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The effect of nutritional educational intervention to mothers on improving the hemoglobin level of their nine month old children attending Ahmed Ali Kanoo Health Center in the Kingdom of Bahrain ..... page 4

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In this issue a number of papers deal with topics varying from nutrition to migrant health.

The Effect of nutritional educational intervention to mothers on improving the hemoglobin level of their nine months old children attending Ahmed Ali Kanoo Health Center in the Kingdom of Bahrain

A paper from Bahrain looked at the effect of maternal nutritional educational intervention on correcting iron deficiency anemia of their children presented at the health center for the nine month screening program. Diverse methods of interventions exist that are designed to prevent and correct iron deficiency anemia including, education, dietary improvement, fortification of foods with iron, and Iron supplementation. Mothers and their children at 9 months of age from August 2010 until July 2011 who attended Ahmed Ali Kanoo health center MCH department for regular screening during that period were included in the study. The total number of children included in the study was 448. The Total number of females was 211 (47.1%) and the males were 237 (52.9%). The majority of the babies were delivered full term 426 (95.1%), while 22 (4.9%) were premature. The percentage of anemia in infant at the age of nine months was 198 (45.7%) while at the age of 18 month it decreased to 136 (31.9%). Seventy-five (19.3%) who had a low Hb level at 9 months of age improved to a normal Hb level at 18 month of age. The study showed that nutritional educational intervention that include educating the mother (by doctors, nurses and/or educational material) was statistically significant (p= 0.025) in improving anemia from 9 to 18 month of age. The author concluded that a statistically significant relationship between providing nutritional educational intervention and improving the iron deficiency anemia outcome in nine months old children.

A cross-sectional study included a representative sample of inpatients in Prince Salman Armed Forces hospital, Tabuk, KSA from all main departments. Arabic version of Newcastle Satisfaction with Nursing scale (NSNS) was used for data collection. The aim is to assess nursing care from patients` perspective as well as to study the difference in the level of patients` satisfaction and their perspectives in relation to demographic background of patients and hospital characteristics. Out of 420 patients invited to participate in the study, 414 filled in the questionnaires giving a response rate of 98.6%. None of the participants reported above good (>80%) experience of nursing care score. None of the participants reported high (>80%) satisfaction with nursing care score. Male, higher educated patients, those admitted to obstetrics and gynecology and stayed for 2-3 weeks in hospitals more likely to express higher experience of nursing care and satisfaction with nursing care scores. The authors concluded that patient satisfaction with nursing care is generally low in the recent study. The findings provide nurses with information about aspects that enhance or hinder patient satisfaction

A descriptive cross-sectional study was carried on , adult patients ?18 years old that were selected from Primary Care Clinics in Riyadh City. Data was collected using self-administered questionnaire with 21 items of patient satisfaction scale. Data were analyzed using descriptive and analytic statistics. The study included 400 patients. The average consultation time among females was (16.28±8.006) minutes and among males was (17.68±9.049) with no significant difference (p-value=0.102,CI -0.280,3.080). The mean satisfaction score among females was (94.18,SD=±1.54), while among males was (104.68,SD=±11.99) . the authors concluded that Females' satisfaction is positively correlated with consultation time, with consideration to give more time to them, focusing on psychological problems, which needs better doctor-patient communication skills. On the other hand, males' satisfaction didn't show significant correlation with consultation time and other aspects of satisfaction other than consultation itself should be analyzed as health care system

A paper from Egypt looked at methods to improve practices of hand hygiene among medical students in health care settings and to evaluate the effectiveness of educational training on hand hygiene among the medical students. The study is a prospective before-and-after trial of an educational intervention with longitudinal follow up. Educational training program was designed and conducted by the researchers on hand hygiene measures, technique, time and compliance.
The educational intervention had a significant improvement in KAP, one and six months after the intervention (P <0.001). Non significant decrease in median scores of knowledge with no change in median scores of attitude but significant improvement of median scores of practice and overall KAP scores of hand hygiene in the follow up (P <0.001). The authors concluded that the educational intervention was effective in improvement in KAP of hand hygiene in pre-post intervention with one month interval and in the follow up after six months after the intervention

A paper from Bahrain looked at the Health of Migrant Workers. The authors stressed that over the past few decades, mobility of people around the world has been incrementing, from about 82 million in 1970 to 200 million in 2005. The Middle East, and in particular the Gulf countries (GCC) had a tremendous influx of migrant workers (around 16 million, majority over 80% were from Asia) due to its rapid development as reflected by marked increase in oil revenue. It is reported that almost seven out of every ten workforce In the GCC were foreigners.

Health issues impacting migrant workers are intricate and numerous, especially, when some host countries perceive these workers as exploitable, frugal and flexible labor. Despite that most of them work in 3D jobs; Dirty, Dangerous and Degrading, they usually have poor living and safty conditions and the prominent consequential factor leading to their health disparities is the cultural differences affecting their health care seeking patterns, perception of health and compliance with treatment.

A cross sectional study from Bahrain looked at Knowledge, Attitude and Practice of Primary Health Care Physician in Bahrain towards Complementary and Alternative Medicine (CAM). It included all the 323 primary health care doctors who are working in the governmental health centers in Bahrain. A self-filled questionnaire was used for data collection. Two hundred twenty two (68.7%) questioners out of 323 questionnaires were completed . Around half (50.5%) of the respondents stated that they have a poor level of knowledge about CAM, while only 6 (2.7%) of them stated that they have excellent level of knowledge. In general, the attitude of primary care doctors toward CAM was positive with 72.5% of them were interested in CAM, 81.1% believe that training in CAM would affect their practice as a doctors, and 73.9% agreed that CAM is beneficial. Regarding the practice of PHC doctors toward CAM, more than half (59.5%) had used CAM with their patients, while only 23% of them had referred patients to a CAM practitioners. The authors concluded that Primary Health Care doctors in Bahrain has a poor knowledge about CAM and would like to know more about it. On the other hand, they have a good attitude towards using CAM with their patients.

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The effect of nutritional educational intervention to mothers on improving the hemoglobin level of their nine month old children attending Ahmed Ali Kanoo Health Center in the Kingdom of Bahrain

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Abstract

Background: **Anemia is a public health problem that affects the population of both rich and poor countries. The WHO's Global Database considers the prevalence of anemia in Bahrain as moderate, ranging between 20%-39.9% in all age groups (5). On the other hand, the prevalence of anemia is reaching 48.3% in those who are 6-59 months of age.**

Diverse methods of intervention have been designed to prevent and correct iron deficiency anemia including the following:
1. Education,
2. Dietary improvement,
3. Fortification of foods with iron,
4. Iron supplementation and,
5. Other public health measures, such as helminthic control.

The aim of this study is to observe the effect of maternal nutritional educational intervention on correcting iron deficiency anemia of their children who presented at the health center for the nine month screening program.

Methodology:
• Mothers and their children at 9 months of age who attended Ahmed Ali Kanoo health center MCH department for regular screening from August 2010 until July 2011 were included in the study.
• Booklets were checked for Hb level at 9 months and later at 18 months, gender, duration of pregnancy, and hemoglobinopathies of the children. Moreover, mother's age, educational level and occupation were also recorded.
• Mothers of anemic children were contacted by telephone and asked whether they received any of the nutritional educational intervention, and whether they gave their children the iron supplement or not.

Results:
• The total number of children included in the study was 448. The Total number of females was 211 (47.1%) and males 237 (52.9%). The majority of the babies were delivered full term 426 (95.1%), while 22 (4.9%) were premature.
• The percentage of anemia in infants at the age of nine months was 198 (45.7%) while at the age of 18 months it decreased to 136 (31.9%).
• Seventy-five (19.3%) who had a low Hb level at 9 months of age improved to a normal Hb level at 18 months of age. However, 44 (11.3%) of the infants who were anemic at 9 months of age continued to be anemic at 18 months of age.

• Change in Hb level from 9 months to 18 months of age is not statistically significant in relation to:
o gender (P=0.086),
o mode of delivery (P=0.142),
o mother occupation (p=0.58),
o mother education (p= 0.468),
o mother age (p=0.141),
o presence of alpha thalassemia (0.264),
o SCD (p=0.375) and,
o whether iron supplementation was given to child (p= 0.15)
The study showed that nutritional educational intervention that includes educating the mother (by doctors, nurses and/or educational material) was statistically significant (p= 0.025) in improving anemia from 9 to 18 months of age.

Conclusion: This study showed a statistically significant relationship between providing nutritional educational intervention and improving the iron deficiency anemia outcome in nine months old children.

Key words: nutritional, educational, intervention, anemia, children, Bahrain.

Background

Iron status in the human body can be grouped into normal level, iron depletion, iron deficiency without anemia and iron deficiency with anemia. Iron depletion refers to the earliest stage of diminishing iron stores in the setting of insufficient iron supply as a result of insufficient intake or excessive loss of iron. Iron deficiency (without anemia) develops as these iron stores are depleted further and begin to impair hemoglobin synthesis. Finally iron deficiency anemia results when the supply is insufficient to maintain normal levels of hemoglobin and represents the latest spectrum of iron deficiency. (1, 2)

The World Health Organization defines Iron deficiency Anemia (IDA) as a hemoglobin (Hb) concentration of 2 SDs below the mean Hb concentration for a normal population of the same gender, age range and altitude (2, 3). In the age group between 6-59 months, anemia is considered to be present when the hemoglobin level is below 11 g/dl. (4)

Anemia is a public health problem that affects the population of both rich and poor countries. The WHO Global Database considers the prevalence of anemia in Bahrain as moderate, ranging between 20%-39.9% in all age groups (5). On the other hand, the prevalence of anemia is reaching 48.3% in those who are 6-59 months of age. (6)

In Saudi Arabia the prevalence of anemia in the same age group (preschool) ranges between 20%-67% (7). A study done in Riyadh showed that 37.2% of healthy Saudi infants between 6-24 months of age who were attending the Well Baby Clinic at King Khalid University were found to be anemic, while the prevalence of anemia in Jeddah on children of the same age group was 37.7%. (8) In Western Saudi Arabia, 34% of the Bedouin children below five years of age were found to be anemic. (8)

In 2003 the Palestinian Central Bureau of statistics reported that 37.9% of children aged 6-59 months were anemic.(9) In a study done in Southwest Iran for children aged 6-59 months, anemia was found in 43.9% of children and 29.1% were due to iron deficiency anemia. The study also shows that the highest prevalence of iron deficiency anemia was in the 12-24 months age group.(10) When it comes to Eastern Mediterranean Region, Yemen has the highest prevalence of anemia in preschool age group where the prevalence is about 73.5%, followed by Pakistan with 60% and Palestine with 52% prevalence of anemia. (6)

Globally, Africa has the highest prevalence of anemia in preschool age children with 67.6%, followed by South East Asia 65.5%, Eastern Mediterranean 46.7%, America 29.3% and Western Pacific 23.1%. (5)

The least prevalence of anemia was found in Europe with a prevalence of 21.7 % in preschool children. (5)

Diverse methods of interventions exist that are designed to prevent and correct iron deficiency anemia. These include education, dietary improvement, fortification of foods with iron, iron supplementation, and other public health measures, such as helminthic control (11).

Many studies have been conducted showing the various effects of education on preventing and treating iron deficiency anemia.(12-15) A pilot study in Tehran in 2001 showed an increase in ferritin levels in those children whose mothers received nutrition education as compared to the control and dietary modification groups.(12)

A randomized trial conducted in Delhi, India in 2003 suggested that nutrition education did have a positive effect on the iron status possibly by improving the dietary iron intake.(13) Another study in UAE in 2005 showed highly significant increases in the levels of hemoglobin and hematocrit of children of mothers who received a face to face health education program.(14) A recent study in 2013 in Iran showed that education based on health belief model can improve knowledge of parents towards supplemental iron. (15)

On the other hand, a Randomized Clinical Trial (RCT) in west and south Birmingham, in 1997 showed no reduction in anemia using a targeted nutritional program and have highlighted the difficulties in conducting health education programs within the scope of current health resources. (16) In 2012 a study in Brazil, on maternal dietary counseling covering breastfeeding and healthy complementary feeding on the prevalence of iron deficiency, anemia and iron deficiency anemia in children aged 12 to 16 months showed no effect of dietary counseling on the prevalence of anemia, iron deficiency or iron deficiency anemia.(17)

The aim of this study is to observe the effect of maternal education on correcting iron deficiency anemia.

Methods

In the Kingdom of Bahrain, the primary health care services are provided through 25 health centers distributed all over the kingdom.(18) Ahmed Ali Kanoo health center is one of those health centers that provide primary health services to a population of around 35,000. Maternal and child health department (MCH) in the health center is providing all the health care services to mothers and children.(18) Child screening is one of the major services provided that include anemia screening at 9 months of age. Mothers and their children at 9 months of age who attended the MCH department in Ahmed Ali Kanoo Health Center for regular screening program in the period from August 2010 to July 2011 were included in the study.

According to the MCH guidelines, mothers and care givers of children with low Hb (below 11 at 9 months) are supposed to receive nutritional educational intervention including advice from nurses, doctors and/or receiving educational leaflets regarding diet and iron supplementation. (19) They should also be given iron supplementation according to the weight of the child. Booklets were checked for Hb level at 9 and later at 18 months, gender, duration of pregnancy, and heamoglobinopathies of the children. Moreover, mother age, educational level and occupation were recorded.

Mothers of anemic children were contacted then by telephone and asked whether they received any of the nutritional educational intervention, and whether they gave their children the iron supplement or not. Data were entered in excel and transferred to SPSS. Continuous variables were presented as means and standard deviation and categorical variables were presented as percentages. Chi square test was used for association testing.

Results

- The total number of children included in the study was 448. (Table 1)
- The total number of females was 211 (47.1%) and the males were 237 (52.9%).
- Most of the babies were delivered full term 426 (95.1%), and only 22 (4.9%) were premature. (Table 1)
- Our sample showed a total of 95 (21.1%) infants carry the alpha thalassemia gene, 8 (1.8%) had sickle cell disease, and 2 (0.4%) had beta thalassemia trait. (Table 1)
- Most of the mothers were housewives 304 (68.2%), and only 142 (31.8%) were working. (Table 1)
- Around half of the mothers 226 (50.8%) had a higher education level, 171 (38.4%) had a secondary level, and only 48 (10.8%) had an intermediate level and below. (Table 1)
- The majority of mothers were aged between 30-39 years with a total number of 243 (54.2%); those who were 30 years and below represent 153 (34.2%), and those who were above 40 years of age represent 52 (11.6%). (Table 1)
- Most of the infants 121 (92.4%) were not given iron supplemental therapy by their mothers, while only 10 (7.6%) were given iron therapy for a duration of one month and more. (Table 2)
- For a hundred and twenty-five (80.1 %) of those who were anemic, their mothers received the nutritional educational intervention, while 31 (19.9 %) mothers denied receiving any kind of intervention. (Table 2)
- The percentage of anemia in infants at the age of nine months was 198 (45.7%) while at the age of 18 month it decreased to 136 (31.9%). (Table 3)
- Regardless of being anemic or not, a total of 256 (62.1%) infants had an increase in their Hb level from nine to 18 months of age, while141 (34.2%) had a decrease in their Hb level, and only 15 (3.6%) had the same Hb level. (Table 3)
- Most of the infants who had a normal Hb level at 9 months of age continued to have a normal Hb level at 18 months of age with a total number of 236 (61%). However, 34 (8.7%) who had a normal Hb level at 9 months of age had a drop in their Hb level at 18 months of age. (Table 3)
- Seventy-five (19.3%) who had a low Hb level at 9 months of age improved to a normal Hb level at 18 months of age. However, 44 (11.3%) of the infants who were anemic at 9 months of age continued to be anemic at 18 months of age. (Table 3)
- Change in Hb level from 9 months to 18 months of age is not statistically significant in relation to gender (P=0.086), mode of delivery (P=0.142), mother occupation (p=0.58), mother education (p=0.468), mother age (p=0.141). (Table 4)
- The presence of alpha thalassemia was (0.264), SCD (P=0.375), and whether iron therapy was given to child (P= 0.15) was not statistically significant in relation to improving the Hb level from 9 to 18 months of age. (Table 5)
- The study showed that nutritional educational intervention was statistically significant (P= 0.025) in improving anemia from 9 to 18 months of age. (Table 5)

Table 1: Characteristics of children at 9 months of age and their mothers who attended Ahmed Ali Kanoo health centers during August 2010 to July 2011

DESCRIPTIVE DEMOGRAPHIC			
VARIABLE		NUMBER	PERCENT
GENDER			
	FEMALE	211	47.10%
	MALE	237	52.90%
	TOTAL	448	100%
DISEASE			
	ALPHA THAL	95	21.10%
	BETA THAL	2	0.40%
	SCD	8	1.80%
MODE OF DELIVERY			
	FULL TERM	426	95.10%
	PREMATURE	22	4.90%
	TOTAL	448	100%
MOTHER OCCUPATION			
	HOUSE WIFE	304	68.20%
	WORKING	142	31.80%
	TOTAL	446	100%
MOTHER EDUCATION			
	INTERMEDIATE AND BELOW	48	10.80%
	SECONDARY	171	38.40%
	HIGHER EDUCATION	226	50.80%
	TOTAL	445	100%
MOTHER AGE			
	BELOW 30	153	34.20%
	30-39	243	54.20%
	40 AND ABOVE	52	11.60%
	TOTAL	448	100%

