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Level of Patient Empathy among medical students of Saudi Medical College: A Cross-sectional Survey

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From the Editor

This is the last issue of the year. The issue is rich with topics of interest to primary care. At the end of the year I would like to acknowledge all the team, the editorial board, the publishing manager and her team and to thank all authors for their continuous support and trust in the journal.

Elnashar M.A et al did a cross sectional study aimed at assessing the awareness of vertically transmitted infections (TORCH) among health care providers, female students in Taif university. A pre-designed questionnaire was used to collect data on the women and students' knowledge of vertically transmitted infections (torch). About 87% and 71% of students and mothers respectively didn't know that the congenital infections are contagious, and 57.46% and 75% of them didn't know that the congenital infections can cause congenital anomalies. The authors concluded that the deficient knowledge of studied females regarding congenital infections observed in this study calls for health education program directed to female students and women in the reproductive age about congenital infections.

Alharthi, A.F et al did a cross sectional study to assess the level of knowledge, attitude and practices of breastfeeding with its determinants among the in Taif city. The study included 384 women. About 26% of the participants had very good level of knowledge regarding breast feeding whereas 15.6% had poor level of knowledge. The authors concluded that the level of knowledge about the breastfeeding in this sample was moderate and slightly more than half of them had positive attitude towards breastfeeding. The main source of health education in our sample about breastfeeding were the doctors.

Alharthi, W.M et al; aimed to assess elementary school teachers' knowledge, attitude and practice towards epilepsy. A cross sectional study which was carried out on 400 elementary school teachers from 16 schools in Taif city using convenience sampling technique. 95% of participants have heard of epilepsy and their source of knowledge was mostly public media (43%).(58.8%) believed that epilepsy is a result of multiple causes like head trauma, brain tumor and even spiritual illness. If a child is having a seizure at school (40.3%) of the teachers chose to open his mouth forcefully to prevent tongue swallowing. The authors concluded that there is a gap in teachers knowledge regarding epilepsy which necessitate the presence of education programs about dealing with epileptic children properly.

Hasanain A et al presented a case of CDH3 mutation associated with ectodermal dysplasia and hair abnormalities. A six-year-old Saudi girl who was referred to the Dermatology

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Level of Patient Empathy among medical students of Saudi Medical College: A Cross-sectional Survey

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Abstract

Introduction: Empathy is the ability of the physician to understand the patient's situation, perspective and feelings. It helps in the doctor-patient relationship, and may also benefit the doctor by enhancing job satisfaction, improving the clinical diagnosis and the management plan.

Subjects and methods: A cross sectional study conducted among 545 undergraduate medical students in Faculty of Medicine at Taif University. It took 6 months starting from September 2018 to February 2019. The assessment of empathy was done by using a validated questionnaire which was distributed through the students randomly. Data was analyzed using SPSS (version 21).

Results: Mean score of empathy was found to be 65.21±7. 24. Mean score of empathy was found to be better among male students (66.31±7.78) compared to female students (64.37±6.68). The difference between scores among male and female students was found to be statistically significant (T=3.09, p value<0.05). When mean empathy scores were compared among various academic years by ANOVA test, it was not found to be statistically significant.

Conclusion: In Taif University the mean empathy score among Medical students was found to decrease with academic year and was found to be higher among male students.

Key words: Patient empathy, medical students, Saudi Arabia

Introduction

Patient doctor communication is an essential element of medical practice (1). It is known that it supports the patient's healing process and has a therapeutic effect; it has also been shown to have an excellent effect on objectively measurable outcome parameters and on psychosocial outcomes (2-5). Empathy is defined as the ability of a physician to "(a) understand the patient's situation, perspective and feelings (and their attached meanings), (b) communicate that understanding and check its accuracy and (c) act on that understanding with the patient in a helpful (therapeutic) way" (6). Patients have been found to report higher levels of satisfaction, comfort and self-efficacy when doctors are more empathetic (7,8,9). Empathy facilitates the development of trust and openness, enables more accurate diagnosis and possibly fosters greater adherence to treatment regimes(10,11). Being in receipt of physician empathy may have a direct influence on clinical outcomes (12).

Empathy in the doctor-patient relationship may also benefit the doctor (13). Displaying empathy may enhance job satisfaction by making medicine less frustrating (14). Diminished empathy has been found to be associated with higher levels of physician burnout, which in turn may be associated with increased likelihood of perceived medical error (15,16,17).

Study rationale

Empathy among Taif University medical students has not been studied. Therefore, the goal of this study was to determine the level of empathy among the medical students at various years of study and other factors that affect the patient empathy level.

Objectives of the study

1. To measure the mean level of empathy among medical students.
2. To compare the level of empathy among various academic years and among gender.

Materials and Methods

Study Design

A cross sectional study was conducted at Faculty of Medicine at Taif University to assess the level of empathy among undergraduate medical students from third to sixth years. Total number of participants consisted of 545 medical students of whom 304 were female and 241male, during their academic year from 2018 to 2019 and the study was conducted for six months duration. Inclusion criteria for the study included all medical students who agreed to participate in the study from 3rd to 6th grade and medical students who did not agree to take part in the study were excluded.

Instrumentation

Student empathy levels were measured using valid structured self-administered questionnaire in English version. The questionnaire consisted of demographic information such as student's age, sex, marital state and academic year choice of specialty, also it consisted of a 20 item Likert scale with 5 options. In response to each statement the students chose an option between (1=strongly disagree and 5=strongly agree). Level of empathy was directly proportional to the score that was calculated from 20 questions.

Data Analysis

The collected data was verified and coded for computerized data entry. The Statistical Package for Social Sciences (SPSS version 21) was used to analyze the data. The descriptive statistical analysis in the SPSS was employed to demographic data presented by frequencies and percentages and, also employed by means (M) and standard deviations (SD) which were used to calculate the total empathy score. Inferential statistics were used to compare the difference of total empathy score among gender and medical year by used independent samples t-tests and Analysis of Variance (ANOVA) test respectively. Chi-square test was used for testing difference of demographic data among medical year level. All tests used were considered statistically significant if the p value was < 0.05. Microsoft Excel 2017 was used to represent specialty preference in future by bar chart.

Ethical Approval

The research proposal was reviewed and approved by Taif University Research Ethics Commitee .Permission was gained from Medical College Administration before starting the study. The students who participated in the study were given a brief overview about the nature of the study. They were assured the contents would be kept confidential. after taking informed consent. Data was treated confidentially during all stages of the research.

Results

545 medical students participated in this study; an overwhelming majority 304 (55.8%) were females, while the rest 241 (44.2%) were males, including 129 (23.7%) third year, 159(29.2%) fourth year, 129(23.7%) fifth year, and 128(23.5%) sixth year students. Age ranged between 19 to 34 years and most of the participants were aged between 23-26 years. According to the questionnaire, apart from religious denomination, other factors examined were in relation to being the eldest child in their family; 28.3% of students reported being the eldest child. Considering whether they had a disabled family member or had cared for a disabled family member in the past, 14.1% of students reported in the affirmative. Regarding nationality, the majority of the 98.7%% were Saudi except 1.1% of students were non-Saudi. 18 (3.3%) of students had at least one of their parents as a medical doctor. According to the percentage of last annual exams and specialty preferred in the future showed that the majority of students between 80-100% preferred General Surgery as a future specialty as shown in Figure 1. All demographic data shows no statistical difference among medical year except for gender, age and marital status which were (p-value= .032) (p-value= .000) (p-value=.000) respectively, as shown in Table 1.

Mean score of empathy was found to be 65.21±7.24. Score of empathy was found to be better (4.29 ± .831) and (4.28 ± .788) for question no. 2 and no 3 respectively ('My understanding of my patients' feelings gives them a sense of validation that is therapeutic in its own right'& 'An important component of the relationship with patients is understanding of the emotional status of themselves and their families'). Score was found to be poor (2.09 ± 1.024) and (2.14 ± 1.028) with question 17 and 16 respectively (I consider asking patients about what is happening in their lives as an unimportant factor in understanding their physical complaints. & I try not to pay attention to my patients' emotions in interviewing and history taking.) as shown in Table 3.

Mean score of empathy was found to be better among male students (66.31±7.78) compared to female students (64.37±6.68). Difference between scores among male and female students was found to be statistically significant (p value=0.002). Male students were found to be more empathetic than female students as shown in Table 3.

Mean score of empathy among medical year was found to be high among third year (65.92±6.84) in comparison to other medical years and that might because they had not experienced clinical life yet. Difference between scores among medical years was found to be statistically not significant (p value=0.583) as shown in Table 3.

Figure 1: Represents the percentage of specialty preference by medical students

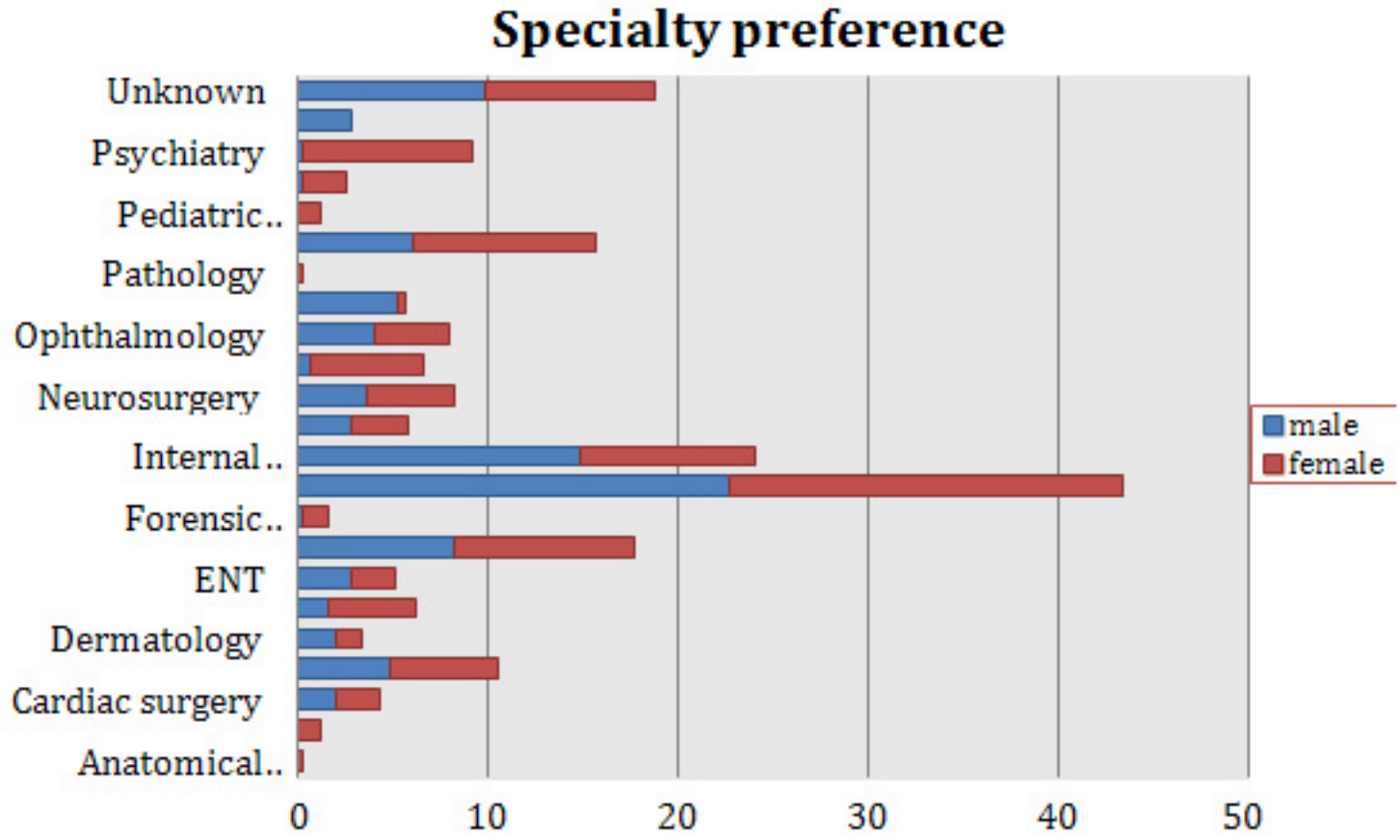

Table 1: Demographic Characteristics of Medical Students (N=545) by Medical Years

Characteristic	3rd year (129)23.7%	4th year (159)29.2%	5th year (129)23.7%	6th year (128)23.5%	Test value	p-value
Gender						
Male	(50)20.7%	(75)31.1%	(48)19.9%	(68)28.2%	8.806	.032
female	(79)26%	(84)27.6%	(81)26.6%	(60)19.7%		
Age						
19-22	(121)37.8%	(125)39.1%	(57)17.8%	(17)5.3%		
23-26	(7)3.2%	(34)15.4%	(70)31.7%	(110)49.8%	216.524	.000
27-30	(1)33.3%	0	(1)33.3%	(1)33.3%		
31-34	0	0	(1)100%	0		
Percentage in last annual exam						
20-49	(3)36.5%	(3)37.5%	(2)25%	0		
50-79	(31)19.5%	(37)23.3%	(46)28.9%	(45)28.3%	11.430	.076
80-100	(95)25.1%	(119)31.5%	(81)21.4%	(83)22%		
Marital status						
Single	(127)24%	(158)29.9%	(127)24%	(117)22.1%	19.087	.000
married	(2)12.5%	(1)6.3%	(2)12.5%	(11)68.8%		
Are you the eldest child in your family?						
Yes	(32)20.8%	(50)32.5%	(33)21.4%	(39)25.3%		
No	(97)24.8%	(109)27.9%	(96)24.6%	(89)22.8%	2.320	.509
Are either of your parents a medical doctor?						
Yes	(3)16.7%	(3)16.7%	(3)16.7%	(9)16.7%	7.341	.062
No	(126)23.9%	(156)26.6%	(126)23.9%	(119)22.6%		
Have you cared for a person with permanent disability In your family, now or in the past?						
Yes	(19)24.7%	(24)31.2%	(23)29.9%	(11)14.3%	4.849	.183
No	(110)23.5%	(135)28.8%	(106)22.6%	(117)25%		
Are you an international (non Saudi) student?						
Yes	(2)33.3%	(2)33.3%	(1)16.7%	(1)16.7%	.521	.914
No	(127)23.6%	(157)29.1%	(128)23.7%	(127)23.6%		

Table 2: Total Score of empathy for each question

Questions	Minimum	Maximum	Mean ± SD
1. I try to imagine myself in my patients' shoes when providing care to them.	1	5	4.26 ± 0.935
2. My understanding of my patients' feelings gives them a sense of validation that is therapeutic in its own right	1	5	4.29 ± .831
3. An important component of the relationship with my patients is my understanding of the emotional status of themselves and their families	1	5	4.28 ± .788
4. I try to understand what is going on in my patients' minds by paying attention to their non-verbal cues and body language	1	5	4.08 ± .864
5. I try to think like my patients in order to render better care	1	5	3.75 ± 1.174
6. I believe that empathy is an important therapeutic factor in medical treatment	1	5	3.78 ± 1.218
7. Empathy is a therapeutic skill which without it my success as a health care provider would be limited	1	5	3.69 ± 1.002
8. Patients' illnesses can only be cured by medical treatment; therefore, affection ties to my patients cannot have a significant place in this endeavor	1	5	2.61 ± 1.126
9. I do not allow myself to be touched by intense emotional relationships between my patients and their family members.	1	5	3.48 ± .985
10. I believe that emotion has no place in the treatment of medical illness.	1	5	2.23 ± 1.142
11. Because people are different, it is almost impossible for me to see things from my patients' perspectives.	1	5	2.78 ± .947
12. Attentiveness to my patients' personal experiences is irrelevant to treatment effectiveness.	1	5	2.40 ± .959
13. My patients feel better when I understand their feelings.	1	5	4.02 ± .853
14. I have a good sense of humor that I think contributes to a better clinical outcome.	1	5	3.49 ± 1.023
15. I consider understanding my patients' body language as important as verbal communication in caregiver–patient relationships	1	5	3.96 ± .808
16. I try not to pay attention to my patients' emotions in interviewing and history taking.	1	5	2.14 ± 1.028
17. I consider asking patients about what is happening in their lives as an unimportant factor in understanding their physical complaints.	1	5	2.09 ± 1.024
18 It is difficult for me to view things from my patients' perspective.	1	5	2.72 ± .855
19. I do not enjoy reading non-medical literature and the arts.	1	5	2.37 ± 1.054
20. My understanding of how my patients and their families feel is an irrelevant factor in medical treatment	1	5	2.76 ±.967
Mean score of empathy	1	5	65.21±7.24

Table 3: Distribution of depressive symptoms experienced nearly every day during the last 2 weeks by gender among depressed PHC consumers according to PHQ-9 questionnaire.

(PART 1: The Second half of this table is on the following page)

Symptoms	Depression score				P value
	frequency	valid %	Mean	SD	
Little interest					
-Not at all	360	45%	83.7	55.6	0.001
-Several days	273	34.1%	88.5	50.2	
-More than half the days	124	15.5%	80.6	56.4	
-Nearly every day	43	5.4%	90.5	53.9	
-Total	800	100%	85.2	53.8	
Hopelessness					
-Not at all	334	41.8%	86.6	57.1	0.001
-Several days	296	37%	85	52.07	
-More than half the days	127	15.9%	79.1	48.08	
-Nearly every day	43	5.4%	93.7	56.5	
-Total	800	100%	85.2	53.8	
Sleeping problems					
-Not at all	295	36.9%	87.9	56.4	
-Several days	248	31%	84	54.7	0.001
-More than half the days	170	21.3%	82.3	51.4	
-Nearly every day	87	10.9%	85.3	47.2	
-Total	800	100%	85.2	53.8	
Little energy					
-Not at all	254	31.8%	82.8	58.7	
-Several days	314	39.3%	86.4	52.2	0.001
-More than half the days	154	19.3	86.5	51.8	
-Nearly every day	77	9.6%	85.3	48.3	
-Total	799	100%	85.2	53.8	
Poor appetite or overeating					
-Not at all day	387	48.4%	87.7	55.7	
-Several days	207	25.9%	88.8	52.7	
-More than half the days	146	18.3%	75.3	50.3	0.001
-Nearly every day	60	7.5%	81.1	51.5	
-Total	800	100%	85.2	53.8	
Feeling bad about yourself					
-Not at all	506	63.2%	85.5	55.2	
-Several days	166	20.8%	85.4	48.6	0.001
-More than half the days	78	9.8%	76.6	52.5	
-Nearly every day	50	6.3%	95.1	58	
-Total	800	100%	85.2	53.8	

Table 3: Comparison of scores of empathy among gender and medical year

Group		Mean ± SD	Test value	p-value
Gender	Male	66.31±7.78	3.092	0.002*
	Female	64.37±6.68		
Medical year	3th year	65.92±6.84	0.651	0.583*
	4th year	64.74±8.13		
	5th year	65.23±7.72		
	6th year	65.04±5.82		

* Among gender by use of independent test
* Among medical year by one way ANOVA test

Discussion

In our study the mean score of empathy was found to be (65.21±7.24). Vinay and Swanand (18) conducted a cross sectional study to assess the patient Empathy level in undergraduate medical students and mean empathy score was found to be (99.25±13.813). Shashikumar et al(19) conducted a cross sectional study to assess empathy among medical college students. Mean empathy score was found to be 102.91±19.217.

