wrong statements answered Yes were incorrect answers and “No,” and “I don’t know” were correct answers. Section V, consisted of statements regarding students’ attitude towards HIV/AIDS. There were three possible response options of “Agree”, “Neutral”, and “Disagree”. Finally, in Section VI, respondents were asked about their source of information about the disease with family, friends, mass media, teachers, religious centre and health staff as options. Frequency distributions for proportions and means for Continuous variables were generated using SPSS, version 17. Chi-Square and Exact Fischer Tests were performed to compare categorical variables and Student’s t tests were performed for continuous variables. Potential differences between facilities were explored. Relations of P value <0.05 was considered significant.

The following ethical consideration has been taken: Approval to carry out the research was obtained from the research committee in Hamad Medical Corporation (HMC). Ethical permission for the study was obtained prior to collection of data from the universities: (Qatar University, Qatar Foundation and College for North Atlantic Qatar). Participants were assured of the confidentiality of their responses and provided informed verbal consent. After we emphasized that participation in the study was voluntary, and that they could stop participating at any time and that data would be presented so that identification at an individual level would not be possible. The aim of the study was explained to the participants and prior to the interview students were informed that participation was voluntary and that they had a right to withdraw from the study at any time.

Variable	Number	Percentage (%)
Age		
16-18	154	19.7
19-21	423	54.2
22-24	204	26.1
Sex		
Male	251	32.1
Female	530	67.9
National		
Qatari	357	45.7
Non Qatari	424	54.3
Social status		
Single	710	90.9
Married	71	9.1
University		
Governmental	385	49.3
Non Governmental	396	50.7
Grade		
1	297	38.1
2	201	25.7
3	169	21.6
4	104	13.3
5	10	1.3

Table 1: The distribution of Socio-demographic Variables of students (N = 781)

Results

The overall response rate for this survey was 84% (781/924 students), with high response rate in non-governmental universities compared to 88% (396/447) and 80% (385/477) in governmental universities. Table 1 shows that among the 781 students participating in the study, 530 (67.9%) were females while the rest were males. The students were aged 15-24 years (mean + SD= 20.7+1.8), and 357 (45.7%) were Qatari, while 90.9% were single in terms of their marital status.

Table 2 (page 20) shows that most of the students (97.6%) could correctly identify AIDS as a serious disease, that AIDS can be transmitted from person to person (92.1%), and that AIDS is caused by the HIV virus. On the other hand, in terms of the knowledge related to mode of transmission of AIDS the majority of the respondents knew that HIV is transmitted by sexual intercourse (95.8%) followed by sharing injecting needles or surgical operation devices with an infected person (94.9%), while most myths about modes of transmission identified were mosquito bite (38.9%), sharing public toilets or swimming pools with an infected person (47%), and sharing utensils of an infected person as not modes of transmission of HIV/AIDS (49.9%).

Regarding knowledge in the area of prevention most of the students knew that avoiding contact with any used needles, syringes and razor blades (85.1%) and screening blood before transfusion (80.9%) were preventive measures for HIV/AIDS, while (30.7%) of the students stated that isolating people living with HIV or AIDS is an ineffective measure to prevent HIV from spreading.

As shown in Table 3, (page 21) the students' attitudes towards HIV/AIDS, the findings revealed that most of the students (around 86 %) agreed to support the awareness campaign toward preventing spread of HIV inside or outside college and that HIV testing should be conducted compulsorily before marriage. However, only 61.3% of the students agreed that HIV/AIDS preventive measures, such as use of condoms, could be discussed publicly in schools and university.

Regarding students' sources for HIV/AIDS information, most students reported that mass media (television, radio 74.1%, internet 73.6, newspapers & magazines 61.6%) were the major sources of their information about HIV/AIDS. In contrast, parents and relatives, health care workers and religious centres constituted the least sources of AIDS-related information, (31.1%, 28.6% and 24.2 respectively) as shown in Figure 1 (page 21).

According to Figure 2, (page 22) more than 75.9% of the students had heard HIV/AIDS discussed on the internet followed by physicians (49.3%) but on the other hand, television represented the least source of discussion (11.0%).

Regarding gender differences, our findings suggested that gender was related with the number of correctly answered HIV general knowledge for four questions (Table 4 - page 23). Males correctly identified that AIDS

Statements regarding general knowledge	Correct No. (%)
AIDS is a serious disease	762 (97.6)
AIDS is a disease existing in Qatar	457 (58.5)
AIDS is caused by HIV virus	649 (83.1)
AIDS is a disease that can be transmitted from person to person	719 (92.1)
AIDS is not a genetic disease	506 (64.8)
AIDS can be prevented	612 (78.4)
AIDS cannot be completely cured	501 (64.1)
An infected person with HIV might not have symptoms and signs of the disease	511(65.4)
Statements regarding HIV/AIDS being transmitted by	
Sexual intercourse	748(95.8)
Drug injecting through drug abuse	649(83.1)
Sharing injection needle or surgical operation devices of an infected person	741(94.9)
Donating organs, tissues and blood of an infected person	709(90.8)
An infected pregnant woman to her newborn baby throughout pregnancy or labor	649(83.1)
Breast milk of an infected mother	354(45.3)
Using razor blade together with an infected person	564 (72.2)
Statement regarding HIV/AIDS being not transmitted by	
Sharing food utensils of an infected person	390(49.9)
A bite of a mosquito (insect)	304(38.9)
Sharing public toilets and swimming pools with an infected person	367 (47.0)
Using an infected person's belonging such as clothes, comb, underwear and towel	420 (53.8)
Exposure to an infected person who coughs or spits	396 (50.7)
Touching an infected person such as hugging, holding and shaking hands	639 (81.8)
Statements regarding preventive measures	
Avoiding extra marital relations	541(69.3)
Proper condom use	461(59.0)
Isolating people living with HIV or AIDS is not an effective measure to prevent HIV from spreading	240(30.7)
Screening blood before transfusions	632(80.9)
Avoiding contact with any used needles, syringes and razor blades	665(85.1)
Premarital testing	600(76.8)

Table 2: Frequency distribution of correct responses about HIV/AIDS knowledge among university students in Qatar (N = 781)

Statements regarding HIV/AIDS Attitudes	Agree No. (%)	Neutral No. (%)	Disagree No. (%)
Do you accept to be tested for AIDS if the test provided confidentiality?	605 (77.5)	100(12.8)	76 (9.7)
Do you think that HIV/AIDS preventive measures such as use of condom could be discussed through media e.g. TV, Radio and Newspaper?	556 (71.2)	127(16.3)	98 (12.5)
Do you think that HIV/AIDS preventive measures such as use of condom could be discussed publicly in schools and University?	479 (61.3)	143(18.3)	159 (20.4)
Do you think that HIV testing should be conducted compulsorily before marriage through premarital counseling?	673 (86.2)	66(8.5)	42 (5.4)
Would you support the awareness campaign toward preventing spread of HIV among your colleagues inside or outside college?	674 (86.3)	79(10.1)	28 (3.6)

Table 3: University students' in Qatar Attitudes towards HIV/AIDS (N = 781)

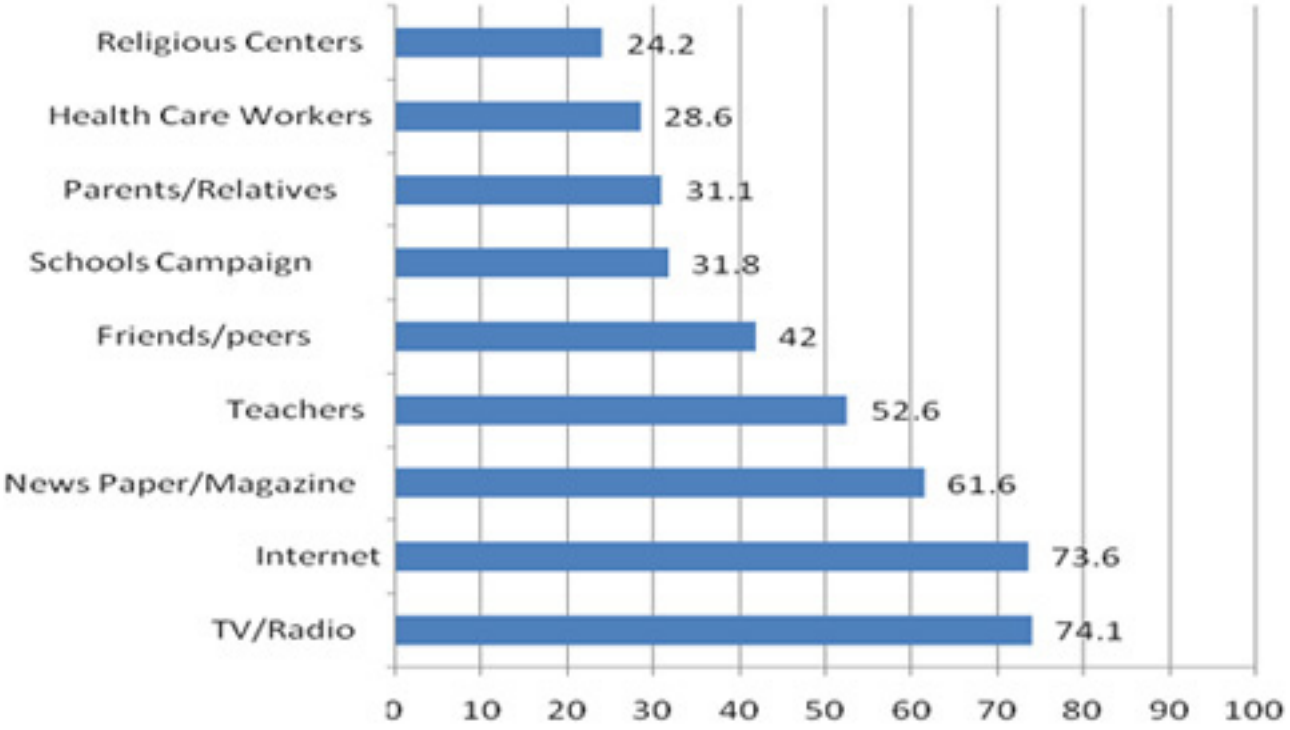

Figure 1: Qatar university students' responses on Source of Information about HIV/AIDS (N = 781)

is caused by HIV virus (X2=3.711, p = 0.032); AIDS is a disease that can be transmitted from person to person (X2= 3.853, p = 0.031) and there is not an available vaccine for AIDS (X2=3.477, p = 0.037) more than did their female peers. However, females could more correctly identify that AIDS is not a genetic disease than did males (X2=7.989, p = 0.003).

Table 5 (page 24) shows the relation between gender and knowledge of students about mode of transmission. Males and females responded similarly except for four questions. Males responded more correctly than did females that HIV could not be transmitted through: sharing public toilets and swimming pools with an infected person (X213.635, p= 0.000), using an infected person's belonging such as clothes, comb, underwear and towel (X2=4.003, p =0.027) and exposure to an infected person who coughs or spits (X2=5.098, p =0.015). Regarding students' prevention knowledge according to gender - as shown in Table 5, females were more likely to respond correctly to the statement

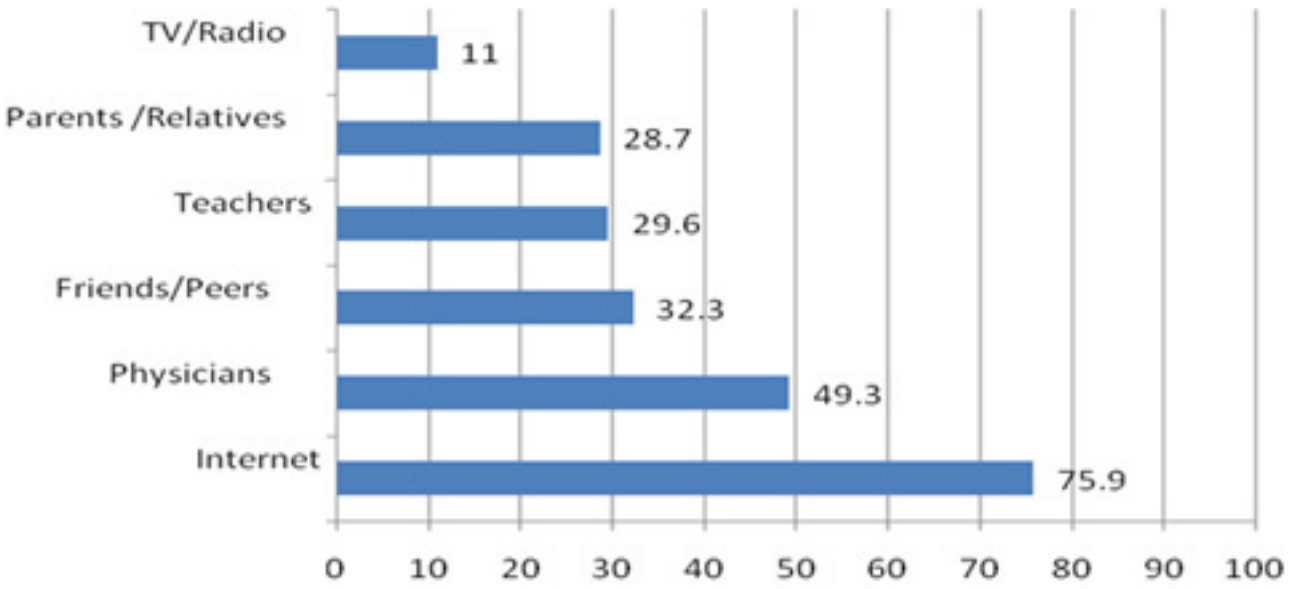

Figure 2: Qatar university students responses on source of discussion about HIV/AIDS (N=781)

that HIV can be prevented through avoiding extra marital relations (X2=3.258, p = 0.043) and screening blood before transfusions (X2=12.666, p = 0.000). On the other hand, males were more likely to respond correctly to the effect of proper condom use as a preventive measure. (X2=7.575, p = 0.004).