Table 2: Clinical description of Iron supplementation and nutritional educational intervention to mothers of anemic 9 month old children who attended Ahmed Ali Kanoo health center during August 2010 to July 2011

TABLE 2			
DESCRIPTIVE CLINICAL			
VARIABLE		NUMBER	PERCENT
IRON SUPPLEMENTED TO CHILD			
	NO	121	92.40%
	YES	10	7.60%
	TOTAL	131	100.00%
NUTRITIONAL EDUCATIONAL INTERVENTION GIVEN TO MOTHER			
	YES	125	80.10%
	NO	31	19.90%
	TOTAL	156	100%

Table 3: Hb Status of children at 9 and 18 months who attended Ahmed Ali Kanoo health centers during August 2010 to July 2011

HB LEVEL AT 9 MONTHS		
LESS THAN 11	198	45.70%
MORE THAN 11	235	54.30%
TOTAL	433	100.00%
HB LEVEL AT 18 MONTHS		
LESS THAN 11	136	31.90%
MORE THAN 11	290	68.10%
TOTAL	426	100%
CHANGE OF HB LEVEL		
HB DECREASED	141	34.20%
NO CHANGE IN HB LEVEL	15	3.60%
HB INCREASED	256	62.10%
TOTAL	412	100%
CHANGE OF HB FROM 9 TO 18 MONTHS		
ANEMIA AT 9 - ANEMIA AT 18	44	11.30%
NORMAL AT 9 - ANEMIA AT 18	34	8.70%
ANEMIA AT 9 - NORMAL AT 18	75	19.30%
NORMAL AT 9 - NORMAL AT 18	236	61%
TOTAL	389	100

Table 4: Effect of demographic variables on the Hb status of children at 9 and 18 months who attended Ahmed Ali Kanoo health centers during August 2010 to July 2011

TABLE 4						
CROSSTAB						
VARIABLES		CHANGE OF HB LEVEL FROM 9 TO 18 MONTHS				
		ANEMIA AT 9-ANEMIA AT 18	NORMAL AT 9-ANEMIA AT 18	ANEMIA AT 9-NORMAL AT 18	NORMAL AT 9-NORMAL AT 18	P VALUE
GENDER	FEMALE	22 (11.4%)	16 (8.3%)	47 (24.4%)	108 (56.0%)	0.086
	MALE	22 (11.2%)	18 (9.2%)	28 (14.3%)	128 (65.3%)	
MODE OF DELIVERY	FULL TERM	44 (11.9%)	30 (8.1%)	71 (19.2%)	224 (60.7%)	0.142
	PREMATURE	0 (0.0%)	4 (20.0%)	4 (20.0%)	12 (60.0%)	
MOTHER OCCUPATION	HOUSE WIFE	31 (11.7%)	26 (9.8%)	52 (19.7%)	155 (58.7%)	0.58
	WORKING	12 (9.8%)	8 (6.5%)	23 (18.7%)	80 (65.0%)	
MOTHER EDUCATION	INTERMEDIATE AND BELOW	4 (10.5%)	5 (13.2%)	6 (15.8%)	23 (60.5%)	0.468
	SECONDARY	21 (14.0%)	16 (10.7%)	27 (18.0%)	86 (57.3%)	
	HIGHER EDUCATION	18 (9.1%)	13 (6.6%)	42 (21.2%)	125 (63.1%)	
MOTHER AGE	BELOW 30	12 (8.6%)	9 (6.5%)	32 (23.0%)	86 (61.9%)	0.141
	30-39	27 (13.1%)	17 (8.3%)	34 (16.5%)	128 (62.1%)	
	40 AND ABOVE	5 (11.4%)	8 (18.2%)	9 (20.5%)	22 (50.0%)	

Table 5: Effect of diseases, iron supplement and nutritional educational intervention on the Hb status of children at 9 and 18 months who attended Ahmed Ali Kanoo health centers during August 2010 to July 2011

TABLE 5

CROSSTAB

VARIABLES		CHANGE OF HB LEVEL FROM 9 TO 18 MONTHS				
		ANEMIA AT 9-ANEMIA AT 18	NORMAL AT 9-ANEMIA AT 18	ANEMIA AT 9-NORMAL AT 18	NORMAL AT 9-NORMAL AT 18	P VALUE
ALPHA THAL	NO	34 (11.1%)	26 (8.5%)	53 (17.4%)	192 (63.0%)	0.264
	YES	10 (11.9%)	8 (9.5%)	22 (26.2%)	44 (52.4%)	
SCD	NO	43 (11.3%)	34 (8.9%)	72 (18.8%)	233 (61.0%)	0.375
	YES	1 (14.3%)	0 (0.0%)	3 (42.9%)	3 (42.9%)	
IRON SUPPLEMENTED TO CHILD	YES	28 (27.5%)	9 (8.8%)	29 (28.4%)	36 (35.3%)	0.15
	NO	3(33.3%)	1 (11.1%)	5 (55.6%)	0 (0.0%)	
EDUCATION GIVEN TO MOTHER	NO	4 (17.4%)	1 (4.3%)	5 (21.7%)	13 (56.5%)	0.025
	YES	30 (25.6%)	11 (9.4%)	47 (40.2%)	29 (24.8%)	

Discussion

The study showed the percentage of anemia in infants aged 9 months was 45.7%, which is in concordance with The WHO Global Database that estimated the prevalence of anemia in Bahrain to be 48.3% in those who are 6-59 months of age.(5)

In 2007, a Ministry of Health report showed that 26% of individuals attending for the premarital counseling service had an alpha thalassemia gene, and our study also showed that there is a high percentage of alpha thalassemia reaching 21.1% in 9 month old infants.(20)

A neonatal screening study done in Bahrain in 1984-1985 showed that the prevalence of sickle cell disease was 2.1% and decreased to 0.9% in another study done in 2002(20). In our study, the percentage of sickle cell disease was high reaching 1.8 %. This could be due to the high rate of sickle cell disease in the area of the study population.

Presence of alpha thalassemia gene and sickle cell disease were not related to the improvement of Hb level between 9 and 18 months of age as expected in these diseases. (21-23)

There were a small percentage of mothers who used the iron supplement for more than one month to treat anemia in their infants. This is largely due to the fact that mothers are worried about the side effect of iron syrup, such as dental discoloration, dental carries and constipation. (24, 25) Moreover it has an un-pleasant taste.

Our study showed that the nutritional educational intervention of the mother had a statistically significant role in improving the Hb level in children between 9 and 18 months of age. This result is supported by many other studies done in different regions like UAE, India and Iran which showed that maternal education significantly increases the level of hemoglobin in their children(12-14). Based on the results of the study, we recommended strengthening the nutritional educational intervention provided by doctors, nurses and/or other health professionals in order to improve the uptake of iron and decrease the prevalence iron deficiency anemia among children in Bahrain.

Conclusion

This study showed a statistically significant relationship between providing nutritional educational intervention and improving iron deficiency anemia.

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Satisfaction with nursing care from the inpatients' perspective in Prince Salman Armed Forced Hospital Tabuk, Saudi Arabia

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Abstract

Background: Patient satisfaction with nursing care is important for any health care agency because nurses comprise the majority of health care providers and they provide care for patients 24 hours a day.

Objectives: To assess nursing care from patients` perspective as well as to study the difference in the level of patients` satisfaction and their perspectives in relation to demographic background of patients and hospital characteristics.

Subjects and Methods: This cross-sectional study included a representative sample of inpatients in Prince Salman Armed Forces hospital, Tabuk, KSA from all main departments (medical, surgical, nephrology, orthopedic and obstetrics & gynecology departments). Arabic version of Newcastle Satisfaction with Nursing scale (NSNS) was used for data collection.

Results: Out of 420 patients invited to participate in the study, 414 filled in the questionnaires giving a response rate of 98.6%. The study included 414 admitted patients. Their age ranged between 18 and 74 with a mean of 38.5 (SD=14.2) years. Males represent 59.4% of them. 44.9% of patients reported below good, while 55.1% of them reported good experience of nursing care score. None of the participants reported above good (>80%) experience of nursing care score. The participants were mostly experienced with team work between Doctors and nurses and collaboration between nurses of different shifts. 73.9% of patients reported low (<60%) while 26.1% reported moderate satisfaction with nursing care score. None of the participants reported high (>80%) satisfaction with nursing care score. Male, higher educated patients, those admitted to obstetrics and gynecology and stayed for 2-3 weeks in hospitals were more likely to express higher experience of nursing care and satisfaction with nursing care scores.

Conclusions: Patient satisfaction with nursing care is generally low in the recent study. The findings provide nurses with information about aspects that enhance or hinder patient satisfaction.

Key words: Patient Satisfaction, Nursing Care, Quality of Health Care, Questionnaires, Saudi Arabia

Introduction

Patient satisfaction is the patient's perception of care received compared with the care expected.(1) During hospitalization, patient satisfaction represents a balance between the patient's perception and expectation of their nursing care. (2)

Quality of care is a system approach to health services, which emphasizes both technical competence as well as interpersonal dimension of "health care giving process". Client's/patient's satisfaction is one of the two main components of quality of care which includes respect for the client/patient and understanding the needs of the client and providing services accordingly.(3)

Patient satisfaction has been used as an indicator of quality of services provided by health care personnel. The most important predictor of patient` overall satisfaction with hospital care is particularly related to their satisfaction with nursing care.(4-5)

It is becoming increasingly recognized that patient's views should be taken into account as a part of comprehensive assessment of quality of care.(6) Patients` experiences in hospitals offer insights into areas that need improvement, and high nurse-staffing levels may be associated with better experiences for patients.(7)

Data about patient satisfaction equips nurses with useful information about the structure, process and outcome of nursing care such as adequacy of staffing, therapeutic needs and patient behaviors.(8-9) The number of patient satisfaction questionnaires has proliferated over the last decades as tools to measure health care from the patients` perspective.(10-12)

One common target group has been patients admitted to a hospital, because admission can be a stressful and dissatisfying experience for many people and because of the high health care costs, than an admission to a health care system entails.(13) Patient satisfaction with nursing care is important for any health care agency because nurses comprise the majority of health care providers and they provide care for patients 24 hours a day.(14-15)

Methods

A cross-sectional study was conducted at Prince Salman Armed Forces hospital in Tabuk, KSA. The bed capacity in Prince Salman armed forced hospital is 402 beds providing primary, secondary and tertiary care. All inpatients in Prince Salman Armed Forces hospital, Tabuk, KSA were in all main departments (medical, surgical, nephrology, orthopedic and obstetrics & gynecology departments).

Sample size and sampling technique
Approximately 25,000 patients were admitted to the studied hospital per year. Assuming that the patient dissatisfaction represents 20% and by accepting an error of 4% the calculated sample size at 95% level of confidence was 377 using Epi info software. In order to compensate for drop out (non-respondent), a total of 420 patients was sufficient for the study by recruiting of all patients admitted at Tabuk armed force hospital during the period of 25 th August till 25 th September, 2013, provided that they are fulfilling the criteria of inclusion in the study, the required sample was achieved.

Study tool and procedure:
The Arabic version of Newcastle Satisfaction with Nursing scale (NSNS)(14) was used for data collection. The NSNS was selected for data collection for the current study because (i) it was found to be valid and reliable in previous studies conducted in both Western(13) and Arabic countries (Jordan) (15), (ii) it can detect differences in the level of satisfaction between wards in the same hospital and different hospitals,(16) and it addresses nursing care rather than other dimensions of the hospital experience. (17)

The questionnaire consists of three components:

1- Experience of nursing care: Patient`s experience of nursing care is defined as the cognitive judgment of several aspects of nursing. (18) Respondents rated their experience of nursing care on 26 items, using a five-point Likert scale (1=strongly disagree, 5= strongly agree).

2- Opinions of nursing care (satisfaction with nursing care): Patient satisfaction with nursing care is defined as the emotional reaction of the patient to several aspects of nursing care. (18) Respondents rated their satisfaction with various aspects of nursing care, using a five-point Likert scale (1= not at all satisfied, 5= completely satisfied). This section consisted of 19 items.
The maximum scores for patients` experiences and satisfaction were calculated out of 100. The scores were categorized into three levels: (i) a score less than 60% indicated "below good" level of experience or "low" level of satisfaction with nursing care; (ii) a score between 60-80% indicated "good" level of experience or "moderate" level of satisfaction with nursing care; and (iii) a score of more than 80% indicated an "above good" level of experience or "high" level of satisfaction with nursing care.(15)

3- Demographic information: This section includes gender, age, marital status, level of education, ward and length of stay in the hospital.

Results

Out of 420 patients invited to participate in the study, 414 filled in the questionnaires giving a response rate of 98.6%. The study included 414 admitted patients. Table 1 presents their demographic information. Their age ranged between 18 and 74 with a mean of 38.5 (SD=14.2) years. Most of them (79.8%) were aged 50 years or less. Males represent 59.4% of them. Almost half of them (48.6%) were married. More than a third of them (37.8%) were university graduated.

Table 1: Demographic information of admitted patients, Prince Salman Armed Forces hospital, Tabuk, KSA.

Demographic information	Frequency N=414	Percentage
Age (years)		
≤30	144	34.9
31-50	186	44.9
51-60	42	10.1
>60	42	10.1
Gender		
Male	246	59.4
Female	168	40.6
Marital status		
Single	123	29.7
Married	201	48.6
Divorced	60	14.5
Widowed	30	7.2
Educational level		
Illiterate	15	3.6
Primary	6	1.4
Intermediate	87	21.0
Secondary	150	36.2
University	156	37.8

Discussion

Insight into patients ' perceptions of nursing care will help nurses to understand better how to address these patients' needs and expectations more appropriately. The study included 414 students with a response rate of 98.%. According to Rosnow and Rosenthal (1999).(19) these techniques (e.g. personal contact, using reminders and explaining the scientific importance and value of the study, ensuring the participants confidentiality) are linked to increased participation in surveys.

Patients` experiences of nursing care in the current study were generally good particularly in regards to aspects of continuity of nursing care. These findings are consistent with the findings of Ahman and Alasad (2004)(7) and McColl et al (1996).(5) Such results indicate the importance of collaboration and continuity of nursing care.

Participants of the present study had below good experiences with aspects of no time for nurses to sit and talk to them and nurses completely relying on doctors. Such finding are also consistent with the findings of Ahmas and Alasad (2004)(7), McColl et al (1996)(5) and Walsh and Walsh (1999). (20)

On the other hand, participants` satisfaction with nursing care was generally low. The participants were mostly satisfied with aspects of nurses` capability of their jobs, nurses` helpfulness, nurses' manner in going about their work and the amount nurses knew about patient care. These factors reflect the nurses` competencies and skills, which mean that satisfaction of participants is mostly affected by the skills and competencies of nurses in performing their work. Such results are congruent with the findings of Alasad and Ahmad (2003). (21)

The participants were also least satisfied with items such as "how nurses listened to patients` worries and concerns" and "the amount of time nurses spent with patients". These aspects indicate that the time that nurses spend with patients was not adequate, which might be attributed to heavy workload, inadequate staffing, performing non-nursing activities and the most important aspects are nursing shortage and language barriers. Such results inform nurses, nurse administrators and managers that despite cultural differences, the issue of spending inadequate time with patients and poor nursing autonomy seem to be common dissatisfactions among patients with different cultures. These finding are consistent with what has been reported in a Jordanian study conducted in 2009. (15)

Male patients were more satisfied and had better experience of nursing care than female patients. Such a result is consistent with the findings of Ahmad and Alasad (2004).(7) On the other hand, such a result is inconsistent with the findings of Alasad and Ahmad (2003)(25), Easter et al (2003)(22), Alhusban and Abualrub (2009)(15) and Venn and Fone (2005).(23)

The findings of the current study also indicated that patients with lower levels of education had lower levels of satisfaction and experience of nursing care. Such findings were inconsistent with findings of Alasad and Ahmad (2003)(20), Barbara et al (1999)(24) and Bodil (1999).(25) These studies found that patients with higher levels of education had lower levels of satisfaction with nursing care. This could be attributed to language barriers that our patients are facing as the majority of nurses were Filipinos and illiterate patients are not able to contact with them properly. Other researchers indicated that patients` educational level had no effect on their experience or satisfaction with nursing care. (15, 26-27)

The findings of this study revealed no significant influence of the variables of age, marital status, and length of stay on patient experience and satisfaction with nursing care, which is inconsistent with the findings of others. (25, 28, 29) On the other hand, it was consistent with findings of other researchers in Saudi Arabia (30) and Jordan.(15) Such inconsistent results in regard to the association between demographic variables of patients and the level of satisfaction call for further research that controls for other variables such as the demographic variables of nurses who provide care for those patients and other organizational variables such as nurses` satisfaction.