The availability of appropriate role models, variation in the selection and education of medical students in different countries, and expression of empathy in different cultures can partially explain the empathy score disparity in different cultures and studies.

Total score of empathy was better in question no.2 and question no.3 compared to Vinay and Swanand[1] that showed Score of empathy was found to be better for question no. 6.

And the total score in our study of questions no. 10, 16 and 17 was found to be poor. In Vinay and Swanand(18) showed total score was found to be poor with question 1, 9 and 16.

Mean score of empathy was found to be better among male students (66.31±7.78) compared to female students (64.37±6.68). Male students were found to be more empathetic than female students. While in the study of Vinay and Swanand(18) they found that empathy score was better among females (101.30 ±14.534) as compared to male students (97.05±12.717). Another Japanese study(20) showed that female Japanese medical students scored higher than their male counterparts.

The empathy level decreased with academic year, which was high in the third year (65.92±6.84), followed by a drop in 4th year (64.74±8.13). Then it increased in the 5th year (65.23±7.72) then slightly decreases in the 6th year (65.04±5.82) which is different from a study in Kuwait (21).

In Kuwait the mean empathy level increased with academic year. There was a low empathy score among 2nd year students then it is increase until the 4th year then there is drop of mean empathy score, but it is more than the basic year (21).

In this study the mean score of empathy relating to medical year was found to be high among third year (65.92±6.48), while the study done in Kuwait showed the higher score among 4th year students.21

The mean empathy score in this study was found to be low among 4th year students (64.74±8.13) but in the Kuwait study the high mean score was in 4th year students(21).

Limitations of the study:
It was not possible to include all semesters and all students of all health colleges (Pharmacy, Applied medical sciences) due to the short duration of period. The present study was a cross sectional study. The results cannot be generalized. A longitudinal study with a large sample size from a greater number of colleges in the country would be helpful to assess the real findings.

Conclusion

In Taif University the mean empathy score among Medical studentswas found to decrease with academic year. And it was found to be better among male students.

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Returnee's Depression Epidemiology among Secondary School Students in Tikrit, Iraq after Internal Displacement

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Abstract

Introduction: Rapidly progressive epidemiological and demographic changes have occurred in Iraq and surrounding countries, which cause a big increase in the prevalence of mental diseases and specifically depression. This necessitates careful attention from both clinicians and health policy makers. Depression is the 11th cause of disability all over the world but with elevated prevalence rate in the region of the Middle East. Unfortunately, depression is not sufficiently studied, in Iraq, in spite of rising prevalence of this disorder.

Subjects and methods: This a descriptive study with an analytic component carried out on secondary school students in Tikrit district. The study was carried out from 10th January to 14th May 2017. Questionnaires were presented to all students in the schools that day, in the classroom, depending on the help and cooperation of the school's administration and teachers during spare time. The students filled out the questionnaires, after explanation of each item by the researcher, in about 35 minutes and they returned them to the researcher at the end of the session. The study was carried out, and a screening tool the DISC (Diagnostic Interview Schedule for Children) Depression Scale (60) which has been renamed the Columbia Depression Scale (CDS), which is a paper-and-pencil yes/no questionnaire. The DISC can be presented to adolescents and youths (ages 11 and over). This study included 269 secondary school students who have returned from internal displacement.

Results: The study revealed that 64 (23.8%), 26 (9.7%) of returnees were of moderate and high depression score respectively. This means that (33.5%) of returnees had depression. Study revealed that 4 (9.1%), and 6 (13.6%) of males returnees were of moderate and high depression score respectively and 60 (26.7%), and 20 (8.9%) of females returnees were of moderate and high depression score respectively. This means that 80 (35.6%) returnee females versus 10 (22.7%) male returnees suffer from depression.

Conclusion: Depression prevalence rate in IDPs who are living in Tikrit city was found to be (33.5%) of returnees, and the rate of depression is higher among returnee females than males.

Key words: Returnees' depression in IDP Students in Tikrit, IDP Returnees Depression Epidemiology, in Tikrit schools.

Introduction

Rapidly progressive epidemiological and demographic changes have occurred in Iraq and surrounding countries, which cause a big increase in the prevalence of mental diseases and specifically depression. This necessitates careful attention from both clinicians and health policy makers (1, 2). Depression is the 11th cause of disability all over the world but with elevated prevalence rate in the Middle East region (3). Unfortunately, depression is not sufficiently studied, in Iraq, in spite of rising prevalence of this disorder (4). According to previous research median yearly and lifetime depression prevalence are 4.7 and 8.9% respectively. Females of low education and with war experience are at higher risk of depression (5-10). Really, there is no data concerning depression prevalence (11). Repeated wars since the early nineties have had a huge effect on Iraq, leading to reduction in the health status of Iraqi people and destruction of mental health services infrastructure (2). There is no available data about the associated morbidity, burden, therapy, and related suicide. Availability of such data is very important in studying the impact of war on the Iraqi population.

Subjects and methods

Formal administrative approval was granted to conduct the study from the Ministry of Education, Department of Education in Tikrit Education Directorate in order to perform the study in secondary schools in Tikrit city. The study was carried out in the secondary schools in Tikrit District which is located about 200 km north of Baghdad city. Written consent was taken from all students involved in the study. This was a descriptive study with analytic component carried out on secondary schools, students in Tikrit district. The study was carried out from 10th January to 14th May 2017. Questionnaires were presented to all students in the schools that day, in the classroom, depending on the help and cooperation of the school's administration and teachers during spare time. The students filled out the questionnaires after explanation of each item by the researcher, in about 35 minutes and returned them to the researcher at the end of the session. The study was carried out, using a screening tool, the DISC (Diagnostic Interview Schedule for Children) Depression Scale (60) which has been renamed the Columbia Depression Scale (CDS), and is a paper-and-pencil yes/no questionnaire. The DISC was presented to adolescents and youths (ages 11 and over). It consists of 22 items that are rated as Yes and No scored as (1) and (0) respectively. The total score is calculated from the score of each of the 22 items. If the result of calculation is 0-6, 7-11, 12-15, 16 and above that means depression was very unlikely, moderately likely, likely and highly likely, respectively. The first group included moderately likely and highly likely which are considered as high risk for depression. To prove that the assessment tool was clear and simple a pilot study was done in the secondary schools in Tikrit. This study includes 269 secondary school students who had returned from internal displacement.

Results

The study revealed that 64 (23.8%), 26 (9.7%) returnees were of moderate and high depression score respectively as shown in Table 1. This means that (33.5%) of returnees had depression.

The study revealed that 4 (9.1%), and 6 (13.6%) of males returnees were of moderate and high depression score respectively and 60 (26.7%), and 20 (8.9%) of females returnees were of moderate and high depression score respectively as shown in Table 2. This means that 80 (35.6%) returnee females versus 10 (22.7%) male returnees suffer from depression.

Suicidal ideation was reported in 34 (12.6%), and suicidal attempt reported in 142 (53%) of returnees.

Table 1: Depression score among returnees

Depression score	Returnees No. (%)
Weak	86 (32%)
Mild	93 (34.6%)
Moderate	64 (23.8%)
High	26 (9.7%)
Total	269 (100%)

Table: 2. Depression scores in returnees according to gender

Depression score	Males Returnees No (%)	Females Returnees No (%)
Weak	27 (61.4%)	59 (26.2%)
Mild	7 (15.9%)	86 (38.2%
Moderate	4 (9.1%)	60 (26.7%)
High	6 (13.6%)	20 (8.9%)
Total	44 (100%)	225 (100%)

Discussion

Depression is prevalent among people displaced because of large-scale political war and conflicts (12). Iraq suffered from occupation and invasion of a terrorist organization of some Iraqi governorates in 2014, which caused millions of the population to be displaced to other nearby normal cities. This displacement of the mass population suddenly saw them without houses and incomes and either living in a miserable situation in the cities or in camps. This was an extra burden on Iraqis who have lived for decades, in a vicious circle of sanctions, wars, and displacement which influences all life, and health aspects of children, women, and adolescents (13-14). Psychological and mental disorders frequently occur gradually as a result of interaction of multiple factors such as; conflicts and violence, continuous stress, environmental factors and internal psychogenic factors that contain Internalizing Items (fear of new situations, sadness, self underestimation, hopelessness, unhappiness, many worries, and experiencing less fun); and Externalizing factors (unnecessary risky behaviors, ignoring rules, misunderstanding feelings of others, fights with other children, teasing others, blaming others for troubles, refusing to share) (14, 15). Severe deficiencies in mental and psychological health care services remains a persistent problem in Iraq (13, 14, 15, 16,17).

This study's results found that (33.5%) of returnees had depression and this agrees with Alkhafaji A.M. et al who found a statistically significant relation in the depression rate in IDPS which was 34.5% in comparison to 16.4% in their matched control group (18). In this study, the sample was from returnee secondary school students after internal displacement whose age was 12-18 years. This is supported by Noori and Janet who found that higher than one third of their sample was aged 18-27 years and stated that immigrants were of young ages (15-24 years old) (13, 14, 19). Also Joseph and Cristina found that 24% of their study group of immigrants were aged between 16-25 years and 33% were 26-35 years (13, 20).

Being young person IDP secondary school students are included in this group under risk of depression which is supported by Alkhafaji AM et al who found that the majority of depressive patients were of high educational level (47%0. This was explained by Beiser M who found that young and educated persons were a target for violence, terror and experiencing more events of loss(21). The results of the current study agree with a study on Turkish immigrants, which revealed a prevalence rate of depression of 36.1% in females, and 27.9% in males (22). This is higher than Mirela Grgić who found that 17.9% of displaced children aged 12-15 manifested clinically significant depression (23).

This study's results are lower than Kinzie et al who found that 50% of Cambodian refugee children 6-12 years of age developed a depressive disorder after 4 years of displacement (24). The difference may be due to our sample being returnees after internal displacement and the Kinzie et al sample was Cambodian refugees who had greatly affected personality disorder. Harvard USA program in Refugee Trauma found two thirds had disabling depression among Bosnian refugees (25).

This study revealed that suicidal ideation was reported in (13%), and suicidal attempt reported in (53%) of returnees. Recently Iraq has suffered from increased rate of suicides especially among younger age groups. Social, political, economic, conflicts which characterize the Iraqi community may explain this rise. Terrorism and armed invasion and occupation of Iraqi cities obliged a mass population to leave their houses and towns for internal displacement. According to Abbas MJ et al, the suicide rate per 100,000 Iraqi population in 2015 was 1.09 and in 2016 1.31, which is lower than both the global suicide rate (11.4/100 000 population) and the Eastern Mediterranean rate (6.4/100 000 population) (26, 27). It is worth noting that WHO figures for this region have been questioned. Suicide in Iraq is still stigmatized, although not illegal, and under-reporting is still possible (28). The high level of suicidal attempts and suicide ideation is supported by a persistent vicious circle of political conflict, unemployment, poverty, miserable years of displacement, bad present conditions, vague future concepts. Internal displacement separates families and destroys the social cohesion. This study results disagree with Abbas MJ et al who stated the low rate of suicide in Iraq (26).

Conclusion

Depression prevalence rate in IDPs who are living in Tikrit city was found to be 33.5% of returnees, and the rate of depression is higher among female returnees than male.

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Accuracy of Pap smear in cervical cancer screening

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Abstract

Introduction: Globally, cancer of the cervix is the second leading cancer in females. The sensitivity of conventional Pap smear in diagnosing cervical lesions before development of cervical cancer is fifty one percent, which indicates that false negative results is forty nine percent. The aim of this research is to compare two methods for cervical cancer screening (conventional Pap smear and colposcopy).

Methods: This was a cross sectional study carried out on 38 patients who presented to the private clinic, during the period 1st January-1st September 2018. All cases underwent Pap smear, a colposcopy, and a cervical biopsy, with the latter being considered as the gold-standard test. Inclusion criteria include married for at least 3 years, non pregnant, age ≥ 21 years. The exclusion criteria were the following; women with active vaginal bleeding, hysterectomy, women with frank growth and/or who had never been sexually active or had undergone prior treatment for CIN or cancer of cervix, or had unsatisfactory Pap smear. Pathological study was done by histopathology specialist. Conventional Pap smear was used, using a smear made on a glass slide for CPS and fixed. Cytology was reported using Bethesda system and histology reporting was done using CIN terminology.

Results: Most of the cases were Atypical Squamous Cell Undetermined Significant (ASCUS) 15 (39.5%). Histopathological study of the biopsy taken from the patient revealed that: Squamous cell carcinoma was found among 2 (5.3%) of the patients, CIN3 2 (5.3%), 4 (10.5%), and CIN1 7 (18.4%). The overall sensitivity of Pap smear was (93%), with the largest sensitivity among those aged ≤ 44 years (100%), while among those aged ≥ 45 years it was decreased (86%).

Conclusion: The sensitivity and specificity results indicate that the cytologists need more training as it is operator dependent.

Key words: conventional Pap smear, colposcopy, cervical cancer, sensitivity, specificity

Introduction

Globally cancer of the cervix is the second most prevalent cancer affecting women; the incidence of cervical cancer is 1.3 per 100,000 women in Iraq [1]. The prevention or cure of cervical cancer has the best prospects because there is a high rate of early diagnosis when it it still has a high cure rate. Developing countries contain 80% of cases of cervical cancer occurence, and it is the important reason for women's death [2, 3]. The Papanicolaou (Pap) smear is a unique, widely used, and cost effective method for diagnosing cancer of cervix, and it has been successful in prevalence, and mortality rates reduction of this cancer in women [4]. Pap smear has succeeded in reduction of cervical cancer rate and its mortality rate by 79%, and 70% respectively [5]. Patients with frequent Pap smears have increased incidence of cervical cancer [6]. Pap smear sensitivity in diagnosing lesions before stage cancer of cervix is found is half of the cases, which indicates false negative results of this conventional Pap smear is 49% [7]. Pap smear specificity and sensitivity in diagnosing (high-grade lesions of cervical intraepithelial neoplasia)+8 (CIN II and CIN III) have found around 55% and 97%, respectively [8]. Iranian researchers found that less than 2% of cervical cancer patients had undergone a Pap test in the previous 10 years [9, 10]. Human papilloma virus (HPV) is the primary reason behind cervical intraepithelial neoplasia (CIN) and cervical cancer. Researchers found that in females infected with HPV high-risk, their progression from CIN to cancer was of a higher rate, with three hundred-fold elevation in the risk of high-grade disease [6, 11, 12]. Although, HPV infections usually are not persistent, it can remain latent, maybe for many years. Exposed women are asymptomatic, and HPV infection is either suppressed or eliminated by the immune system [6, 7]. In another percentage of affected females, there may be occurrence of low-grade cervical lesions, which regress spontaneously. Mostly, the infections clear in 9-19 months [6, 13]. Limited percentages of females exposed to HPV, infection of persistent type may develop to CIN [6, 7]. Recently, prophylactic HPV vaccination has been initiated, but such vaccinations are not used in Iraq, so we do not have the benefit of its effective role in decreasing the incidence of persistent HPV infection [6]. The aim of this research is study the accuracy of Pap smear in cervical cancer screening.

Patients and method

Cross sectional study of 38 patients presented to the private clinic, during the period 1st January -1st September 2018. Inclusion criteria included married for at least 3 years, non pregnant, age ≥ 21 years. Women with active vaginal bleeding, hysterectomy, and women with frank growth and/or who had never been sexually active or had undergone prior treatment for CIN or cancer of cervix, or had unsatisfactory Pap smear were excluded from the study. Pap smear colposcopy and cervical biopsy was done for all the patients. Pathological study was done by histopathology specialist. Conventional Pap smear was used, using a smear made on a glass slide for CPS and fixed. Cytology was reported using Bethesda system and histology reporting was done using CIN terminology.
Preparation of the single combined smear, was obtained through use of endocervical brush, taking a sample. The brush was inserted to the external os and the device rotated gently by use of ¼ or ½ turn to get the cellular sample (being careful as bleeding may be caused by over rotation).

The following protocol was used: Firstly, do not smear, but allow the material to stay on brush. Then scraping of the ectocervix with a spatula and spreading of the material quickly onto a slide at its upper end. Then, rapidly roll the endocervical brush through the ectocervical material to a slide at its upper end. This technique, should be performed quickly to prevent drying artifacts. As soon as possible spray fix by thoroughly soaking the cellular sample while holding the spray fixative container about 6-8 inches from the slide. Allow spray fixative to evaporate.

Sensitivity, specificity, positive predictive value (PPV), negative productive value (NPV), and accuracy, was calculated by comparing the Pap smear results with biopsy results, as the latter is the gold test.
Statistical analysis and data management: The Statistical Package for Social Sciences (SPSS, version 18) was used for data entry and analysis. Chi ($\chi 2$) square test, and t- test were used to compare means and proportions of different factors among different groups of study sample. P value of ≤ 0.05 was regarded as statistically significant. Bar charts and tables were used to present the data.

Results

Table 1 shows the Pap smear results: most of the cases were Atypical Squamous Cell Undetermined Significant (ASCUS) 15 (39.5%), followed by Low-grade squamous intra-epithelial lesion (LSIL) 14 (36.8%), and High-grade squamous intra-epithelial lesions (HSIL) 6 (15.8%). Squamous cell carcinoma was found among 2 (5.3%) of the cases.

Histopathological study of the biopsy taken from the patient revealed that: Squamous cell carcinoma found among 2 (5.3%) of the patient, CIN3 2 (5.3%), 4 (10.5%), and CIN1 7 (18.4%), as shown in Table 2.

For testing the sensitivity and specificity the Pap smear result was regarded as: negative included (normal, inflammatory and ASCUS), while positive included (LSIL, HSIL, and carcinoma). The pathological results were also divided as; negative included (normal, inflammatory and ASCUS), while positive included (CIN1-3, and carcinoma). The correlation between Pap smear cytology and pathological result show that concordance in negative results was found among 15 (39.5%) of the total sample, and positive results found among 14 (36.8%). This relation was statistically significant, as shown in Table 3.