Gender differences existed in attitudes towards HIV/AIDS with females expressing greater acceptance ofdisease prevention than males did. Females are more likely to accept that HIV/AIDS preventive measures, such as use of condom, could be discussed through media e.g. TV, Radio and Newspaper (X2=7.680, p = 0.021,) and they would support the awareness campaign to prevent HIV among colleagues inside or outside the college more than did males (X2=8.273, p = 0.016).

As illustrated in Figure 3 female students identify TV/Radio as their main source of information (76.6%), while 75.1% of males identified internet as a main source of information. Generally there is no statistical differences in HIV source of information except the female students got their information from TV/Radio and from teachers more than males students did (X2=5.239, p = 0.014) and (X2=3.441, p = 0.038) respectively while the males got information from friends/peers (X2=25.592, p = 0.000) more than females students did. On the other hand the internet represents the major source of discussion preferred in both females (77.4%) and male (72.9%), while females preferred parents/relatives (X2=4.843, p = 0.016) and TV/Radio (X2=5.412, p = 0.012) more than males. In contrast the males preferred to discuss the issue with friends/ peers (X2=8.715, p = 0.002) more than females.

Discussion

AIDS is an important public health problem and the only way to eradicate the disease is by prevention and the best single way to prevent the disease is through education. (16) Even in countries where HIV infection has a low rate, like Qatar, early actions are essential to avoid serious impacts on economic activities.

The response rate in this study was 84% in general, reaching to 88% in the non-governmental universities. Females represent 68% of the sample; the mean age is 20.7 and the most of them are in freshmen and sophomores grade. The high percentage of females students represents a known fact that there are more females than males in Qatar's university because the males tend to join certain type of colleges such as Police and military academies and have more options to study abroad.

Accordingly regarding general knowledge about HIV/AIDS, this study revealed that most of the surveyed students had perceived HIV/AIDS as the most serious disease, similar to what has been reported among Saudi Arabia paramedical students,(9) and undergraduate students studying at the University of Jordan. (17)

On other hand, the present study revealed that two third of students knew that HIV/AIDS cannot be completely cured. These results are consistent with studies among Saudi (18) and Malaysian youth (69%)(19) but is inconsistent with studies among Emirates' (20), Iranian (2) and Turkish students,(16) where only one third of students believed that AIDS can be cured. Regarding presence of HIV vaccine, in our study only half of the students knew there is no available vaccine yet, this finding is similar to the studies conducted in UAE (20) , Iran (21) and China(22) where the misconception about presence of treatment or vaccine for HIV was explained by Agrawal et al(23) and can be attributed to the many false claims published in media and other modes of advertisements. Such misinformation concerning a "cure" for AIDS is one of the risk factors for contracting the disease. (15)

Regarding knowledge about mode of transmission, the majority of students

	Female n = 530	Male n = 251	P-value
Statements regarding HIV/AIDS general knowledge	Correct No. (%)	Correct No. (%)	
AIDS is a serious disease	520(98.1)	242(96.4)	0.118
AIDS is a disease existing in Qatar	312(58.9)	145(57.8)	0.415
AIDS is caused by HIV virus	431(81.3)	218(86.9)	0.032
AIDS is disease that can be transmitted from person to person	481(90.8)	238(94.8)	0.031
AIDS is not a genetic disease	361(68.1)	145(57.8)	0.003
AIDS can be prevented	416(78.5)	196(78.1)	0.484
AIDS cannot be completely cured	346(65.3)	155(61.8)	0.189
An infected person with HIV might not have symptoms and signs of the disease	347(65.5)	164(65.4)	0.516
Statements regarding HIV/AIDS transmission by			
Sexual intercourse	512(96.6)	236(94.0)	0.072
Drug injecting through drug abuse	441(83.2)	208(82.9)	0.490
Sharing injection needle or surgical operation devices of an infected person	505(95.3)	236(94.0)	0.280
Donating organs, tissues and blood of an infected person	485(91.5)	224(89.2)	0.186
An infected pregnant woman to her newborn baby throughout pregnancy or labor	444(83.8)	205(81.7)	0.263
Breast milk of an infected mother	235(44.3)	119(47.4)	0.233
Using razor blade together with an infected person	379(71.5)	185(73.7)	0.291
Statements regards HIV/AIDS not being transmitted by			
Sharing food utensils of an infected person	267(50.4)	123(49.0)	0.389
A bite of a mosquito (insect)	202(38.1)	102(40.6)	0.275
Sharing public toilets and swimming pools with an infected person	225(42.5)	142(56.6)	0.000
Using an infected person's belonging such as clothes, comb, underwear and towel	272(51.3)	148(59.0)	0.027
Exposure to an infected person who coughs or spits	254(47.9)	142(56.6)	0.015
Touching an infected person such as hugging, holding and shaking hands	437(82.4)	202(80.5)	0.283

(continued next page)

Statements regarding preventive measures			
Avoiding extra marital relations	378(71.3)	163(64.9)	0.043
Proper condom use	290(54.7)	171(68.1)	0,000
Isolating people living with HIV or AIDS is no an effective measures to prevent HIV from spreading	160(30.2)	80(31.9)	0.346
Screening blood before transfusions	443(83.6)	189(75.3)	0.004
Avoiding contact with any used needles, syringes and razor blades	455(85.9)	210(83.7)	0.243
Premarital testing	412(77.7)	188(74.9)	0.215

(continued from previous page)

Table 4: Distribution of the university students in Qatar knowledge about HIV&AIDS according to gender differences (N = 781)

	Female n=530	Male n=251	
Statements regarding HIV/AIDS Attitudes	Agree No. (%)	Agree No. (%)	P-value
Do you accept to be tested for AIDS if the test provided confidentiality?	413(77.9)	192(76.5)	0.646
Do you think that HIV/AIDS preventive measures such as use of condom could be discussed through media e.g. TV, Radio and Newspaper?	383(72.3)	173(68.9)	0.021
Do you think that HIV/AIDS preventive measures such as use of condom could be discussed publicly in schools and University?	324(61.1)	155(61.8)	0.685
Do you think that HIV testing should be conducted compulsorily before marriage through premarital counseling	466(87.9)	207(82.5)	0.107
Would you support the awareness campaign toward preventing spread of HIV among your colleagues inside or outside college?	470(88.7)	204(81.3)	0.016

Table 5: Distribution of attitudes of the university students in Qatar towards HIV&AIDS prevention according to gender differences (N= 781)

(95.8%) in the current study knew that HIV can be transmitted by sexual intercourse. These findings are consistent with previous studies among Jordanian,(17) Afghani (24) and Japanese (25) university students. Also about 95% and 91% of the students in Qatar have identified contaminated instruments and blood transfusion respectively as routes for HIV transmission, which is consistent with Jordanian (17) Afghani (24) Malaysian (19) and Chinese (22) university students, while about 83% of participating students knew that HIV can be transmitted from mother to her new baby; these findings are consistent with Jordan (17), Afghanistan (24), Malaysia (19), and Japan(25) and via a razor blade used by an infected person (72%) similar to high school students in Saudi Arabia. (18) However, there is misconception about the infectivity of breast milk as only 45% of students identified this mode of transmission. Similar low findings have been reported among Malaysian (54%),(19) and Nigerian youth (13%).(26) These findings about mode of transmission can be attributed to type of information that is usually communicated in any health education campaign as these campaigns concentrate on three modes: sexual, blood transfusion, and injections, while these educational campaigns do not concentrate on the breast milk route. On the other hand the present study showed presence of some misconceptions regarding the modes

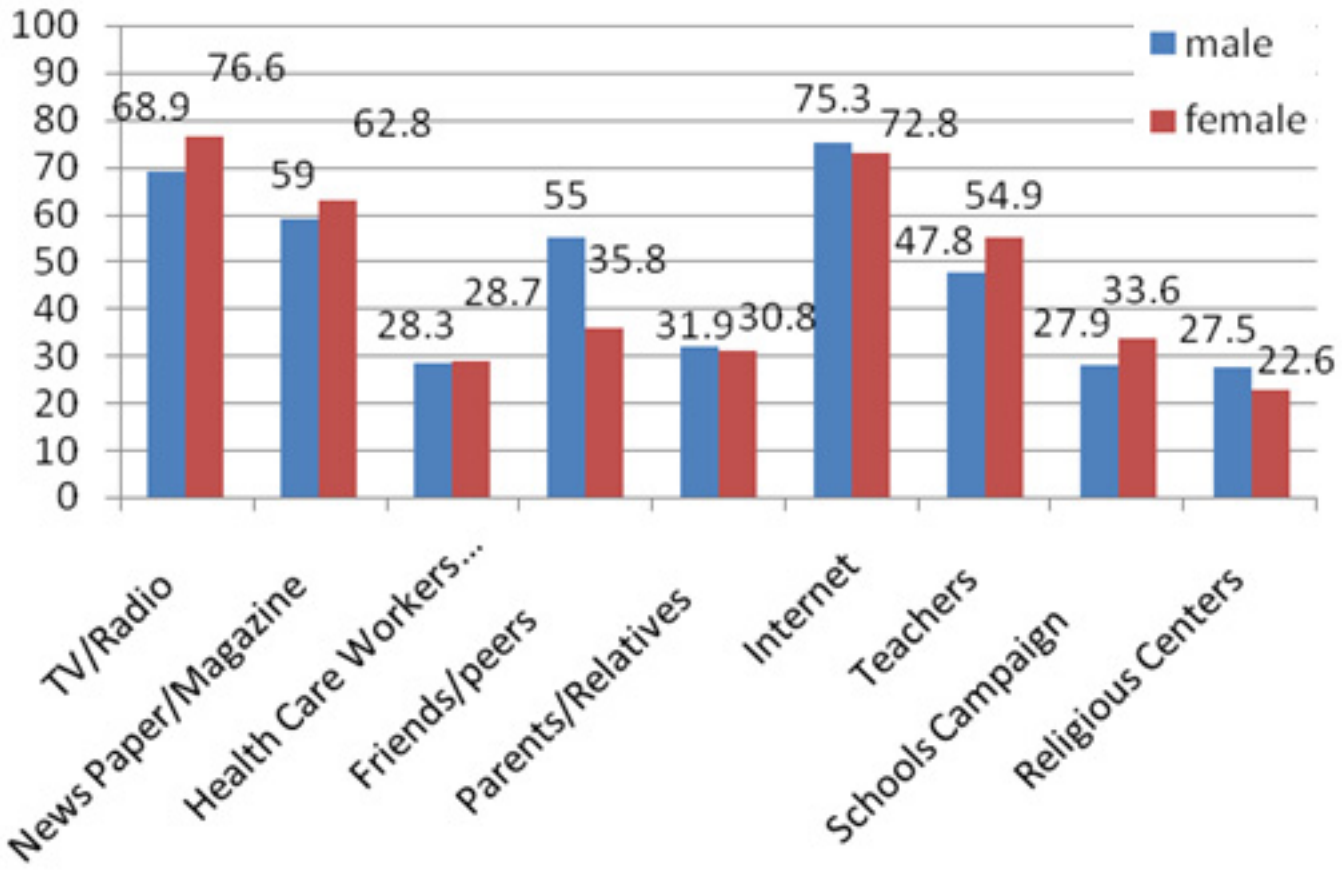

Figure 3: Distribution of source of information of HIV/AIDS according to gender differences (N=781)

that cannot transmit HIV among the students. For example half of the students identified that HIV can be transmitted by sharing food utensils.