When comparing departments of admission, the results showed that participants in obstetrics and gynecological department had higher level of experience and satisfaction with nursing care than participants in surgical department; such a result is consistent with the findings of many researchers. (20, 26, 30, 31) A possible explanation for this result might be because of the fact that the health status of gynecological patients is better than those in surgical departments. Usually, patients who are admitted to surgical departments are more sensitive to the quality of care they receive because of their reduced health status.

In the present study, experience of nursing care and satisfaction with nursing care were significantly associated despite them having different operational definition. Experience of nursing care was measured by 26 items (cognitive judgment); whereas, satisfaction with nursing care was measured by 19 different items (emotional judgment).

A limitation of the research is the sampling of this study as it included patients from one hospital that affects the ability to generalize the findings. In addition, the cross-sectional design of the survey makes it difficult to sort out the causal relationships among variables studied.

Conclusion

.Identifying the level of patients` satisfaction with nursing care is a good indicator for the quality of nursing care services. The findings of the present study provide nurses with information about aspects that enhance or hinder patient satisfaction.

Patient satisfaction with nursing care is generally low. Female, lower educated and those admitted to the surgical department experienced lower level of satisfaction with nursing care.

The findings of this study provide a framework for both nurse managers and unit nurse managers to seriously think when planning for steps to take towards implementing patient centered health care.

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Gender Differences in Consultation Time and its Relation to Patient's Satisfaction: a cross-sectional study at King Khalid University Primary Health Care Clinics In Riyadh, Saudi Arabia

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Abstract

Background: Patient's satisfaction is regarded as an outcome of care in itself and is one of the major contributors toward better patient compliance leading, presumably, to better clinical outcomes. Many studies have been done in Saudi Arabia assessing health care services but only few were conducted assessing consultation per se and was quite a long time ago. The objective of the study is to find the relation between consultation time and patient's satisfaction of both male and female patients and the other correlates of patient's satisfaction among those attending Primary Health Care Clinics.

Methods: A descriptive cross-sectional study was carried out over April-June during 2013; adult patients ≥ 18 years old were selected from Primary Care Clinics in Riyadh City. Data was collected using a self-administered questionnaire with 21 items of patient satisfaction scale. Data were analyzed using descriptive and analytic statistics.

Results: The study included 400 patients. The average consultation time among females was (16.28±8.006) minutes and among males was (17.68±9.049) with no significant difference (p-value=0.102,CI -0.280,3.080). The mean satisfaction score among females was (94.18,SD=±1.54), while among males was (104.68,SD=±11.99). The difference between the two groups in the overall satisfaction score is significant. Female patient's satisfaction was positively correlated with consultation time as well as the age. Among males, the satisfaction didn't show any correlation with the consultation time but it was negatively correlated with marital status, experiencing bad experience with family medicine doctor in the last year, and with the waiting time in waiting area.

Conclusion: Females' satisfaction is positively correlated with consultation time, with consideration to give more time to them, focusing on psychological problems, which needs better doctor-patient communication skills. On the other hand, males' satisfaction didn't show significant correlation with consultation time and other aspects of satisfaction other than consultation itself should be analyzed such as health care system and services (waiting area setting, nurses, pharmacy, and building).

Key words: Consultation time, consultation length, gender, patient satisfaction.

Background

Patient satisfaction is regarded as an outcome of care in itself and is one of the major contributors toward better patient compliance leading, presumably, to better clinical outcomes [1]. Through consultation, one can measure the quality of care provided and overall patient's satisfaction [2].

Many Studies have been conducted to assess patient's satisfaction, most of them were about health care services, others about drugs and prescriptions [2, 3, 4, 5, 6] and few were about consultation itself and consultation time. One study conducted in Philadelphia, United States , reported mean patient satisfaction with primary care physicians of (62.9) for males and (60.7) for females [7]. Another study in Slovenia, reported that (58.2%) of participants rated the level of care received as excellent with no discrimination between genders [1].

One study conducted at Ministry of Health facilities in Jeddah, Saudi Arabia, assessed the factors associated with patient's care during consultation in 1997, and showed that the rate of patient's satisfaction with the primary health care clinics was (73.2%) without discrimination between genders although the study stated that gender is a significant factor affecting patient care [2]. Another study conducted in Qateef, Saudi Arabia, assessed the determinants of users' satisfaction with primary health care settings in 1999 and included consultation time as one the components, and revealed the rate of patients' satisfaction with consultation time as (79.7%) but again no differences were shown between genders [4].

Many factors play a role on patient's satisfaction during the consultation, including physician's characteristics, patient's characteristics, organizational factors and health care system [8]. Among patients' characteristics, studies found that gender difference has an effect on patient's overall satisfaction [3]. Al-Dawood mentioned that female gender is the most influential factor [5] and some studies showed that females are less satisfied with their consultation [3]. This in turn may be related to consultation time, which could be short or insufficient for them [9] and ultimately can affect patient's satisfaction as was mentioned by Raja Lexshimi who revealed low patient's satisfaction with consultation time [10].

Hence, looking at consultation time, different countries showed different average consultation times [9, 11]. A study done in Europe measuring consultation length among six different countries, showed that Germany had the shortest consultation time with mean of (7.6) minutes and Switzerland had the longest consultation time with mean of (15.6) minutes [9]. Another study in Qatar stated that the mean time was (10.7) minutes and for Arabian Gulf Areas was (5.9) minutes [11]. In Saudi Arabia, a study was conducted in eastern province primary health care centers and showed that the mean consultation time was (7.3) minutes with a range between (4.6-12.6) minutes with no differences given between males and females [5].

Different reasons attribute toward different consultation times and ultimately to different satisfaction rates. Female gender with their own characteristics as they reported higher psychological problems than males including depression, anxiety and emotional issues [12], had longer consultation time and the longest consultation time was found when a female doctor was dealing with a female patient [13].

Female gender needs longer consultation [2]. This study aims to identify if female patients, in comparison with males, are satisfied with longer consultation time at King Khalid University Primary Health Care Clinics.

The rationale of this project is that many studies have been done in Saudi Arabia assessing health care services but only one was found that conducted assessing consultation per se and was done in 1997 which is quite a long time ago. In fact, satisfaction is one of the measures of quality outcome, which needs to be assessed continuously.

Materials and methods

This is a cross-sectional study conducted from April-June, 2013 at Primary Health Care Clinics in Riyadh, Saudi Arabia. A total of 400 patients (200 males, 200 females) were included in the study. The sample size was calculated based on the assumption that females are at twice the risk of low satisfaction than males, taking into account CI=95% , power of 80, ratio between male and female =1 and percent of control exposed =30% with refusal rate of 10%.

Separate primary health care clinics (PHCC) are conducted for males and females. Four (PHCC) were randomly selected during each morning and afternoon slots (2 female and 2 male clinics) and patients were selected consecutively. Male and female patients attending PHCC $\geq$ 18 years old were included involving Saudi and non-Saudi patients. These clinics were run by Saudi and non-Saudi doctors who are working as (professors, consultants, senior registrars, registrars). Clinics that were run by residents and under graduate students were excluded as well as patients < 18 years old, very ill patients presenting as emergency cases, and mentally retarded, blind and deaf patients. Data was collected through self-administered questionnaire from the period (April-June) during 2013. Each questionnaire had two parts; one for the health care provider with consultation time and information about the doctor, whereas the second part was for the patient. Patients were asked to fill in the questionnaire in the waiting area after they were done with their consultation. Written and signed consent was taken before filling in the forms . One male and female research assistants were trained to collect data and interview those patients who had difficulty in reading or writing. Patients completed a questionnaire consisting of Sociodemographic characteristics (age, gender, nationality, marital status, educational level, occupation, residence. In cases if the participant was married, educational level and occupation of the spouse was also inquired about), health status and factors related to patient's satisfaction (participants were

asked if they have any common chronic diseases, any history of stressors in the last 6 months, a history of bad experience with family medicine doctor, their next follow-up appointment, waiting time in the waiting area and things to be changed if it was not comfortable), and the overall patient's satisfaction scale (Medical Interview Satisfaction Scale MISS-21). MISS-21 consists of 21 items with four factors (distress relief, communication comfort, rapport and compliance intent) with 7 point Likert scale [1=very strongly disagree,2=strongly disagree,3=disagree,4=uncertain,5=agree,6=strongly agree,7=very strongly agree]. The original scale was validated, used and adapted for British general practice in 2002. The scale was translated from English to Arabic language with backward translation by two bilingual experts (family physicians) as no previous Arabic version of the scale was found. The minimum score is 21 and maximum score is 147. The score used doesn't have any cutoff point; it is taken as a continuous variable, the more the score, the more the satisfaction.

Pilot testing was carried out on 20 patients. Any ambiguity identified was removed with the approval of an expert epidemiologist. In addition, health care providers completed a questionnaire consisting of doctor's gender, doctor's nationality, professional status, presenting problem if new or follow up, and the number of the visits to the clinic within the last 2 years. The consultation time was calculated in minutes by the health care provider using her/his watch from the moment the patient entered the room to the moment he/she left. After collecting the data, it was coded and entered using SPSS statistical software version 16. Descriptive statistics were done. Frequency tables and appropriate charts of different variables were performed. For seven point satisfaction questions, total score for each patient was summated for all 21 questions. Maximum possible score was (21*7=147). To evaluate statistical difference, Student-t test was used for comparison between mean values of 2 groups. Linear and multiple regression analysis was used to assess correlation. P-value of < 0.05 was used as a level of significance. Approval was taken from the departement administration. Written consent was obtained from those accepted to participate. The survey was anonymous and participants' anonymity was assured by assigning each questionnaire with a code number for the purposes of analysis only.

Results

Data were obtained from 400 patients giving a response rate of 89%. The sample was composed of 200 females and 200 males. Mean age (SD) of female patients was (43, ±14.37) years and ranging from (>18 to 85) years. Mean age (SD) of males was (48, ±16.89) years and ranging from (>18 to 86) years. The difference between the two genders in age is significant with (p-value=0.002, CI =1.764-7.983). Female patients represent (99.5%) Saudi and (0.5%) non-Saudi females, whereas male data represent (95.5%) of the sample as Saudi and (4.5%) non-Saudi.

Average consultation time among females was (16.28) minutes (SD=8.006), (minimum=4 minutes, maximum=50 minutes). While average consultation time among males was (17.68) minutes (SD=9.049), (minimum=3 minutes, maximum=55). The difference between the two groups is not statistically significant with (p-value= 0.102, CI =-0.280, 3.080) as shown in Table 1 and Figures 1 & 2.

Table 1. Average consultation time of both genders:

	Female	Male	P value	CI
Average consultation time (mean ±SD)	16.28(±8.006)	17.68(±9.049)	0.102	(-0.280 , 3.080)

The mean satisfaction score among females was (94.18±1.54). While mean satisfaction score among males was (104.68±11.99). The difference between the two groups in the overall satisfaction score is significant with (p-value=0.000, CI= 7.139,12.947) as shown in Table 2 and Figures 3 & 4.

The majority of female patients were married (64.5%) as were male patients (85%). For education, females reported that most of them were at the level of high school (31%) and most of male patients were at the level of university and advanced studies (42%). For occupation, the majority of female patients were retired or housewives (78.5%) and the remaining (21.5%) were either students, teachers or working in private sector. In contrast, most of male patients were working (60.1%) while (30.3%) are retired and (9.6%) were students. The majority of female and male patients were coming from urban rather than rural areas with frequencies of (90.5% vs. 9.5%) respectively for both genders.

Figure 1. Frequencies of consultation time among female patients

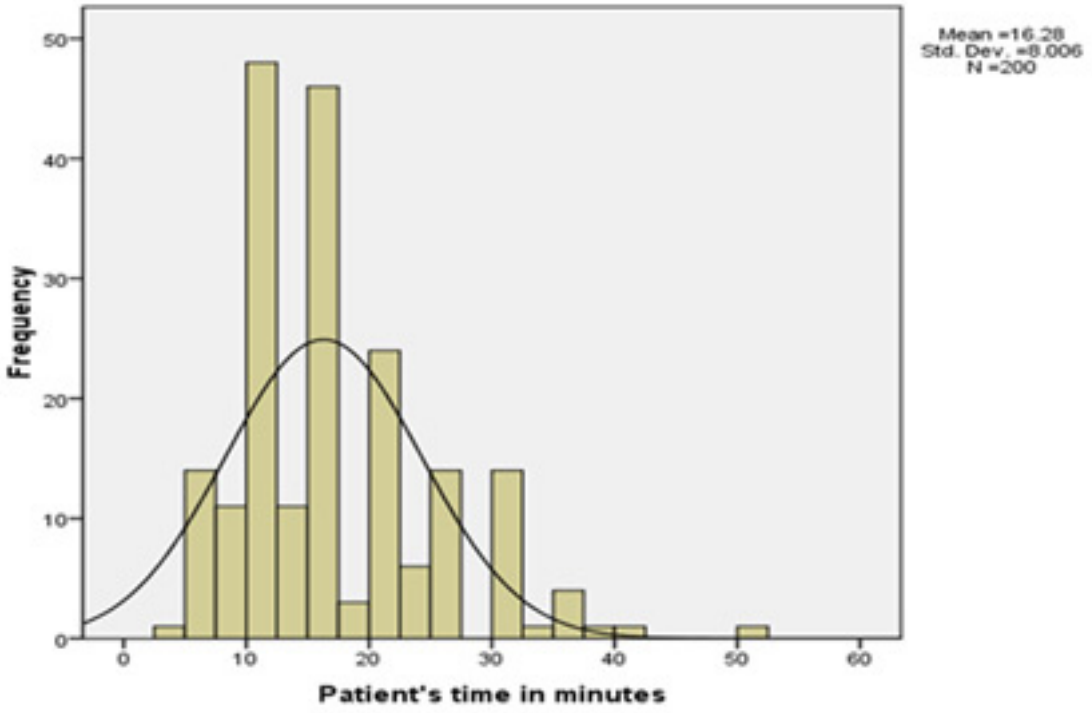


Figure 2. Frequencies of consultation time among male patients

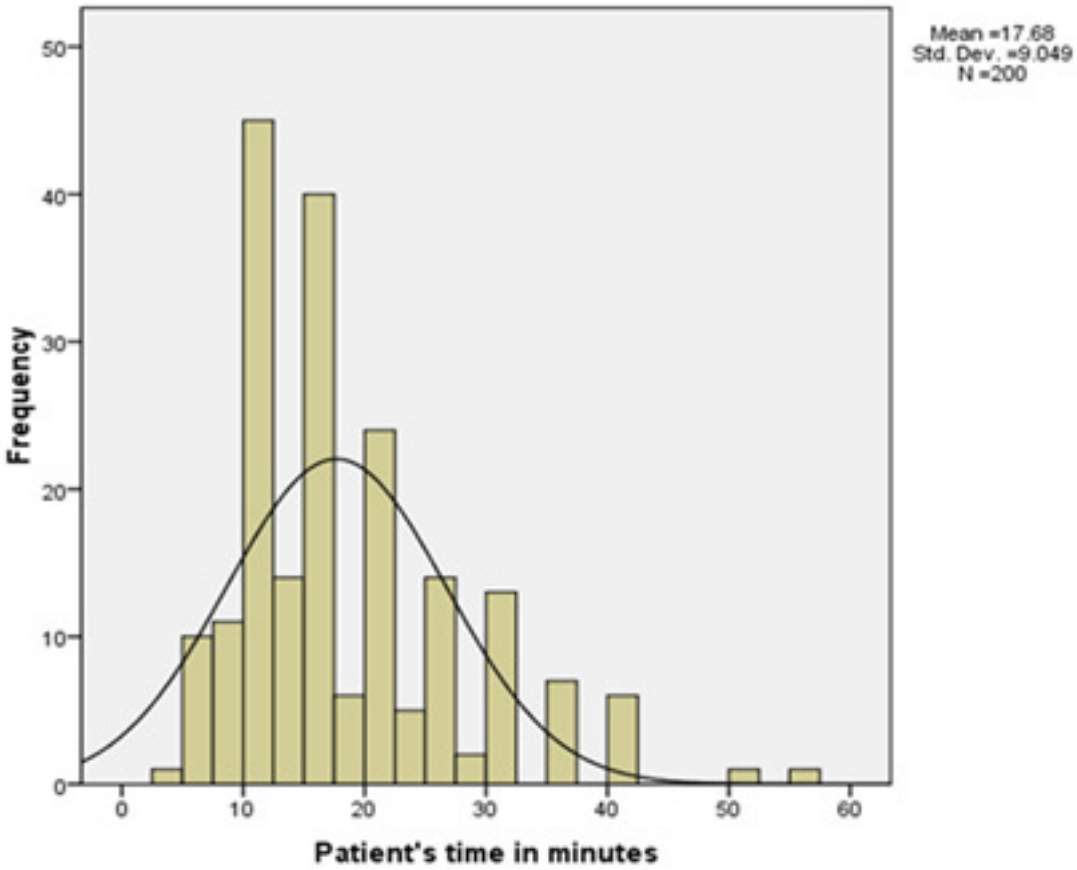


Table 2. Mean satisfaction scores of both genders:

	Female	Male	P value	CI
Satisfaction score (mean ±SD)	94.18(±1.54)	104.68(±11.99)	0.00	(7.139 , 12.947)

Figure 3. Frequencies of overall satisfaction among female patients

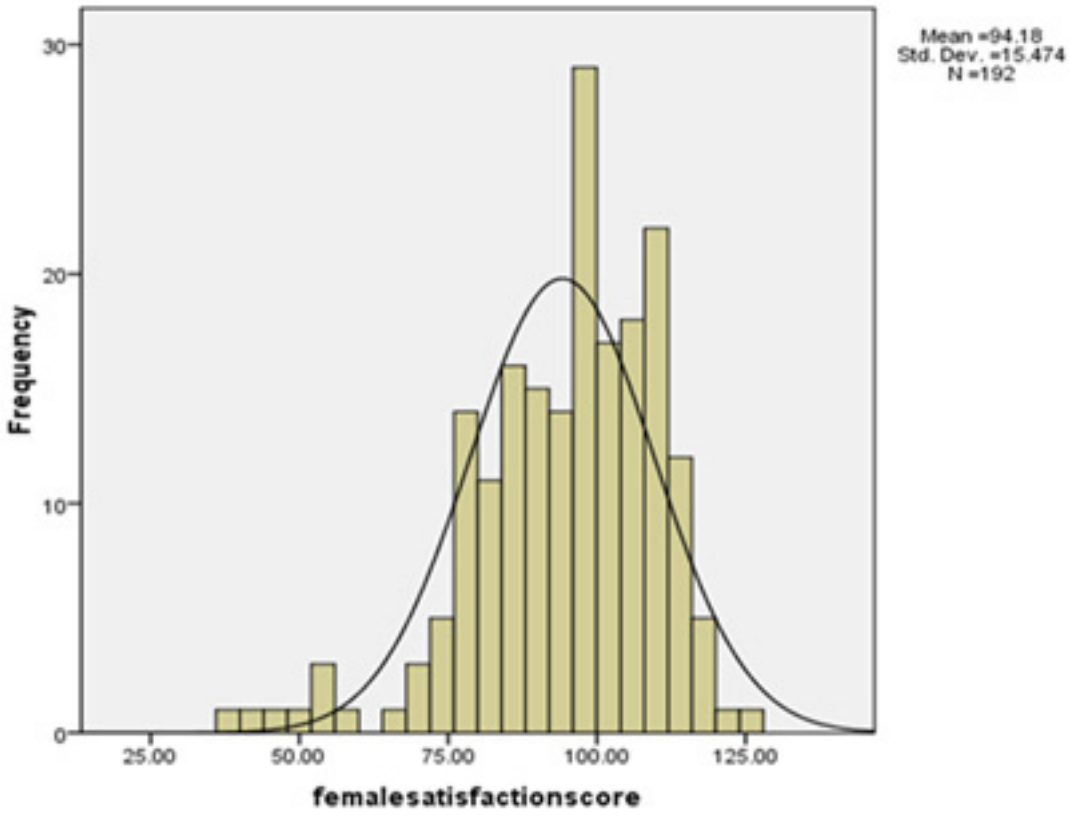
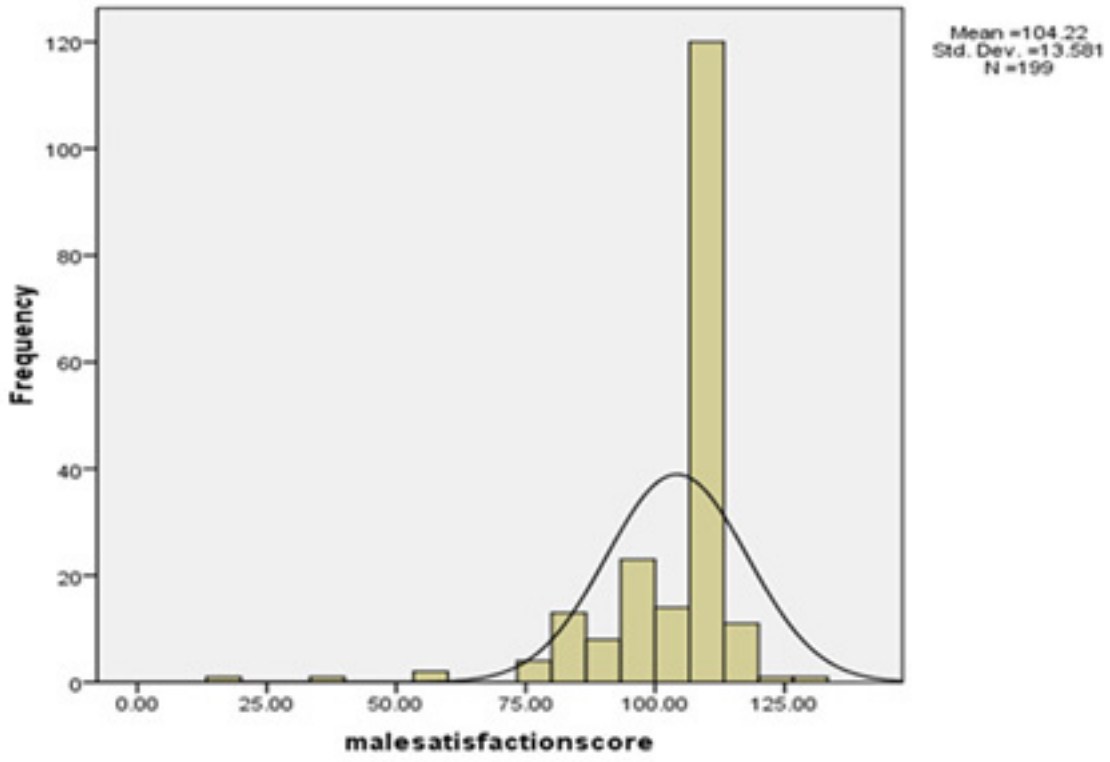


Figure 4. Frequencies of overall satisfaction among male patients



The main reason for most patients' presentation were for follow-up and old problem instead of new problem which was (87.% vs. 12.%) respectively among females and (85% vs. 15%) among males. Chronic diseases have been reported being diagnosed in (82%) of females (in the form of diabetes, hypertension, dyslipedemia, osteoarthritis, hypothyroidism, depression, bronchial asthma, obesity or other diseases such as cardiac, renal, gastritis or dermatological) and most of them had two to three chronic diseases (34.5%) whereas among males, (97%) reported having chronic diseases and most of them had one form of chronic disease (61%). Most female patients were given a follow-up appointment within 6 months-<1 year (66.5%) whereas male patients were mostly given appointments within 3-<6 months (52.5%). The majority of the patients were visiting primary health care clinics more than twice per year in the previous two years (52.2% and 43.3%) among female and male patients respectively.

Among female patients, (43%) reported having stressors in the last 6 months with the highest stressors being socially related (40.69% were social, 26.9% were bereavement, 15.11% were financial, 9.3% were work-related, 9.3% were medical and 4.6% didn't mention the type of their stressors) in contrast, (5.5%) males reported having stressors (36.37% reported bereavement, 18.8% reported medical stressors and 45.45% didn't mention their type of stressor) and both genders fell in the category of having one type of stressor rather than having multiple stressors within the last 6 months. Reporting bad experience was mentioned by (5%) of females and (10.5%) of males with the highest bad experience for females being in communication with their doctors (40%) but for males (95%) didn't mention what type of bad experience they had. For waiting time in waiting area, females showed variable frequencies of waiting time (19.5% waited 5-<15 minutes, 24% waited 15-<30 minutes, 28% waited 30 minutes<1 hour and 28% waited from 1-2 hours) in contrast, for males (41% waited 5-<15 minutes, 33% waited 15-<30 minutes, 19.5% waited 30-<1 hour and 6.5% 1-2 hours). When reporting about if the waiting area was comfortable for them, (90.5%) of females reported that it was comfortable and (77.5%) of males reported so. Females mentioned that the things that must be changed in waiting area if it wasn't comfortable for them were (100% for prayer rooms, 63.15% for chairs, 47.36% for space of waiting area, 36.84% for educational aids, 36.48% for availability of bathrooms, 31.57% for privacy, 10.52% for cleanliness and 26.31% mentioned other things such as receptionist. While males showed that (53.3% for space of waiting area followed by 40% for receptionist, 33.3% for availability of bathrooms, 26.6% for chairs, 11.11% for educational aids, 8.88% for prayer rooms and 46.66% didn't mention anything).

Female patients were seen by female doctors most of the time (93.2% seen by females doctors vs. 6.8% seen by male doctors) as did males where they were seen most of the time by male doctors (93.5% by male doctors vs. 6.5% seen by females). For professional status of the doctors, (50.5%) females and (54.5%) males were seen by professor or consultant. Most of females and male patients were seen by Saudi doctors. The majority of patients were seen by Saudi doctors (66.5% of females vs. 54% for males). Table 3 shows frequency distribution of each variable.

Separate models were made for males and females. Univariate analysis of female patients' satisfaction was highly significant and positively correlates with the consultation time (p-value =0.003, beta=0.211, CI= 0.135, 0.668) and was significant with positive correlation with the age of the patient (p-value= 0.009, beta=0.190, CI =0.049,0.343). It didn't show any correlation with other sociodemographic characteristics or other related factors shown in Table 4. In contrast, male patients' satisfaction didn't show any association with the consultation time (p-value= 0.952, Beta=-0.004, CI= -0.191,0.180). The satisfaction showed negative correlation with marital status (p-value= 0.000, Beta=-0.252, CI= -13.335,-3.977), presence of stressors within the last 6 months (p-value= 0.031,Beta=-0.143, CI= -17.318,-0.856), history of bad experience with family medicine doctor within the last year (p-value 0.010, Beta=-0.182, C=I -14.420,-1.970) and with waiting time in waiting area (p-value= 0.045, Beta=-0.142, CI= -4.116,-0.048). It didn't show any correlation with other sociodemographic characteristics or with other factors related to patient's satisfaction as shown in Table 5.

Multivariate regression showed that female patient's satisfaction was positively correlated with only consultation time (p-value=0.019, Beta=0.176 , CI= 0.054 , 0.588) as well as their age (p-value= 0.057, Beta= 0.141 , CI= -0.005 , -0.297). Among males, the satisfaction didn't show any correlation with the consultation time (p-value= 0.869, Beta= 0.011, CI=-0.187, 0.221) but it was negatively correlated with marital status (p-value= 0.000 , Beta= -0.243, CI= -12.992 , -3.728), experiencing bad experience with family medicine doctor in the last year (p-value=0.009, Beta= -0.179, CI= -14.123 , -1.997) and with the waiting time in waiting area (p-value=0.033 , Beta= -0.146, CI= -4.098 , -0.176) as shown in Tables 6 & 7.

Table 3. Descriptive frequencies of sociodemographic, health care provider and patient's satisfaction related variables: (Part 1)

	Female (n%)	Male (n%)
Sociodemographic:		
Age in years[F =195 , M =198]		
18-<30	39 (19.5%)	33 (16%)
30-<40	26 (13%)	28 (14%)
40-<50	55 (27.5%)	29 (14.5%)
50-<60	48 (24%)	56 (28%)
60->70	27 (13.5%)	52 (26%)
Patient's nationality[F =200,M =200]		
Saudi	199 (99.5%)	191 (95.5%)
Non-Saudi	1 (0.5%)	9 (4.5%)
Marital status[F =200,M =200]		
Single	33 (16.5%)	28 (14%)
Married	129 (64.5%)	170 (85%)
Divorced	11 (5.5%)	2 (1%)
Widowed	27 (13.5%)	---
Educational level of the patient [F =200, M =200]		
Illiterate	58 (29%)	8 (4%)
Elementary	16 (8%)	31 (15.5%)
Intermediate	25 (12.4%)	26 (13%)
High school	62 (31%)	51 (25.5%)
University plus advanced	39 (19.9%)	84 (42%)
Educational level of spouse "if married": [F = 127,M =163]		
Illiterate	14 (11%)	34 (27.6%)
Elementary	19 (15%)	29 (22.7%)
Intermediate	10 (7.9%)	18 (11%)
High school	35 (27.6%)	37 (22.7%)
University plus advanced	49 (38.6%)	45 (27.6%)

Table 3. Descriptive frequencies of sociodemographic, health care provider and patient's satisfaction related variables: (Part 2)

Occupation: [F =191,M =198]		
Retired+ housewife	150 (78.5%)	60 (30.3%)
Student	11 (5.8%)	19 (9.6%)
Government offices	---	61 (30.8%)
Military	---	10 (5.1%)
Teacher	24 (12.6%)	22 (11.1%)
Businessman/private sector	6 (3.1%)	25 (12.6%)
Doctor +lawyer	---	1 (0.5%)
Occupation of spouse "if married" [F =125,M =169]		
Retired +housewife	48 (38.4%)	138 (81.7%)
Student	---	2 (1.2%)
Government offices	28(22.4%)	7 (4.1%)
Military	11 (8.8%)	---
Teacher	22 (17.6%)	21 (12.4%)
Businessman	11 (8.8%)	---
Doctor +lawyer	5 (4%)	1 (0.6%)
Residency[F =200,M =200]		
Urban	181 (90.5%)	181 (90.5%)
Rural	19 (9.5%)	19 (9.5%)
Health status and factors related to patient's satisfaction:		
Medical Problem[F =200,M =200]		
New	25 (12.5%)	30 (15%)
Follow up	175 (87.5%)	170 (85%)
Number of Chronic diseases present [F =200,M=200]		
0	36 (18%)	6 (3%)
1	43 (21.5%)	122 (61%)
2	28 (14%)	40 (20%)
3	41 (20.5%)	24 (12%)
4	26 (13%)	6 (3%)
5	15 (7.5%)	2 (1%)
6	10 (5%)	--
7	1 (0.5%)	--
Average consultation time in minutes [F =200,M =200]		
(mean ±SD)	16.28 (+- 8.006)	17.68(+-9.049)

Table 3. Descriptive frequencies of sociodemographic, health care provider and patient's satisfaction related variables: (Part 3)

Next follow up appointment: [F =200,M =200]		
Less than three months	10(5%)	27 (13.5%)
3 months< 6 months	28 (14%)	105 (52.5%)
6 months< 1 year	133 (66.5%)	53 (26.5%)
More than one year	15 (7.5%)	4 (2%)
No appointment	14 (7%)	11 (5.5%)
Number of visits to the clinic in the last 2 years: [F =182),M =190]		
None	21 (11.5%)	19 (10%)
Once	23 (12.6%)	28 (14.7%)
Twice	43 (23.6%)	32 (32.1%)
More than twice	95 (52.2%)	82 (43.2%)
Any stressors in the last 6 months [F =200,M =200]		
Yes	86 (43%)	11 (5.5%)
No	114 (57%)	189 (94.5%)
Number of stressors in the last 6 months:[F=200,M=200]		
0	114 (57%)	189 (94.5%)
1	74 (37%)	9 (4.5%)
2	11 (5.5%)	2(1%)
3	1 (0.5%)	--
History of bad experience with FM doctor during the last year: [F =200,M =200]	10 (5%)	21 (10.5%)
Yes	190 (95%)	179 (89.5%)
No		
Waiting time in waiting area [F =200, M =200]		
5-<15 minutes	39 (19.5%)	82 (41%)
15-<30 minutes	48 (24%)	66 (33%)
30-<1 hour	56 (28%)	39 (19.5%)
1 hour-2 hours	57 (28%)	13 (6.5%)
Comfortable waiting area: [F =200, M =200]		
Yes	181 (90.5%)	155 (77.5%)
No	19 (9.5%)	45 (22.5%)
Health care provider information: Doctor's gender: [F =191,M =200]		
Male	13 (6.8%)	187 (93.5%)
Female	178 (93.2%)	13 (6.5%)

Table 3. Descriptive frequencies of sociodemographic, health care provider and patient's satisfaction related variables: (Part 4)

Professional status: [F =200,M =200]		
Professor/ consultant	101(50.5%)	109 (54.5%)
Senior registrar/ registrar	99 (49.5%)	91 (45.5%)
Doctor's nationality[F =200,M =200]		
Saudi	133 (66.5%)	108 (54%)
Non-Saudi	67 (33.5%)	92 (46%)

Table 4. Univariate analysis of female patients' satisfaction score with sociodemographic, health status and health care provider variables:

Variable	*B*	*Beta*	*95% CI*	*P value*
Age (in years)	**0.196**	**0.190**	**(0.049 , 0.343)**	**0.009**
Patient's Nationality	9.869	0.046	(-20.78, 40.519)	0.526
Marital status	-2.072	-0.107	(-4.834 , 0.690)	0.141
Educational level of the patient	1.204	0.120	(-0.223 , 2.632)	0.098
Educational level of spouse	0.592	0.059	(-1.222 , 2.406)	0.519
Occupation of the patient	0.309	0.032	(-1.115 , 1.733)	0.669
Occupation of spouse	-0.265	-0.037	(-1.558 , 1.028)	0.686
Residency	0.849	0.016	(-6.546 , 8.244)	0.821
Status of Medical problem	-1.923	-0.041	(-8.595 , 4.750)	0.570
Number of chronic diseases present	1.207	0.137	(-0.038 , 2.452)	0.057
Average consultation time	**0.402**	**0.211**	**(0.135 , 0.668)**	**0.003**
Next follow up appointment	-1.325	-0.071	(-3.973 , 1.323)	0.325
Number of visits to the clinic in the previous 2 years	-1.645	-0.112	(-3.831 , 0.542)	0.139
Recent stressors in the last 6 months	-1.297	-0.042	(-5.752 , 3.157)	0.566
Number of stressors within the last 6 months	-0.359	-0.15	-3.893 , 3.174)(	0.841
History of bad experience with family medicine doctor within the last year	-1.669	0.024	(-11.606 ,8.268)	0.741
Waiting time in the waiting area in this last visit	1.461	0.104	(-0.531 , 3.452)	0.150
Uncomfortable waiting area	-2.305	-0.045	(-9.694 , 5.084)	0.539
Doctor's gender	8.033	0.128	(-1.081 ,17.147)	0.084
Doctor's professional status	1.660	0.054	(-2.751 , 6.071)	0.459
Doctor's nationality	-0.203	-0.006	(-4.888 , 4.482)	0.932

Table 5. Univariate analysis of male patients' satisfaction score with sociodemographic, health status and health care provider variables:

	B	Beta	95% CI	P value
Age (in years)	0.076	0.109	(-0.22 , 0.175)	0.129
Patient's Nationality	8.380	0.129	(-0.704,17.464)	0.070
Marital status	**-8.656**	**-0.252**	**(-13.335 ,-3.977)**	**0.000**
Educational level of the patient	0.487	0.044	(-1.059 , 2.034)	0.535
Educational level of spouse	0.137	0.019	(-0.987 , 1.261)	0.810
Occupation of the patient	0.010	0.001	(-1.090 , 1.111)	0.985
Occupation of spouse	0.640	0.082	(-0.542 , 1.822)	0.287
Residency	-3.794	-0.082	(-9.990 , 1.390)	0.248
New Medical problem	-4.982	-0.130	(-10.249 , 2.661)	0.068
Number of chronic diseases present	0.172	0.012	(-1.891 , 2.235)	0.870
Average consultation time	-0.006	-0.004	(-0.191 , 0.180)	0.953
Next follow up appointment	-1.173	-0.052	(-2.801 , 1.283)	0.218
Number of visits to the clinic in the previous 2 Years	0.475	0.036	(-1.454 , 2.404)	0.628
Any stressors in the last 6 months	**-9.087**	**-0.153**	**(-17.318 , -0.856)**	**0.031**
Number of stressors in the last 6 months	-1.350	-0.024	-9.205 , 6.505)(	0.735
History of bad experience with family medicine doctor within the last year	**-8.195**	**-0182**	**(-14.420 , -1.970)**	**0.010**
Waiting time in the waiting area in this last visit	**-2.082**	**-0.142**	**(-4.116 , -0.048)**	**0.045**
Uncomfortable waiting area	-2.468	-0.076	(-7.005 , 2.069)	0.285
Doctor's gender	-2.865	-0.059	(-9.657 , 3.928)	0.407
Doctor's professional status	0.220	0.008	(-3.600 , 4.041)	0.910
Doctor's nationality	-2.979	-0.110	(-6.777 , -0.819)	0.124

Table 6. Multivariate analysis of female patients' satisfaction score:

	B	Beta	95% CI	P value
Consultation time	0.321	0.176	(0.054 , 0.588)	0.019
age	0.146	0.141	(-0.005 ,-0.297)	0.057

*The results were adjusted for education level, occupation, marital status, waiting time in waiting area, number of chronic diseases, presence and number of stressors within the last 6 months and history of bad experience with family medicine doctor.

Table 7. Multivariate analysis of male patients' satisfaction score:

	B	Beta	95% CI	P value
Consultation time	0.017	0.011	(-0.187 ,0.221)	0.869
Marital status	-8.360	-0.243	(-12.992 ,-3.728)	0.000
History of bad experience with family medicine doctor within the last year	-8.060	-0.179	(-14.123 , -1.997)	0.009
Waiting time in waiting area	-2.137	-0.146	(-4.098 , -0.176)	0.033

*The results were adjusted for age, education level, occupation, number of chronic diseases, presence and number of stressors within the last 6 months.

Discussion

The mean consultation time of female patients' (16.28±8.006) minutes and of males (17.68 ±9.049) minutes is much better than what was reported earlier from PHCC in Saudi Arabia. One study conducted at eastern province showed that average consultation time was (7.3±5.7) minutes [5]. Another study conducted in Jeddah reported mean consultation time of (5.94±0.2) minutes [2]. Looking at different aspects, mean consultation time for Europe was (10.7±6.7) minutes with the longest consultation being reported in Belgium and Switzerland (15±7.2 and 15.6±8.7) minutes respectively, whereas in Arabian Gulf countries, the average consultation time was (5.9±2.4) minutes [4]. This improvement in consultation time would reflect the improvement in the health care system. On the other hand, most of our sample patients were above the age of 40 years. Tahepold H reported in her study that patients > 46 years of age had longer consultations while Myriam Deveugele mentioned in her study that as the patient age increases by one year, the consultation time increases by one second [9, 14 , 15]. Most of the patients presenting to the clinic had one or more chronic diseases and the higher the number of health problems, the more the consultation time [8]. Our study did not show significant difference in the consultation time between both genders. The same was presented in a study conducted at an Estonian family practice [15]. The studies are contradictory, regarding gender and consultation time, with other studies showing that females require more consultation time [2, 9, 15].

Consultation time is considered one of the main factors influencing patient's satisfaction [16]. Looking at the overall patient's satisfaction first, then its relation with consultation time, the study shows that the score of patients' satisfaction of both genders is below expected with significant difference between female and male patients (64.1% for females vs. 71.2% for males) (p. value=0.00, CI=7.139 , 12.947). It is near to what was conducted in Jeddah, which reported a total patient satisfaction of both genders of (73.2%) [2]. Another study conducted in Qatar, showed satisfaction rate of 79%.

The satisfaction among male patients is higher than females. Al-Dawood identified that sex of respondents is the most influential factor on the level of satisfaction, with males being more satisfied [4].

Among males, consultation time didn't show an association with the level of satisfaction; other correlates such as marital status, waiting time in waiting area and bad experience with family medicine doctor within the last year were associated with it inversely. These findings were also shown in some previous studies. Al-Faris reported that being married is associated with more satisfaction [4] and Hassali reported that waiting time more than 2 hours is associated with less satisfaction [16] while Janko reported from a study conducted in Slovenia that waiting in waiting room has the poorest satisfaction [1].

Among females, satisfaction score positively correlated with consultation time. The more time given to females, the more satisfaction. Psychological problems and stressors tend to be higher among females and the presence of emotional stressors is associated with less satisfaction as mentioned by Jane Odgen [14]. Elaborating on psychological stressors takes more time but leads to better satisfaction especially among females. In our study, the rate of psychological problems were expected to be higher than what was found. Although (10%) of females reported

being diagnosed with depression, and (43%) reported having stressors in their life within the last 6 months, they didn't show an association with patient satisfaction. This could be explained by the small sample of patients reporting having depression, as people in our country tend to be conservative with some cultural barriers. In addition, this could explain the overall lesser female satisfaction score. Another explanation is the poor communication skills rather than the time of consultation per se. Doctor-patient communication can affect rate of satisfaction [3] and the best way to assess this is by, videotaping the consultation. This was difficult to conduct, as it is culturally not accepted by Saudi females.

Another positive correlate for female satisfaction in this study is the age. The more advanced the age, the more is the satisfaction which is in accordance with the findings of most previous studies [3, 4].

Other sociodemographic factors such as (level of education, occupation or residency) didn't show any correlation with patients' satisfaction although previous studies showed less satisfaction with lower educational level or being unemployed [4, 6]. Doctor related factors such as gender, nationality or professional status also did not show any correlation. C. Carolyn stated that physicians can promote higher satisfaction by the way they interact with their patients [3] and with perceived empathy from the doctors [16]. Satisfaction is not simply a product of patient demographics and physician skills, it is also affected by the way in which care is provided [3]. It is a complicated construct involving an array of factors including physician's knowledge, clinical and communication skills, accessibility, convenience and location of surrounding areas and continuity of care.

Conclusion

Female satisfaction is positively correlated with consultation time, with consideration to give more time to them, focusing on psychological problems, which needs better doctor-patient communication skills. On the other hand, males' satisfaction didn't show significant correlation with consultation time and other aspects of satisfaction other than consultation itself should be analyzed such as health care system and services (waiting area setting, nurses, pharmacy, and building).

The study highlights the need to increase the consultation time among females for better satisfaction as well as the need to focus on psychological problems especially among females with good training in communication skills. It emphasizes the need for continuous studies for evaluation of patients' satisfaction with the consultation.

Conducting studies for evaluation of patients' satisfaction with other aspects such as health care services is suggested, since they play a major role in overall patients' satisfaction.

This study had some limitation in the form of study sample population. Although it was done in a large primary care clinic in Riyadh, it is better if we involve other primary health care centers in Riyadh to make the generalization more accurate. And for better assessment of the consultation and its quality, videotaping should be used but, because of our cultural barriers it will be difficult to apply with a high rate of refusal especially among females.

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The Effectiveness of Hand Hygiene Education Intervention for Medical Students in Primary Care Settings, Ismailia City, Egypt

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Abstract

Background: All medical students must be aware and practice hand hygiene procedures as one of the infection control measures that could lower health care acquired infections.

Aims: to improve practice of hand hygiene among medical students in health care settings and to evaluate the effectiveness of educational training on hand hygiene among the medical students.

Methods: The study is a prospective before-and-after trial of an educational intervention with longitudinal follow up. Pre-post intervention was between April and May 2014 with one month interval and the follow up was 6 months later. The pre post intervention included all the first year medical students with affiliation to Faculty of medicine, Suez Canal University in Ismailia city. The follow up included all the participants who continued their second educational year in the same faculty. The researchers used a validated questionnaire and observation checklist to collect data in all periods of the study. Educational training program was designed and conducted by the researchers on hand hygiene importance, measures, technique, time and compliance.

Results: The educational intervention had a significant improvement in KAP, one and six months after the intervention (P <0.001). Non significant decrease in median scores of knowledge with no change in median scores of attitude but significant improvement of median scores of practice and overall KAP scores of hand hygiene in the follow up (P <0.001) was observed.

Conclusion: The educational intervention was effective in improvement in KAP of hand hygiene in pre-post intervention with one month interval and in the follow up after six months after the intervention.

Key words: Hand hygiene, intervention, medical students

Introduction

Hand hygiene is a general term referring to any action of hand cleansing. The World Health Organization (WHO) guidelines on hand hygiene in health care provide a comprehensive review of scientific data on hand hygiene rationale and practices in health care. The strategy of "My five moments for hand hygiene" by WHO, can be used to ensure proper education of the trainee health work force. These five moments that call for the use of hand hygiene include the moment before touching a patient, before performing aseptic and clean procedures, after being at risk of exposure to body fluids, after touching a patient, and after touching patient surroundings.[1]

Hand hygiene awareness and compliance among undergraduate medical students of the Qassim College of Medicine, Saudi Arabia, was very low.[2] There was a previous study in Ain Shams University hospitals in Cairo that recommended the implementation of hand washing training programs for undergraduate doctors, house officers and nurses to improve Hand wash practice. [3] Also in a study comparing hand hygiene knowledge, beliefs and practices of Italian nursing and medical students, mean scores on the knowledge questions were low for both groups and in another Italian study knowledge of the medical students was lower than that of nursing students; also they had lower values in adherence to practice.[4,5]

Students are bound to develop faulty hand hygiene practice if the curriculum is not enforced with hand hygiene concepts and skills.[2] Behavioral change is part of hand hygiene intervention and the dynamic of behavioral change is complex and multifaceted. It involves a combination of education, motivation, and system change.[1] Education is pivotal to the outcome of effective healthcare-associated training programmes and nowhere is this more apparent than in infection prevention and control (IPC). Hand hygiene is one of the basic principles of ICP and requires all healthcare practitioners (and others) to consider IPC as an integral part of their lives and working practice.[6] Previous studies have revealed educational deficits among medical students regarding patient safety. It has been previously recommended that the importance of hand hygiene must be taught to medical students from the first year and integrated into their clinical curriculum.[7, 8]

The medical students in Faculty of medicine-Suez Canal University are in direct contact with patients from their first year of education in primary care clinical training. This item is not included in their family medicine theoretical curriculum and is supposed to be learned during their clinical training which could differ from one to another primary care centers or trainers. All primary care centers have policies and procedures of infection control measures including hand hygiene. All the medical students must be aware and practice hand hygiene procedures as one of the infection control measures that could lower health care acquired infections.

Aims

To improve practices of hand hygiene among medical students in health care settings and to evaluate the effectiveness of educational training on hand hygiene among the medical students.

Materials and methods

Design:
The study is a prospective before-and-after trial of an educational intervention with longitudinal follow up. Pre-post intervention was carried out in 6 training primary care units (4 urban and 2 rural settings) in Ismailia city between April and May 2014. The pre intervention assessment and the educational intervention were conducted in April while the post intervention was carried out one month later. Follow up was carried out in the same primary care units, 6 months later between November and December in the first term of the second educational year (2014-2015).

Participants:
The pre-post intervention included all the first year medical students with affiliation to Faculty of medicine, Suez Canal University in Ismailia city; 145 completed the intervention out of a total 153 with a response rate of 94.8%. The follow up was carried out among all the participants who continued their education in the same faculty,132 out of total 137, with a response rate of 96.4% as 16 participants moved from the faculty of medicine in Ismailia city to Port Said city, 4 students were recurrently absent at the time of follow up and one student recently joined the second year and was excluded.

Questionnaire:
A validated modified questionnaire was self-administered by the medical students before and after their clinical training on hand hygiene and in the follow up.

The questionnaire included 4 sections:

1. Characteristics of the medical students; training, if they had been previously educated about hand hygiene within the primary care unit; whether they previously learned about hand hygiene from the posters or lectures.
2. Knowledge of hand hygiene included: source and main route of transmission of harmful germs, 5 moments of hand hygiene; the precautions with hand hygiene; the difference between routine hand wash with soap and water and alcohol based hand rub in indications, time and their efficiency. Knowledge test was previously used among medical and nursing students in other studies.[9-11] The selected items were adapted from WHO's hand hygiene questionnaire for health care workers.[12] It included multiple choice and "false" or "true" questions. Maximum score was 25.
3. Attitude was assessed by 4 questions that were developed by the researchers including the support with sufficient knowledge; importance of hand hygiene; their readiness to practice and the presence of facilitation to

use it within primary care units. They were given a score three for agree, two for not sure and one for don't agree with a maximum score of 12.
4. Practice included 3 parts: compliance (self report), technique of hand wash including hand rubbing steps and its duration (observation). Compliance was self-reported in the questionnaire as correct practice of hand hygiene on physical examination of their last 3 patients; if they practiced hand hygiene before, after or both. It scores one to yes and zero to no or sometimes. Maximum score was 2 for before and after. The students who reported the correct practice before and after were considered compliant. The questionnaire was translated into Arabic, then it was back translated into English by a bilingual consultant; both translators met for necessary modifications, restatement and rewording. A Pilot study was carried out before the study on a sample of students to assess the feasibility and reliability of the questionnaire.

Observation checklist:
An observation checklist was used to assess the whole technique of hand washing in eleven steps (e.g. run water, use soap, rubbing the palm of the hand, rubbing the dorsum of the hand, rubbing between fingers, rubbing the back of fingers, rubbing the thumbs, rubbing the finger tops within the palms, rinse the hands, drying their hands and closing tap with single use towel). Time of hand washing was also assessed. WHO recommends 40-60 seconds for hand washing with 20-30 seconds of hand rubbing.[1, 12] Maximum score of practice was 14: 2 for compliance which was added to 11 of hand wash technique and 1 for the appropriate time. Observations were recorded by the first author to avoid bias. Maximum score of Knowledge, attitude and practice (KAP) was 51.

Training program:
It was conducted for all the first year medical students. It has a theoretical and practical orientation. Both were adapted from WHO guidelines and the monograph by the Joint Commission 2009.[1,12]

The program lasted 90 minutes. It was structured as follows:

1. Brief overview of the background of infection prevention and WHO concept of five moments for hand hygiene. [1]
2. All students were made aware of their non-adherence to hand hygiene, a strategy aimed to enhance responsibility awareness and behavioral change.
3. Instructions for optimal hand hygiene procedures. These mainly focused on the timing and the whole technique of hand washing.
4. Instructions about the similarities between the Alcohol based hand rubbing and the hand wash with water and soap in involvement of 6 areas for rubbing with the difference in indications, time, drying and efficiency.
5. Performance feedback on personal hand hygiene practices and peer auditing.
6. Tutors and health care workers within primary care units and centers were encouraged to improve social norms regarding hand hygiene by serving as role models, encouraging medical students to comply with hand hygiene protocol and building a culture shift to better hand hygiene.