Table 1: The cytological results of the Pap Smear

Pap Smear cytology results	Frequency	%
Normal	1	2.6
Atypical Squamous Cell Undetermined Significant (ASCUS)	15	39.5
Low-grade squamous intra-epithelial lesion (LSIL)	14	36.8
High-grade squamous intra-epithelial lesions (HSIL)	6	15.8
Squamous cell carcinoma	2	5.3
Total	38	100%

Table 2: The Pathological results of the biopsy

Biopsy results	Frequency	%
Normal	17	44.70%
Atypical Squamous Cell Undetermined Significant (ASCUS)	6	15.80%
CIN1	7	18.40%
CIN2	4	10.50%
CIN3	2	5.30%
Squamous cell carcinoma	2	5.30%
Total	38	100.00%

Table 3: The correlation of Pap smear results with the Biopsy results

Pap smear results	Biopsy Results			
	Negative		Positive	
	Frequency	%	Frequency	%
Negative	15	39.5	1	2.6
Positive	8	21.1	14	36.8
Total	23	60.5	15	39.5

X^2=12.77, df=1, P value= <0.05 (significant)

Table 4: Comparison of Pap smear results with Biopsy results according to age of patient

Age	Pap smear results	Biopsy results				P- value
		Negative		Positive		
		Frequency	%	Frequency	%	
≤44	Negative	5	25	0	0.0	0.05*(significant)
	Positive	7	35	8	40	
	Total	12	60	8	40.0	
≥45	Negative	10	55.6	1	5.6	0.002*(significant)
	Positive	1	5.6	6	33.3	
	Total	11	61.1	7	38.9	

* Fisher's Exact Test

Table 5: The efficacy of the Pap Smear in diagnosing cervical carcinoma

Pap test efficacy	Sensitivity	Specificity	False +ve	False –ve	Accuracy	PPV[1]	NPV[2]
Pap test efficacy in aged ≤44	100	42	58	0	65	53	100
Pap test efficacy in aged ≥45	86	91	9	14	89	86	90.9
Pap test regardless age	93	65	35	7	76	64	93.8

The correlation between Pap smear cytology and pathological result stratified by age, show that among those aged ≤44 years: the concordance in negative results was found among 5 (25%) of those aged ≤ 44 years, and positive results found among 8(40%). In the age group ≥45 years, the concordance found among 10 (55.6%), and 6 (33.3%) regarding negative and positive results among this age group. These relations were statistically significant, as shown in Table 4.

The overall sensitivity of Pap smear was (93%), with largest sensitivity among those aged ≤ 44 years (100%), while among those aged ≥ 45 years was decreased (86%). The largest specificity found among those aged ≥ 45 years (91%), and lowest among those aged ≤ 44 years (42%), the overall specificity was (65%). The overall positive predictive value (PPV) was (64%), (86%), and (53%), among all cases, those aged ≥45years, and aged ≤ 44 years, respectively, while regarding Negative predictive value is (93.8%), (90.9%), and (100%) among all cases, aged ≥ 45 years, and aged ≤ 44 years, respectively, as shown in Table 5.

Discussion

In this study the overall sensitivity of Pap smear was (93%), and this is higher than results of previous studies which found that cervical cytology's specificity and sensitivity were somewhat low, because sensitivity ranges from 30-87% and specificity is 86-100% [13]. The unique finding of this study, was the differences in sensitivity and specificity with age. The largest sensitivity was among those aged ≤ 44 years (100%), while among those aged ≥ 45 years was decreased (86%). The largest specificity found among those aged ≥ 45 years (91%), and lowest among those aged ≤ 44 years (42%). The overall specificity in this study was (65%).

In this study, the sensitivity is more among those aged < 44 years which indicates that the cytologist pays attention when they see positive results in the younger age group, while they are not concentrating as much on the slide examination at age 44 years and above. While among those aged 45 years or above the cytologist may search thoroughly, therefore the specificity is higher. The sensitivity and specificity results indicate that the cytologist needs more training as it is operator dependent. The need for more training was also reported by Abedalrahman SK. [14].

The overall positive predictive value (PPV) was (64%), (86%), and (53%), among all cases, cases aged ≥ 45years, and cases aged ≤ 44 years, respectively, while regarding Negative predictive value is (93.8%), (90.9%), and (100%) among all cases, aged ≥ 45 years, and aged ≤ 44 years, respectively. This is different from the results of Karimi-zarchi M, et al who found that Pap smears sensitivity, specificity, and the positive and negative predictive values were determined to be as follows; (18.2, 98.5, 85.7, and 71.3%), respectively. Karimi-zarchi M, et al found that colposcopy sensitivity, specificity, and the positive and negative predictive values were as follows (66.7, 98.94, 80, and 97.9%), respectively. [16] For that reason, in case of finding of Pap abnormality, a set of (colposcopy, cervical biopsy, and endocervical curettage) are indicated for cervical cancer detection [15].

Histopathological study of the biopsy taken from the patient revealed that: Squamous cell carcinoma was found among (5.3%) of the patients, CIN3 (5.3%), CIN2 (10.5%), and CIN1(18.4%). This figure was higher than found by Karimi-Zarchi M 2015 [15] CIN3 (1%), CIN2(4%), CIN1(27.7%), normal (67.3%), and from Arvind B Set al 2016 who found, malignant (10%) CIN2-3 (11.5%), CIN1(16.5%), normal(3%) [16]. The greater figure of high and low grade, indicates the high prevalence of intraepithelial lesions among private clinic attendance in Iraq, which needs more attention for implementation of cervical cancer screening program [1] and coordination among private and public health sectors to overcome this problem.

Conclusion: The study has shown a relatively high prevalence of epithelial abnormalities in cervical smears in the studied population. The overall specificity and sensitivity was good with better results among women older than 45 years old. The sensitivity and specificity results indicate that the cytologist needs more training as it is operator dependent.

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Prevalence of Dry Eye Disease in Rheumatoid Arthritis Patients

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Abstract

Background: Dry eye, is a common extra-ocular manifestation of Rheumatoid Arthritis (RA), It causes discomfort and complications. Little is known about its epidemiology among RA patients.

Patients and Method: A descriptive cross-sectional study was conducted at the Rheumatology Unit in Baghdad Teaching Hospital, a tertiary referral center in Iraq. A total of 103 adult Iraqi patients with rheumatoid arthritis were enrolled in this study. Data collection was done using standard questionnaire, investigation of RF, ACPA and erythrocyte sedimentation rate (ESR), Schirmer test, and ocular examination by ophthalmologist.

Results: Dry eyes were found among (27.2%) of RA cases. The age of the study group ranged between 23-60 years with a mean of 41.5 years. Females were more frequent than males with a female to male ratio of 7.6 to 1. Dry eye was more prevalent among those with positive ACPA (anti-citrullinated peptide antibody) 25(34.7%), with positive RF 28(37.3%), and those treated with biologic DMARDs 15 (42.9%). These relations were statistically significant, and those who had a positive family history were 8(57.1%), compared with those without family history 20(22.5%). This study revealed a significant correlation between ocular dryness with RF, ACPA, high disease activity and treatment with biological drugs.

Conclusion: Prevalence of dry eye was 27.2%. There was a significant association between ocular dryness with RF, ACPA, high disease activity, family history of RA and treatment with biological drugs.

Key words: Rheumatoid arthritis, dry eye, ocular manifestation.

Introduction

Rheumatoid arthritis (RA) is a systemic autoimmune inflammatory disease which affects different ethnic groups around the world. Females are more likely to be affected than males with a ratio (2.5:1)[1]. Primarily it affects synovial joints but 40% of cases had extra-articular structures involvement [2]. The incidence of ocular findings in the Iraqi population is 32%.[3]

The estimated prevalence for RA was between (0.5% - 1.0%) in European and North American populations but in China and Japan society was (0.2%–0.3%), and native American populations was 5% [4]. The prevalence of RA is approximately 1% in the Iraqi population [5].

All these differences in regional RA prevalence may suggest environmental and genetic factors contribute to RA [6].

Initial presentation of classic rheumatoid arthritis is synovitis of small joints of the hands and feet, and with the disease progression large joints may be involved, associated with morning stiffness more than one hour, fatigue, weight loss, and low-grade fever. [7]

Dry eye (Keratoconjunctivitis sicca (KCS)), is a disorder of the tear film either due to tear deficiency or excessive tear evaporation which subsequently leads to intraepalbebral ocular surface damage [8]. The dry eye syndrome (keratoconjunctivitis sicca) can be divided into two major group; aqueous layer deficiency (Sjögren's syndrome, non-Sjögren's syndrome) and evaporative type (meibomian gland diseases, exposure, contact lens-associated and environmental) [9].

Symptoms of eye dryness include ocular burning, foreign body sensation, stinging sensation and photophobia [9].
The causes of dry eyes can be divided into primary and secondary. [9] Dry eye diseases can be secondary to environmental, hormonal, physiological, contact lens wear and pathological causes [9]. Systemic diseases that cause ocular dryness include diabetes mellitus, thyroid disease, rheumatoid arthritis, Sjögren's syndrome etc.; in addition, patients with previous eye surgeries or regular use of eye medications/systemic medications such as antihistamines, antidepressants, beta-blockers and oral contraceptives can predispose to dry eyes [9].

In terms of diagnostic criteria, Ohashi reported that: (1) Symptoms of dry eyes, (2) Schirmer tests (< 5 mm after 5 min.) and clearance test (< 8x) (3) Fluorescein stain and Rose Bengal staining (>3+) are qualified as clinical dry eyes. [10]

Treatment is targeted towards the correction of underling pathology as well as replacement of deficient tear include artificial tears and the patient with functional impairment of the hand can use an opticare device (eye drop dispenser) that may result in less wastage of tears and increase independence and compliance of the patients; gel and ointment can be used in mild to moderate dry eyes [9]. In severe dry eyes, surgical approaches such as punctal occlusion can be used to save the tear [9]. Other treatments such as topical steroids, topical immuno-modulating drugs, topical antibiotics, bandage contact lens, autologous serum and amniotic membrane may be useful in very severe cases [9].

The most common extra-articular manifestation of rheumatoid arthritis is secondary Sjögren's syndrome which is characterized by dry eyes (KCS) with positive minor salivary glands biopsy or abnormal salivary flow study (dry mouth) and occurring in approximately 35% of patients with rheumatoid arthritis [1].

Little has been reported about dry eye prevalence among RA patients in Iraq. This study aimed to evaluate the prevalence of dry eye and its associated risk factors, in a sample of adult Iraqi patients with rheumatoid arthritis.

Patients and method

A descriptive cross-sectional study was conducted at the Rheumatology Unit in Baghdad Teaching Hospital, a tertiary referral center in Iraq. A total of 103 adult Iraqi patients with rheumatoid arthritis were enrolled in this study; all of them fulfilling both the 1987 revised ACR criteria [39] and the 2010 ACR / EULAR criteria [11].

Patients above 60 year old and any patients with history of infection, retinal detachment, surgery or trauma to the eye, hypertension, diabetes mellitus or overlap with other autoimmune disease were all excluded from the study.

Ethical issues, approval and official permission: a signed consent from each of the participants was obtained after explaining the purpose of the study and ensuring privacy of the data. The approval and official permission were obtained from the Ministry of Higher Education and Scientific Research, Baghdad University, College of Medicine to conduct the present study.

Data collection:
Demographic data: name, age, gender and body mass index (BMI) were obtained from the patients. Clinical data included: symptoms of RA (presence of joint pain and/or swelling with morning stiffness), duration of disease, presence of eye symptoms (pain, redness, photophobia, discharge, blurring of vision, dryness), medical history, family history of rheumatoid arthritis, previous and current treatment, CDAI [12], and functional class of the patient [13].

Patients were investigated for RF, ACPA and erythrocyte sedimentation rate (ESR). Schirmer test was done to all patients and then all were examined by the same consultant ophthalmologist.

Statistical Analysis:
Data were translated into a computerized database structure. The database was examined for errors using range and logical data cleaning methods, and

inconsistencies were remedied. Expert statistical advice was sought. Statistical analyses were done using SPSS version 21 computer software (Statistical Package for Social Sciences).

The Pearson Chi-square ($\chi 2$) test was used to assess the statistical significance of association between 2 nominal or ordinal level variables. We assumed the level of statistical significance at $P < 0.05$. All analyzed tests were bilateral. Reference category: In any estimate of risk the calculated index measures the risk for one category in comparison to a reference category, which always has a risk of one (neutral).

Frequency distributions for selected variables were done first. To measure the strength of association between 2 categorical variables, such as the presence of certain risk factors and for disease status the odds ratio (OR) was used.

Results

The age of study group ranged between 23-60 years with a mean of 41.5 years. Females were more frequent than males with a female to male ratio of 7.6 to 1.

A positive serum for RF was obtained in 72.8% of subjects. Similarly a positive ACPA was obtained in 69.9% of subjects. About a third of patients were treated with biologic DMARDs (34%) and slightly more than a half (52.5%) had steroid treatment.

As shown in Table 1, dry eye prevalence was high among cases with RA (27.2%).

Dry eye was more prevalent among those with positive ACPA (anti-citrullinated peptide antibody) 25(34.7%),with positive RF 28(37.3%), and those treated with biologic DMARDs15(42.9%); these relations were statistically significant, as shown in Table 3.

Dry eye was more prevalent among those who had positive family history 8(57.1%), than those without family history 20(22.5%). This relation was statistically significant, as shown in Table 2.

As shown in Tables 2 and 3, a positive family history of RA significantly increased the risk of having dry eye by 4.6 times. Clinical disease activity index was positively associated with the probability of having dry eye. The risk of having dry eye was increased by 6.12 times among RA cases with high disease activity compared to those with low activity. The calculated risk estimate, however failed to reach the level of statistical significance (probably due to small sample size). A positive serum RF and ACPA significantly increased the risk of having dry eye by 34.2 and 4.96 times respectively. Treatment with biologic DMARDs also significantly increased the risk of having dry eye by 3.17 times. Treatment with steroid on the other hand was negatively, but not significantly associated with the risk of having dry eye. A long duration of treatment (2 or more years) reduced the risk by 0.39 compared to those never treated with steroids. Age, gender, duration of the disease, functional class showed no obvious or statistically significant association with dry eye.

Table 1: Point prevalence rate of dry eye in the study sample

Ocular manifestations	N	%
Dry eye (Ocular surface disease)	28	27.2
Negative for dry eye	75	72.82
Total	103	100

Table 2: The risk of having dry eye by selected general factors

	Negative		Positive			95% CI of OR	Inverse OR	
	N	%	N	%	OR			P
Age group (years)								
<35	16	66.7	8	33.3	Reference			
35-49	39	76.5	12	23.5	0.62	(1.8 to 0.2)	1.6	0.373[NS]
50+	20	71.4	8	28.6	0.8	(2.6 to 0.2)	1.3	0.711[NS]
Gender								
Female	66	72.5	25	27.5	Reference			
Male	9	75	3	25	0.88	(3.5 to 0.2)	1.1	0.856[NS]
Duration of the disease (years)-categories								
First (lowest) quartile (<= 3.0)	23	67.6	11	32.4	Reference			
Average (inter-quartile range) 3.1 - 15.0	36	73.5	13	26.5	0.76	(2 to 0.3)	1.3	0.566[NS]
Fourth (Highest) quartile (15.1+)	16	80	4	20	0.52	(1.9 to 0.1)	1.9	0.332[NS]
Family history of Rheumatoid arthritis								
Negative	69	77.5	20	22.5	Reference			
Positive	6	42.9	8	57.1	4.6	(1.4 to 14.8)	**	0.011

CI, confidence interval; N, number; NS, not significant; OR, odd ratio; RF, rheumatoid factor

Table 3: The relation between dry eye and different disease characteristics

	Negative		Positive			95% CI of OR	Inverse OR	
	N	%	N	%	OR			P
CDAI (Clinical disease activity index)-categories								
Low activity	13	92.9	1	7.1	Reference			
Moderate activity	28	71.8	11	28.2	5.11	(0.6 to 43.9)	**	0.137[NS]
High activity	34	68	16	32	6.12	(0.7 to 50.9)	**	0.094[NS]
Functional class 3								
Class-I	49	74.2	17	25.8	Reference			
Class-II	14	70	6	30	1.24	(0.4 to 3.7)	**	0.708[NS]
Class-III and IV	12	70.6	5	29.4	1.2	(0.4 to 3.9)	**	0.761[NS]
Steroid use								
Never used	33	67.3	16	32.7	Reference			
< 2 years of use	21	72.4	8	27.6	0.79	(2.2 to 0.3)	1.3	0.64[NS]
2+ years	21	84	4	16	0.39	(1.3 to 0.1)	2.5	0.135[NS]
RF								
Negative	28	100	0	0	Reference			
Positive	47	62.7	28	37.3	34.2	(4.4 to 264.6)	**	<0.001
ACPA								
Negative	28	90.3	3	9.7	Reference			
Positive	47	65.3	25	34.7	4.96	(1.4 to 18)	**	0.015
Treatment with biologic DMARDs								
Not used	55	80.9	13	19.1	Reference			
Used	20	57.1	15	42.9	3.17	(1.3 to 7.8)	**	0.012

ACPA, anti-citrullinated peptide antibody;
CDAI, Clinical disease activity index;
CI, confidence interval;
DMARDs, disease modifying anti-rheumatoid drugs;
N, number;
NS, not significant;
OR, odd ratio;
RF, rheumatoid factor

Discussion

This study shows that the prevalence of ocular manifestation in rheumatoid patients was 57.2% which is less than that obtained by Kumar et al which was 66% [14] and much higher than that obtained from Reddy et al which was 39% [15]. This might be explained by the large number of patients in the current study or may be attributed to a different ethnic group.

The prevalence of KCS in this study is 27.2% which is lower than Yumori J W (44%) [16], (54%) and by Aboud S A et al [17] and it was higher than the result obtained from Zlatanović et al which was 17.65% [18].

The keratoconjunctivitis in RA is classically described as an aqueous tear deficiency. Those patients with this disorder need supplementation of artificial tears for lifetime. Hori, Maeda and Sakamoto showed that patients with an altered ocular environment or chronic topical medication use demonstrate a disruption of the natural flora with a marked increase in antibiotic resistant organisms [19]. Sometimes disease-modifying anti-rheumatic drugs (DMARDs) systemic immunosuppressive agents may be necessary to improve tear production and to resolve severe keratoconjunctivitis sicca like Cyclosporin A, or a monoclonal antibody to TNF-alpha such as infliximab [20, 21].

This may be attributed to a large number of patients, the longer follow up period and genetic factor but it agrees with the study done by Itty et al which was 26% [22] and the study done by Bettero et al which was 29.8% [23].