These findings are similar to findings among Emirati (20) and Chinese (22) university students. Also 61% of the students believe that HIV can be transmitted by mosquito bites, which is similar to the findings in the Turkish study. (27) Moreover on agreement with Jordanian (17) and Chinese (22) studies, about 53% of students believe that they can get HIV through using public toilets and swimming pools. Also 46% believe that HIV can be transmitted through sharing belongings of an HIV positive person, while 50% believe that HIV can be transmitted by cough.

However, most of the students knew you cannot get HIV by hugging and shaking hands (82%) which is similar to the findings reported among Sudanese (28) and Chinese (22) university students.

Overall the level of misconceptions among students who participated in this study, the fact that these routes cannot transmit HIV, is within the same reported level in the previous studies in the Emirates(20 Jordan (17) and China (22) , but an Omani study among medical students in Oman has shown a better level of knowledge.(1) This can be referred to the influence of being medical students. The explanation for the presence of such levels of misconception about certain modes of transmission can be attributed to the fact that most health education programs focusing on sexual intercourse, using injections and blood transfusion as the main of means of disease transmission while is neglecting the areas regarding routine and daily activities that can or cannot transmit the disease. Furthermore, more than three quarters of the students in the current study believed that HIV could be prevented and most students believed that avoiding HIV/AIDS transmitted through blood transmission such as blood testing and avoiding contaminated tools is more effective than avoiding extramarital relations and proper condom use in HIV prevention. These findings are consistent with the previous studies done in Saudi Arabia, (9) Turkey (16) and Nigeria. (26) This may reflect the effect of the conservative culture on the students' attitude in discussing the importance of avoiding risky behavior such as extra-marital relations or usage of condoms as preventive measures.

However, the current study revealed that almost one third of students have misconceptions about isolating people living with HIV/AIDS as one of the effective measures for prevention. These findings agreed with the previous studies among Turkish (27) and Chinese university students. (6) These misconceptions may increase the stigmatization of HIV positive people, as was shown in a study in San Francisco, California

where students with misconceptions about transmission of HIV through casual contact were more likely to answer that students with AIDS should not be allowed to attend school. (29)

In terms of attitudes towards HIV/AIDS, the present study found that the majority of the students have positive attitudes towards preventive measures for HIV/AIDS. For example about two thirds of students accepted being tested for HIV. A similar result was reported in studies among students in Oman,(1) and among Nigerian adults. (26) There were some positive opinions, such as HIV testing should be conducted compulsorily before marriage through premarital counseling, and testing for HIV. This can influence positively the utilization of the premarital testing program that will be implemented in Qatar in 2010 like neighboring countries (20), which will include a part on genetic diseases like HIV as well as other STDs that are considered as a risk factor for contracting HIV, like syphilis and hepatitis B.

Most of the students in our study (86%) believe that would support the awareness campaign towards preventing measures for HIV through either university based or community based campaigns. This finding is consistent with other findings in other communities such as China. (22) Most students support public health promotion to prevent HIV among students. Such a positive attitude can give great support for any HIV prevention program in Qatar by involving youth to participate actively in such a program, which is more effective and sustainable.

Furthermore, the discussion on STDs, including HIV/AIDS, and their transmission routes and ways of prevention, is one of the sensitive matters in our region. In the present study, we found that attitudes of students show a preference to discuss preventive measures such as use of condoms, in the media more than in a field of study.

Students had obtained information and preferred discussion on HIV/AIDS from various sources. The present study revealed that the mass media (TV/Radio 74%, Internet 73%, News paper/Magazine 61.6%) was identified as the major source of information, while school based health education campaigns were the least source (31.8%). This can be attributed to lack of lectures, workshops and school campaigns for HIV/AIDS as there is no sustainability for this program as it started in 2002 for one year and then stopped. Therefore the majority of the students are receiving information from the mass media channels, like the internet.

Using mass media as the main source of information for HIV/AIDS has been reported in several previous studies. For example 90% of Emirates university students use internet and TV(20) while in Jordan half of the students use TV and a third of them use Newspapers(17) as information sources. Similar to the Jordanian study, Iranian,(21) Indian, (30) Malaysian,(31) Chinese(22), Turkish (27) studies have reported the same finding.

In agreement with previous studies among Emirati students(20) and Afghanistan students(24), the present study found that the majority of students prefer the internet websites as a means to address their enquiries about HIV/AIDS (76%), followed by discussions with their physician (49.3%), then friends/peers, teachers, and parents/relatives (32%, 29%, 28%) respectively. However there are other studies that have reported other preferred sources for discussion other than media, such as friends among Saudi (18) Kazakhstani students(29), or physicians among Chinese students.(22)

The current study showed a significant difference between males and females in their knowledge, in agreement with previous studies in UAE (20) Jordan (17) and China (22). Our results found that males are more knowledgeable than females. Agrawal et al found that boys had better knowledge than girls and their explanation for this finding was that boys feel freer than girls to talk about matters relating to sex and HIV/AIDS (23). However such a finding is not consistent with some previous studies in Malaysia and Afghanistan (19,24) that found that females were more knowledgeable than males, or other studies (Malawi and Iran)(32, 21) with no significant differences.

In the present study, males were more likely to respond correctly to such questions as HIV cannot be transmitted by the use of a toilet seat, swimming in the same water, wearing the clothes of someone with AIDS or through the cough of someone who is infected with HIV virus, and can be prevented through condom use while females responded more correctly to HIV/AIDS can be prevented through blood screening before transfusion. This shows that young males are more willing to take risks, as they engage in significantly more risky behaviors' than women, a fact which may be explained by the theory of gender roles.(33)

It is well documented that females often have less access to education, training and productive resources. (34) There are several practices that increase women's difficulty in accessing information on HIV risks, such as marriage patterns and age differences between spouses, and cultural expectations of women.(35) Nevertheless, it was found that females express greater acceptance in their attitudes towards HIV/AIDS preventive measures than males; for example females believed in discussing preventive measures for HIV/AIDS through media and support the awareness campaign towards preventive spread of HIV more than males (72% versus 68%) and (88% versus 81%) respectively. Such findings have been reported by previous studies in the Emirates (20) and China. (6)

There were significant differences in the responses provided on the source of information about AIDS with regard to students' gender; the current study found internet ranked first among males while TV/Radio

ranked first among females. Also female students more often reported TV/Radio and teachers as a source of information than males, while male students reported friends/peers as a source of information more than females.

However, for the source of information among Saudi students friends ranked first among males while booklets ranked first among females (9). Among Afghanistan students no statistically significant difference was found between genders. The majority mentioned health workers as a main source (41.7%) and television as a main channel of information (52.3%) (24), and among Chinese students more males received AIDS information from newspapers, while more females received it from public displays such as shop windows and bill posters(22). As for the discussion in HIV/AIDS, the current study found significant difference in which female students preferred discussion with parents/relatives and TV/Radio more than males, while the male students preferred friends/peers more than female students. These findings are similar with Chinese university students where females discussed the topic with their parents /relatives more than males (28% versus 14%)(22).

Conclusion and Recommendations

In conclusion, the present study has found that university students in Qatar have deficiencies with respect to their knowledge and the amount of information received on HIV and AIDS related topics. With most misconceptions noted in routes of transmission we observed however most of the students reported to have positive attitudes toward HIV/AIDS preventive measures and mass media was regarded as the main source of information and most of the students preferred the internet as a forum to discuss HIV/AIDS.

It is recommended that health authorities establish a well-structured health education program in a way to address misconceptions about the routes of transmission of HIV. Such a program can be initiated from schools and extended beyond formal education to reach parents and other adults in the community, in a collaboration between the Universities, Ministries of Education and Health, and youth organizations to implement comprehensive preventive programs that offer a youth friendly concept to encourage students to discuss HIV/AIDS with their teachers and health care providers, and establish health education messages for HIV/AIDS through the preferred channels like internet education program and sponsored by Health Education Authorities. Also integration of health education for HIV/AIDS in the curriculum of all colleges through subjects like science, sociology, behavioral science, or life skills courses would be beneficial.

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Nocturnal enuresis: Prevalence and associated Factors. A sample of children in Baghdad

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Abstract

Background: Enuresis is defined as the occurrence of involuntary voiding at an age when voluntary control of micturition is expected. By the age of 3 years, nearly 75% of children attain night time dryness. Boys tend to be slower than girls in acquiring dryness. The term enuresis is usually used when wetting persists beyond the age of 6 years.

Aims: to determine the prevalence and sociodemographic factors associated with nocturnal Enuresis in sample of children in Baghdad.

Patients and method: A cross sectional study conducted from six sectors in Baghdad, 3 in Al Resafa side and 3 in Al Karah side, from January and May 2011 where 610 children were enrolled. Information was collected by direct interview with the families, usually the mother of the child, at their homes, using a structured questionnaire.

Results: Among 610 children, enuresis was found in 127 (20.8 %). 48% were male and 52% were females; the maximum age group with enuresis was 8-9 years (64.5%).

Conclusion: Findings suggest that nocturnal enuresis is a common problem among children, especially with low income, smaller age, family history of enuresis and history of urinary tract infection. Enuresis is a pediatric public health problem and efforts at all levels should be made, such as preventive, etiological and curative.

Key words: Enuresis, nocturnal, prevalence, associated factors, children

Introduction

Enuresis is defined as continued wetting in girls beyond 5 years and in boys beyond 6 years (1). Enuresis can be disruptive to normal family life and can generate stress between parents and child. There may be anxiety about such events as sleep overs and there are significant costs in lost time, laundry and bedding as well as potential for guilt and loss of self-esteem (2). It is well known that nocturnal enuresis is a common, genetically complex and heterogeneous disorder among children (3).

In recent terminology, Nocturnal Enuresis (NE) is categorized into two different groups. The first, monosymptomatic NE (MNE), is bedwetting occurring without any day-time incontinence or urological symptoms (4, 5). It might be an explanation of a normal void occurring at an inappropriate and socially unacceptable time and place (5). In contrast, bedwetting associated with day-time indicators of bladder dysfunction, such as urgency or toileting frequency, is considered polysymptomatic or non-monosymptomatic NE (6,7,8). However, the characteristics of different forms of NE have not yet been clarified. Nocturnal enuresis is an important developmental problem for school age children and it can cause emotional and social problems for the child as well as family (9). NE is also classified as primary and secondary. Primary enuresis was defined as bedwetting in a child who had never had bladder control for a period longer than six months. Secondary enuresis was defined as enuresis seen in a child who was toilet trained for at least six months after the age of bladder control and with subsequent loss of bladder control. (10)

Table 1: General characteristics of sample (n=610)			
		NO.	%
AGE	6-7	21	3.4
	8-9	318	52.1
	10-12	271	44.4
SEX	MALE	320	52.5
	FEMALE	290	47.5
NE	YES	127	20.8
	NO	483	79.2

Table 1

Table 2: Individual characteristics of children with enuresis (n=127)			
		No.	%
SEX	MALE	61	48
	FEMALE	66	52
Age	6-7	5	4
	8-9	82	64.5
	10-12	30	23.5
FREQ OF BED WETTING	Once monthly	2	1.6
	Once weekly	14	11
	Twice weekly	38	30
	daily	73	57.4
Bad School performance		25	19.5
Deep sleep		86	68
Urinary tract infection		65	51
Breastfed ≥6 months		103	81

Table 2

Table 3: Familial characteristics of children with enuresis			
		No.	%
Family history of enuresis in parents		63	49.5
Family history of enuresis in other siblings		45	35.5
Birth order	1st	34	26.5
	2nd	29	23
	3th	32	25
	4th and more	32	25
No. of children in household	<4	63	50
	4-8	61	48
	>8	3	2.3
Familial stress (divorce or death of one of the parents)		58	45.6
Maternal education	Primary school or less	58	45.6
	Secondary school or more	69	54.3
Working mother		30	23.6
Father education	Primary school or less	39	30.7
	Secondary school or more	88	69
Previous treatment		42	33

Table 3

Patients and Method

A Cross sectional study of 610 children, from six sectors in Baghdad, three in Al Resafa side and three in Al Karah side, from January and May 2011; information was collected by direct interview with the families at their homes, using a special questionnaire form which was prepared for the study. The collected data asked about socio-economical, familial and physical status of the children, whether he or she had NE, and frequency of NE.