Methods of training: A lecture in 30 minutes represented the theoretical part; videos regarding the WHO concept of technique and five moments for hand hygiene were presented to them; along with cluster-field training; small group discussion; simulations followed by one-to-one teaching method of hand washing. Tutors were encouraged to remind the student to comply with hand hygiene measures. At every primary care unit: each training clinic had a washing sink, liquid soap dispensers and drying tissues. Reminders in primary care units: illustrative posters of the steps of hand wash were above each sink. Reminders on hand: printed figures of hand hygiene and the educational videos were sent to the students through their email.

Outcome measures:
Knowledge, attitude, practice of hand hygiene were assessed in pre-post intervention and in the follow up.

Ethical clearance:
The study was approved by the ethics committee of Faculty of Medicine, Suez Canal University (no.2086) and was performed in accordance with the ethical standards laid down in the Declaration of Helsinki (1964). Informed consents were obtained from medical students who participated in the study. Questionnaire did not contain any critical questions and confidentiality of data was maintained.

Statistical analysis:
The collected data were analyzed using SPSS 20.0 for Windows. Categorical data are presented as numbers and percentages. Continuous data as the knowledge, attitude and practice scores and total scores before and after the educational intervention were tested for normality of distribution using one sample Kolmogorov-Smirnov test. The samples were found not to follow a normal distribution and median was calculated as a measure of central tendency, interquartile range as measure of variance. Non-parametric tests were used for comparison across the different periods of intervention. Friedman two-way test for repeated measures was used to compare median values in the three evaluations and Wilcoxon signed - rank test with post-hoc correction in paired measures for continuous variables. Cochran Q test was used for repeated measures to assess changes over time and McNemar test for pairwise measures when comparisons were in categorical variables.

Median of knowledge, attitude, practice and total scores were compared among different subgroups of participants with regard to characteristics of the students: gender, site of PHC, learning and training of infection control measures before and after the intervention using the Mann-Whitney test for dichotomous variables. A p value less than 0.05 was taken as statistically significant, with post hoc Bonferroni correction p value less than 0.016 considered statistically

significant. Spearman correlation test was used to test significant relationship between knowledge attitude and practices scores in the different study periods.

Results

	Pre		Post		Follow up		Friedman test	Post Hoc Wilcoxon Sign Rank Test		
	Median	IQR	Median	IQR	Median	IQR		Pre-post	Post-follow up	Pre-follow up
Knowledge	14	(12-18)	23	(22-24)	22	(21-23)	260.24**	-9.97*	-2.33 NS	-9.90*
Attitude	8	(7-10)	11	(10-12)	11	(10-12)	210.96**	-9.32*	-0.635 NS	-9.28*
Practice	6	(4-8)	11	(10-12)	13	(12-13)	215.64**	-9.45*	-8.02*	-9.91*
KAP	28	(25-31)	44	(42-47)	46	(44-48)	227.64**	-9.93*	-6.26*	-9.97*

**Repeated measure analysis using the Friedman test P<0.05
*Post-hoc analysis with Wilcoxon signed rank test was conducted with a Bonferroni correction applied P <0.016
NS: non significant

Table 1: Comparison of pre, post intervention and follow up of students' knowledge, attitude, practice and total KAP of hand hygiene (n=132)

The pre-post intervention sample was all the first year medical students. The follow up were in the second medical year. The mean age of students at the start of the study was 18.5±0.65. More than half of the study sample were female (57.9%). More than two thirds of the study sample (71.7%) were trained in rural PHC units. All the trainers were family physicians. No previous formal training in the PHC units was experienced by most of the students. Previous learning was mentioned by only (13.8%) of the sample.

Repeated measures of knowledge, attitude and practice of hand hygiene:

The intervention leads to statistically significant change between the pre, post intervention and follow up in the median scores of knowledge (14, 23, 22), attitude (8,11,11), practice (6, 11,13) of hand wash and the overall KAP scores (28, 44, 46) (P<0.001). The changes in median scores of knowledge, attitude, practice and the overall KAP were statistically significant in the Pre-post intervention and pre-follow up of the intervention. In post-follow up of intervention, statistically significant change was observed in the median scores of practice and the overall KAP with no statistically significant change in median scores of knowledge or attitude. (Table 1)

Pre-post intervention changes in practice of hand hygiene

Technique: The present study revealed a highly statistically significant increase in practice of all steps of hand wash among the study sample in pre-post intervention with maintenance/improvement in the follow up after 6 months. The palms and backs of the hands were more frequently observed than other areas of hand rubbing among pre-post intervention and in the follow up (P < 0.001). [Table 2]

Table 2: Comparison of pre, post and follow up of students' practice sub-items

	Technique	Pre		Post.		Follow up		Cochran's Q	Pre-post	Post-follow up	Pre-follow up
			%		%		%				
	Run water	132	100	132	100	132	100	-	-	-	-
	Liquid	132	100	132	100	132	100	-	-	-	-
	PP	79	59.8	132	100	132	100	106.00**	51.02*	-	51.02*
	PB	66	50	132	100	132	100	132.00**	64.01*	-	64.01*
	INT	37	28	108	81.8	116	87.9	133.39**	63.63*	1.88 NS	69.93*
	BF	22	16.7	83	62.9	119	90.2	131.14**	48.00*	47.02*	93.09*
	Thumb	30	22.7	107	81.1	127	96.2	144.38**	63.47*	12.89*	93.09*
	Top	22	16.7	83	62.9	115	87.1	137.79**	46.08*	36.21*	95.09*
	Rinse water	132	100	132	100	132	100	-	-	-	-
	Dry hand	57	43.2	101	67.5	107	81.1	83.02**	34.24*	0.893 NS	44.46*
	Close tap	27	20.5	54	40.9	82	62.1	70.90**	16.48*	24.30*	51.15*
	Appropriate Time:	7	5.3	67	50.8	92	69.7	109.04**	49.73*	11.75*	77.54*
	Self reported compliance	7	5.3	61	46.2	94	71.2	130.04**	52.02*	27.67*	85.01*

** Cochran's Q test P Value < 0.05

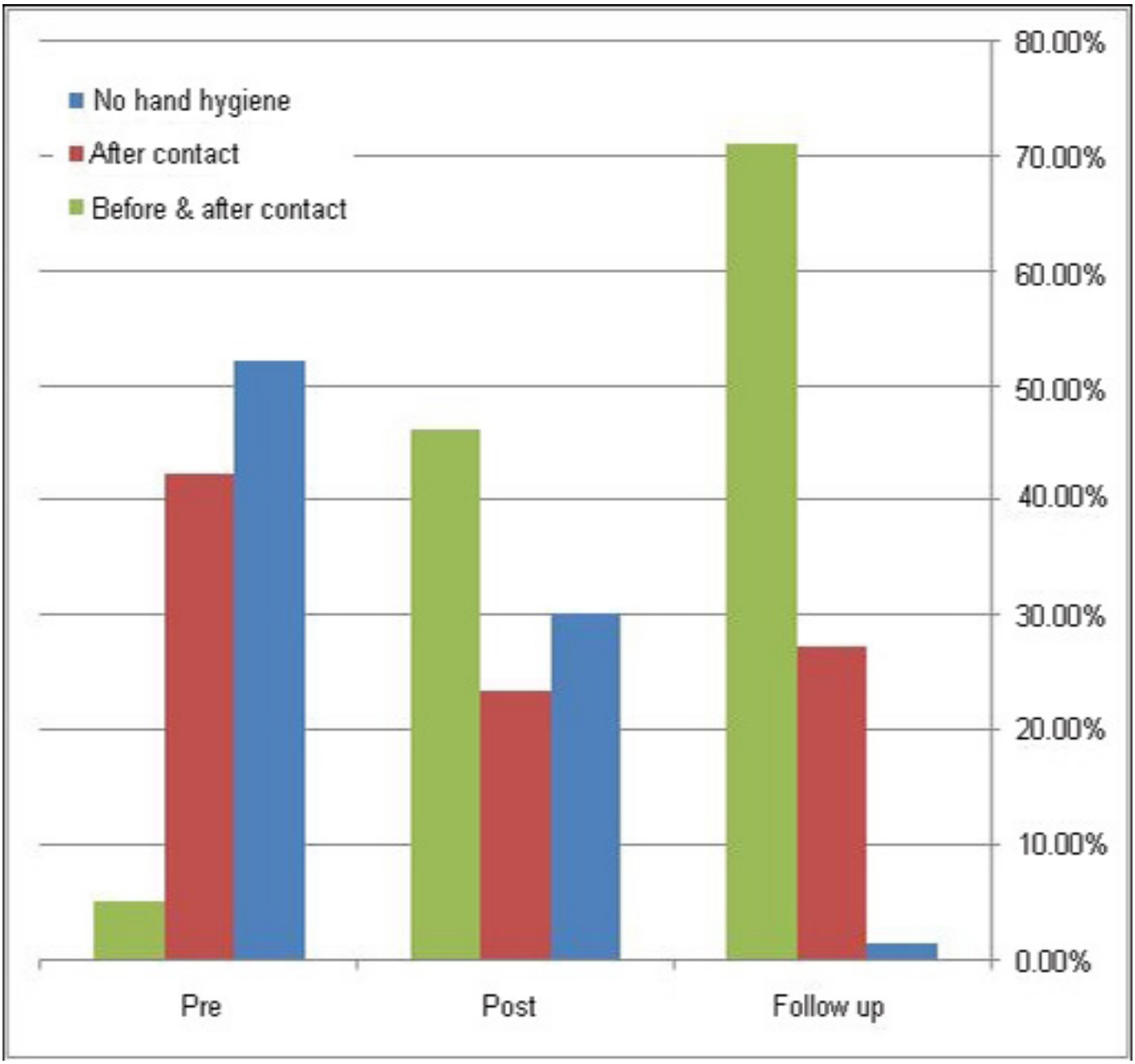
* McNemar test was conducted with a Bonferroni correction applied P <0.016

NS: non significant

Time:
The frequency of students who practiced hand rubbing in appropriate time increased significantly in pre-post intervention from (5.3-50.8%) and increased in the follow up among (69.7%) of the students (P < 0.001). [Table 2]

Compliance:
The appropriate practice of hand hygiene before and after patient contact was reported by only (5.3%) of the students which significantly increased to (46.2%) while it increased among (71.2%) of the students in the follow up (P<0.001). [Table 2] No hand wash was decreased among the students from (52.3 to 30.3) in pre-post intervention with further decrease to (1.5%) in the follow up. [Figure 1]

Figure 1: Comparison of pre-post intervention and follow up of self reported compliance of hand hygiene



Pre-post changes in knowledge, attitude, and practice changes and personal characteristics of the study sample:
There was a high statistically significant relationship between the changes in knowledge, attitude and practice with previous training and the greater differences were observed among those who didn't receive training.

Correlations between Knowledge, attitude and practice across the study periods
Statistically significant correlations were found between knowledge, attitude and practice scores in each period of the study. [Table 3]

Table 3: Correlation between Knowledge, attitude, practice scores among the study sample

	Median (IQR)		Median (IQR)		Spearman's rho	P value
Correlation between Knowledge and Attitude scores						
Before	14	(12-18)	8	(7-10)	0.244	0.005*
After	23	(22- 24)	11	(10-12)	0.428	<0.001*
Follow up	22	(21-23)	11	(10-12)	0.371	<0.001*
Correlation between Knowledge and Practice scores						
Before	14	(12-18)	6	(4-8)	0.453	<0.001*
After	23	(22- 24)	11	(10-12)	0.308	<0.001*
Follow up	22	(21-23)	13	(12-13)	0.250	0.004*
Correlation between Attitude and Practice scores						
Before	8	(7-10)	6	(4-8)	0.360	<0.001*
After	11	(10-12)	11	(10-12)	0.218	0.012*
Follow up	11	(10-12)	13	(12-13)	0.232	0.007*

* Bivariate analysis using Spearman's correlation P Value < 0.05

Discussion

The intervention was effective in changing the knowledge, attitude, practice and overall KAP scores among the students in all periods of the study with a high statistically significant difference between the pre intervention and the follow up. The non significant decrease of median scores of knowledge and maintenance in median scores of attitude in the follow up; with the improvement in the practice and overall scores of practice and KAP could be due to the maintenance of the same situations in practice settings and the reminders that were on hand of the students. These results were nearly similar to the results in a quasi-experimental study among 100 randomly assigned nurses to receive an educational intervention prior to and 4 months after the training. The educational training significantly improved Chinese nurses' knowledge, practice, and behavior related to universal precautions by Huang et al., [13] and the Iranian study by Rezaee et al., [14] on 4th year medical students as a significant difference were found between the pre and the late post-test scores in knowledge and performance but not the attitude. Also they found a significant difference only in the performance pre-test and immediate post-test scores, category. While another intervention by Gould and Chamberlain[15] determined the effect of a hand hygiene education program after 3 months and found no effect of the program. The difference could be related to the difference in the used tools of assessment.

There was significant increase of the students (40.2%) that correctly rub of palm to palm from (59.8 to 100%) with maintenance of 100% in follow up. Also there was an increase in palm to back from (50 to 100%) without change in the follow up. Students who rub between fingers were increased significantly from (28 to 81.8%) with increase to 87.9% in the follow up. Students with rubbing of the back of fingers were increased significantly from (16.7 to 62.9%) with increase to 90.2% among the students in the follow up. Thumb rubbing was increased among the students from (22.7 to 81.1%) with increase to 96.2% of the students. Rubbing of the top of fingers increased from (16.7 to 62.9%) in pre-post intervention with increase to

96.2% of the students. Rubbing of the top of fingers increased from (16.7 to 62.9%) in pre-post intervention with increase to 87.1% in the follow up. These results were similar to those of Helder et al.,[16] who found that along all observation periods the palms and backs of the hands were significant better disinfected than wrists, between fingers, finger tops and thumbs.

Regarding the reported compliance of hand hygiene in contact with patients; the appropriate practice of hand hygiene before and after patient contact was increased significantly by 65.9% from (5.3% to 46.2%) pre-post intervention while it increased significantly to 71.2% of the students after 6 months. These results were higher than other hand hygiene interventions based on observations where difference from pre to post evaluations in overall hand hygiene ranged from 14% -27 % by other studies.[16-18] The higher compliance in the present study could be due to the self reported which is expected to be much higher than with direct observation. In another study by KuKanich et al., Gel sanitizer and informational posters were introduced together as an intervention and they found that hand hygiene improved from baseline to the intervention period for precontact and postcontact observations, and this improvement was sustained with no significant decreases in hygiene during the follow-up period. [19]

Although Self-reported data were not considered a valid measure of compliance Gould et al., 2010, [20] In a previous study, self reported adherence was higher 61% than observed practice 44%.[21] The current study revealed that 52.3% didn't practice hand hygiene with no one practiced it before contact wit patient while only 1.5% before and after in the pre intervention. These results were in congruent with that found by Anwar et al., [22] where only 4.7% of the physicians reported to decontaminate their hands before direct contact with patients and 20.9% after contact.. The current reported compliance at the start of the study could be related to the lack of formal training of most of the students.

Appropriate time of hand rubbing as recommended by WHO, was observed among 5.3% of the student in the pre intervention that significantly was increased to 50.8% in the post intervention observations but it was further increased among 69.7% of the students after 6 months-follow up. The higher compliance in the follow up could explain the improvement in the technique of hand hygiene among the students in their second educational year. The most inappropriate hand washing at the pre intervention were appropriate time 5.3%; the top and back of fingers 16.7% and closing the tap 20.5%. Also in a descriptive study by Abd Elaziz and Bakr[3] 2009, the most common form of inappropriate hand washing was in the improper drying and having short contact time 23.2%.

The current study revealed high statistically significant pre-post changes in knowledge, attitude and practice with previous training and the greater differences were observed among those who didn't receive training. Fear or a wish to protect oneself is also a motivational factor in taking measures to prevent and control of health acquired infections. Many medical students and others learn by example and in particular through the influence of mentors or those senior personnel whom the student admires. [8]

Statistically significant correlations were found between knowledge, attitude and practice median scores in all periods of the study. With high intensity between knowledge and attitude relatively high intensity of correlation between knowledge and practice mainly pre and due to the intervention.

Limitations of the study

The study was not controlled trial. The researchers aimed to provide structured educational training to all first year medical students, to be continued rather than only to involve the students in a research. Compliance was assessed based on self-report for time constrains. Most of the published researches that studied hand hygiene among medical students were descriptive that calls for comparison with other intervention studies that included other health care personnel.

Conclusion

The intervention on hand hygiene to the first year medical students was effective in improvement of knowledge, attitude, practice and overall KAP of the students after education with further improvement after 6 month in the follow up in their second educational year. Inclusion and implementation of the educational training on hand hygiene is recommended to the medical students in health care settings.

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Health of Migrant Workers; A Matter Of Concern

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Abstract

Over the past few decades, mobility of people around the world has been incrementing, from about 82 million in 1970 to 200 million in 2005. It customarily transpires to both developed (which is the majority, 60%) and developing countries for a more preponderant life opportunity. The most astronomically immense migrants were found to settle, in Europe followed by Asia and North America. In 2000, the European countries received 56.1 million migrants, Asia 49.9 million, North America 40.8 million and Africa 16.3 million.