This study shows that positive serum RF and ACPA significantly increased the risk of having dry eye which agrees with the result obtained from Itty et al. [22].

The study showed that positive family history of RA significantly increased the risk of having dry eye OR 4.6 times; this goes with Moss SE and Klein BEK [24].

This study experienced that the dry eye prevalence was significantly more common among patients receiving treatment with biologic DMRADs. To the best of our knowledge the only available data to support this correlation is the study done by Meijer et al who explained that TNF-targeting treatment (one of the biological DMARDs) could not be proven to be of benefit in reducing the complaints of patient with Sjögren's syndrome including dry eye [25].

Dry eye was more prevalent with increasing age, female gender, increased duration of the disease and functional class. This agreed with that obtained from the study by Reddy et al [15], Bettero et al [23] and Zlatanović et al [18], and Moss SE and Klein BEK [23]. There is no available data to support correlation between disease duration and functional class with ocular eye manifestation in rheumatoid arthritis.

Conclusion

Prevalence of dry eye was 27.2%. There was significant association between ocular dryness with RF, ACPA, high disease activity, family history of RA and treatment with biological drugs. Early and frequent eye checking for patients with RA is recommended to diagnose ocular manifestations and aggressively treat it as well as to prevent serious complications, especially in those with high disease activity, positive RF, positive ACPA, positive family history of RA and those treated with biological DMARDs.

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Knowledge and awareness of health practice during pregnancy among females of Jeddah City in Saudi Arabia

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Abstract

Background: Pregnancy is a delightful experience for the expectant mother. It is a good time to develop healthy lifestyle habits including regular exercise, playing yoga and avoiding smoking and it is an integral part of life of a woman which changes her physically, mentally, emotionally and spiritually for rest of her life. It is a condition in which a woman changes both from inside as well as outside. There is a direct link between healthy mothers and healthy infants.

Subjects and Method: An observational cross-sectional study was done carried out on 445 females from the general population in Jeddah city, Saudi Arabia, from January to June 2019. The tool used in this study consisted of a self-administrated questionnaire applied in Google form to cover three important perspectives (socio-demographic data, knowledge and awareness about wrong beliefs and risk behaviors during pregnancy).

Results: The study sample included 445 participants. Most participants confirmed the importance of sports during pregnancy and that smoking had a harmful effect. 75.5% of participants confirmed the importance to consult a doctor before traveling; strikingly most of the participants had limited knowledge about correct practice during pregnancy (>60%).

Conclusion: Overall knowledge about correct and poor practice during pregnancy was low to moderate. So, the study group recommended formation and implementation of health education programs to be given to expectant mothers especially on issues related to nutrition and activity. Evaluation of its impact on mothers and babies can be applied at a later stage.

Key words: Knowledge, health, practice, pregnancy, females, Jeddah

Introduction

A woman who is healthy at the time of conception is more likely to have a successful pregnancy and a healthy child. Observational studies show strong links between health before pregnancy and maternal and child health outcomes (1). Despite the importance attributed to good pre-pregnancy care and its potential to improve pregnancy and child health outcomes (2) most pregnant women in Jeddah had moderate knowledge on risk factors for a healthy pregnancy.

A cross-sectional study was conducted to assess the levels of knowledge and behavior of pregnant women and showed that only 42% of them knew all the main risk factors for pregnancy (e.g., smoking, alcohol, obesity and lack of physical activity (3).

There are growing public health concerns about the transfer of contamination, such as nicotine monoxide and other harmful chemicals, from the pregnant women who smoke, to the growing fetus. Also, it can affect the function of placental vascular and umbilical artery blood flow and can pass directly into the fetal bloodstream (4).

Previous studies have shown that the proportion of women who smoke throughout pregnancy is 7–17% in high-income countries like Sweden, Norway, Germany, Canada, USA and Australia (5). In Saudi Arabia, the prevalence of smoking in 2015 was 2.9% in females (6).

Physical activity is not harmful during pregnancy and is important for health and wellness, which has led some women to choose to stay active during pregnancy (7). Pregnant women have cited discomfort during exercise, fear of harming the fetus and a history of abortion or infertility treatments as reasons for reducing physical activity (8). Many socio-demographic factors, such as obesity, lower educational level, income and greater number of children at home, are most frequently associated with reduced physical activity (9).

However, due to physical changes that occur during pregnancy, special precautions are also needed. Most guidelines suggest that women should seek advice from their health care provider before starting or continuing an exercise program. It is advised to avoid sports that involve risk of falls, trauma or collisions during pregnancy (10).

Yoga is an ancient discipline designed to bring balance and health to the physical, mental, emotional and spiritual dimensions of the individual (11). Yoga provides a great range of activity to the unborn child and mother in numerous ways. Yoga soothes the mind, refocuses energy and prepares the woman psychologically for labor (12).

Folk traditions among women have linked dental health with pregnancy, as dental minerals are recycled to benefit fetal bone formation. In addition, confusion over the safety of accessing dental care during pregnancy has led some women to avoid treatment during the prenatal period (6).

According to the World Health Organization (WHO), sexual health is a complex biological and sociological concept that requires a positive and responsible approach to sexuality and sexual relationships. Sexual health can be greatly altered during pregnancy, birth and the postpartum period (13). Several studies have assessed the knowledge and awareness of pregnant women about their practices during pregnancy, such as smoking, lack of physical activity, oral health care and obesity. To the best of our knowledge, there is a lack of information about the level of knowledge among Saudi females as to health practices during pregnancy.

Therefore, this study aimed to evaluate the knowledge and awareness of women in Jeddah regarding important health practices during pregnancy through these objectives: 1) to evaluate knowledge about traveling by airplane, 2) to evaluate awareness about the benefits of doing physical exercise, 3) to evaluate knowledge about sexual activity during pregnancy, 4) to evaluate awareness of good dental care and regular dentist visits during pregnancy, and 5) to evaluate awareness regarding the negative impact of smoking during pregnancy.

Subjects and methods

Study design and time frame: This was an observational cross-sectional study. The study was conducted over a six-month period from January to June 2019.

Sampling methodology: Participants in this study were taken from the general population of Jeddah, Saudi Arabia. A survey was sent to 445 females living in Jeddah. Cases accepted for analysis were pregnant, non-pregnant, married, widowed and single women, children, males and females. Excluded from the study were children less than 18 years of age.

Sample size was estimated using Epi Info (Epidemiological Information Package) version (21) 3.5.3. statistical package, assuming that the frequency was (20%) at a confidence interval of 95% and power of 80%.

Study instrument: Data were collected from study participants using a standardized, self-administered questionnaire applied in a Google form that had been downloaded from the internet. Informed consent was voluntarily sought from the participants after clarifying the aim of the study, methods and duration of the study.

1- A pilot study was carried out to evaluate the validity and reliability of the questionnaire given to participants. Test–retest reliability was assessed using the questionnaire two times on 10% of the sample size (45 subjects). Based on the result of the pilot study, some modifications and rearrangement of some questions were made. Validation of the questionnaire was done as follows: the questionnaires were translated using the back-translation technique. An expert translated the original questionnaire from English into Arabic. The Arabic version of the questionnaire was translated back into English by a bilingual individual. The

back-translated and original versions of the questionnaire were compared with attention given to meaning and grammar.

2-The self-administrated questionnaire consisted of three sections: 1) The first section consisted of socio-demographic characteristics: age, occupational status, marital status, having been pregnant before, pregnant now and number of children.2) The second section consisted of four close-ended questions about knowledge and awareness about wrong beliefs and risk behaviors during pregnancy: 1) Do you think playing sports has a harmful effect on pregnancy?, 2) Does smoking have a harmful effect on pregnancy and the fetus?, 3) Do you think doing yoga is useful for pregnant women?, 4) Do you think sleeping in a specific position (sleeping on the side) has a good effect on pregnant woman?

3-The third section consisted of five questions: (Awareness): 1) Do you think traveling by plane is harmful to pregnant women? 2) Do you think visiting a dentist will harm the fetus or the mother during pregnancy?, 3) Do you think sleeping and sitting a lot is useful for pregnant women?, 4) Do you think prolonged standing, daily movement and exercise may harm the pregnant woman?, and 5) Do you think sexual intercourse is harmful during pregnancy?.

Questions were developed from a review of qualitative and quantitative literature for relevant items (3,14,15) and consisted of 15 items.

Scoring of the questionnaire: Knowledge was measured by a set of nine questions. Four questions were asked with one point given for a yes answer and zero for a no answer. An additional five questions were asked, with three points given for a correct answer and 0 for an incorrect answer. Consequently, knowledge scores ranged from 0 to 19. The higher the score was, the better the knowledge. Cronbach's Alpha was used to measure consistency of the questionnaire. A reliability coefficient of 0.703 was considered acceptable.

Ethical considerations: Ethical approval for the study was obtained from participating hospitals and the ethical review committee of the college; all study participants provided consent for the study. The nature of the study was fully explained to the participants to obtain their informed consent prior to participation in the study, and data were kept confidential.

Data analysis: Data were entered in an Excel spreadsheet. The collected data were recorded then presented and analyzed using SPSS (Statistical Package for the Social Sciences) version 22.0 and qualitative data were presented as number and percentages.

Results

Out of the 460 women invited to fill out the questionnaire in this study, 445 responded, making a response rate of 96.7%. All of the included subjects were Saudi women. Various questions were asked to assess their knowledge of wrong concepts of pregnancy in the study area. The mean age (± SD) of the participants was 32.4 (± 9.26) years. However, a considerably high proportion of the respondents (79.77%) were in the age range of 20–40 years. Most of the respondents were married (65.6%), while 62.6% of them had been pregnant before and most of them (60.7%) had healthy children, numbering from one to eight children. Only 6.3% were pregnant at the time of the study. As far as occupation, nearly two-thirds (62.7%) worked (had a job) and 37.3% were housewives, as described in Table 1 and Figure 1.

Regarding the level of awareness of participants about health concepts during pregnancy, it was good to observe that most of the participants (61.1%) believed that sleeping on one side was not necessary during pregnancy. The majority of participants confirmed the importance of doing sports during pregnancy (90.6%) and that smoking had harmful effects on pregnancy and the fetus (98%) (Table 2 and Figure 2).

It was also good to find that most participants had previous knowledge about the importance of consulting a doctor during pregnancy regarding traveling by plane (75.5%), visiting a dentist (77.1%), sleeping and sitting a lot (63.1%) and daily movement during pregnancy (70.6%). When asked about intimate relations during pregnancy, only 5.6% found that it may lead to harm during pregnancy (Table 3 and Figure 3).

Regarding participants' level of knowledge as measured through the scoring system applied, it was found that most of the participants had accurate knowledge about health practices during pregnancy (> 60%).

Table 1: Demographic characteristics among students in the study

	Demographic Character	No	%
Age (32.4 ± 9.26)	20-40 years	355	79.7
	40-60 years	90	20.3
	Total	**445**	**100.0**
Married	Yes	292	65.6
	No	153	34.4
	Total	**445**	**100.0**
Pregnant now	Yes	28	6.3
	No	417	93.7
	Total	**445**	**100.0**
Pregnant before	Yes	279	62.6
	No	166	37.3
	Total	**445**	**100.0**
Had children	Yes	270	60.7
	No	175	39.3
	Total	**445**	**100.0**
Children number	1	48	10.8
	2	62	13.9
	3	66	14.8
	4 or more	94	34.8
	Total	**270**	**100.0**
Professionally active	Yes	166	37.3
	No	279	62.7
	Total	**445**	**100.0**

Figure 1: Socio-demographic characters among participants in the study

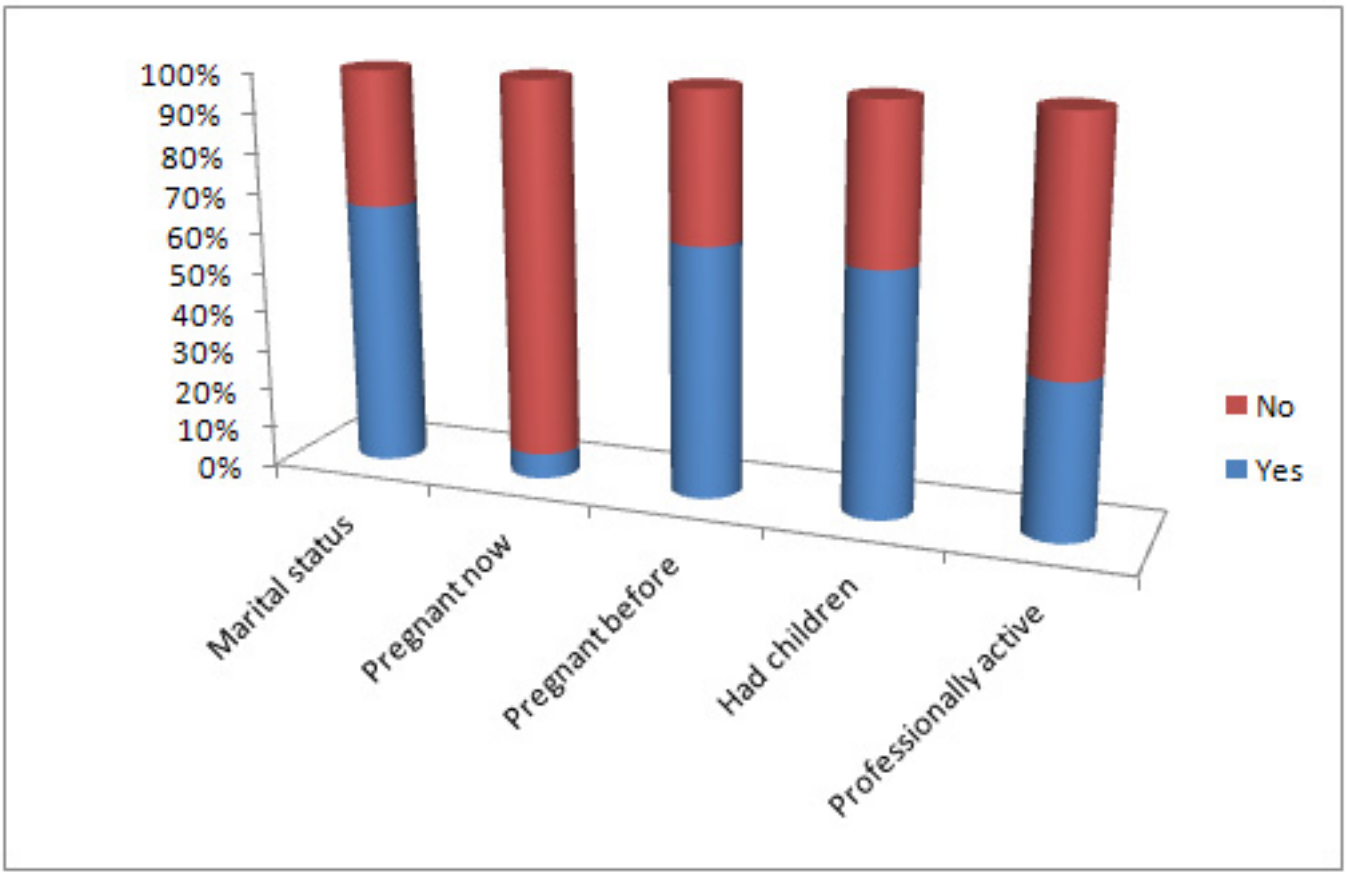


Table 2: Participants' knowledge about concepts during pregnancy

Variable		No	%
Sports have harmful effect on pregnancy	Yes	42	9.4
	No	403	90.6
	Total	**445**	**100.0**
Smoking has a harmful effect on pregnancy and fetus	Yes	436	98
	No	9	2
	Total	**445**	**100.0**
Drinking castor oil facilitates childbirth	Yes	160	36
	No	285	64
	Total	**445**	**100.0**
Yoga is useful for pregnant women	Yes	377	84.7
	No	68	15.3
	Total	**445**	**100.0**
Sleeping in a specific position has a good effect on the pregnant woman	Yes	173	38.9
	No	272	61.1
	Total	**445**	**100.0**