Inclusion criteria:

1. Child age 6-11 years
2. Repeated voiding of urine into bed or clothes for at least three consecutive months, in a child who is at least 6 years of age (10).

Exclusion criteria:

1. Children with Diabetes mellitus.
2. Children with obvious mental abnormalities.

Results

A total of 610 children aged between 6 and 12 years were included. General characteristics of the sample are given in Table 1. The overall prevalence of nocturnal enuresis was 20.8% (127 children with nocturnal enuresis were identified).

Nocturnal enuresis was slightly more common in girls (52%) than in boys (48%). Mean age of the children with NE was 9.17 ± 1.47 years. Most of the cases were observed at 8-9 years of age 64.5% (Table 1), while only 4 % occurred at an age before 8 years. In 57.5 % of the cases, bed-wetting occurred every night (Table 2), and an average of 11% wet nights occurred once weekly and 1.6% once monthly. Only 19.5 % of children with NE were successful at school, and 68% of them had deep sleep. Table 3 shows the Familial characteristics of children with enuresis.

Discussion

Enuresis is a common problem in children, which causes embarrassment, stress, and discomfort in them and their families. Nocturnal enuresis has multiple causes.

This is a population-based study, which aimed to detect prevalence and risk factors of EN in Baghdad. A high response rate (95.8 %) was achieved. No gender predominance was observed for NE (girls 52% versus boys 48 %) although male predominance was detected in some other studies (12). The overall prevalence of nocturnal enuresis was 20.8% which was the highest prevalence compared to many other studies. The higher rate observed in the above study may be due to the fact that the proportion of younger children in the sample was too small coupled by the use of questionnaires rather than semi-structured interviews. It may be that parents over report the problem when a questionnaire is used (11).

The study found that 49.5% had a positive family history of NE. Among enuretic children from eastern Croatia, 68.6% of them had a positive family history of enuresis, (13-15).

Results of another study revealed that the prevalence of NE in Croatian school children was 1.2%. Previous studies had shown that the prevalence of enuresis varies with geographical area, study population and the criteria used in the studies. It has been reported to be as low as 2.6% in the United Kingdom (UK) to 15.0% in Saudi Arabia (12,29) and in Taiwan (8.0%), Pakistan (9.1%) and Spain (18%) (13,18,).

An earlier study carried out in the United Arab Emirates (UAE) reported a prevalence rate of 5.5% among 6-12 year olds using a questionnaire survey (16).

This study was performed from January to May, covering autumn and spring, so we speculate that climatic changes might affect EN prevalence, as mentioned by Cederblad et al. [17].

The reported prevalence of enuresis at different ages varies considerably because of inconsistencies in the definition of enuresis, differences in the method of data collection, and characteristics of the population sampled (18).

In this study about 80.5 % of children with NE had bad performance at school. Chang et al found that enuresis was associated with childhood behavioral problems, and in particular attention problems and aggressive behavior, lower social competence and school performance (19,22).

It is known that there are some variations in the pattern of NE between summer and winter, and it is considered that NE decreases in the summer (21).

In this study 68% of children with NE had deep sleep. Many parents complain their bed-wetting children are difficult to be fully awakened. In the study of Tai et al the ratio of deep sleepers between bedwetting and non-bedwetting children showed a significant difference [23]. A recent epidemiological study by Neveus et al reported that most of the dry children were relatively easy to arouse from sleep [24]. It is obvious that waking up is still a problem in enuretics and that some questions remain to be answered on this matter.

In this study, there was no relationship between the enuresis prevalence and the educational level of the father and mother. Spee-Van der Wekke found that the educational level of parents was not significantly related to the prevalence of nocturnal enuresis [25]. The findings suggest that enuresis is connected with higher rates of poor school performance and poor social adaptation compared with non-enuretic children(26).

Conclusion

Our findings suggest that nocturnal enuresis is a common problem among children, especially with low income, smaller age, family history of enuresis and history of urinary tract infection. Enuresis is a pediatric public health problem and efforts at all levels should be made, such as preventive, etiological and curative.

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The Effect of Ramadan Fasting on Waist Circumference (WC), Body Mass Index (BMI), C-Reactive Protein (CRP), Mean Arterial Pressure (MAP) and Fasting Blood Sugar (FBS) in Type 2 Diabetic Kuwaiti Patients

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Abstract

Background: Diabetes and obesity are cardiovascular risk factors. Both conditions are associated with elevation of inflammatory markers especially C-reactive protein (CRP).

Aims: To study the effect of Ramadan fasting on the Waist Circumference (WC), Body Mass Index (BMI), C-Reactive Protein (CRP), Mean Arterial Pressure (MAP)and Fasting Blood Sugar (FBS) in Type 2 Diabetic Kuwaiti Patients.

Methods: One hundred male and female type 2 diabetic patients on oral hypoglycemic agents aged between 28-67 years old willing to fast during Ramadan, were randomly selected and their Waist Circumference (WC), Body Mass Index (BMI), C-Reactive Protein (CRP), Mean Arterial Pressure (MAP) and Fasting Blood Sugar (FBS) were measured before and at the end of Ramadan fasting, meaning 25 days fasting for 12 hours a day.

Results: Data analysis using standard statistical techniques showed a statistical significant difference between the two measurements of the five variables with high significant P values (P<.0001).

Conclusion: C-reactive protein is an inflammatory marker which predicts cardiovascular risk which is raised in obese and diabetic patients and can be significantly decreased with 12 hours fasting for a mean of 25 days (e.g. Ramadan Fasting).

Keywords: Body Mass Index (BMI), Waist Circumference (WC), Fasting Blood Sugar (FBS), C-Reactive Protein (CRP) and Mean Arterial Pressure (MAP).

Introduction

Diabetes and Obesity are quite Prevalent in Kuwait. In Kuwait about 18% of people are diabetic and about 70% of people are obese and or overweight [1, 2, 3, 4]. Previous studies have shown that fasting during the month of Ramadan (a religious fasting month for Muslims from dawn to sunset) resulted in a significant decrease in Fasting blood sugar (FBS), Blood Pressure (BP) and Low density lipoprotein (LDL) [5,6,7,8,9,10]. C-reactive protein (CRP) is raised in obese patients and in Type 2 diabetics [11, 12, 13]. Weight loss and adjusting Hemoglobin A1c (HbA1c) level less than 7 percent is associated with significant decrease in CRP [11, 12, 13]. In this study one hundred Kuwaiti patients suffering from type 2 diabetes on oral hypoglycemic agents, aged between 28-67 years old, were randomly selected. The sample consisted of 64 percent men and 36 percent women. The various parameters such as Waist Circumference (WC), Body Mass Index (BMI), Fasting Blood Sugar (FBS), C - Reactive Protein (CRP) and Mean Arterial Pressure (MAP), were measured before fasting began (defined as 'Pre Ramadan Period') and during the last week of Ramadan (defined as 'Post Ramadan Period').

Methods

The BMI (Body Mass Index), FBS (Fasting Blood Sugar), WC (Waist Circumference), CRP (C-reactive protein), MAP (Mean Arterial Pressure) and Age of one hundred Kuwaiti men and women, who were type 2 diabetic patients on oral hypoglycemic agent's, were measured at 'Pre Ramadan' and 'Post Ramadan' periods. The data of these patients were recorded and was analyzed using SPSS, Version 19. All the patients were divided into two categories of age. Patients who were in the age group of 'less than

50' were 48 percent and patients who were in the age group of '50 or more' were 52 percent. 64 percent of patients were men and 36 percent of patients were women. The results show that at the Pre Ramadan period 28 percent of patients were non obese (i.e. either normal or over-weight) and 72 percent were obese, whereas at the Post Ramadan period 30 percent of patients were non obese (i.e. either normal or over-weight) and 70 percent were obese. It was found that at Pre Ramadan period 32 percent of patients had their FBS reading as 'Less than 7.9' and 68 percent of patients had their FBS reading as 'greater than 7.9', whereas at the Post Ramadan period 72 percent of patients had their FBS reading as 'Less than 7.9' and 28 percent of patients had their FBS reading as 'greater than 7.9'. Mean Arterial Pressure (MAP) was also calculated from the two readings of their Systolic and Diastolic blood Pressures. It was found that at the Pre Ramadan period 94 percent of patients had their MAP reading as 'normal' and only 6 percent of patients had their MAP as 'high' whereas at the Post Ramadan period all 100 percent of patients had their MAP as 'normal'. To see the significant difference between various independent and dependent variables, independent samples t-test was applied on the various dependent variables such as BMI, FBS, Waist Circumference, CRP and MAP with respect to various independent variables such as sex (men's, women's) and age (up to 49 years, 50 and more years). The Pearson correlation coefficients were computed among the variables such as Waist Circumference, FBS and CRP for Pre Ramadan and Post Ramadan period. Bonferroni approach was applied to controls for 'Type I error' and an appropriate p-value was used to show the significant difference across the various correlations. A 'Paired Sample T test', was used to show a high statistical significant difference between the two measurements in all the five variables that were measured at Pre Ramadan and Post Ramadan periods.

Statistical Methods and Results

An independent sample t-test with respect to sex

An independent sample t-test was applied with respect to sex to see the significant difference between males and females on the measurements of their various parameters such as BMI, Waist Circumference, FBS, CRP, and MAP for their Pre Ramadan period, Post Ramadan period and on the difference of their 'Pre and Post' Ramadan period.

Table 1 (opposite page) shows that there is a statistical significant difference at (.05) with respect to "Sex" on the BMI, FBS, CRP, and on MAP for their 'Pre Ramadan period'.

Table 1 also shows that there is a statistically significant difference at (.05) with respect to "Sex" on the BMI measurement of the participants for their 'Post Ramadan period', $t\ (83.524) = -5.725$, $p < .01$, $(p=.000)$. Men's means were much less than $(M=31.566, SD=4.276)$ women's means $(M=36.161, SD=3.593)$.

Table 1 shows that there is a statistically significant difference at (.05) with respect to "Sex" on the FBS measurement of the participants for their 'Post Ramadan period', $t\ (98) = -2.462$, $p < .05$, $(p=.016)$. Men's means were much less than $(M=7.4, SD=0.52)$ women's means $(M=7.667, SD=0.519)$.

Table 1 shows that there is a statistically significant difference at (.05) with respect to "Sex" on the CRP measurement of the participants for their 'Post Ramadan period', $t\ (98) = -2.186$, $p < .05$, $(p=.031)$. Men's means were much less than $(M=2.453, SD=0.496)$ women's means $(M=2.689, SD=0.555)$.

Table 1 shows that there is a statistically significant difference at (.05) with respect to "Sex" on the MAP measurement of the participants for their 'Post Ramadan period', $t\ (98) = -2.89$, $p < .01$, $(p=.005)$. Men's means were much less than $(M=103.167, SD=5.071)$ women's means $(M=106.278, SD=5.337)$.

Table 1 shows that there is a statistically significant difference at (.05) with respect to "Sex" on the 'difference on BMI measurement of the participants for their Pre minus Post Ramadan period', $t\ (56.757) = -2.084$, $p < .05$, $(p=.042)$. Men's means were $(M=0.100, SD=.165)$ much less than women's means $(M=0.189, SD=0.224)$.

Table 1 shows that there is a statistically significant difference at (.05) with respect to "Sex" on the 'difference on CRP measurement of the participants for their Pre minus Post Ramadan period', $t\ (98) = -2.213$, $p < .05$, $(p=.029)$. Men's means were $(M=0.681, SD=.421)$ much less than women's means $(M=0.867, SD=0.366)$.

Table 1 shows that there is a statistically significant difference at (.05) with respect to "Sex" on the 'difference on FBS measurement of the participants for their Pre minus Post Ramadan period', $t\ (98) = -2.969$, $p < .01$, $(p=.004)$. Men's means were $(M=0.797, SD=.522)$ much less than women's means $(M=1.111, SD=0.483)$.