The Middle East, and in particular the Gulf countries (GCC) have had a tremendous influx of migrant workers (around 16 million, the majority, over 80%, were from Asia) due to its rapid development as reflected by marked increase in oil revenue. It is reported that over the past 10 years almost seven out of every ten members of the workforce in the GCC were foreigners.

Health issues impacting migrant workers are intricate and numerous, especially, when some host countries perceive these workers as exploitable, frugal and flexible labor. Despite that most of them work in 3D jobs; Dirty, Dangerous and Degrading. They usually have poor living and safety conditions and the prominent consequential factor leading to their health disparities is the cultural differences affecting their health care seeking patterns, perception of health and compliance with treatment.

In this review article the health quandaries of the migrant worker in the GCC countries and factors playing in worsening those conditions, are elaborated. Withal we endeavor to find how to compact such health issues for the benefit of both the workers and the nation.

Key words: **health, migrant workers**

Review

Mobility of people around the world is perpetual and has never ceased since archaic time. People kinetically circumnavigate for many reasons, but economic factors and probing for a more preponderant life and future shape the most consequential issues for such acts. It has been estimated that three percent of the total world population peregrinates to other countries while the international mobility over the past four decades has doubled, incrementing from 82 million in 1970 to 200 million in 2005 [1].

For migrants who travel abroad for working purposes, the story is the same. Albeit, their number has been reported to be perpetually high, during the last century it has risen sharply due to rapid worldwide development. About 105 million people peregrinate abroad to work annually. Although, such migration occurs in both the developed and developing worlds, the majority (around 60%) settle in the developed countries. It was reported that the most immensely colossal single majority of migrants has settled in Europe, followed by Asia and North America. In 2000, Europe received 56.1 million migrants, Asia 49.9 million, North America 40.8 million, Africa 16.3 million, Middle East 16.00 million, Latin America 5.9 million and Australia 5.8 million migrants[1], (Figure 1). However, The United States is still considered to be the most attractive place for many migrants around the world.

Migration is not constrained to certain sectors or nationalities but it occurs from virtually all countries, in particular poor nations. According to the Philippines Overseas Employment Administration (POEA) more than ten million Filipinos have left seeking for jobs because of high unemployment levels in their country, of whom, the majority went to the Arab world (around 200,000 in Saudi Arabia alone)[2]. And the Filipino emigration towards the Middle East has grown by 29.5 per cent between 2007 and 2008[2].

In addition migration is not limited to a certain gender as women today are found to represent around half of the total international migrants worldwide. Eighty three percent of all domestic workers in the world are women. And the percentage of women's employment in particular in Europe is increasing as betokened by the third European survey on working conditions[3].

Due to the economic boom during the last fifty years, the Middle East (ME) in general and the Gulf Coopration Countries (GCC) in particular, have attracted many migrant workers from all around the world. Studies reported that in the 1980s, over 80% of these countries' workers emanated from Asia (of whom 20% were Indians) and almost seven out of ten of its workforce are foreigners[4,5], to the extent that 90% of all workforce population in Qatar and the UAE alone, are expatriate[6] (Figure 2).

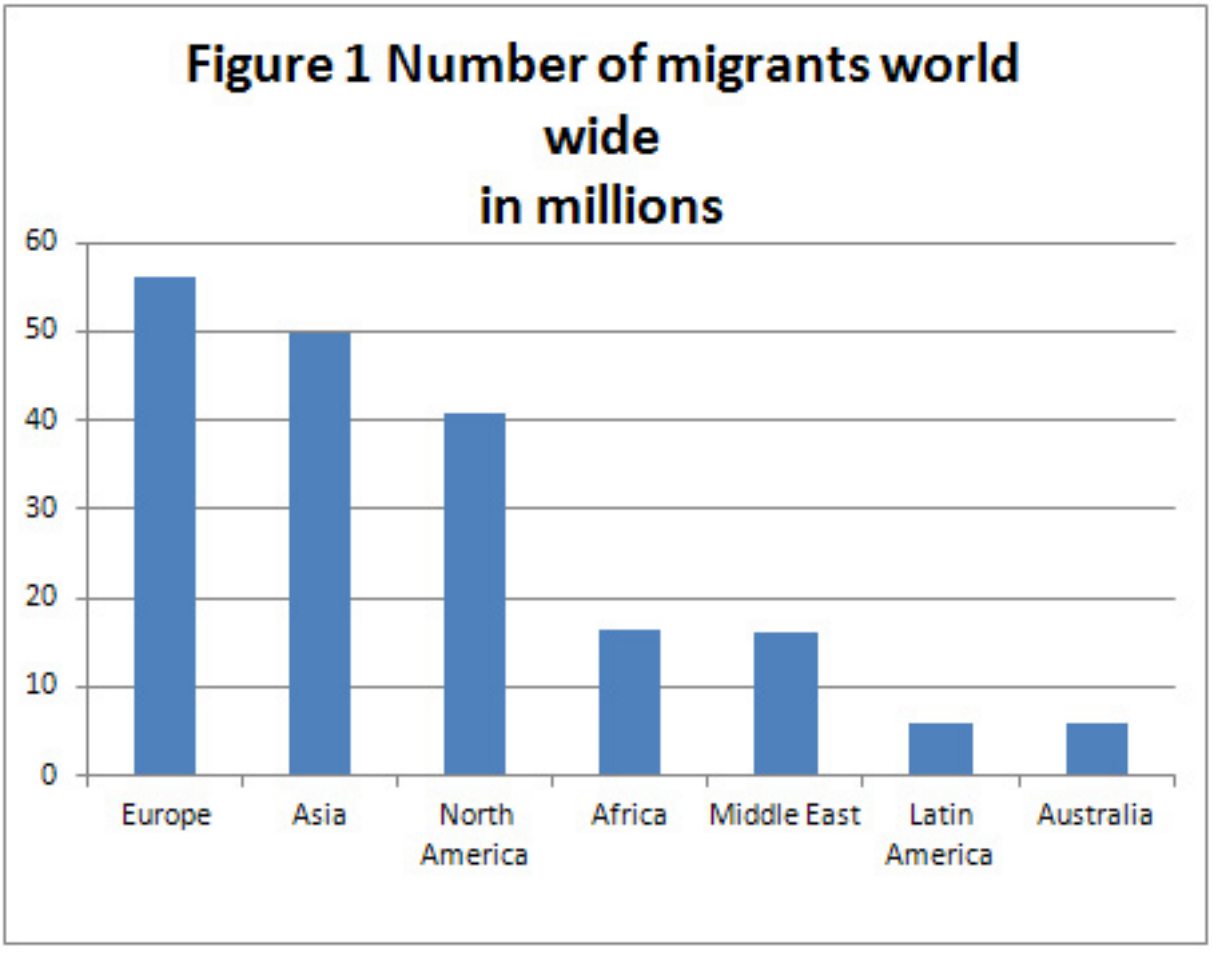

Figure 1

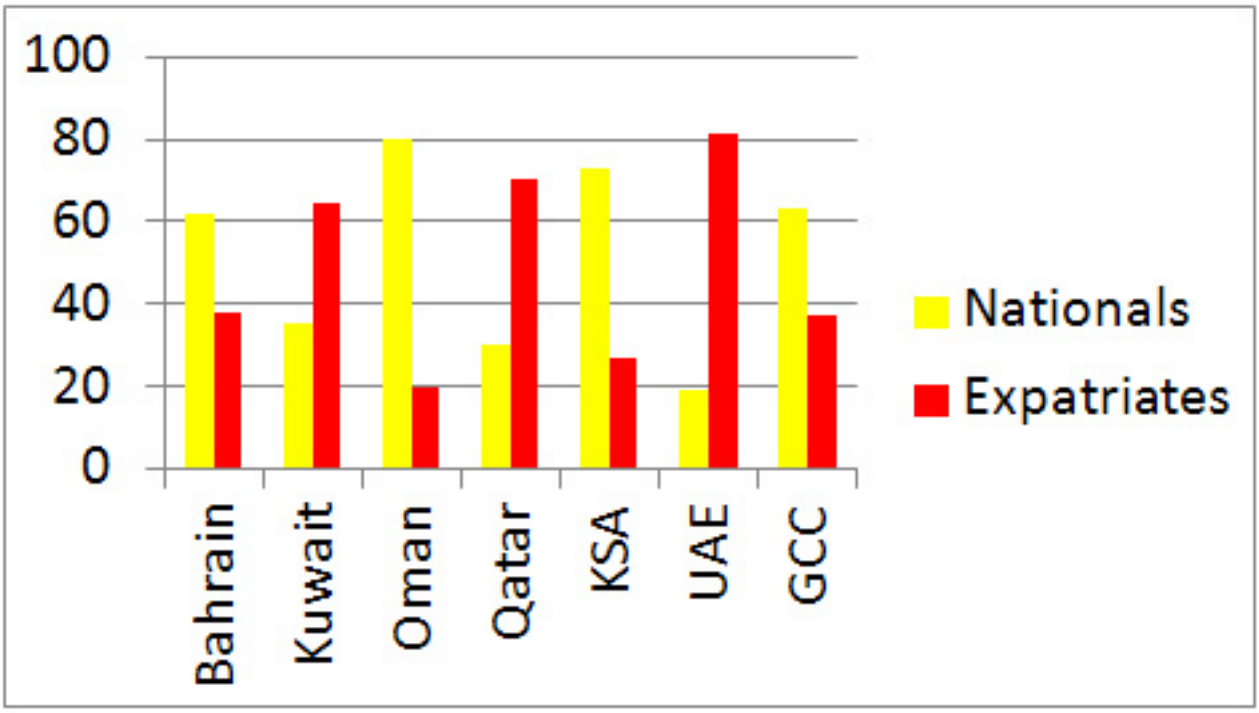

Figure 2

Andrzej Kapiszewski in his study in 2001 while illustrating the GCC migrant workers' nationalities denoted that in almost all of these countries, Indian formed the majority[7]

Despite the fact that the contribution of the immigrant workers to the host country's economy can't be estimated, it is unfortunate that in many instances they are perceived as exploitable, frugal and flexible labor, and therefore employed in 3-D jobs: Dirty, Dangerous and Degrading[8]. Kawon et al., (2011) reported that these migrants are often depicted as an encumbrance on society[9]. Hence they face earnest health quandaries due to discrimination, their licit position, low socioeconomic status or due to language barrier[10]. Moreover, many of them often face difficulties in adjusting to their new society including adopting safe and healthy lifestyles because the nature and quality of health care and the gregarious and health characteristics of re-settlement can withal determine the health status of migrants.

Health issues impacting migrant workers are intricate and numerous and factors that affect their health are vast and varied, of which the cultural difference in attaining health is one of the most consequential. When tailoring interventions to vulnerable populations, consideration ought to be given to the importance of diverse cultural beliefs. Since culture shapes an individual's perception of health, illness, and compliance with diagnosis and treatment regimens. Cultural differences in health care seeking patterns and differences in the perception of health care could markedly affect their health status[11]. In addition, the workers' educational level plays a vital role in their health status. A recent study concerning the health and lifestyle of Nepalese migrants in the United Kingdom has found that migrants with low level of education are more likely to lack good dental hygiene and regular exercise[12]. The precedent medical history of migrants, is also important since certain diseases are cognate to their nationalities. A study from the UAE reported that the obesity rate was high among certain nationalities while the presence of hepatitis C antibodies was virtually exclusive to, more or less, Egyptian workers[13].

Other barriers that put migrant workers in situations of vulnerability and risk of ill health are factors that are related to lack of knowledge of the health system and precarious work or exposure to higher risk working and occupational hazards and accidents. Occupational injuries and work accidents have a contribution on the health and the well-being of migrant workers. In highlighting that, the Nepalese government recently revealed that about 70 of their nationals died on building sites in one of the GCC countries since the beginning of 2012. Hundreds more are thought to have been injured in falls and accidents with machinery and vehicles[3]. Accommodation on the other hand forms a major health risk factor and workers health after migration could also deteriorate due to the living conditions. Conventionally workers live in an overcrowded insalubrious condition that lacks sanitation and is an environment for deterioration of physical and mental health. The mental health status and salubrity is also influenced by life-adjustment stressors, socioeconomic isolation and cultural alienation from mainstream society which result in somatization issues. Workers from poorer groups are usually at a higher risk of mental illness due to their living and working conditions.

Women migrant worker are no different, beside being at risk of acquiring many health hazards especially physical, they are prone to sexual and verbal abuse. The International Labor Organization (ILO) reported that Indonesian women migrant workers, a majority of whom work as domestic workers, are particularly vulnerable to gender predicated violence and to HIV that avails throughout the employment

period[5]. The POEA also indicated that some Filipino female workers face horrible working conditions as well[2].

In highlighting the health problem of the migrant workers, the BSR Migration Linkage's report in 2012[14] has stipulated four focal stations, that contribute to the health of any migrant worker: those which are related to pre-departure and transit such as the health risk and poor health in the country of origin and cultural beliefs that affect health; post-arrival factors suchas language barrier, employment in 3-D jobs and lack of access to adequate health care services; while at work such as the inadequate living conditions, inadequate nutrition and greater susceptibility to mental health strains. And the last factor is related to when workers return to their county of origin such as lack of awareness of medium and long-term illnesses that can leave workers at heightened risk upon return.

To procure equitable, adequate, and efficacious access to health care services, migrants need initially to be inculcated and apprised about the health care system and how to approach it in the country of work. The more workers become integrated the more they would utilize health care services efficaciously[15].

It is the legal obligation of countries of destination, origin and transit to protect the human rights of migrants on their territory[3]. Countries that are dependent on migrant workers should review their health and safety procedures in order to prepare a healthy working envoironmet for such workers. For such causes and in order to facilitate health accessibility for migrant workers the ILO in 1997 adopted guidelines "The Workers' Health Surveillance" that place workers' health surveillance within the discipline of occupational safety and health. The central purport is the primary obviation of occupational and work-cognate diseases and injuries. These provisions are considered to be the rudimentary requisites for the surveillance of workers' health, and are not intended to deter competent ascendant entities from adopting higher standards[10]. In that line the GCC countries started the implementation of proper screening programs for foreign workers in order to protect their health and to prevent the entry of possible infection that might be dangerous to their population. It includes epidemiological, psychological, neurological and sexual examinations and investigations besides other tests ensuring the public safety[16]. Despite that, most of workers in the GCC countries, are initially screened at employment, but without a strict longitudinal follow up.

To ensure the provision of a proper health service to migrant workers, Poureslami et al, recommended adopting multiple approaches, that include; mapping and identifying health risks for major migrant workers; building health profiles at the pre-departure phase; ensuring occupational health and safety procedures are communicated and enforced effectively to migrant workers; taking proactive steps to ensure the availability, accessibility, and acceptability of health services in the destination country; educating the migrants about how to approach such facilities; to overcome the language barriers and finally avoiding overcrowding in accommodation compounds[17].

In conclusion, health issues impacting migrant workers are intricate and numerous. Therefore, their health provision should always be the responsibility of the government and not delegated to private sectors in order to ensure proper adoption and implementation of health policies for the health safety of these workers and the nation.

Review

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Celebrating a good life - Professor Waris Qidwai

Lesley Pocock
Publisher - MEJFM

In an intermittent series we focus on regional luminaries who have shown leadership, contributed to the discipline, have improved lives of people in the region and who have worked for the advance of excellence in medical knowledge and in the practice of medicine.

Excellence and leadership is not just achieving academic and professional goals, it is the application of knowledge, learned and innate, within an empathic approach that strives to deliver that excellence to all who need it.

Indeed these are the traits and aims of all good family doctors.

Sometimes however we come across those who are a little more focused on these higher ideals, and who carry them through all aspects of their lives; those people who are a little humbler, a little better, a little more consistent, and a little more enlightened in approach than the rest of us.

It is for this reason I have chosen to feature, in this issue of MEJFM, no, to celebrate, one of the region's great real achievers, Professor Waris Qidwai of Aga Khan University, Karachi, Pakistan. During 2014 I learnt of various awards given to Prof Qidwai, read various of his excellent papers and have had the ongoing opportunity to work on various collaborations with Professor Qidwai under the many 'hats' he wears.

Important projects, I have well found myself, do not go to the lowest bidder, or those seeking the glory, they go to those who are prepared to do the real work, and who approach that work with the right heart and mind; those who focus on outcomes, not just completing the process.

Of note, during the early months of 2015 Professor Qidwai was awarded an Appreciation Certificate for Excellence in Family Medicine by College of Family Medicine, Pakistan at a reception held at National Institute of Child Health, Karachi on January 18, January 2015.

Earlier in 2014 Professor Qidwai gave an Invited presentation, at the Inauguration session, World Health Organization (WHO) sponsored regional consultation meeting on "Strengthening service provision through Family Practice approach: Towards Universal Health Coverage in Eastern Mediterranean Region (EMR)", held at Cairo in November 2014. Topic: "Current Status of Family Medicine Education and Training in Eastern Mediterranean Region".