Figure 2: Participants' knowledge about concepts during pregnancy

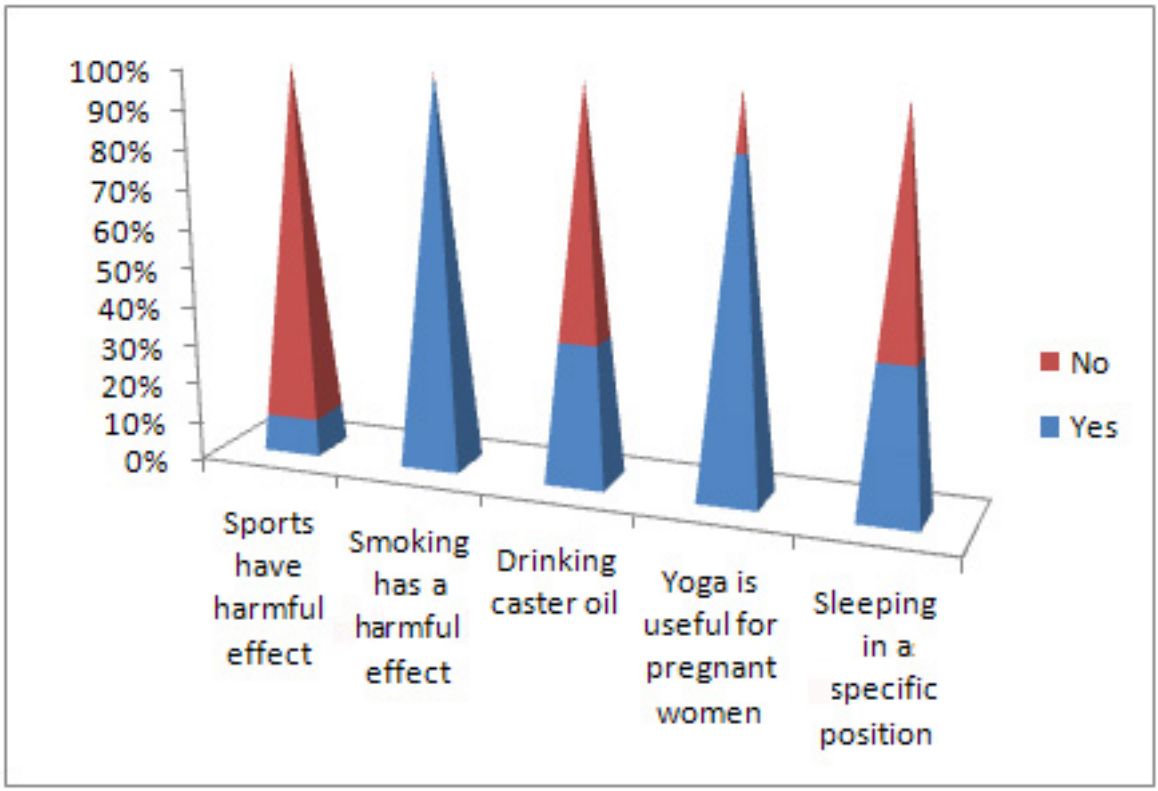
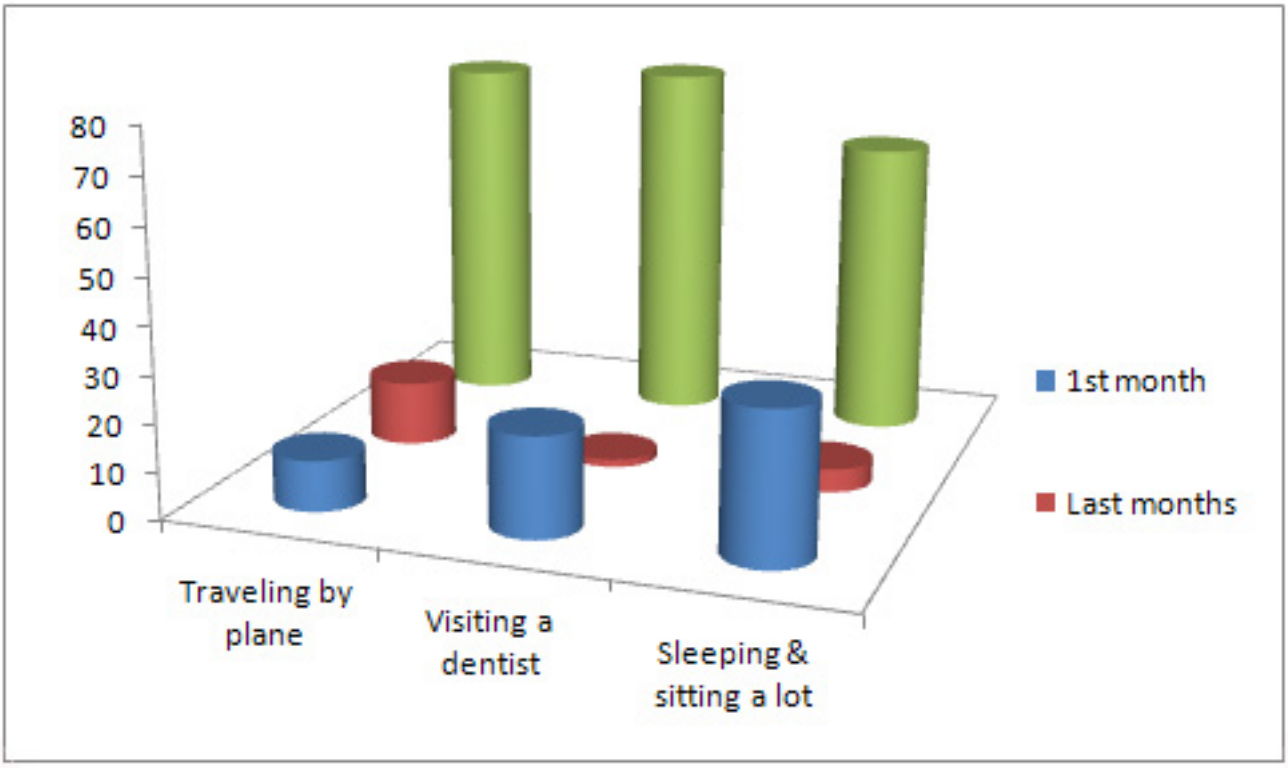


Table 3: Participants' awareness about travelling, visiting dentist, sleeping a lot, daily movement and sexual intercourse during pregnancy

		Answer (Yes)	%
Traveling by plane is harmful to pregnant women	1st months	48	10.8
	Last months	61	13.7
	After consulting doctor	336	75.5
	Total	**445**	**100.0**
Visiting a dentist will harm the fetus or the mother during pregnancy	1st months	95	21.3
	Last months	7	1.6
	After consulting doctor	343	77.1
	Total	**445**	**100.0**
Sleeping and sitting a lot is useful for the pregnant woman	1st months	142	31.9
	Last months	22	4.9
	After consulting doctor	281	63.1
	Total	**455**	**100.0**
Standing, daily movement and exercise may harm the pregnant women	1st months	117	26.3
	Last months	14	3.1
	After consulting doctor	314	70.6
	Total	**455**	**100.0**
Sexual intercourse is harmful during pregnancy	No	25	5.6
	1st months	97	21.6
	Last months	16	3.6
	After consulting doctor	307	69
	Total	**455**	**100.0**

Figure 3: Participants' awareness about travelling, visiting dentist, sleeping a lot and daily movement during pregnancy



Discussion

Despite the importance attributed to good pre-pregnancy care, a relatively limited number of women invest in pre-pregnancy health and care. This observational, cross section study aimed to evaluate the knowledge and awareness of Jeddah females regarding various health concepts during pregnancy.

The study was conducted on 445 females through a structured questionnaire applied in a Google form. The mean age (± SD) of the participants was 32.4 (± 9.26) years. This coincides with a study done in Saudi Arabia by Alfayez et al., (16) aimed at assessing the attitudes and knowledge of Saudi women about neonatal screening programs and their psychological impact. More than half of the participants in the age group 20–40 years had healthy children (82.7%) and about 31.2% had more than four children.

The women in this study sample were shown to be adequately knowledgeable (90.6%) concerning the practice of physical exercise during pregnancy. This is similar to results reported in various other countries, as these studies evaluate the knowledge of pregnant women about physical exercise during pregnancy and investigate why some women do not exercise (17,18,19). These studies found that women perceive physical exercise as beneficial because they believe it helps control blood glucose levels, minimizes weight gain, improves energy efficiency and mood, makes childbirth easier and contributes to fetal health (8). Despite some women recognizing these advantages, the rest of the women believed that it was more important to rest and relax during pregnancy than to exercise.

Several studies (20) have investigated the effects of a regular exercise program during pregnancy. A systematic review completed in 2010 found broad literature support for the antidepressant effects of exercise in the general population and how physical activity improves self-esteem and reduces the symptoms of anxiety and depression during pregnancy (21).

Regarding practicing yoga during pregnancy, more than 80% of participants agreed that it provides a great range of activity and benefits to the unborn child and the mother (12). Practicing yoga includes physical postures and breathing techniques that minimize complications of pregnancy, such as pregnancy-induced hypertension, intrauterine growth retardation and pre-term delivery (22). Most women reported the importance of practicing yoga at least once a week in early (92%) and mid (66%) pregnancy.

Smoking during pregnancy may cause many health problems for pregnant women and their newborn. Most participants (98%) believed in the harmful effects of smoking. Esposito et al. (3) stated that about 42% of women correctly knew all the main maternal risk factors of smoking during pregnancy. The study was conducted to explain the harm of smoking by the mother during pregnancy and found that smoking is strongly associated with low weight birth (2500 g), anatomical defects, such as congenital heart defects, and sudden infant death syndrome. Smoking also imposes a considerable economic burden on the health care system (5).

A survey was conducted on 10,735 individuals in Saudi Arabia aged 15 years or older between April and June 2013 to assess the status of tobacco consumption. It found that prevalence of current smoking was 12.2% and males were more likely to smoke than females (21.5% versus 1.1%) (23).

About food beliefs and practices during pregnancy, 64% of participants did not believe that drinking castor oil during pregnancy would help facilitate childbirth. Aikins (2014) (24) did a qualitative study that examined pregnancy food beliefs and practices in Ghana. Thirty-five multi-ethnic Ghanaian women between the ages of 29 and 75 were interviewed about pregnancy food beliefs and practices. About 23% showed that noncompliance is attributed to “faulty” cultural knowledge and poor access to expert nutrition knowledge and interventions.

A study done to describe the consumption habits of pregnant women in the Jazan region in five primary health care units in Saudi Arabia found that consumption of canned food (71%), sugary desserts (97%) and fast food (86%) were higher among pregnant women in the sample (25).

In summary, more than 60% of participants had good knowledge about health practices during pregnancy regarding exercise, nutrition, seeking medical care and smoking. In a study done by Daba et al. (2013) (15), the knowledge of pregnant mothers was relatively low concerning information about nutrition, which could be explained as differences in family income and educational status of mothers.

Limitations

One of the limitations was the need to increase the samples taken to compensate for incomplete questionnaires. And being a cross-sectional study showed the relation between variables without concluding a cause-effect relationship.

Conclusion

Overall knowledge about health practices during pregnancy was moderate. We recommend more health education programs about all aspects of antenatal care programs, including health education programs about maternal risk factors such as bad habits. Implementation and evaluation of such programs may help improve knowledge and attitudes among general populations.

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Knowledge and awareness of age related eye diseases in the population of the western region of Saudi Arabia

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Abstract

Background: Visual impairment represents one of the most important public health issues that significantly affects quality of life of millions worldwide, so increasing awareness will likely promote effective management and result in minimizing the burden of visual impairment and expense of eye care.

Objectives: The study aimed to evaluate the knowledge and awareness of the Saudi Arabian population in the western region regarding old age related eye diseases i.e. cataract, glaucoma, and diabetic retinopathy.

Subjects and Methods: This was an observational cross-sectional study performed on 580 from the general population from different cities in Saudi Arabia over a nine-month period from August 2018 to April 2019. Data was collected through a semi-structured questionnaire and was applied on a Google form. Awareness was defined as whether the respondent had ever heard of the disease.

Results: The study sample was 580 participants, 85% were above 45 years old, and the majority were female (71.4%). This study reported good knowledge of participants about cataract, diabetic retinopathy and glaucoma (84.1 %, 57.2% and 71.1%) while there was poor knowledge regarding age-related macular degeneration with statistically significant differences between them with the best knowledge in all aspects about cataract (p value <0.001).

Conclusion: The Saudi population who are 45 years or older had relatively good knowledge about diseases such as cataract, DR and glaucoma while they had poor knowledge about macular degeneration.

Key words: Cataract, Diabetic retinopathy, glaucoma, knowledge

Introduction

Visual impairment is one of the most important medical problems of the general population with an expected 253 million individuals suffering worldwide; about 36 million are blind. Glaucoma (12.3%), age-related macular degeneration (AMD) (8.7%), corneal opacities (5.1%) and diabetic retinopathy (4.8%) are other main causes of visual impairment [1].

The prevalence of blindness among the population aged 50 years and older in Saudi Arabia in 2010 was (3.3%) [2], 5.8% prevalence of glaucoma [3]. Cataract is responsible for 52.6% of blindness and 20.6% of visual impairment in the southwestern region of Saudi Arabia, considering one of the most common age-related eye diseases [4].

Age related eye disease such as Macular Degeneration, Cataracts, Glaucoma and Diabetic Retinopathy take time to develop with the person's age; these diseases are common in old age and threaten their ability to live alone and increases the risk of accidents [5].

Eye diseases, like too many chronic conditions such as diabetes and hypertension, are usually asymptomatic in the early stages, until the disease has progressed. However, eye diseases are generally ignored while those with other chronic diseases are usually monitored regularly [6].

Cognitive impairment is an important cause of morbidity in elderly persons. Some studies have reported associations between reduced visual acuity and poor cognitive function, but few have investigated the specific vision threatening eye diseases that may be associated with cognitive impairment. The current evidence on the relation between age-related eye diseases and cognitive impairment is still limited. In contrast other studies report that age-related eye diseases such as cataract, diabetic retinopathy (DR), and glaucoma are associated with poorer cognitive tests cores and higher prevalence of cognitive dysfunction [7].

Although cataract is considered one of the multifactorial diseases that have a genetic, socio-demographic, behavioral or environmental basis, age is still the single most effecting risk factor for cataract [8].

Age-related macular degeneration (AMD) is one of the macular diseases that is characterized by marked gradual visual impairment and the major cause of central visual loss, as it is resulted from neuro-degeneration of the photoreceptor–retinal pigment epithelial complex which with late onset, affects 10% of people older than 65 years [9].

In Saudi Arabia, AMD represents 3.3% of the major causes of blindness in individuals older than 50 years [10]. Patients' knowledge is relevant to the prevention of blindness, as most of the age-related eye diseases are treatable conditions and can be prevented or cured in almost 80% of conditions [11]. However, lack of awareness about sight-threatening eye diseases may contribute to the delay of seeking medical advice and losing the opportunity of management and prevention. So increasing awareness of these conditions will have a great effect in minimizing the burden of visual impairment and cost-effectiveness of eye care [12,13].

As far as our knowledge, the Saudi population has poor knowledge about age-related eye disease and its risk factors [4]. This study was a part of a community-based survey conducted to evaluate the knowledge and awareness of the Saudi Arabian population in the western region regarding old age related eye diseases i.e. cataract, glaucoma, and diabetic retinopathy.

Patients and Methods

Study design: This is a cross-sectional survey-based study aimed to to evaluate the knowledge and awareness of the Saudi Arabian population regarding old age related eye disease.

Time frame: The study was conducted over a nine-month period from August 2018 to April 2019.

Sampling methodology: This study was undertaken from the general population, who were above 45 years of age, in the western region of Saudi Arabia. Five hundred and eighty (580) participants were enrolled in the study. People who were not mentally or physically able to communicate, as well as those who did not consent to participate in the study were excluded from the study.

Sample size was estimated using EPI INFO (Epidemiological Information Package) version (21) assuming that the frequency was (20%) at a confidence interval of 95 % and power of 80%. The Sample was conventional sample; selection of sample was done when sample size had been completed, and the application form closed.

Study instrument: Data was collected from study participants using a semi-structured questionnaire, applied in a Google form that had been loaded on the internet. The questionnaire included questions about demographic characters, awareness, attitudes and practice with regard to visual impairment in general and about the most prevalent age-related eye diseases in Saudi Arabia (glaucoma, cataract and diabetic retinopathy).

Pilot study: A pilot study was carried out (10% of the sample size - 50subjects) to evaluate the validity and reliability of the questionnaire applied on participants. Based on the result of the pilot study some modifications and rearrangement of some questions were done. The results of the pilot study were not included in the final data analysis. Validation of the questionnaire was made as follows: the questionnaires were translated using a back-translation technique. An expert translated the original questionnaire from English into Arabic. Arabic version of the questionnaires was translated back into English by a bilingual individual. The back-translated and original versions of the questionnaire were compared with attention given to the meaning and grammar.

Semi-structured questionnaire included five boxes obtained from Katibeh et al., [14] and Lee et al [6]:

(1) The first box included socio-demographic characteristics such as Age, sex, education, employment, residency and insurance and other questions about participants' attitudes and practice with regard to visual impairment in general, and included six questions: Have you ever had any visual problem?, Have you ever been prescribed spectacles for near or far visual impairment?, Which types of spectacles do you wear consistently?, Has an ophthalmologist visited you so far?, Do you have history of major ophthalmologic treatment including surgery, laser or medical therapy?, How does vision loss affect your daily performance?.

(2) The second box included five close-ended questions about the participants' knowledge about cataract (hearing about cataract, definition of cataract, source of information, effect of it and if it is treatable or not). (3) The last three boxes each included six close-ended questions about the participants' knowledge about diabetic retinopathy, glaucoma and age-related macular degeneration (hearing about disease, definition of it, source of information, effect of it, if it is treatable or not and first presentation). Awareness was defined as whether the respondent had ever heard of the disease.

Ethical considerations: Ethical approval for this study was obtained from the ethical review committee of the college. The nature of the study was fully explained to the study participants and formal online web page consent was obtained from each participant before they filled out the questionnaire. All participants could respond at their convenience and available time and their privacy was assured.

Data analysis: The collected data were coded, entered, presented, and analyzed by computer using a data base software program, Statistical Package for Social Science (version 20, SPSS Inc., Chicago, IL). Quantitative variables were expressed as the mean ± standard deviation (Mean ± SD), while the qualitative variables were expressed as a number and percentage. For quantitative variables, independent samples t-test (t) was used as appropriate for normally distributed data. Chi square test was used to detect the relation between different qualitative variables. The results were considered statistically significant when the significant probability was (p-value < 0.05).

Results

This study was a cross sectional study which included 580 participants from both sexes and different areas to assess the knowledge about different eye diseases. Most of the participants were above 45 years and the majority of them (71.4%) were females. About 80% had university education and unemployed participants were (54.8%). Most of the participants had no insurance coverage (64.5%) as described in Table 1 and Figure 1.

Regarding general vision care practice of the participants, about (44.8%) had no eye problems and nearly half of them (49.3%) did not wear spectacles. Only 7.6% mentioned that they have problems in near and/or far vision (combined problem). Most of the participants did not have ophthalmology surgery before (74.8%). To approximate the attitude of participants toward eye health care, they were asked how much visual loss would affect their daily performance. About 37.1% of the participants believed that vision loss would mainly affect their daily performance, 23.8% believed it would be a moderate effect and 11.9% believed in a minimal effect; an unexpected, 27.2% believed that vision loss would have no effect on their daily performance as shown in Table 2.

Regarding knowledge of participants about the age related disease, about 84.1 % of the participants had positive awareness about cataract and most of them obtained their information from family members or friends and magazines (31.7% & 30.9%) and 44.8% knew it is a blinding disease and 75.7% knew that it can be treated (Table 3).

Regarding awareness of diabetic retinopathy, nearly more than half of the participants (57.2%) had positive awareness, 55.2% knew it is a blinding disease and 53.7% knew that it can be treated as shown in Table 4. While 71.2 % of the participants had positive awareness about glaucoma, 39.8% knew it is a blinding disease and 55.7% knew that it can be treated (Table 5).

About 82.1 % of the participants had not heard about macular degeneration, 22.6% knew it is a blinding disease and 18.3% knew that it can be treated (Table 6).

There were highly statistically significant differences regarding the knowledge about the four eye diseases (cataract, diabetic retinopathy, glaucoma and macular degeneration) with the best knowledge in all aspects about cataract (p value <0.001) (Table 7).