An independent sample t-test with respect to age:

An independent sample t-test was applied with respect to age (< 50, > 50) to see the significant difference between two age groups of participants on the measurements of their various parameters such as BMI, Waist Circumference, FBS, CRP and MAP for their Pre Ramadan period, Post Ramadan period and on the difference of their 'Pre and Post' Ramadan period.

	Sex	N	Mean	Standard Deviation	t	df	Sig. (2-tailed)
BMI1 (Pre Ramadan Period)	Men's	64	31.666	4.349	-5.798**	84.66	.000
	Women's	36	36.350	3.586			
FBS1 (Pre Ramadan Period)	Men's	64	8.197	0.838	-3.343**	98	.001
	Women's	36	8.778	0.827			
CRP1 (Pre Ramadan Period)	Men's	64	3.134	0.757	-2.671**	98	.009
	Women's	36	3.556	0.756			
MAP1 (Pre Ramadan Period)	Men's	64	105.969	5.727	-2.247*	98	.027
	Women's	36	108.759	6.363			
BMI2 (Post Ramadan Period)	Men's	64	31.566	4.276	-5.725**	83.52	.000
	Women's	36	36.161	3.593			
FBS2 (Post Ramadan Period)	Men's	64	7.400	0.520	-2.462*	98	.016
	Women's	36	7.667	0.519			
CRP2 (Post Ramadan Period)	Men's	64	2.453	0.496	-2.186*	98	.031
	Women's	36	2.689	0.555			
MAP2 (Post Ramadan Period)	Men's	64	103.167	5.071	-2.890**	98	.005
	Women's	36	106.278	5.337			
Difference in BMI (Pre minus Post Ramadan period)	Men's	64	0.100	0.165	-2.084*	56.76	.042
	Women's	36	0.189	0.224			
Difference in Waist circumference (Pre minus Post Ramadan period)	Men's	64	1.647	0.640	-1.229	95.44	.222
	Women's	36	1.778	0.422			
Difference in CRP (Pre minus Post Ramadan period)	Men's	64	0.681	0.421	-2.213*	98	.029
	Women's	36	0.867	0.366			
Difference in FBS (Pre minus Post Ramadan period)	Men's	64	0.797	0.522	-2.969**	98	.004
	Women's	36	1.111	0.483			
Difference in MAP (Pre minus Post Ramadan period)	Men's	64	2.802	2.393	.475	52.42	.637
	Women's	36	2.481	3.634			

* shows significant difference at (.05); ** shows significant difference at (.01);

Table 1: T-TEST with respect to Sex on various dependent variables such as BMI, FBS, CRP, and MAP for their Pre Ramadan, Post Ramadan and on the difference of their Pre and Post Ramadan period

	Age	N	Mean	Standard Deviation	t	df	Sig. (2-tailed)
BMI1 (Pre Ramadan Period)	< 50	48	33.346	5.012	-.013	98	.990
	> 50	52	33.358	4.354			
FBS1 (Pre Ramadan Period)	< 50	48	8.442	0.965	.390	98	.698
	> 50	52	8.373	0.793			
CRP1 (Pre Ramadan Period)	< 50	48	3.183	0.855	-1.268	98	.208
	> 50	52	3.381	0.699			
MAP1 (Pre Ramadan Period)	< 50	48	106.764	6.898	-.326	87.912	.745
	> 50	52	107.167	5.282			
BMI2 (Post Ramadan Period)	< 50	48	33.204	4.934	-.033	98	.974
	> 50	52	33.235	4.307			
FBS2 (Post Ramadan Period)	< 50	48	7.550	0.576	.973	98	.333
	> 50	52	7.446	0.490			
CRP2 (Post Ramadan Period)	< 50	48	2.371	0.499	-3.181**	98	.002
	> 50	52	2.692	0.510			
MAP2 (Post Ramadan Period)	< 50	48	103.250	5.779	-1.883	98	.063
	> 50	52	105.244	4.792			
Difference in BMI (Pre minus Post Ramadan period)	< 50	48	0.142	0.182	.481	98	.631
	> 50	52	0.123	0.203			
Difference in Waist circumference (Pre minus Post Ramadan period)	< 50	48	1.646	0.555	-.807	98	.421
	> 50	52	1.738	0.590			
Difference in CRP (Pre minus Post Ramadan period)	< 50	48	0.813	0.434	1.521	98	.131
	> 50	52	0.688	0.381			
Difference in FBS (Pre minus Post Ramadan period)	< 50	48	0.892	0.575	-.332	98	.740
	> 50	52	0.927	0.486			
Difference in MAP (Pre minus Post Ramadan period)	< 50	48	3.514	3.016	2.831**	92.604	.006
	> 50	52	1.923	2.562			

* shows significant difference at (.05); ** shows significant difference at (.01);

Table 2: T-TEST with respect to Age on various dependent variables such as BMI, FBS, and CRP and MAP for their Pre Ramadan, Post Ramadan and on the difference of their Pre and Post Ramadan period

	Waist1 (Pre Ramadan)	FBS1 (Pre Ramadan)	CRP1 (Pre Ramadan)	Waist2 (Post Ramadan)	FBS2 (Post Ramadan)
FBS1 (Pre Ramadan)	.000				
CRP1 (Pre Ramadan)	.102	.691**			
Waist2 (Post Ramadan)	.994**	-.027	.080		
FBS2 (Post Ramadan)	-.004	.828**	.613**	.016	
CRP2 (Post Ramadan)	-.023	.685**	.873**	-.030	.635**

(above) ** p < .001

Table 3: Correlations among various variables for Pre and Post Ramadan period

Table 2 (opposite page) shows that there is a statistically significant difference at (.05) with respect to "age" on the CRP measurement of the participants for their 'Post Ramadan period', t (98) = -3.181, p < .01, (p=.002). The mean of age group of '< 50' people was much less than (M=2.371, SD=0.499) mean of age group of '> 50' people (M=2.692, SD=0.510). It also shows that there is a statistically significant difference at (.05) with respect to "age" on the 'difference on MAP measurement of the participants for their Pre minus Post Ramadan period', t (92.604) = 2.831, p < .01, (p=.006). The mean of age group of '< 50' people was much less than (M=3.514, SD=3.016) mean of age group of '> 50' people (M=1.923, SD=2.562).

Pearson Correlation Coefficients:
The Pearson correlation coefficients were computed among all the variables such as Waist Circumference, FBS and CRP for their Pre Ramadan and Post Ramadan periods. Bonferroni approach was applied to controls for 'Type I error' across the 15 correlations. A p-value of less than .003 (.05/15 = .003) was required for significance. The results of the correlational analyses are presented in Table 3. The results show that 7 out of 15 correlations were statistically significant and were greater than 0.6. The results show that FBS and CRP has a high significant correlation in the Pre Ramadan period, r (98) =.691, p < .001 as well as in the Post Ramadan period, r (98) = .635, p < .001. There was no significant correlation between (waist circumference and CRP) as well as between (waist circumference and FBS) in the Pre Ramadan period as well as in the Post Ramadan period. There was a high significant correlation for the two periods i.e. between Pre Ramadan and Post Ramadan period for the various variables such as waist circumference, FBS and CRP.

The Pearson correlation coefficients were also computed among the variables which represent 'Pre minus Post Ramadan period'. In this we have taken variables such as BMI, Waist Circumference, CRP and FBS. Bonferroni approach was applied to controls for 'Type I error' across the 10 correlations. A p-value of less than .005 (.05/10 = .005) was required for significance. The results of these correlational analyses are presented in Table 4 (next page - page 38). The results from Table 4, show that 4 out of 10 correlations were statistically significant and were greater than 0.3. The results show that 'Difference in Waist Circumference for Pre minus Post Ramadan period and 'Difference in CRP for Pre minus Post Ramadan period' has a high significant correlation, r (98) =.342, p < .001. Table 4 results show that 'Difference in Waist Circumference for Pre minus Post Ramadan period' and 'Difference in FBS for Pre minus Post Ramadan period' has a high significant correlation, r (98) =.301, p < .005. Table 4 results show that 'Difference in CRP for Pre minus Post Ramadan period' and 'Difference in FBS for Pre minus Post Ramadan period' has a high significant correlation, r (98) =.366, p < .001. Table 4 results show that 'Difference in BMI for Pre minus Post Ramadan period' and 'Difference in FBS for Pre minus Post Ramadan period' has a high significant correlation, r (98) =.310, p < .005.

Paired-Samples T Test:
A paired-samples t test was conducted to evaluate the difference in the measurements in all the five parameters BMI, Waist Circumference, FBS, CRP, and MAP for 100 participants who were assessed during the Pre Ramadan and Post Ramadan period.

	BMI (Difference in Pre minus Post Ramadan Period)	Waist Circumference (Difference in Pre minus Post Ramadan Period)	CRP (Difference in Pre minus Post Ramadan Period)	FBS (Difference in Pre minus Post Ramadan Period)
Waist Circumference (Difference in Pre minus Post Ramadan Period)	.160			
CRP (Difference in Pre minus Post Ramadan Period)	.103	.342** (p=.000)		
FBS (Difference in Pre minus Post Ramadan Period)	.310** (p=.002)	.301** (p=.002)	.366** (p=.000)	
MAP (Difference in Pre minus Post Ramadan Period)	.039	.042	.219 (p=.028)	.147

** p< .01

Table 4: Correlations among various variables for Pre minus Post Ramadan period. All variables represent the difference in 'Pre minus Post Ramadan' Period

Table 5 (opposite pages) shows that for all the five variables there is a statistically significant difference at (.05) in the mean values for their Post Ramadan period with respect to their Pre Ramadan period. The results indicate that the mean value for 'BMI' in post Ramadan period (M=33.22, SD=4.595) was significantly less than the mean value in pre Ramadan period (M=33.35, SD=4.657), t (99) = 6.867, p < .001 (p= .000). The results show that the mean value for 'FBS' in the Post Ramadan period (M=7.496, SD=.533) was significantly less than the mean value in the Pre Ramadan period (M=8.4, SD= .876), t (99) = 17.244, p < .001 (p= .000).

The results indicate that the mean value for 'Waist Circumference' in the Post Ramadan period (M=102.75, SD=5.24) was significantly less than the mean value in Pre Ramadan period (M=104.44, SD= 5.33), t (99) = 29.6, p < .001 (p= .000). The results indicate that the mean value for 'CRP' in Post Ramadan period (M=2.54, SD=.528) was significantly less than the mean value in the Pre Ramadan period (M=3.3, SD= .78), t (99) = 18.24, p < .001 (p= .000). The results indicate that the mean value for 'MAP' in the Post Ramadan period (M=104.29, SD=5.36) was significantly less than the mean value in the Pre Ramadan period (M=106.97, SD= 6.08), t (99) = 9.3, p < .001 (p= .000).

Results

Standardized statistical tests (using SPSS19 software package) were used to analyze the research data file. Using 'Independent-Samples T-Test' with respect to Sex, (Table 1), we find a statistically significant difference in various variables, BMI, CRP and

	Period	N	Mean	Standard Deviation	t	df	Sig. (2-tailed)
BMI	Pre Ramadan	100	33.352	4.657	6.867**	99	0.000
	Post-Ramadan	100	33.220	4.595			
FBS	Pre Ramadan	100	8.406	0.876	17.244**	99	0.000
	Post-Ramadan	100	7.496	0.533			
Waist circumference	Pre Ramadan	100	104.444	5.325	29.604**	99	0.000
	Post-Ramadan	100	102.750	5.244			
CRP	Pre Ramadan	100	3.286	0.780	18.24**	99	0.000
	Post-Ramadan	100	2.538	0.528			
MAP	Pre Ramadan	100	106.973	6.083	9.304**	99	0.000
	Post-Ramadan	100	104.29	5.356			

* shows significant difference at (.05); ** shows significant difference at (.01);

Table 5: A Paired T-Test on various dependent variables such as BMI, FBS, CRP and MAP for their Pre Ramadan Period & Post-Ramadan Period

FBS in the values for their Pre minus Post Ramadan Period with p values of .04, .03, and .004 respectively. Using 'Independent-Samples T-Test' with respect to Age, (Table 2), we find a statistically significant difference in MAP in the values for Pre minus Post Ramadan Period with p values of .006. A highly significant correlation was found among various variables for the Pre Ramadan and Post Ramadan periods. The results in Table 3 show that 7 out of 15 correlations were statistically significant and were greater than 0.6. The Pearson correlation coefficients were also computed among the variables which represent 'Pre minus Post Ramadan period'. The results in Table 4 show that 4 out of 10 correlations were statistically significant and were greater than 0.3. Using 'Paired Sample T test' in Table 5, the results show a high statistically significant difference between the two measurements in all the five variables that were measured Pre and Post Ramadan period. It shows a significant decrease in the Pre and Post Ramadan Period in all the five variables, BMI, FBS, Waist Circumference, CRP, and MAP with highly significant p values ($p < .0001$).