In 2014 he completed a survey and prepared a report in Collaboration with World Health Organization (WHO) and World Organization of Family Doctors (WONCA) titled, "Current Status of Family Medicine Education and Training in Eastern Mediterranean Region" and he also served as Technical Expert on a World Health Organization (WHO) project titled, "Integration of Non-Communicable diseases into Primary Health Care: A snapshot from Eastern Mediterranean Region".

On May 15, 2015 he will receive his FRCGP(Int) from the Royal College of General Practitioners, UK.

I have attached Professor Qidwai's CV
(see: http://www.mejfm.com/March 2015/Waris Qidwai CV Jan 2015.pdf)
which lists many more examples of his personal contribution to global family medicine and the many positions under which he contributes to a wide variety of human endeavours.

I follow with some photographs celebrating the many aspects Professor Qidwai's career, and life with family, friends, colleagues and students.

Career highlights

WHO Meeting
Regional consultation meeting on "Strengthening service provision through Family Practice approach: Towards Universal Health Coverage in Eastern Mediterranean Region (EMR)", held at Cairo in November 2014

3rd International seminar on Health, Safety and Environment

Receiving an Award from the President of Pakistan at the 3rd International Conference on "Health, Safety & Environment", Fauji Fertilizer Bin Qasim Limited at Hotel Marriot, Karachi

Career highlights

Receiving Membership from the Royal College of Physicians, UK

At Aga Khan University Convocation with fellow colleague

Teaching

Dining with Residents

A visit to rural Sind to assist in improvement of health care

With Residents and students

Family and friends

Professor Qidwai with wife Shabana, sister and aunt

Professor Qidwa with wife Shabana and sons Moiz and Moin

Family and friends

Professor Qidwai with wife Shabana, and cousins

Visiting Egypt with friends

The Qidwai family home

Knowledge, Attitude and Practice of Primary Health Care Physicians in Bahrain towards Complementary and Alternative Medicine (CAM)

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Abstract

Introduction : The use of CAM has become popular and widely practiced among the general population. The integration of CAM into the ordinary medical system has been encouraged by World Health Organization (WHO) to improve the quality of care in the health for all strategy. This research aims at studying the knowledge, attitude and practice of primary health care doctors towards CAM in Bahrain.

Method: A cross sectional study of all the 323 primary health care doctors who are working in the governmental health centers in Bahrain were the study population. A self-filled questionnaire was used for data collection. The Questionnaires were distributed to all primary health care doctors by name and collected after one week through the chief of medical services of primary health care. Data were entered and analyzed using SPSS program version 18.

Results: Two hundred and twenty two (68.7%) questionnaires out of 323 questionnaires were completed. Around half (50.5%) of the respondents stated that they have a poor level of knowledge about CAM, while only 6 (2.7%) of them stated that they have an excellent level of knowledge. General non-medical sources were the main source of knowledge about CAM with general reading ranked as the main source (48.2%), followed by general media like TV and radio (34.2%), and followed by internet (23%).

In general, the attitude of primary care doctors toward CAM was positive with 72.5% of them interested in CAM, 81.1% believe that training in CAM would affect their practice as doctors, and 73.9% agreed that CAM is beneficial.

Regarding the practice of PHC doctors toward CAM, more than half (59.5%) had used CAM with their patients, while only 23% of them had referred patients to CAM practitioners. Most of PHC doctors (79.7%) stated that they asked their patients about the use of CAM.

Conclusion: Primary Health Care doctors in Bahrain have a poor knowledge about CAM and would like to know more about it. On the other hand, they have a good attitude towards using CAM with their patients.

Key words: Knowledge, Attitude, Practice, Primary Health Care, Complementary, Alternative, Bahrain.

Background

The National Centre for Complementary and Alternative Medicine (CAM) define CAM as "a group of diverse medical and health care systems, practices and products that are not presently considered to be part of conventional medicine". [1] CAM usually refers to a large range of therapies outside the mainstream of western medicine. [2] Some of these therapies receive a reasonable acceptance by the medical Profession whereas others are viewed with much scepticism, especially those that have little evidence behind them. [3]

The use of CAM has become popular and widely practiced among the general population. [4,5] Several studies showed that the use of CAM in different populations, including industrialized countries, reaches between one third to more than half of the general population and up to 98% in some other settings.[4,6,7,8,9]

The integration of CAM into the ordinary medical system has been encouraged by World Health Organization (WHO) to improve the quality of care in the health for all strategy.[10]

A study in Saudi Arabia showed that 23.9% of primary health care patients reported previous use of traditional remedies. [11]

Because of this wide use of CAM, primary health care professionals and GPs should be ready to discuss the indications, contra indications, and potential side effects of CAM.[12]

Several previous studies examined the knowledge, attitude and/or practice of GPs toward CAM. [13,14]

A study in Qatar conducted in 2008, reported that 39.1% of General Practitioners had poor knowledge about Complementary and Alternative Medicine. Self-reported knowledge was highest for counselling and psychotherapy (69.0%), diet and supplements (68.1%), acupuncture (45.2%), herbal medicine (47.3%) and massage (42.5%). [15] Another study in Kuwait showed that the majority of the GPs (78.4%) stated that their knowledge about CAM therapy was poor. Self-reported knowledge about specific CAM therapies was highest for herbal and acupuncture (33.0%), and was the lowest for chiropractic (2.3%).[16]

This research aims at studying the knowledge, attitude and practice of primary health care doctors towards CAM in Bahrain.

Methods

A cross sectional study of all the 323 primary health care doctors who are working in the governmental health centers in Bahrain has been conducted. Those who were on leave during the study period or refused to participate were excluded.

A self-filled questionnaire was used for data collection. The items of the questionnaire were adopted from a previous studies conducted in Qatar. [15]

The following items were included in the questionnaire:

- Demographic (age, sex, nationality)
- Work factors (qualification, years of experience, morning or evening shift)
- Knowledge (definition of CAM, Types of CAM, effectiveness of CAM, health hazards of CAM)
- Attitude (interest in CAM, legalization of CAM)
- Practice (prescribing CAM to patients, referral to CAM practitioner)

An instruction about filling the questionnaire was provided with each questionnaire and clear instruction for each question was included.

The Questionnaires were distributed to all primary health care doctors by name and collected after one week through the chief of medical services of primary health care.

Data were entered and analyzed using SPSS program version 18.

Results

Two hundred and twenty two (68.7%) questionnaires out of 323 questionnaires were completed by primary health care (PHC) doctors working in the Ministry of Health.

Around two thirds (68.5%) of the respondents were above 40 years of age and the same proportion (68.5%) were females. The majority of them (83.8%) were Bahrainis. Around three quarters (74.8%) were a graduate of Family Residency program. More than half (64%) of the respondents had 10 years or more of experience as a primary health care physician. (Table 1 - next page)

Around half (50.5%) of the respondents stated that they have a poor level of knowledge about CAM, while only 6 (2.7%) of them stated that they have an excellent level of knowledge. General non-medical sources were the main source of knowledge about CAM with general reading ranked as the main source (48.2%), followed by general media like TV and radio (34.2%), and followed by internet (23%). On the other hand, the medical sources including medical journals (18.5%), specialized workshops (9.5%) and formal medical education (8.6%) were minor sources of knowledge about CAM among the participants. (Table 2 - next page)

Table 1: Demographic characteristics of the studied primary health care doctors in Bahrain (n = 222)

Characteristic	No.	%
(Age (years		
<40	70	31.5
≥40	152	68.5
Sex		
Female	152	68.5
Male	70	31.5
Nationality		
Bahraini	186	83.8
Non Bahraini	36	16.2
Qualifications		
family residency program graduate	166	74.8
Others	56	25.2
Experience as a primary health physician *(years)*		
1-5 Yrs.	37	16.7
6-10 Yrs.	43	19.4
11-15 Yrs.	32	14.4
16-20 Yrs.	47	21.2
21-25 Yrs.	40	18.0
=>26 Yrs.	23	10.4

Table 2: Self-reported level of knowledge of primary health care doctors in Bahrain about complementary and alternative medicine (CAM) (n = 222)

Item	No.	%
Level of knowledge about CAM		
Excellent	6	2.7
Good	104	46.9
Poor	112	50.5
Main source of knowledge about CAM		
1. General non medicine sources		
General reading	107	48.2
General media (TV, Radio, TV)	76	34.2
Internet (non-medical sites)	51	23.0
2. Medical sources		
Medical journals	41	18.5
Specialized Workshop	21	9.5
As part of formal medical education	19	8.6
Receive any formal training in CAM		
No	169	76.1
Yes	53	23.9
Receiving formal training in CAM from		
Family resident program	27	50.0
Continue medical education	23	42.6
University	4	7.4

When the participants were asked regarding their level of knowledge about the different types of CAM therapies, those who ranked their knowledge as excellent, very good or good about diet and supplement were 56.8%, about counseling and psychotherapy were 52.7%, and about herbal medicine were 28.8%. On the other hand, they ranked their level of knowledge as poor regarding acupuncture (64.9%), faith healing (69.8%), homeopathy (71.6%), naturopathy (77.5%), and Chiropractic (79.3%). (Table 3)

Table 3: Self-reported level of knowledge of primary health care doctors in Bahrain about different complementary and alternative medicine (CAM) therapies (n = 222)

Type of CAM	Excellent/V. Good/Good %	Average %	Poor %
Diet/supplements	56.8	29.7	13.5
Counseling & psychotherapy	52.7	31.1	16.2
Herbal medicine	28.8	32.0	39.2
Massage	18.9	31.5	49.5
Acupuncture	11.7	23.4	64.9
Faith healing	8.1	22.1	69.8
Homeopathy	7.7	20.7	71.6
Naturopathy	4.5	18.0	77.5
Chiropractic	4.5	16.2	79.3

In general, the attitude of primary care doctors toward CAM was positive with 72.5% of them interested in CAM, 81.1% believe that training in CAM would affect their practice as a doctors, and 73.9% agreed that CAM is beneficial. (Table 4)

Table 4: Attitudes of primary health care doctors in Bahrain towards complementary and alternative medicine (CAM) (n = 222)

Item	%
Primary care doctor interested in (CAM)?	
Yes	72.5
don't know	14.0
No	13.5
training in (CAM) would affect your practice as a doctor	
Yes	81.1
don't know	10.8
No	8.1
agree that (CAM) is beneficial	
Yes	73.9
don't know	21.6
No	4.5
Interested in attending future courses in CAM	
Yes	89.2
don't know	6.3
No	4.5
Areas of CAM would you like to know more about	
Side-effects and safety	80.2
Mechanism of action	70.3
Optimal combination with conventional therapy	61.7
Cost-effectiveness	44.6

The majority of them (89.2%) were interested in attending future courses on CAM. The main areas of CAM that they would like to know more about were side effects and safety (80.2%), mechanism of action (70.3%), and optimal combination with conventional therapy (61.7%). (Table 4)

The majority (83.3%) of PHC doctors agreed that they should regularly ask patients if they are regularly using CAM. When asked about regulation of CAM by law, 81.5% of PHC doctors agreed about that. Most of the participants (69.8%) agreed that CAM should be included in undergraduate medical education; the majority (74.8) also agreed that there is a need for physician supervision of CAM. (Table 5)

Table 5 Beliefs of primary health care doctors in Bahrain about complementary and alternative medicine (CAM) therapies (n = 222)

Items	Agree %	Neutral %	Disagree %
CAM should be regulated by law	81.5	17.1	1.4
CAM should be included in undergraduate medical education curriculum	69.8	21.6	8.6
There is a scientific basis for CAM	67.1	30.6	2.3
CAM practitioners should be fully qualified and licensed by law	86.5	12.2	1.4
There is a need for physician supervision of CAM	74.8	20.3	5.0
The result from CAM is mainly due placebo effect	22.1	38.7	39.2
Most CAM therapies are safe and have very few side effects	21.6	36.0	42.3
General practitioners should regularly ask patients if they are using CAM	83.3	15.3	1.4
CAM is a useful supplement to conventional medicine	57.2	37.8	5.0

The majority (86.5%) of PHC doctors agreed that CAM has a scientific basis. More than half of them (57.2%) agreed that CAM is a useful supplement to conventional medicine. On the other hand only (22.1%) agreed that the results from CAM are mainly due to placebo effect. The results showed that the PHC doctors were not sure about the safety and the side effects of CAM therapy, 21.6% agreed that CAM is safe while 36% were neutral and 42.3% disagree that CAM is safe. (Table 5)

Regarding the practice of PHC doctors toward CAM, more than half (59.5%) had used CAM with their patients, while only 23% of them had referred patients to a CAM practitioner. Most PHC doctors (79.7%) stated that they asked their patients about the use of CAM. (Table 6)

When asked about the difficulties facing PHC doctors with the use of CAM, they stated that the main reasons were lack of knowledge and training (92.8%) and lack of studies supporting CAM (69.4%). (Table 6 - opposite page)

When evaluating practice areas that are affected by level of level of knowledge about CAM among PHD doctors, we found that all aspects of practice were significantly higher among doctors with higher level of knowledge ($P < 0.05$). (Table 7 - opposite page)

Table 6: Practice of complementary and alternative medicine (CAM) by primary health care doctors in Bahrain (n = 222)

Item	%
During practice as primary health care	
Have you ever used CAM with your patients?	
Yes	40.5
No	59.5
Have you ever considered use of CAM with your patients?	
Yes	55.9
No	44.1
Have you ever referred patients to CAM practitioner?	
Yes	23.0
No	77.0
Have you asked patients about their use of CAM?	
Yes	79.7
No	20.3
Have you had a personal experience of CAM?	
don't know	5.4
No	55.4
Yes	39.2
Most difficulties facing you with the use of CAM	
Lack of knowledge and training	92.8
Lack of studies supporting CAM	69.4
License by health authority	45.1
Cost	9.5

Table 7: Association of level of Knowledge about complementary and alternative medicine (CAM) of primary health care doctors and their practices.

Variables		What is your the level of knowledge about CAM in general?			
		Excellent/Good %	Poor %	Chi-square - corrected	2-tailed p-v
Have you ever used CAM with your patients?	Yes	61.1	38.9	7.3346	0.0076
	No	41.7	58.3		
Have you ever considered use of CAM with your patients?	Yes	60.5	39.5	12.4621	0.0004
	No	35.7	64.3		
Have you ever referred patients to CAM practitioner?	Yes	70.6	29.4	10.6564	0.0011
	No	43.3	56.7		
Have you asked patients about their use of CAM?	Yes	55.9	44.1	12.9985	0.0003
	No	24.4	75.6		
Have you had a personal experience of CAM?	Yes	58.6	41.4	4.1315	0.0420
	No	46.4	32.1		

Discussion

CAM is considered one of the important elements in todays and future medical and health practice; the research in this field is increasing worldwide.[4, 5, 15, 16]

In this study the highest percentage of PHC doctors evaluated their level of knowledge to be poor (50.5%) which is slightly higher than Qatar (39.1%) but better than Kuwait (78.4%). [15, 16] This high proportion could be related to the fact that the majority of the participants were graduated more than 10 years from the medical schools when CAM was still not widely used. [6]

Of the different CAM therapies, PHC doctors reported more knowledge about diet and supplements, psychotherapy and counselling which is similar to a study conducted in Qatar, [15] but different than the studies conducted in UAE and Kuwait which showed that GPs were more aware about and supportive of herbal medicine, acupuncture and homeopathy. [16, 17]

The attitude of PHC doctors in this study was clearly positive toward CAM which is similar to previous studies in the Gulf region. [15,16,17]

The participants supported that the practise of CAM in Bahrain has to be regulated by law which matches the results of the previous studies in the Gulf and globally. [15, 16, 3]

Most PHC doctors had no previous training in CAM; however, 89.2% are interested in attending future courses in CAM which goes in parallel with the results from UAE, [15] while it is different than the Canadian and Australian studies which reported a higher level of training. [18,19]

In this study PHC doctors had limited use of CAM for their patients and low referral rate to CAM practitioners. These results are similar to a previous study conducted in Qatar [15] but different to the one conducted in UAE where 32% of GPs referred their patients to herbal medicine specialties.[17] On the other hand, 20% of GPs in Australia, practised CAM; 93% had referred their patients at least once and 82% a few times a year for CAM therapy [19]. This limited use and referral could be explained by the lack of specialized and licenced CAM centres in Bahrain and the lack of knowledge and training of physicians in CAM.

This study has a lot of similarities with previous studies conducted in the Gulf region, but also showed some variations. This indicates that despite the similar culture, beliefs and level of education, there are still some differences between the Gulf countries which indicates the need to study this issue more on a local and regional level.

The response rate was lower than desired in this study, but it was similar to the response seen in Qatar (70%). [15] This is considered a limitation and therefore the results should be interpreted with caution because those with strong feelings towards CAM (for or against) may have been more likely to respond to the survey.

Another limitation is the fact that the study only included primary care physicians working in ther Ministry of Health and did not include those working in the private sector. Moreover, it did not include doctors from other specialities. Attitudes and knowledge about CAM could be significantly different in physicians at different levels and specialties of health care. Thus, it would be interesting to compare attitudes and knowledge across different practice settings.

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