Table 1: Basic characteristics of the studied group (n=580)

Basic characteristics	Study group (n=580)	
	No	%
Age		
>=45	493	85
<45	87	15
Total	**580**	**100.0**
Sex		
Male	166	28.6
Female	414	71.4
Total	**580**	**100.0**
Education		
University	466	80
High school	92	15.9
Intermediate	5	0.9
Elementary	14	2.4
Non educated	3	0.5
Total	**580**	**100.0**
Employment		
Unemployed	318	54.8
Employed	188	32.4
House wife	46	7.9
Retired	28	4.8
Total	**580**	**100.0**
Insurance		
No insurance	374	64.5
Complete	92	15.9
Partial	114	19.7
Total	**580**	**100.0**

Figure 1: Distribution of the studied group over different areas

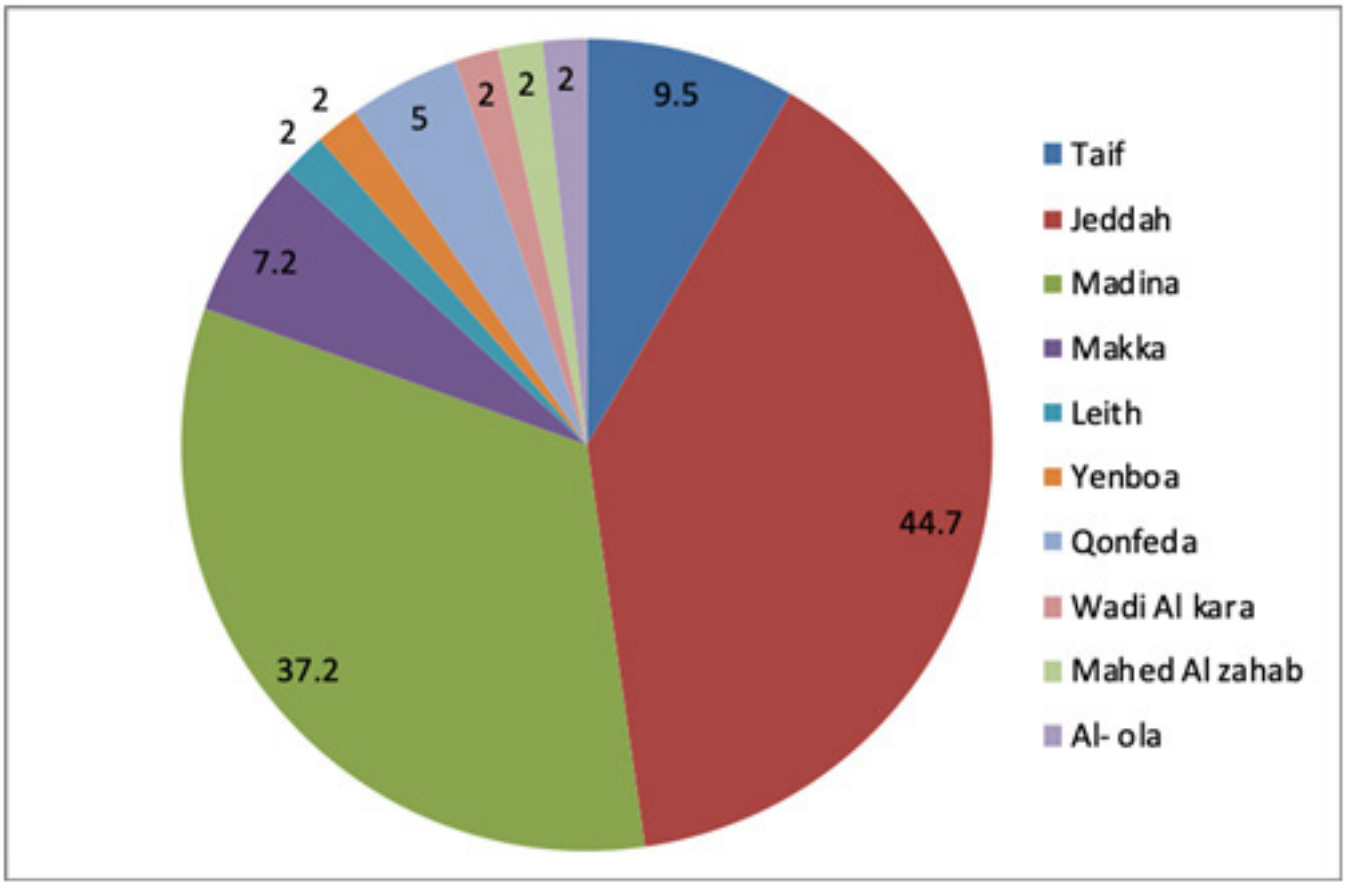

Table 2: Medical characteristics concerning vision of the studied group

Visual characteristics	Study group (n=580)	
	No	%
Visual problems		
For near vision	166	28.6
For far vision	96	16.6
Combined problem	58	10.0
No problem	260	44.8
Total	**580**	**100.0**
Visual spectacles		
For near vision	152	26.2
For far vision	98	16.9
Combined problem	44	7.6
No problem	286	49.3
Total	**580**	**100.0**
Type of Visual spectacles		
For near vision	140	24.1
For far vision	87	15.6
Combined problem	33	5.7
No problem	320	55.2
Total	**580**	**100.0**
Ophthalmology visit		
Yes, eye problem	240	41.4
Yes, for check up	72	12.4
No need	67	11.6
No, Financial reason	166	28.6
No, Limited time	25	4.3
No, other reason	10	1.7
Total	**580**	**100.0**
Ophthalmic surgery		
Yes	146	25.2
No	434	74.8
Total	**580**	**100.0**
Daily performance		
Very high	120	20.7
High	95	16.4
Intermediate	138	23.8
Low	69	11.9
No	158	27.2

Table 3: Knowledge about cataract among the studied group

Items	Study group (n=580)	
	No	%
Awareness (heard about cataract)		
Yes	488	84.1
No	92	15.9
Total	**580**	**100.0**
Definition		
White spot in the eye	50	8.6
It is a white pupil	89	15.3
Opacity of the lens	203	35.0
Any changes in eye lens which make it unclear or white	99	17.1
Visual loss due to a covering shield in front of light rays	45	7.8
Don't know	94	16.2
Total	**580**	**100.0**
Source of your information about cataract		
Ophthalmologist	94	16.2
Family members or Friends	184	31.7
General Practitioner	39	6.7
Optometrist	5	9.0
Medical Staff	17	2.9
Media	62	10.7
Books or Magazines	179	30.9
Total	**580**	**100.0**
What is the worst effect of cataract?		
Blindness	260	44.8
Low Vision	156	26.9
Pain	8	1.4
Cosmetic Problems	7	1.2
Other	69	11.9
Blurriness	80	13.8
Total	**580**	**100.0**
Is cataract a treatable condition?		
Yes	490	75.9
No	6	1.0
Don't know	31	23.1
Total	**580**	**100.0**

Table 4: Knowledge about diabetic retinopathy among the studied group

Items	Study group (n=580)	
	No	%
Awareness (heard about Diabetic retinopathy)		
Yes	332	57.2
No	248	42.8
Definition		
It is a preventable side effect of diabetes or high blood sugar on eyes	160	27.6
It is a side effect of diabetes on posterior parts of eye	80	13.8
Any damage of retinal vessels in diabetic patients	48	8.3
A vision threatening condition caused by high blood sugar	156	26.9
Don't know	136	23.4
Total	**580**	**100.0**
Source of your information about DR		
Ophthalmologist	79	13.6
Family members or Friends	116	20.0
General Practitioner	35	6.0
Optometrist	3	5.0
Medical Staff	24	4.1
Media	59	10.2
Books or Magazines	264	45.5
Total	**580**	**100.0**
What is the worst effect of cataract?		
Blindness	320	55.2
Low Vision	111	19.1
Pain	16	2.8
Cosmetic Problems	6	1.0
Other	127	21.9
Total	**580**	**100.0**
Is diabetic retinopathy a treatable condition?		
Yes	207	35.7
No	66	11.4
Don't know	307	52.9
Total	**580**	**100.0**
What is the first presentation of DR in most cases?		
Visual loss	49	8.4
Pain	55	9.5
It may start without any alarming symptoms or signs	102	17.6
Other	129	22.2
Blurring vision	245	42.2
Total	**580**	**100.0**

Table 5: Knowledge about glaucoma among the studied group

Items	Study group (n=580)	
	No	%
Awareness (heard about glaucoma)		
Yes	413	71.2
No	167	28.2
Total	**580**	**100.0**
Definition		
High pressure of the eye	203	35
An eye disease which limits the visual field	54	9.3
An eye disease which damages the optic nerve	39	6.7
Increasing the internal liquid of eye	150	25.9
Don't know	134	23.1
Total	**580**	**100.0**
Source of your information about glaucoma		
Ophthalmologist	81	14.0
Family members or Friends	151	26.0
General Practitioner	39	6.7
Optometrist	6	1.0
Medical Staff	16	3.1
Media	67	11.6
Books or Magazines	218	37.6
Total	**580**	**100.0**
What is the worst effect of glaucoma?		
Blindness	231	39.8
Low Vision	132	22.8
Pain	47	8.1
Cosmetic Problems	11	1.9
Other	159	27.4
Total	**580**	**100.0**
Is glaucoma a treatable condition?		
Yes	323	55.7
No	23	5.5
Don't know	225	38.8
Total	**580**	**100.0**
What is the first presentation of glaucoma in most cases?	57	9.8
Visual loss	83	14.3
Pain	90	15.5
It may start without any alarming symptoms or	162	27.9
signs	188	32.4
Other	**580**	**100.0**
Blurring vision		
Total		

Table 6: Knowledge about macular degeneration among the studied group

Items	Study group (n=580)	
	No	%
Awareness (heard about macular degeneration)		
Yes	104	17.9
No	476	82.1
Total	**580**	**100.0**
Definition		
Don't know	247	42.6
Degenerative condition affecting the central part of the retina	183	31.6
High pressure of the eye	38	6.6
An eye disease which limits visual field	112	19.3
Total	**580**	**100.0**
Source of your information about macular degeneration		
Ophthalmologist	50	8.6
Family members or Friends	54	9.3
General Practitioner	20	3.4
Optometrist	5	0.9
Medical Staff	23	4.0
Media	31	5.3
Books or Magazines	397	68.9
Total	**580**	**100.0**
What is the worst effect of macular degeneration?		
Blindness	125	21.6
Low Vision	82	14.1
Pain	32	5.5
Cosmetic Problems	23	4.0
Other	318	54.8
Total	**580**	**100.0**
Is macular degeneration a treatable condition?		
Yes	106	18.3
No	37	6.4
Don't know	437	75.3
Total	**580**	**100.0**
What is the first presentation of macular degeneration in most cases?		
Visual loss	35	9.1
Pain	55	9.5
It may start without any alarming symptoms or signs	59	10.2
Other	310	53.4
Blurring vision	103	17.8
Total	**580**	**100.0**

Table 7: Comparing Knowledge about different eye diseases among the studied group

Knowledge	Cataract No %	Diabetic retinopathy No %	Glaucoma No %	Macular degeneration No %	p-value
Awareness	488(84.1)	332 (57.2)	413(71.2)	104(17.9)	<0.001*
Definition of the disease	302(52.0)	160 (27.7)	203(35.0)	183(31.6)	<0.001*
Realized it as a blinding disease	260(44.8)	320 (55.2)	231 (39.8)	125(21.6)	<0.001*
Realized the disease as a treatable condition	490(75.9)	207 (35.7)	323(55.7)	106(18.3)	<0.001*

* Highly significant p <0.05 Chi square test

Discussion

The burden of age-related eye diseases can be reduced to a great extent through promoting the knowledge of common eye problems among the general population [15]. Therefore, this study was carried out mainly to assess the knowledge and awareness among the old aged towards common eye diseases in Saudi Arabia.

This study included 580 participants from both sexes and different areas in Saudi Arabia. Most of the participants were above 45 years and most of them (71.4%) were females and the majority had university education.

In this study, about 27.2% believed that vision loss would have no effect on their daily performance while in a study done by Katibeh et al [14], to assess general awareness and knowledge regarding cataract, glaucoma and DR, it found 8.4% believed that vision loss would have no effect on their daily performance at all.

Regarding knowledge of participants about the age related disease, about (84.1 %) of the participants had positive awareness about cataract 57.2% about DR, 71.1% about glaucoma and 17.9% about age-related macular degeneration. Al-Lahim et al [16] found that the awareness among study participants was 64.6% regarding cataract, 77.3% about DR and 67.5% regarding glaucoma while, Lee et al [6] found the average awareness rate over the 3-year study period was 23.69% in subjects with cataract and 1.45% in subjects with age-related macular degeneration and in Katibeh et al [14], awareness regarding glaucoma, cataract and DR was 46.6%. In Bihar (India), 60.3% of the subjects were not aware of glaucoma [17]. Shrestha et al [18] observed the awareness of cataract among 49.6%, and diabetic retinopathy among 29% of the Nepal population.

Regarding cataract as one of the most common age-related eye diseases, in this study about 35% knew that it is opacity of the eye lens, 44.8% confirmed that it may lead to vision loss and almost 75.9% had information that it is a treatable disease. This is not agreed with in a study done by Magliyah et al [4], who reported poor awareness in Makkah region about cataract, as most of participants (72.4%) did not know that cataract is an increase in the opacity of the lens and 78% did not know that cataract can lead to blindness and about two-thirds of them (65.9%) did not know that it is treated surgically when it affects vision, while Alghamdi et al [19], reported great numbers (85%) of the studied population had known that surgical intervention is the recommended treatment of cataract.

The difference in the degree of the awareness rates between cataract and other diseases might be due to differences in the nature of symptoms and patient recognition of each disease, as cataract is more frequently detectable because blurriness is an easily recognized symptom [20].

In the current study, 55.7% were aware that untreated glaucoma could lead to loss of vision while it was observed in 45.1% of the participants in a study done by Al-Lahim et al [16]. In a study done in India, knowledge about glaucoma was observed in only 41% of the participants [21].

Increasing awareness of the studied participants about diabetic retinopathy in the current study is based on the high prevalence of diabetes shown previously among the Saudi adult population, as many Saudi families had at least one member withdiabetes (e.g., first, second, or third degree relatives). Therefore, many efforts have been done toward population health promotion about diabetes in Saudi Arabia, which was mainly supported by the Ministry of Health and other health-related sectors [22].

Regarding medical staff as a source of information for the population in Saudi Arabia, we reported 2.9% about cataract, 4.1% DR, 3.1% glaucoma and 4% macular degeneration. It is observed that there is a gap between health-care providers and the Saudi population which may be due to presence of barriers between the population and health care as the health-care system, including sociocultural barriers, educational barriers, environmental barriers, financial barriers, geographical barriers and health status barriers [4].

In this study, there was poor knowledge regarding age-related macular degeneration with statistically significant differences with other age-related eye disease with (p value <0.001). This may be explained as age-related macular degeneration is not a very common disease in the community in Saudi Arabia [23]. Hence, this result may indicate that there was a great gap of eye public awareness, especially regarding macular degeneration.

Limitations
One of the limitations of this study was using a questionnaire for collecting data which is prone to recall bias, and being a cross-sectional study it showed the relation between variables without concluding a cause-effect relationship.

Conclusion

In conclusion, the Saudi population who are 45 years or older had relatively good knowledge about diseases such as cataract, DR and glaucoma while they had poor knowledge about macular degeneration and efforts should be made to increase the knowledge and aware¬ness of the disease. Efforts should be made to increase understanding and acceptance of the importance of routine eye examination for early detection and treatment of such conditions, thereby reducing visual impairment and the cost of eye care and need to increase contact between population and medical staff will provide a greater chance of detecting eye disease.

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Fatigue in rheumatoid arthritis patients; association with mood status, Kingdom of Saudi Arabia: a cross-sectional study

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Abstract

Background: Fatigue in rheumatoid arthritis patients is a significant problem that might affect mood status as most studies among RA patients have shown a relationship between fatigue and mood status.

Objectives: This study was done to assess the presence of fatigue and mood disturbances among RA patients in Saudi Arabia and possible association between depression and fatigue in RA.

Methods: A cross sectional study was carried out on rheumatoid arthritis (RA) patients using convenience sampling. The data collected using a self-designed online questionnaire containing multi-dimensional assessment of fatigue using Global Fatigue Index (MAF-GFI) and Beck depression inventory for mood status. It was distributed to all regions of Saudi Arabia through the Rheumatoid Charity Association starting from October 2018 until January 2019. The total number of patients included in the study was 244, after applying inclusion and exclusion criteria.

Results: An 89.8% of the 244 participants were female while 10.2% were male. RA patients had a mean MAF-GFI score of (29.91 ±8.17) and a mean Beck score (17.72 ±10.13). 28.7% of RA patients had mild mood disturbance, and depression was significantly correlated with fatigue in RA patients. Marital status and employment were significantly correlated with fatigue, while gender was not. These demographic data had no significant correlation with depression.

Conclusion: Depression and fatigue show a clear association in RA patients. Depression is prevalent enough to warrant regular screening for warning signs of mood disturbance, particularly when fatigue has been established.

Key words: fatigue, rheumatoid, arthritis, mood, status, Saudi Arabia

Introduction

Rheumatoid Arthritis (RA) is a common autoimmune systemic inflammatory disease affecting approximately 1% of the worldwide population. The interaction of genetic and environmental factors results in a cascade of immune reactions, which ultimately lead to the development of synovitis, joint damage, and structural bone damage [1].

The cause of RA is not known exactly. It is not considered a hereditary disease, yet it does appear to run in families. It is may be due to environmental causes, genetic causes, or a combination of both. However, certain factors seem to have a role in increasing the risk of developing RA or triggering its onset e.g. smoking cigarettes, obesity, bacterial or viral infection [2].

A study conducted in 2015 at Taif city, Saudi Arabia, showed that RA affects around 0.3% of the Saudi population [3]. The majority of studies among RA patients have shown a relationship between fatigue and mood status.

There are studies that have shown that comorbidities and pain are commonly associated with both RA and depression [3,4]. One of these studies has declared that depression may contribute to unemployment and loss of work productivity [5]. Moreover, depression may cause financial problems, due to the high prices of its medications [5]. Also, it has been discovered that patients with RA are suffering both physically and psychologically [6]. More importantly, the prevalence of major depressive disorder in patients with RA is 42% [6].

In addition to that, a study which took place in 2018 has pointed out that depression, lower sleep quality and high disease activity were all associated with the increase of fatigue levels among Egyptian RA patients [7]. Also in 2015, a study has shown that 41-80% of RA patients struggle with significant fatigue [8].

Fatigue in RA is a significant problem which has become a great burden on modern society causing disability, pain, and social, emotional, and economic problems. Depression is suggested to be a contributing factor to fatigue in RA, however, this hypothesis has not been tested yet in Saudi Arabia. Hence, the aim of this study was to investigate the presence of fatigue and mood disturbances among RA patients in Saudi Arabia and to study the possible association between depression and fatigue in RA.

Subjects and methods

Study design: The study was a cross sectional study.
Study setting and time frame: The study was carried out in all regions of Saudi Arabia through the Rheumatoid Charity Association, starting from October 2018 until January 2019. The questionnaire was sent to participants as a link to the online survey.

Sampling methodology: A convenience sampling technique was used according to the availability of the participants in the Association. A sample of 244 patients was included in the study. Patients from both genders who have rheumatoid arthritis and are 18 years old or over were included. Participants who did not give consent for participation were excluded from the study.