Discussion

CRP is used in many trials as a predictor of cardiovascular risk [14-15]. Obesity is associated with increase of CRP possibly due to an associated inflammatory process [11, 13]. Furthermore insulin resistance and type2 diabetes are other conditions in which CRP is significantly elevated [12-13]. Controlling type 2 diabetes to target HbA1c levels below 7% will decrease CRP level. This phenomenon is also seen with weight loss which should be logically reflected on decreasing cardiovascular risk [12-15]. In this study weight loss indicated by decrease in Body Mass Index (BMI) and waist circumference (WC) was achieved by Ramadan fasting; this effect was associated with decrease in Mean Arterial Pressure (MAP) and Fasting Blood Sugar (FBS). Hemoglobin A1c (HbA1c) was not measured because of the short period (mean 25 days), however FBS decreased significantly in comparison to the Pre-fasting result. CRP is used as a surrogate indicator of decreasing inflammatory process from Pre to Post Ramadan period. The durability of this effect is not tested but it seems likely that it could be sustained if the BMI and WC is maintained for a longer period. However the long term impacts of this result need to be validated in larger clinical trials.

Conclusion

Modifiable cardiovascular risk factors (BMI, WC, MAP and FBS) show a significant decrease after a short term fasting (e. g Ramadan fasting) which was reflected positively on CRP which is a predictor of cardiovascular risk, but the validity of this effect should be tested in further prospective studies.

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Diagnosis Of Malaria by Community Health Workers in Nigeria

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Abstract

The introduction of primary health care made Nigeria, a developing country, train and retrain community health workers to work all over the country especially in the rural communities where there is dearth of or no doctors. Despite their training and experience many people are skeptical of their competence to diagnose accurately, or to treat endemic disease like malaria. The need to establish the competence of the health workers in malaria control necessitated this study.

A rural primary health center was selected. The community health technician (CHT) was the health worker in charge. Those who were diagnosed as having malaria by CHT were examined by a medical laboratory scientist (who was engaged specifically for this job) for malaria parasitaemia. The laboratory examination was Giamsa - stained thick blood from fingerprint. Those with positive parasite density count of 1000/?L were said to be malaria patients. The study was from March - October 2006.

The number diagnosed as having malaria on clinical grounds by CHT was 2,512 while the number diagnosed by both clinical and laboratory basis was 2,490. The number of patients with a wrong diagnosis of malaria by CHT was 22 (0.875%).

The CHT is useful in the diagnosis and by extension in the control of such endemic disease as malaria where there are no laboratory facilities. Both the populace should have confidence in their services and those in areas where they have been trained and experienced.

Key words: **Malaria, diagnosis, health workers, Nigeria.**

Introduction

After the Alma-Ata declaration in 1978, efforts were made all over the world to ensure that health services get to everybody. In Nigeria primary health care (PHC) services were established to meet the needs of everybody. Also Schools of Health Technology (SOHT) were built to train polyvalent workers. Those trained were post secondary school people who had good grades. They trained as senior community health workers (SCWH) then as community health technicians (CHT) and finally as community health officers (CHO). Each grade was retrained to a higher level after at least two years experience in the field usually in the rural PHC set up. Community health workers work as doctors where there are no doctors and usually where there are no laboratory facilities. They worked within their competence and referred all cases they could not manage to the nearest doctors. The need for the CHW is heightened in the rural area where doctors refuse to work. The health workers are not easily accepted or regarded as competent. One role of the workers is to control common endemic disease, notably malaria. Early and prompt diagnosis of a disease is crucial in any control disease measure. Accurate malaria disease diagnosis of the health worker on clinical basis is considered for this study against the clinical and laboratory based diagnosis. The laboratory diagnosis is from Giamsa stained thick blood film parasite count. This study will help hopefully reassure people that the health workers are filling a big gap in our health care service. They need to be trusted and accepted as competent. The trust should be by both their employers and the populace who are starved of quality primary health care.

Material and Method

The study is in a rural health center at Aboh-Mbaise Local Government Area of Imo State, Nigeria where there is no medical practitioner involved in the health center practice. Our study health worker, a community health technician (CHT) had the responsibilities of seeing and treating patients in this rural health center which was without laboratory facilities. For the purpose of the study, an experienced Medical laboratory scientist was engaged to do Giamsa-stained finger-prick thick blood films for all patients diagnosed and treated as malaria disease patients anytime they came to the health center. Only those who were diagnosed as malaria by CHT were studied. Very many people have self-diagnosis of malaria and proceed to give themselves self-medication. Alternatively, they went to available health facilities without the laboratory facilities but relied on the professional expertise of the health care workers (CHT). The CHT is authorized to diagnose and treat simple endemic disease such as malaria. This grade of worker (CHT) is believed to have poor doubtful diagnostic accuracy and low positive prediction value(1) since symptoms and signs can easily be mimicked by other infectious and non-infectious disease(2). Verbal consent was obtained for this study from the local Govt. administrator and those in charge of the health center and also from those patients from whom we needed to test blood. In fact the patients were happy that we tested their blood free of charge.

Result

Giamsa thick blood film positive results for malaria in people with clinical features of malaria as diagnosed by CHT were taken as malaria disease patients when the film showed asexual forms of plasmodium parasitaemia at a density of >1000/ µL. The study was carried out from March to October 2006. The number of patients diagnosed by CHT as, or coexisting with, other infection were 2,512. The number diagnosed by thick blood film examination with malaria parasite density >1000/ µL was 2,490. The number of wrong diagnoses for malaria by CHT was 22. Percentage of wrong diagnosis was 0.875%.

Discussion

Since the introduction of PHC and the establishment of SOHT to train polyvalent non medical practitioners to do necessary consultation, diagnosis and treatment of patients at PHC level many people have been skeptical about the rationale for it. They have doubted the competentnce of such workers. In developing countries, medical practitioners find it difficult to accept to work in rural areas and if PHC is to succeed, being available to everybody, non-medical practioners who can stay or reach people everywhere are considered desirable. Establishment of SOHT and using the services of their products where there are no doctors are a welcome development. The workers' competence is boosted by their training, continuing education and field experience. The result of this study shows clearly that the margin of error (less than one in every 100 people) in the diagnosis by CHT (health workers) of an endemic communicable disease like malaria is very small. The available laboratory test for malaria in developing countries at primary health care and even secondary health care levels is by light microscopy, which is found to be 6-7 times less sensitive than by light polymerase chain reaction (PCR)(3). If PCR had used the laboratory study method, the margin of error by CHT would have been smaller than 12 (.0875%) to about 3 (0.292%). This result sees wisdom in the World Health Organization (4) recommendation that in places with no properly equipped health centers, treatment should be administered by primary health workers on the basis of a clinical diagnosis. Malaria is highly endemic in many developing countries and it is one of the major causes of ill health and death(5). Waiting to have enough medical practitioners to treat such common endemic diseases will be unwise. It is therefore recommended that in developing countries of the world such primary health workers should be utilized in our PHC set up as long as they are trained and re-trained and experienced on the job.

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Contraceptive Use: Is it a Wife's Decision?

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Abstract

Background: Decisions about contraceptive use and childbearing may be confounded by unequal power relations, especially in more patriarchal societies.

Objectives: The objective of the present study was to assess the extent to which wives in Mosul District, in the North of Iraq, have the decision-power to control their reproductive behaviors within their families.

Methods: A health institutions-based cross-sectional design has been adopted. The study asked 1,302 married women of childbearing age to specify the decision-maker regarding the use of contraceptive methods by direct interview during their attendance to the chosen primary health care centers. Sampling technique was a multi-stage cluster probability context. Participants were consecutively selected during attendance to the chosen centers during a ten month period.

Results: Half of families (52.4%) resided in urban areas while 47.6% resided in peri-urban and rural areas. The present study found that 8.7% of wives controlled their reproduction. Spouses making joint decisions was a feature of urban families (p=0.000). On the other hand, authorization by the husband or husband's parents was clear in peri-urban and rural households (p=0.008) as they control about two-thirds (61.0%) of reproductive decisions. The point prevalence of contraceptive use in Mosul District was 52.2% and it stuck firmly to active wives' role (p=0.000) since 42.9% of contraceptives use were attributed to independent or joint wives' decision.

Conclusion: Husbands and husband's parents are the primary decision-makers regarding wives' contraceptive use. Women's contraceptive decision making power is less in a rural community where women's educational status is low and economic dependence is high.

Keywords: Decision, contraceptives, family planning, women empowerment, decision power, patriarchal societies

Introduction

Until recently, family planning programs have mainly focused on women's attitudes and behaviors. In view of the fact that women are child bearers and care givers, they are considered as the main targets for information, education and communication on contraceptive knowledge and use. Consequently, the roles of men who highly influence the family's decision-making process have been ignored.(1) Decisions about contraceptive use and childbearing may be confounded by unequal power relations, especially in more patriarchal societies were gender stratification and male dominance are commonly observed and decisions on limiting fertility depend on the husband or his parents and generally oppose their partners' contraceptive use. Thus, women would be forced to bear a large number of children.(2,3) The secret use of contraceptives among women indicates problems of decision making power of wives on family planning.(4)

Kishor(5) in 2000 divided factors related to women's empowerment into three categories: sources of empowerment (education and employment), settings of empowerment (literacy of parent and extended family), and evidence of women's empowerment (control over finances and freedom of mobility). Among these factors, women's education and employment are regarded as traditional indicators of women's status and so are the most significant strategies for improving women's status.(6) It is expected that women's contraceptive decision making power would be less in a rural community where women's educational status is very low and economic dependence is high.(4) However, formal education alone may not be sufficient to affect women's empowerment unless it translates into improving women's autonomy which gives them opportunities of income-generating activities.(7) Therefore, both education and cash employment are only distant indicators for women's status.(8) Women's position mediates the association between these factors and women's reproductive health attitudes such as fertility control.(9)

The aim of this study is to assess the extent to which wives have the decision-power to control their reproduction in Mosul District, in the North of Iraq.

Subjects and Method

Administrative and Ethical Agreement

Prior to data collection, formal administrative and ethical agreement was obtained from the responsible committee in Nineveh Health Directorate. In addition, official permission from managers of the selected Primary Health Care Centers (PHCCs) as well as verbal consent of participants was sought after comprehending the aim of the study.

Study Setting, Design and Sampling

The current study was conducted in Mosul District, the center of Nineveh Governorate, in the North of Iraq. Twenty two percent of Mosul's population is women of child bearing age, and two-thirds of them (62%) are married. (10) Therefore, the proportion of married women of child bearing age among Mosul's population is 14%.

In order to achieve the aim of the present study, a qualitative approach of cross-sectional design was adopted. The model of such research is derived from behavioral sciences research where the respondents' beliefs and experiences are prioritized. (11) The studied population was wives selected from different sites in Mosul District. The inclusion criteria were: married women of child-bearing age who attend the selected PHCCs. Almost ten months were needed to collect the required data (from the first of February to the end of November, 2011).

The current study adopted probability sampling through applying a multi-stage cluster sampling method. The first stage of sampling followed the geographical division of Mosul District, by the passage of the Tigris River, into East and West Banks. Each Riverside is further sub-divided crossways by Nineveh Street and its extension. Consequently, Mosul District was divided into four clusters: north and south east as well as north and south west. The next stage was stratifying these clusters into sub-units: urban, peri-urban and rural areas. The third stage of sampling process was non-random selection of the eligible PHCCs. There are 28 PHCCs distributed in Mosul District; 13 are directed by Right Health Sector which provides health services to the West side of Mosul District and 15 belong to the Left Health Sector which is responsible for the East part of the district. (12) Among the above mentioned PHCCs, twenty PHCCs have been selected on the basis of location and rank of population size of each catchment area. In the final stage of sampling a consecutive selection of eligible women was carried out.

The required sample size was calculated following the equation submitted by Daniel (13). Hence, the minimum number of suitable women required for this survey with 95% confidence interval and 0.03 widths, was 1231. Distribution of the studied sample was weighted according to the proportion of married women of child-bearing age in each catchment area.

Data Collection Tool

A special questionnaire was prepared for this study. Its validity has been assessed by the Angoff approach.(14) A group of 11 community and family medicine and biostatistics specialists had judged the coverage, clarity and reality of the concerned form and scored it as very good (83.8%). In addition, the pilot study has helped in measuring its reliability as 87.2%.

A special schedule for data collection was followed. Each cluster was visited once every fourth week. The first cluster was selected randomly and the remaining was arranged in a clock-wise direction. The required data was collected by the first researcher through visiting the

already determined PHCCs during the morning, five days a week.

Statistical Analysis and Outcome Measures

The cornerstone of the study was to estimate the prevalence of wives' role in making reproductive decision. Then, with the assistance of computerized statistical in-packed program (minitab-14), bivariate analysis of the acquired data examined the dependency of the study issue (wives' role in reproductive decision-making) on the other independent variables.

Results

The current study interviewed 1,302 mothers living in Mosul District. Half of them (52.4%) were distributed in urban areas, while 47.6% were residing in peri-urban and rural settings. Almost half of the participants (51.9%) stated they were using a certain method of contraception.

Table 1 shows the reproductive-decision makers by area of residence. Wives had the least power to control their reproductive ability in view of the fact that only 8.7% can shape their fertility. This fraction seems to be further decreased to 7.4% when talking about wives living in peri-urban and rural areas. Although the frequency of women's independent decisions in Mosul did not differ so much between urban and rural areas, spouses sharing in joint decisions was definitely a feature of urban families (p=0.000). Given that, almost a quarter (27.0%) of studied wives participated effectively in collective decisions in contrast to just 17.1% of peri-urban and rural families. Authorization of the husbands or husband's parents was clear in peri-urban and rural households (p=0.008) as they controlled about two-thirds (61.0%) of reproductive decisions compared to 54.0% of urban families. The role of the husband's parents came to significantly float in 43.2% of peri-urban and rural families in contrast to 31.8% in the urban sample (p=0.000 and 0.023 for mothers in-law and fathers in-law respectively).

Unplanned pregnancies which occurred to 11.6% of married couples was significantly more frequent in peri-urban and rural areas than in urban resident families (p=0.005).

Unplanned pregnancies which occurred to 11.6% of married couples was significantly more frequent in peri-urban and rural areas than in urban resident families (p=0.005).

The present study found that more than one third of wives in nuclear families (36.9%) can control their reproduction while only 26.9% of wives in extended family structures had the decision power (p=0.000) to control their reproduction. On the other hand, accepted crowding index, less than five persons per bed room, which had been detected in more than half of the studied families (58.8%) ,helped 33.7% of wives in determining their family size (p=0.016). Moreover, the tradition of polygamy adversely affected women's chances in sharing reproductive decisions (p=0.000), (Table 2 - next page).

Table 3 (page 47) depicts that two-thirds of studied wives (62.7%) had married before their twentieth birthday and this had worsened their status in determining reproductive ability (p=0.014). Postponing marriage after twenty years of age will heighten the rate of sharing

Decision-makers	Urban N=682		Peri-urban and rural N=620		Total N=1302		p-value**
	No.	%	No.	%	No.	%	
Unplanned pregnancy	63	9.2	88	14.2	151	11.6	0.005
The wife	67	9.8	46	7.4	113	8.7	0.124
Joint decision	184	27.0	106	17.1	292	22.3	0.000
The husband's family	368	54.0	380	61.0	748	57.5	0.008
The husband	*251*	*68.2**	*216*	*56.8**	*467*	*62.4**	*0.460*
The mother-in-law	*107*	*29.1**	*143*	*37.6**	*250*	*33.4**	*0.000*
The father-in-law	*10*	*2.7**	*21*	*5.6**	*31*	*4.2**	*0.023*

* The denominator is the frequency of the husband's family in each sub group.
** Chi-square test was used.

Table 1: Reproductive decision makers by area of residence

Family Features		Wife's decision N=405		Total N=1 302		p - value*
		No.	%	No.	%	
Urbanization	Stable	344	30.5	1127	86.6	0.249
	Urbanized	61	34.9	175	13.4	
Social Class	Below 3rd class	188	29.7	634	48.7	0.270
	3rd class and above	217	32.5	668	51.3	
Family Structure	Nuclear	201	36.9	545	41.9	0.000
	Extended	204	26.9	757	58.1	
Consanguineous Marriage	Absent	125	27.8	450	34.6	0.059
	Present	280	32.9	852	65.4	
Polygamy	Absent	394	32.6	1210	92.9	0.000
	Present	12	13.0	92	7.1	
Crowding Index	<5 persons/bedroom	258	33.7	766	58.8	0.016
	≥5 persons/bedroom	147	27.4	536	41.2	

* Chi-square test was used

Table 2: Effects of social and structural features of the studied families on wives-decision power

decisions by almost seven points (from 28.7% of young mothers to 35.2% among older mothers). Formal education of females to secondary level and up, would further empower women's status within their new families (p=0.000) as more than two thirds of educated wives (69.9%) can freely decide the desired family size and timing of each pregnancy in contrast to just 27.0% of illiterate and low-educated mothers. In addition, female participation in the family economy, in the form of official or non-official paid jobs, significantly supported their role in deciding their own reproduction (p=0.000). Furthermore, male progeny strengthened a mothers' position within the family (p=0.015) while presence of female children added nothing to a mother's role.

The same Table also shows that 42.9% of contraceptives used were attributed to the wives' decision (p=0.000). However, still 18.3% of the studied mothers had decided not to use any form of contraception.

Table 4 (page 48) displays that wives of husbands aged 25 years or older had a significant role in shaping their reproductive behaviors (p=0.000). Moreover, marrying men over twenty years of age and/or completing secondary level of formal education had empowered wives' status within the families to share in making reproductive decisions (p=0.000).

Discussion

Family planning programs aimed at regulating fertility through deciding the healthiest timing and spacing of pregnancy, in view of the fact, that as fertility falls, so does infant, child, and maternal mortality.(15) The context of family planning, also, includes the concept of women's empowerment i.e. the ability to discuss freely their family planning needs with spouses and other members of the household and the community; as well as the ability to make independent decisions on fertility regulation.(16)

Maternal characteristics		Wife's decision		Total (1 302)		p-value *
		No.	%	No.	%	
Maternal age	< 25	96	28.3	339	26.0	0.197
	≥ 25	309	32.1	963	74.0	
Maternal age at marriage	< 20	234	28.7	816	62.7	0.014
	≥ 20	171	35.2	486	37.3	
Maternal education	< 2ry level	318	27.0	1177	90.4	0.000
	≥ 2ry level	87	69.6	125	9.6	
Maternal working state	Housewives	356	29.6	1204	92.5	0.000
	Working	49	50.0	98	7.5	
No. of male siblings	0	40	23.1	173	13.3	0.015
	≥ 1	365	32.3	1129	86.7	
No. of female siblings	0	43	26.9	160	12.3	0.217
	≥ 1	362	31.7	1142	87.7	
Contraceptive Use	Users	291	42.9	679	51.9	0.000
	Non-users	114	18.3	623	47.8	

* Chi-square test was used

Table 3: Effects of maternal characteristics on wives-decision power

This study attempted to quantify the role of wives in making decisions regarding family planning (as one dimension of women's autonomy) in Mosul District, as well as to inspect its association with prevalence of contraceptive use. This has been achieved by adopting a cross-sectional study design which has a long tradition in sociology and forms the general methodology of sociological and anthropological research.(11) A cross-sectional study has the advantage of being fairly quick and easy to perform as well as useful for measuring the current status and planning for required services, including setting priorities for control of the studied problem.(15) Yet, there is no cross-sectional study free from recall bias which may perhaps lead to some alteration of the conclusions.(17)

In addition to being easier, quicker and maybe less expensive, subjects in health institutions are more accessible for interview as well as more cooperative with investigators than persons in the community particularly in discussing such embarrassing and deeply settled issues. However, in order to ensure representativeness, efforts were made to overcome selection bias that may come with a health institutions-based study by adopting a multi-stage cluster sampling to include all social strata that were distributed in urban, peri-urban and rural settings.

According to the available data, almost half of wives aged 15 to 49 years old were using family planning methods at the time of study. Accordingly, the point prevalence of contraceptive use in Mosul District was 51.9% and it stuck firmly to

Paternal characteristics		Wife's decision N=405		Total N=1302		p-value*
		No.	%	No.	%	
Paternal Age	< 25	14	14.6	96	7.4	0.000
	≥ 25	391	32.4	1206	92.6	
Paternal Age at Marriage	< 20	56	26.2	214	16.4	0.000
	≥ 20	349	32.1	1088	83.6	
Paternal Education	< 2ry level	372	33.3	1116	85.7	0.000
	≥ 2ry level	117	62.9	186	14.3	

* Chi-square test was used

Table 4: Effects of paternal characteristics on wives-decision power

active wives' choice. The relatively low prevalence may possibly be attributed to the power imbalance between genders in a women's ability to state their fertility desires. Almost one-third of Mosul's married women (31.0%) can decide or discuss their reproductive disposition, ability and wish with husbands or husbands' parents. A lower proportion was found in rural settings where low levels of education "if any" of both partners and economic dependency of wives are common features. The estimated prevalence seems to be lower than that reported by the Central Organization for Statistics and Information Technology and Kurdistan Regional Statistics Office at 2007 which stated that 33% of married women at national level are using family planning methods and 21.8% at Nineveh governorate level. (18) The clear disparity often does not represent a trend in contraceptives use as much as it is due to different sample derivation. The security circumstances during the study period called for choosing health institutions' attendants to collect the required data while there were many married women who were disallowed from access to the available health services.

A similar cross-sectional study was carried out in Mosul city in 2010 by Al-Sammak and Al-Jawadi (19) who found that the prevalence of contraceptive use was 50.4% among married women at child bearing age who were attending the immunization units at PHCCs. The authors indicated that good wife-husband communication was a potent predictor for continuous contraceptives use (p=0.000). However, Al-Jawadi and Al-Bakry,(20) in the same study design and setting in 2008, found that 40.2% of married mothers had met their needs (women are said to have met their needs for family planning when they use any method of contraception to delay or stop their next birth). The higher prevalence of the current study probably pointed to improved performance of the family planning program in Mosul. Yet, the same study reported that there were 20.2% of mothers who had been studied in 2008 who were prohibited from using contraceptives and described as having unmet needs.

The main directors of reproductive decision-making in the study at hand were husbands and /or their parents. The decision responsibility of the husbands was prominent in urban households while their parents were in charge in peri-urban and rural families where extended families are commonly observed. The desire for more children among men, particularly in rural areas, could explain the slow progress of family planning programs in rural settings in Mosul. In such societies, men culturally consider children as an asset and think that they socially and economically gain from having a large number of children. Alongside, women aspire to empower their social status within their new families by having a superior quantity of offspring especially sons.(21)

The current study found that the nuclear family structure (which represented 41.9% of the studied sample) beside good education of couples appeared to be a protective means against intergenerational transmission of harmful fertility patterns and pave the way for independent wives' (or joint) decisions on contraceptive use. In the present study and in most of the nuclear families, the husband alone was the financial provider for all household members since just 98 wives among the total studied sample (7.5%) were working. Lack of economic security and support which are usually offered by the extended families makes paterfamilias among nuclear families think about the economic investment of having many consuming children and, subsequently, decide the desired

family size.(11) In fact, the increasing cost of children is beginning to overweigh material benefits to an extent that reduces desired fertility.(22)

Unfortunately, there is no available database discussing the present study issue in Iraq. In any case, the picture is that of a classic patriarchal society that presents in most developing countries. In Mukalla in Yemen, a cross-sectional survey conducted in 2007 found that about 42% of women cannot even talk to their husbands about family planning while 26% discussed it once or twice and only 32% had discussed it more often. The same survey reported that the higher educational level the wives had, the more likely the couples approved family planning methods use. Partly for this reason, couples in urban areas were twice as likely to endorse use of family planning as those in rural areas. It also revealed that on all aspects of reproductive processes (number of children, timing of pregnancy, contraception and choice of contraceptives methods), decisions were taken exclusively by the husband (52%) or jointly by husband and wife (41%). Women had little right to make independent decisions on their sexuality or reproductive goals.(23)

An in-depth analysis of the Ethiopian Demographic and Health Survey in 2005 interviewed married men aged 20-64 years and indicated that on average more than half of the Ethiopian mothers (53.8%) can decide on the use of modern contraception. The proportion was higher in urban (64%) than in rural dwellers (43.1%).(15) This is incompatible with the fact that the Ethiopian population has the highest average growth rate among the developing countries.(18) However, reliance of the survey on husbands to inform about their wives' independency in contraceptives use possibly created information bias that may misshape the interpretation and elucidate the cause behind a higher rate of wives' participation in reproductive decision-making, than the findings of the present study.