Study instrument: All the data required for the study was collected using a self-designed online questionnaire containing multidimensional assessment of fatigue using Global Fatigue Index (MAF-GFI) and Beck depression inventory for mood status.

MAF-GFI is used to assess the fatigue in RA patients, and contains 16 questions that evaluate the effect of fatigue on the patient's daily activities; the score ranged from 0 which means no fatigue to 50 which indicates severe fatigue.
Beck depression inventory is a tool to evaluate the mood of the patients during the past two weeks. It contains 21 questions, and the score ranges from 0 to 63; the score from 1-10 is considered normal, 11-16 is considered mild mood disturbance, 17-20 is considered borderline clinical depression, 21-30 is considered moderate depression, 31-40 is considered severe depression, and over 40 is considered extreme depression.

Ethical considerations
The study was approved by the Ethical Committee of Taif University. Online consents were applied and taken by all patients before participating in the study.

Data analysis: Data entry and analysis was done using SPSS version 20. Qualitative data were expressed as numbers and percentages. Quantitative data were expressed as mean and standard deviation (Mean ± SD), where Mann-Whitney and Kruskal Wallis Tests were applied for non-parametric variables. Correlation analysis using the Spearman's test was done, and a p-value of <0.05 was considered as statistically significant.

Results

In this study, we aimed to investigate the presence of fatigue and mood disturbances among RA patients and to study the possible association between depression and fatigue among RA patients.

Table 1 shows that 89.8% of the 244 participants were female, while 10.2% were male. Age ranged from 16-77 (Mean 34.56 ± SD 10.41). Regarding marital status, the majority (55.3%) were married. As for employment, 13.5% were students, 35.2% were employed and 51.2% were unemployed.

Table 2 shows that the mean Beck score among participants was 17.72(± SD 10.131) (indicative of borderline clinical depression) with a maximum score of 53 and a minimum score of zero. In the inventory, higher scores suggest more advanced levels of depression. The mean score of the MAF is 29.91(± SD 8.176), with a maximum score of 43.73 and a minimum score of 6.36. A higher score indicates more severe fatigue and worse effects on activities of daily living.

Figure 1 shows that:
1) Most Rheumatoid Arthritis patients had mild mood disturbance (28.7%) while extreme depression was observed in only 2%.

2) Among the participants, 34.8% had depression (moderate, severe and extreme) and an additional 11.5% had borderline clinical depression.

Table 3 shows a significant correlation was found between depression and fatigue in RA patients (r= 0.355, P=<0.000).

Table 4 shows that a non-significant relationship was found between gender and fatigue (p= 0.744). A significant relationship was found between marital status and fatigue (p= 0.014), and a significant relationship was found between employment and fatigue (p= 0.018). A non-significant relationship was found between gender and depression (p= 0.44), between marital status and depression (p= 0.294), and between employment and depression (p= 0.528).

Table 1: Distribution of the study participants according to their demographic data

Gender	No.	%
Male	25	10.2
Female	219	89.8
Marital status	**No.**	**%**
Single	109	44.7
Married	135	55.3
Employment	**No.**	**%**
Student	33	13.5
Employment	86	35.2
Unemployment	125	51.2

Table 2: Mean of Beck/MAF Score

Variable	Beck Depression Inventory Score (a) (Mean ± SD)	Multidimensional Assessment of Fatigue Scale (b) (Mean ± SD)
Mean	(17.7213 ± SD 10.131)	(29.9132 ± 8.176)
Minimum	0.00	6.36
Maximum	53.00	43.73

Table 3: Spearman correlation between n depression and fatigue

Test	Value of (r)	p-value
Spearman test	0.355	0.000

Figure 1. Distribution of levels of depression among RA patients

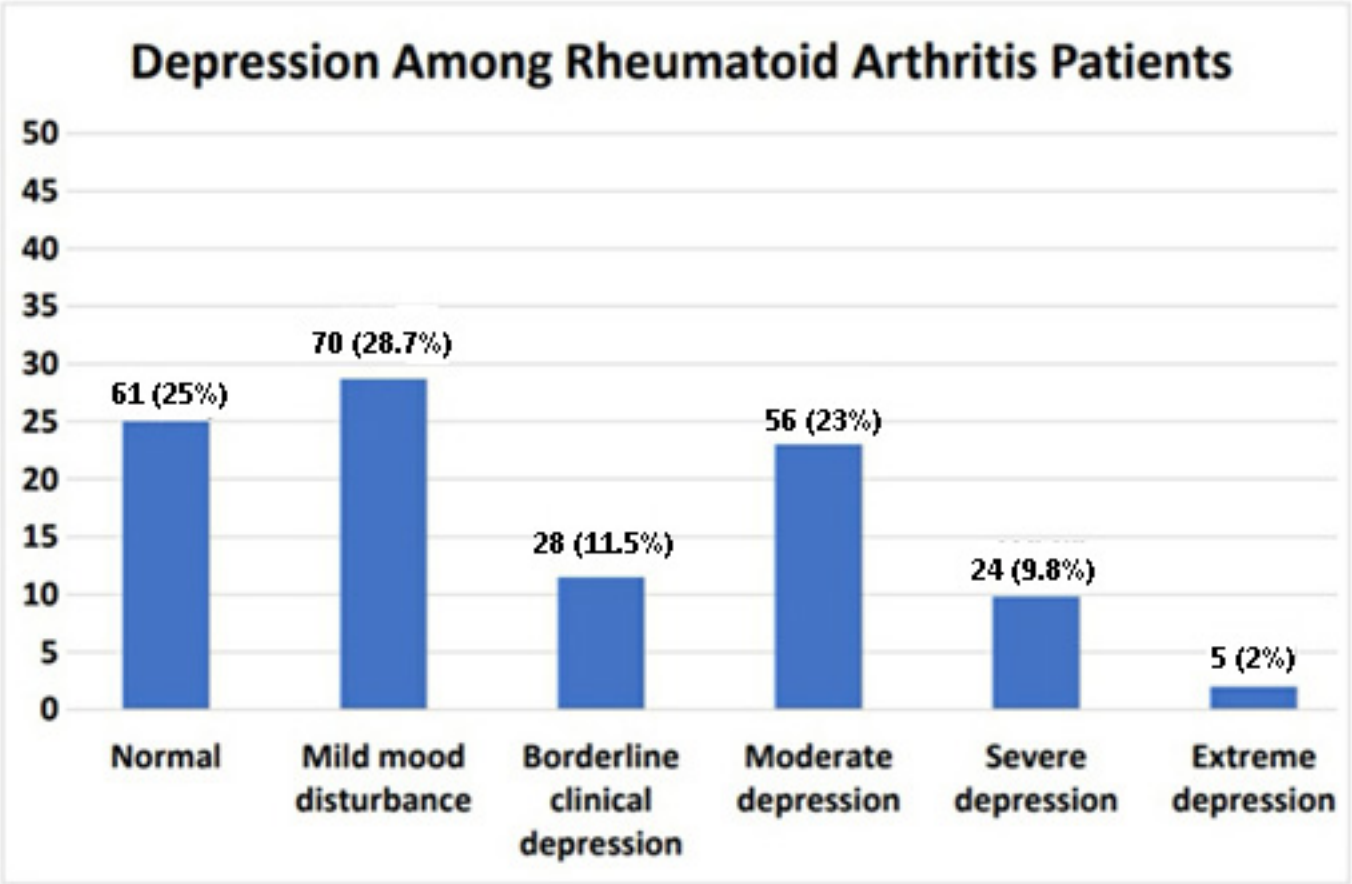

Table 4: Relationship between demographic data and fatigue / Depression

Fatigue (a)					
		Mean ±SD	Value		p-value
Gender	Male	31.03 ±5.68	Mann-Whitney u	2628.5	0.744
	Female	29.78 ±8.41			
Marital Status	Single	28.55 ±8.46	Mann-Whitney u	6015	0.014
	Married	32 ±7.8			
Employment	Student	26.95 ±8.25	Kruskal-Wallis test	7.986	0.018
	Employed	31.54 ±7.69			
	Unemployed	29.57 ±8.28			
Depression (b)					
		Mean± SD	Value		p-value
Gender	Male	19 ±10.07	Mann-Whitney u	2481.5	0.444
	Female	17.57 ±10.15			
Marital Status	Single	18.6 ±10.79	Mann-Whitney u	6783	0.294
	Married	17 ±9.54			
Employment	Student	19.54 ±10.65	Kruskal-Wallis test	1.276	0.528
	Employed	17.40 ±10.13			
	Unemployed	17-45 ±10.23			

Discussion

In this study, the mean Beck score among participants was 17.72 ±10.131 which is higher than the mean Beck score in two previous studies conducted in Egypt and Turkey, where the Beck score was 12.8±7.3 and 12.22 ± 6.30, respectively [4,9].

The mean MAF score was 29.91±8.176, which is less than the MAF score of a study that was conducted in the US, which was 55.80 ±29.41 [10]. It is almost equal to the mean MAF score of the study conducted in Turkey [9], and higher than the MAF score of participants in the study conducted in Egypt, which was 27.2±8.9 [4].

In another study in Morocco, the MAF score was 30.21 ± 11.32 and the study linked fatigue to the duration of RA, the degree of functional impairment, the activity of disease, the intensity of joint pain, and the rate of anti-cyclic citrullinated protein (CCP) antibodies [11]. Also, there is a study that used a different score which is the visual analogue score to assess fatigue in RA patients, which found that more than 80% of participants had clinically relevant fatigue [12].

A cohort study done for 1 year used subscale Checklist Individual Strength-fatigue assessed fatigue at the beginning and at the end of the study and they found that 50% of RA patients experienced severe fatigue both at baseline and at the end of the study [13].

Many studies have related fatigue in RA patients with pain and showed that patients who received methotrexate experienced less pain [12,14,15,16,17]. Another study related fatigue in RA patients to inflammation (erythrocyte sedimentation rate) [18]. At the same time, a study conducted in 2010 showed that fatigue is related to pain and not inflammation [19].

The present study revealed a significant relationship between fatigue and depression; high MAF score was associated with higher depression estimates which is consistent with a meta-analysis study done in 2013 [20].

A meta-analysis concluded that the prevalence of major depressive disorder and depressive symptoms in Rheumatoid Arthritis were 16.8% and 28.8%, respectively [20]. In the present study 34.8% of participants had depression (moderate, severe and extreme) and an additional 11.5% had borderline clinical depression which indicates higher rates in Saudi Arabia.

When investigating age as an influencer on depression we found no significant difference, agreeing with two studies conducted in Turkey in 2007 and 2011 and a study conducted in China in 2010 [6,9,21].

A meta-analysis revealed a significant negative association between depression and the mean age of patients in the study [20]. In the present study the mean age of those with high depression rates was 34.56.

Other demographic data (gender, marital status and employment) have no statistically significant difference [6.9.20.21].

In this study, there was a non-significant relationship between gender and fatigue. The same result was present in one study that was conducted in the United Mexican State 2010, and another one done in Holland in 2010, and another two studies that were conducted in the US 2008 and in 1996 [15,22,23,24]. A significant relationship was found between fatigue and female sex in two previous studies that were conducted in the US in 2010 and in 1998, a study that was conducted in Finland in 2009, a study that was done in Sweden in 2009, and another one done in Norway in 2008 [17,25,26,27].

The present study showed a significant relationship between marital status and fatigue, which is in agreement with a study that was conducted in Poland in 2017. This study found that depression in married subjects was not as severe as in singles [28].

This study also found a significant relationship between employment and fatigue corresponding with a study conducted in Holland in 2005 [29]. However, in the study conducted in Turkey in 2011, there was a non-significant difference with respect to demographic characteristics [9].

Limitations

A limitation of the present study was the depending on electronic questionnaires that RA patients filled out themselves with possible subjectivity, which can affect the accuracy of the data and which is prone to recall bias. This can be corrected using a prospective study design to eliminate this bias.

Conclusion

The study concludes that depression and fatigue show a clear association in RA patients. Depression is prevalent enough to warrant regular screening for warning signs of mood disturbance, particularly when fatigue has been established.

This association needs to be further studied in relation to potential factors that are hypothesized to contribute to mood disturbance and fatigue, and the deterioration of both. Like the level of inflammatory markers like IL-6 and IL-17, the duration of the disease, and the use of biologic medications [30]. The wide variation of the fatigue and depression assessment tools used across different studies, could be overcome in the future, by the determination of the most sensitive and specific assessment tools to unify and standardize the results.

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Mid-Term Outcomes of Laparoscopic Sleeve Gastrectomy in a Single Private Institution

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Abstract

Background: Overweight and Obesity prevalence in Saudi Arabia is estimated to be more than 75%. This has not really deviated from the prevalence worldwide as the World Health Organization reported that obesity has increased three folds in nearly 40 years. Obesity is a disease of ongoing process with a magnitude of effects on different body systems. There are different approaches to deal with obesity and surgery is one of them. Obesity has been approached vigorously with different types of surgeries such as Laparoscopic Sleeve Gastrectomy (LSG), Laparoscopic Roux-en-Y gastric bypass and band insertion. LSG has gained much popularity pursuant to its safety and having more anatomical and physiological similarity to the body.

Objectives: The aim of this paper is to report the midterm outcomes of LSG in a single private institution in Saudi Arabia.

Subjects and Methods: This is a consecutive retrospective chart review from October 2013 to December 2017 for patients who underwent LSG in a single private institution by a single surgeon. We evaluated patients' demographics, preoperative and postoperative medical conditions, Body Mass Index (BMI), medications, length of hospital stay and short and long-term complications.

Results: A total of 464 obese patients who underwent bariatric surgery were evaluated. Most of our patients were females (57.23%). The mean age at operation was 38.2 years old (11-66). Patients' preoperative mean BMI and mean excess body weight (EBW) were 43.27 (27-77), and 57.58 (23-144), respectively. The overall morbidity in this series was 1.73%. Nearly, 27% of diabetic patients became able to maintain a normoglycemic level without using their treatment. In regard to gastro esophageal reflux disease 42% of our patients were symptomatically free postoperative. From those patients who had obstructive sleep apnea, 46% of them were eased from it post operatively.

Conclusion: LSG exhibits an efficient measure for controlling obesity. Midterm outcomes of this procedure revealed a significant reduction in multiple chronic advanced conditions.

Key words: Bariatric surgery; Sleeve gastrectomy; Morbid obesity; Co-morbidities; Outcomes.

Introduction

The World Health Organization (WHO) has defined obesity as abnormal or excessive fat accumulation that presents a risk to health. Obesity is measured by the body mass index (BMI), which is calculated by a person's weight (in kilograms) divided by the square of his or her height (in meters). A person with a BMI of 30 or more is generally considered obese (1). The prevalence of overweight and obesity worldwide has been estimated in 2016 to be > 1.9 billion adults and > 600 million individuals, respectively (1). In Saudi Arabia, the latest studies showed that the proportion of overweight and obesity has reached up to 75% of Saudi society (2). Alshehri et al reported that overweight and obesity among adult males and females were (30.7% and 28.4%) and (14% and 23.6%), respectively (2). It is counted as the most common cause of morbidity in both genders among all age groups (2,3,4). Obesity has been associated with serious chronic diseases including diabetes, cardiovascular disease and cancer. Preventive measures should be applied vigorously to decrease the rate of obesity.

Laparoscopic Sleeve Gastrectomy (LSG) is the procedure that is performed by removing > 80% of the stomach and forms a tubular structure along the lesser curvature of the stomach. Despite the fact that Roux-en-Y Gastric Bypass (RYGB) is the most frequent bariatric procedure performed universally, LSG is the most common bariatric procedure in the United States, Canada, and Asia (5). LSG is determined as a restrictive procedure; with less nutritional defect expected because it is not a malabsorptive surgery such as RYGB. Short-term studies confirm that the LSG has the same weight loss and metabolic benefits in comorbidities to RYGB (6). The National Institutes of Health (NIH) Consensus Development Board recommends that bariatric surgery be designed for only patients with severe obesity as defined by BMI ≥ 40 or ≥ 35 kg/m2 with high-risk comorbid conditions (7).

The aim of this study is to demonstrate the outcomes of LSG in our center and to compare our data to the international institutions.

Method

After institutional review board approval, we retrospectively identified and analyzed all patients in a single center who underwent LSG between October 2013 and December 2017. Data collection included demographic data of the patients, height, weight, BMI, patients' comorbidities, postoperative outcomes and changes in comorbidities postoperatively. SPSS software, version 23 (SPSS Inc., Chicago, Illinois, USA) was used for data entry and analysis. All analyses were carried out at a significance level of 0.05.

Results

Patient demographics

Between October 2013 and December 2017, a total of 464 obese patients who underwent LSG in a single private institution by a single surgeon were enrolled in this study. The study sample included 199 males (42.5%) and 265 females (56.6%) whose mean age at operation was 38.2 (±12.42). Patients' preoperative mean BMI and mean excess body weight (EBW) were 43.27 kg/m2 (±6.93 kg/m2) and 57.58 kg (±17.55 kg) respectively, demonstrated clearly in Figures 1 and 2. The length of hospital stay ranged between 1 to 7 days (mean 3 days). Most of our patients received the scheduled follow-up, with an average follow-up period of 15.2 months.

The 30-days post sleeve gastrectomy morbidity prevalence was not significant (8/463= 1.73%). Only to mention, 4 (0.86%) cases suffered from pain and another 4 (0.86%) cases had perigastric hematoma. Two weeks following LSG, a significant decrease in BMI (43.27 ± 6.93 vs. 40.72 ± 6.22 kg/m2, p-value < 0.001) was achieved. As outlined in Table 1, the number of patients gradually decreased throughout the follow-up period. Although, there is a noted increase in BMI post sleeve gastrectomy at the two and three years' follow-up, these data were considered not significant, as the number of patients during these periods were considerably small compared to the baseline figure. Hence, the results cannot be generalized. On the other hand, regarding the data up to one-year follow-up, as per intention-to-treat strategy, analysis was carried out regardless of the missing data. The prevalence of Gastroesophageal reflux disease (GERD) was significantly reduced postoperatively (p-value < 0.001). In addition, 59 patients (42.45%), diagnosed with pre-operative GERD either on or without medication, were symptomatically free post sleeve gastrectomy.

Furthermore, 146 patients were diabetic preoperatively, and a significant decrease in prevalence in those cases was calculated (p-value < 0.0001), as 40 patients out of 146 (27.40%) stopped their treatment when followed up one-year post surgery. Moreover, there was no significant difference recorded for patients regarding their hypertension status from the baseline (p-value > 0.05).