One of the important limitations of the study in hand is that it did not use the couple data to sort out the impact of spousal communication on contraceptives use. The use of data related to the couple could provide further insights for the issue under investigation.

The current study concluded that wives in Mosul District have little power to control their fertility behaviors. Instead, husbands or husband's parents play the major role in determining reproductive ability, a feature of patriarchal societies. Women's role in reproductive' decision-making is less in a rural community where women's literacy status is low and economic dependence is high.

Acceptability of family planning methods in Mosul needs fundamental changes that start with education. Formal education alone may not be sufficient to affect women's empowerment unless it translates into improvement of women's autonomy which gives them opportunities of income-generating activities. Furthermore, family planning programs should address men as principal stakeholders and not focus only on women. The role of male partners on women's decision making of contraceptives use, needs to be studied systematically from each spouse's perspective.

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Differences in medical practice. A personal perspective

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After graduating from medical school in India, I set out to work in Jamaica in 1995. It was a long journey from home and finally I landed in the beautiful city of Montego Bay. It seemed a world apart, although the West Indies as a whole have a great Indian tradition and culture.

My first job was at the Cornwall regional hospital, a tertiary facility as a house officer in obstetrics and Gynaecology. My practical training in O&G in India as a house officer was limited I should say and here I was on calls every other day for the next six months. The following six months were a roller coaster ride on the huge learning curve. Some of my colleagues may differ, but there was a big difference in training between the Indian medical graduates and the medical graduates from the University of West Indies. The major differences were the levels of communication and the emphasis on practical approach to training and that they enjoyed much better facilities and working conditions.

I migrated to Australia in January 2004 after having worked in the West Indies for nearly a decade. It was a totally new experience altogether. I worked as an Emergency registrar for three years and in occupational health for three years. As Australia has one of the best health care systems in the world the experience was very rewarding.

The Indian medical education in the late 1980's and early 1990's did not emphasise on problem solving skills. Multiple choice question of examining candidates was introduced much later. The use of information and technology was very limited and most of the information was gathered from prescribed text books. Evidence based approach and research facilities were very limited. Although we had access to some of the medical journals, it was not much emphasised in Indian medical schools. The art of communication left a lot to be desired in the Indian medical curriculum.

In the early 1990's HIV and related complications were not prevalent in India, but were much more common in the West Indies and the western world. Medical challenges like malnutrition in children, infant and maternal mortality rates were common in India compared to the west. Also water borne diseases are more prevalent in India due to poor sanitation facilities. Some of the diseases specific to the ethnicity like Sickle cell disease, were encountered commonly in the West Indies .I had not seen a single case of rabies or snake bite in the West Indies, which we do see a lot in India. I was also exposed to managing life threatening trauma like gunshot wounds, machete injuries causing loss of a limb, stab wounds which were all very new and exciting for me to learn.

The government facilities and protocols were well in place and much better in the west, which are mainly due to adequate funding, good planning, and proper implementation of health care regulations and following the set protocols. Trained manpower is also very essential for proper functioning of health care system in any country. In India apart from inadequate funding in most states, issues like corruption compromise the basic medical facilities which a common man is entitled to. In general the public health care system from the primary health care level to the tertiary hospitals lacks the infrastructure, equipment and facilities as compared to the western countries. In terms of private health care India of late is on par with the rest of the world in all aspects and medical tourism has become very popular during the last decade. But the sad aspect is the private health sector does not cater to the general public who always depend on the public health system to deliver. Provision to systems like Medicare and affordable health funds were still in the distant future in the developing countries.

In terms of drug regulation, there is an enormous difference between developing and developed nations. Availability of prescription medications over the counter without a prescription is still a practice in most developing countries. In the developed countries issues like bacterial drug

resistance are well thought of and all possible measures taken to prevent them. In most developing countries bacterial drug resistance is taken for granted even from the primary health care level. Irrational use of antibiotics by medical practitioners and lack of proper investigation facilities are still areas of concern in the developing nations. There is a need for a stable frame work and continuing medical education facilities at all levels of medical practice in the developing world. The uses of disposables are limited due to cost factor and in some cases leads to a compromise in aseptic precautions during procedures. Education and training of medical personnel at regular intervals and updating the medical equipment as needed and their maintenance are important factors.

Alternative medicine like Ayurveda, Homeopathy have been practiced for a long time in India and other practices like acupuncture, Reiki, Bowen therapy and Yoga are fast catching up in the Western world.

I would not hesitate to conclude that there is a vast difference in the health care in the developing and developed nations and one way of bridging the gap is by informed decisions taken by people in the medical field with expertise and following good models from the developed nations.

Let good health care prevail worldwide.

Family practice among the urban poor in India

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Why did you not come earlier? I asked the man with the child who had not been well for 3 months. The child had fever and was losing weight. There was a swelling on the right side of the neck due to matted lymph nodes. These features along with the enlarged liver could imply only one diagnosis in this emaciated child- disseminated tuberculosis. The man did not come to our hospital due to financial issues. He perceived that it would be too expensive to treat in a private hospital. After 3 months of treatment in the local government hospital and a teaching hospital in a city 80 miles away, he decided to bring the child to us as he was not getting any better. This story is not uncommon among the poor of the cities in India. At a time when its economy is booming and medical care comparable to the best in the world is available for those who can pay, there is a large proportion of the population who live on less than 2 US Dollars a day and for whom quality health care is a distant dream.

The Low Cost Effective Care Unit (LCECU) of the Christian Medical College, Vellore, India, was set up 25 years ago to address 2 issues. The first was the difficulty that the local poor patients had in accessing the care of the main hospital which had become a tertiary teaching hospital that was expensive, inaccessible and too specialized for the majority of their health problems. It was also begun to demonstrate that effective care could be offered to patients using minimal investigations with a focus on good history, thorough clinical examination and appropriate investigations. Over the years it has grown to a 46 bedded unit that saw about 50, 000 patients in the year 2008. Currently the unit has 3 family physicians certified by the National Board of Examinations, 2 community medicine consultants and few junior doctors. The unit has been used for training undergraduate and post graduate students in the discipline of family medicine.

As a family physician working in a unit for the urban poor in India, there are many issues that I grapple with:

1. The challenge of determining what is the best care for the patient

Poverty is a factor that influences the standard of care that the patients receive. Knowledge about the available best care does not mean that I can begin it for the patient who sits in front of me. Almost every day I am faced with the dilemma of choosing what is excellent care and what is effective care as far as the patient is considered. The guidelines in protocols for managing various diseases are sometimes a problem for me. Although I become aware of the best evidence that is available to manage a particular condition, I am unable to provide that care because the patient cannot afford it. For example, I know that the best treatment for chronic obstructive pulmonary disease (COPD) is the use of inhalers. However, most of my patients cannot afford them and go home with oral salbutamol and theophylline. The alternative would be for me to deny treatment, insisting that I will only provide the “best, proven, evidence-based medication” for this condition. Many patients come once a month for repeat prescriptions for oral drugs for COPD and seem to be having productive lives. I have to deal with the question whether I am providing sub-standard care due to the financial difficulties of my patients. During my training in family medicine, I was told by my consultant that I must not begin a treatment that will not be sustainable for the patient. This I felt was solid advice for anyone who works among the poor.

Most of the guidelines for the treatment for diseases come from studies done in a population that is quite different from the patients whom I see everyday. Cochrane reviews on the management of many conditions will not have good data from a country like India to guide me in my clinical decision making. There are questions that need to be answered to address these

issues in my daily practice. Will my patients who are on oral drugs fare worse than those on inhalers 5 years or 10 years later? Will those who are on oral drugs have better compliance and fewer admissions? What would be the long term side effects of these of drugs? I see a great need to do primary care research in resource poor settings that will address issues faced by the poor in the management of diseases. Though this is a challenge with the busy clinical work, we hope to ear mark time for research that will make a difference in the care provided for the poor.

2. The challenge of limiting diagnosis and treatment options for the patient

After working almost 9 years among this population and 8 years among other economically disadvantaged populations in India before that, I found that I was unconsciously, and sometimes consciously, limiting the management options for diseases. For example, dialysis or renal transplant is not an option for most of our patients with chronic renal failure due to financial constraints. An angiogram and coronary bypass surgery could not be considered for many patients for the same reason. Beginning a patient on insulin is always a challenge due to issues of acceptance by an illiterate population, the cost involved, storage in houses with no refrigerators and the practical difficulties of administering it. (Patients store the vials in mud pots which seem to keep them cool and make them effective in controlling the sugars). I found that this was affecting my clinical decision making because some of the possible diagnostic tests or treatment options were too costly and could not be considered. Fortunately, the institution has generated funds for our patients who need urgent hi-tech investigations and treatment. We also receive good support from the main hospital which is a state of the art 2400 bedded hospital, for patients who need more specialized care. However, the dilemma of judicious use of resources is a challenge that we face each day. It is a reality that the poor cannot take care of their health by themselves. It becomes too expensive for them. There has to be an external source of funding, be it from the government or from charitable institutions. The philosophy that is followed in our institution is “both & and”- a commitment to primary care and tertiary care, to the rich and to the poor. This is achieved by differential billing for the rich, charging them a higher fee so that the care of the poor can be subsidized. Some call it “taxing the rich”, others call it playing Robin Hood!

3. The challenge of recognition from the specialists in the institution

The identity of family medicine in a premier tertiary teaching hospital is a challenge that is faced at times. As a new specialty that is trying to find its feet, family medicine is somewhere low in the rungs. The department of family medicine was formed towards the end of 2008 and we have just 4 consultants who have received the National Board of Examinations certified training. However, the institution has recently taken many steps to encourage family medicine, including opening 14 tenure positions. LCECU is located about a mile away from the main hospital and few among the faculty of the other specialties are aware of the nature of its work. One of the issues that have been debated is the role of the Indian Family Physician, the final “product” of our training. We are getting increasingly convinced that the family physician in India should be trained to do procedures, conduct deliveries, perform Cesarean sections and minor surgeries and admit patients. They should be able to manage at least 80% of the common problems that people in India face. Only this will motivate many to take up the specialty, deal with these problems and provide care that is accessible and affordable to majority of the population.

4. The challenge of burnout

Providing care for the poor can be quite demanding. In addition to the daily outpatient work from Monday to Friday, taking care of seriously ill patients in the ward, managing a labour room for low risk pregnancies and being on second call 10 days in a month, the family physicians have to be involved in teaching undergraduate and post graduate students and research.. The stress of teaching and practicing a new specialty in itself is a challenge. Keeping boundaries can be quite distressing at times. Charity work can be draining unless time is intentionally set apart for rest, leisure, family, social life, recreation and renewal. In the midst of the clamor for attention from needy people that seems to be unending, it is sometimes hard, but necessary, to take the decision to say no.

5. The challenge of personnel

Perhaps the greatest challenge is to get more family physicians to join the work. The barriers for a medical graduate to take up family medicine exist in India just as anywhere else in the world. With an in house 2 year fellowship in family medicine that is beginning this month and another 3 year post graduate course that is awaiting government approval, it is hoped that more physicians would take up the specialty that is so crucial for improving the health of the country.

In the midst of all these challenges, it is gratifying to be in a specialty that does not restrict me, but equips me to treat most of the problems most

of the time, in a manner that addresses the person and not just the disease. Family Medicine is the way ahead for a country like India, where the gap between the rich and the poor is increasing and the cost of specialist-driven health care is making it unaffordable and inaccessible to the poor who form the majority in the population. The challenges can be faced and innovative answers found for each of them.