Linear regression analysis

There was no significant impact for gender or preoperative clinical characteristics (diabetes, hypertension, depression, GERD, glycosylated hemoglobin and obstructed sleep apnea) on the rate of weight loss during the follow-up period post LSG. However, after adjusting for gender and preoperative clinical characteristics, a significant association was interpreted after the regression of weight loss rate 2-weeks and 1-month post sleeve gastrectomy and age at operation. As for every year decrease in the patient's age, there was a significant decrease in the 2-weeks post-operative BMI by 0.062 kg/m2 (p-value = 0.015) Also, a significant decrease in the 1-month post-operative BMI by 0.116 kg/m2 was recorded for every one-year decrease in patient's age (p-value = 0.011). However, patient's age was no longer a significant factor affecting the rate of BMI post sleeve gastrectomy during the remaining of the one-year follow-up period.

Table1: Number of patients who presented for follow-ups postoperatively in different periods.

Follow-up postoperative	Number of patients	Mean BMI (Std. Deviation)	p-value
2 weeks	464	40.73 (6.22	< 0.001
1 month	166	38.55 (6.97)	< 0.001
3 months	184	35.45 (5.84)	< 0.001
6 months	163	32.33 (5.31)	< 0.001
12 months	131	29.97 (5.29)	< 0.001
24 months	19	31.55 (6.92)	NA
36 months	7	33.43 (10.23)	NA

Figure 1: Distribution of the studied sample according to the gender

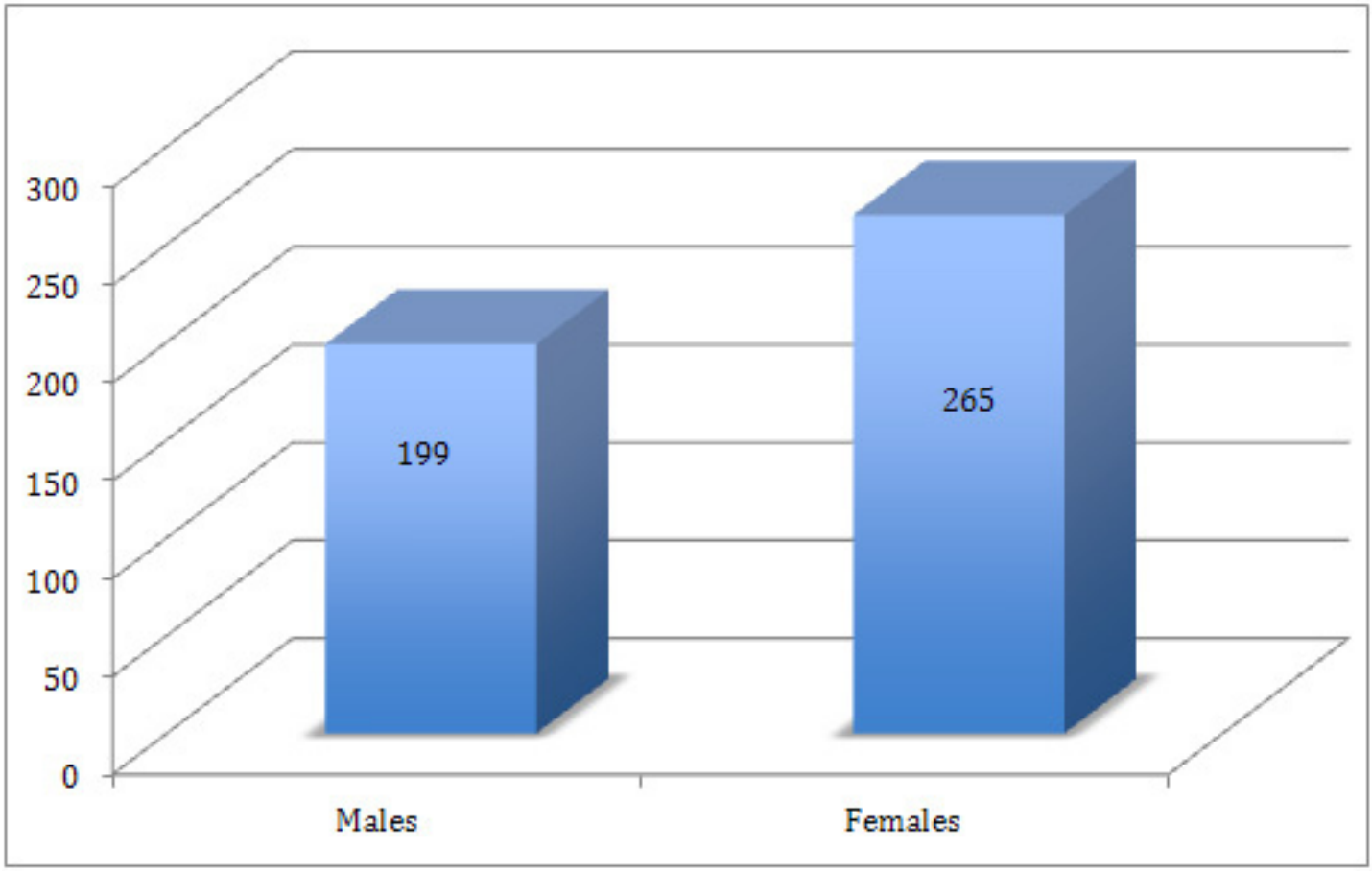
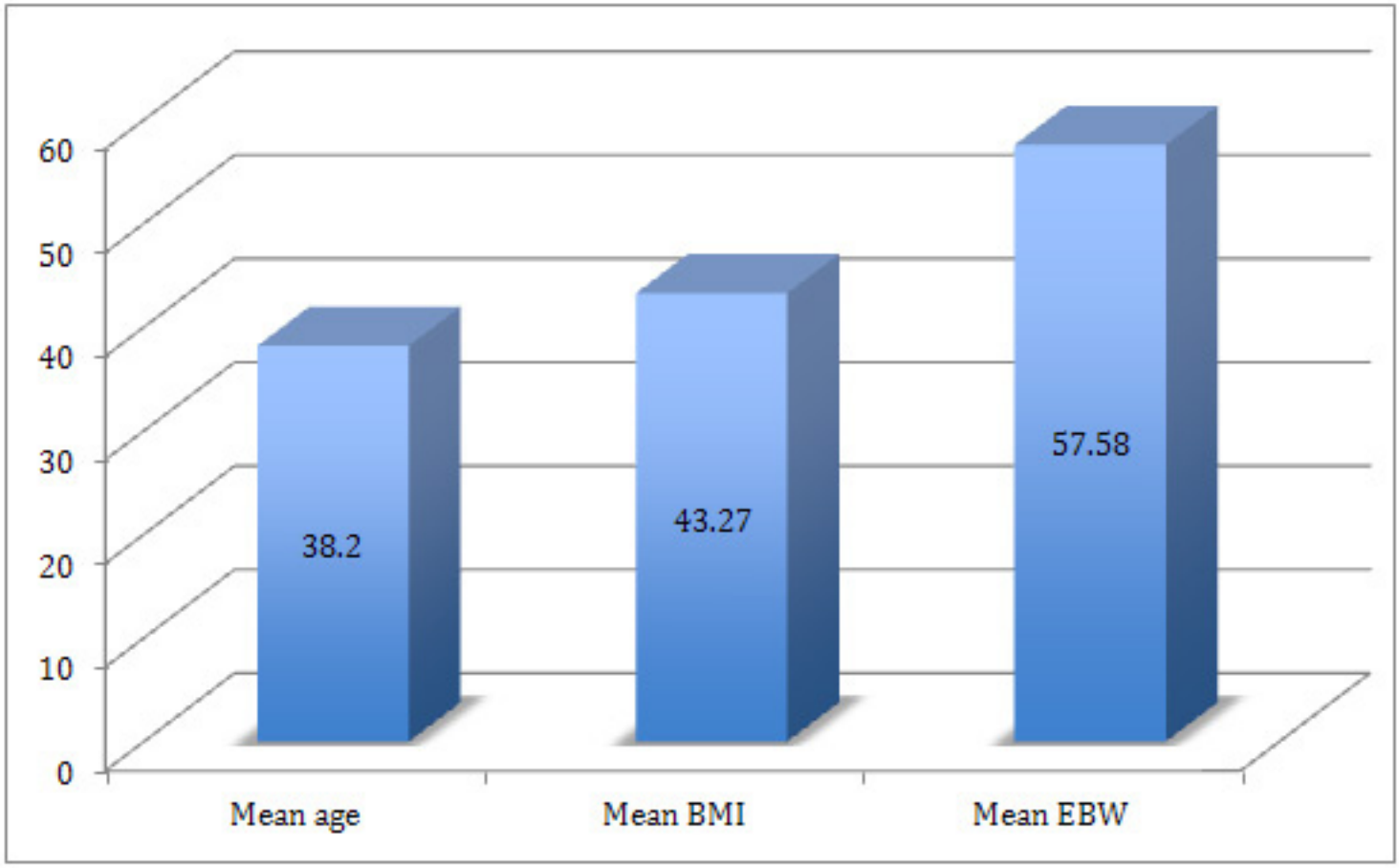


Figure 2: This Chart shows the Mean of each of age, BMI and EBW



Discussion

In consideration of best practice guidelines and recommended surgical techniques of LSG, many peer review studies have been assessing and reporting safety and reproducibility of this procedure in obese patients with different categories (8,9,10,11,12).

The current study assesses the midterm outcome of LSG in different end points including morbidity, mortality and desired outcomes. The well-known 2 complications postoperatively are staple line bleeding and leakage from the anastomotic area (10). A description of morbidities ranged from 0%-24% in published papers with a mortality of 0.39% (10). This series states a 0% mortality rate and non-significance 30-days morbidity rate; which was 1.73%, and was managed conservatively.

Approaching the planned endpoints of LSG starting with DM type 2, as this study continued to solidify that bariatric surgery is superior to medical therapy in terms of glycemic control. Schauer et al (13) reported a similar outcome, which reveals a significant result of maintaining HA1C of 6% in absence of anti-diabetic medications. This series showed 27% of patients had good glycaemic control while stopping their anti-diabetic treatment when followed up one-year post surgery. Obesity has been established as a strong risk factor for OSA (14). Although the diagnosis of OSA might involve different methodological approaches (15,16), In this series, patients who had been on CPAP or BiPAP were titled as OSA in preoperative data. These included 41 patients. Significant reductions with 46% of those patients at ease of OSA postoperatively.

Stenard et al managed to review 25 studies stating the negative and positive impacts of LSG on GERD (17) albeit the diagnosis of GERD was established among those studies in different ways, ranging from clinical evaluation up to endoscopy. 13 out of 25 studies showed negative impact where 84% of patients showed persistence of GERD rather than worsening symptoms. However, in those patients with hiatal hernia repair, GERD was significantly decreased from 42.1% to 3.1% (17). The remaining twelve studies showed the positive impact of LSG on GERD where they came out with results in favour of LSG, hence they brought attention to the surgical technique (17). Our paper shows a significant reduction of GERD postoperatively in 42.45% of patients who were diagnosed preoperatively and who became symptomatically free postoperative. This research reinforces the efficacy of weight reduction of this procedure especially in short and midterm periods, as shown in many other studies, (8, 11,13) although this paper presents only the overall reduction in BMI in different periods which are shown in Table 1.

Losing patients during the follow-up period was considered one of the limitations of this paper. This has been a known problem and would require another study to identify its constraints. In addition, this is a retrospective study with its own known limitations. In fact, a prospective randomized controlled and multi-centric study could help to answer these questions appropriately.

Conclusion

LSG exhibits an efficient measure for controlling obesity. Midterm outcomes of this procedure revealed a significant reduction in multiple chronic advanced conditions.

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Breastfeeding knowledge, attitude and practice among mothers attending Maternity Hospital at King Faisal Medical complex, Taif city, Saudi Arabia 2018

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Abstract

Background: Breastfeeding has countless benefits for the mother and infant as well as society.

Objectives: The aim of this study was to assess the level of knowledge, attitude and practices of breastfeeding with its determinants among mothers in Taif city.

Methods: A cross sectional study was done on Saudi mothers who attended the obstetrics and gynaecology clinics in Taif city. An electronic questionnaire was used for data collection. It included 4 parts seeking demographic information, knowledge, attitude and practice toward breastfeeding.

Results: The study included 384 women; their mean age was 34.7 ±8.1 years, and their children aged between 1- 6 years with a mean age of 2.6 ±1.2 years. About 26% of the participants had a very good level of knowledge regarding breast feeding whereas 15.6% had a poor level of knowledge. Most of the participants (77.1%) had health education about breast feeding. Slightly more than half of the participants (52.3%) had a positive attitude towards breastfeeding and almost two-thirds (64.1%) of the participants had breast fed their infants up to 6 months of age. The majority of them (76%) started breastfeeding in the first day after birth.

Conclusion: The level of knowledge about breastfeeding in this sample was moderate and slightly more than half of them had a positive attitude towards breastfeeding. The main source of health education about breastfeeding in our sample was from the doctors.

Key Words: knowledge; attitude; practice; breastfeeding; exclusive; Saudi

Introduction

Breast feeding is the feeding of an infant from the mothers' breasts directly rather than using infant formula from a baby bottle (1). There are two types of breast feeding ; the first is known as exclusive breastfeeding where the mother gives the infant milk from the breast during the first hour after childbirth due to the milk in first hours containing colostrum which is very rich in antibodies and nutrients to protect the infant and for the first 6 months of life without the addition of any water or food (1,2). The second type is nonexclusive breastfeeding and is defined as providing the fluids or food other than vitamins, drugs and minerals to infants before six months of age (3).

The non-exclusive breastfeeding may increase the risk of the death due to pneumonia and diarrhea between 0–5 months of age by more than two fold (4). In addition it increases the frequency of disease occurrence such as obesity, diabetes, cardiovascular diseases and autoimmune disorders later in life (5,6).

Breastfeeding has countless benefits for the mother and infant as well as society (7). These include reducing the risk of type 1 and 2 diabetes, infant diarrhea, sudden infant death syndrome, childhood leukemia and infections (8,9). It also, has many benefits for the mother such as prolongation of the period of amenorrhea postpartum that increases pregnancy spacing. Moreover, it reduces the risk of type 2 diabetes, and ovarian and breast cancer (10,11). Psychologically, breastfeeding is very important for initiation of strong rapport between infant and mother (12,13,14,15).

Initiation and continuation of breastfeeding is considered a global problem. The United Nation's Children Fund in 2012 showed that 32.6% out of 136.7 million babies born worldwide were exclusively breastfed up to 6 months of age (16). In the United Arab Emirates (U.A.E) a recent study showed that all the Mothers who participated in the study had initiated breastfeeding (98%); only 25% of the infants had been exclusively breastfed up to 6 months of age (17).

The knowledge, beliefs and practices among mothers regarding breastfeeding vary in different countries. In Saudi Arabia, a recent study on school teachers in Asser region showed that out of 384 women, only 8.3% reported exclusive breastfeeding for 6 months, while 31% starting breastfeeding their children within 1 hour of delivery. Regarding their practice, the most common reason given by the participants for beginning breastfeeding was their Islamic religious background (18).

Another study done in Hail district (Northwestern Saudi Arabia) showed that out of 60 women, fifteen (31.2%) reported that breast milk components are good for immunity protection against diseases, thirteen (27.1%) reported it has sufficient nutrients, whereas 8(16.8%) did not know of any advantage. As for practice 70 % of the mothers had started breastfeeding after birth while 30 % did not. The most common reasons for stopping breastfeeding were mother's work 22(38.6%), mother's disease 9 (15.8%) whereas the least reason was the child rejection, given by 2(3.5%) (19).

With the advancement of urbanization and the exit of Saudi women to work in different sectors, we think that plays an important role in affecting the baby's breastfeeding and also there is limited research on the knowledge and practices of breastfeeding among mothers in Taif (in Makkah region west of Saudi Arabia). So, the aim in our study was to assess the level of knowledge, attitude and practices of breastfeeding with its determinants among the mothers attending Obstetrics and Gynecology Clinics in the Maternity hospital at King Faisal Medical Complex.

Materials and Methods

Study Design: The design of this study was cross-sectional and it was carried out in Taif, a city located in western Saudi Arabia. The data collection period was September 2018 to September 2019 from Maternity hospital at King Faisal Medical Complex and was to assess the level of knowledge, attitude and practices of breastfeeding with its determinants among the mothers attending Obstetrics and Gynecology Clinics.

Study Population: 384 mothers were included in this study. The mothers varied in age group and were from different educational levels. Mothers studied were Saudi in nationality, were attending obstetrics and gynecology clinics, and who resided in Taif and agreed to participate in this study. Mothers who were Non-Saudi, not attending obstetrics and gynecology clinics, not residing in Taif and who refused to participate were excluded from the study.

Study instrument: A pre-designed electronic questionnaire was performed in Google form was published and completed by mothers in Obstetrics and Gynecology Clinics at Maternity Hospital in King Faisal Medical Complex by data collectors over a one-month period. The items of the questionnaire were taken from a previous study (20).

The questionnaire included four sections. The first was demographic information about age, nationality, educational level, job of mother and educational level, job of husband. It also included information about the age of baby, number of children, type of last delivery and if the mother received health education about breastfeeding and who presented it to her. The second section was about the breastfeeding knowledge including all questions measuring the knowledge of mother about breastfeeding.

To clarify more there were six questions about advantages of breastfeeding to baby, six questions about Advantages of breastfeeding to mother, four questions about colostrum, three questions about effective feeding, four questions about duration of feeding, two questions about complementary feeding, five questions about problems with breastfeeding, two questions about breast

engorgement and six questions about practical aspects of breastfeeding. The third section was to assess the attitude and it included nine questions. The fourth section was about breastfeeding practice and included two questions. Regarding knowledge questions, the right answers were assigned a score of "1" whereas wrong or don`t know answers were assigned a score of "0". The overall score was computed by summing up all the given scores, and these were converted to percentages. Participants who had a knowledge score percentage less than 50% were considered as having "poor knowledge, those who had a knowledge score percentage ranged between 50 and 74% were considered as having "Fair knowledge" whereas those with a knowledge score percentage of 75% or more were considered as having "good knowledge" (21).

Attitude statements were scored in the way that the higher the score, the more positive the attitude towards breast feeding and the lower the score, the more negative the attitude. The total score was computed for each participant by adding the score of the 9 statements. Thus the total score ranged between 9 and 45. The median score was then computed (it was 33). Participants who scored below the median value were considered as having a "negative attitude" whereas those who scored at or above the median value were considered as having a "positive attitude".

Ethical considerations: The authors obtained ethical approval from the Scientific Research and Medical Ethics Committee of Medical College at Taif university. Approval from the Maternity hospital at King Faisal Medical Complex was also obtained. Verbal and written consent was taken from mothers before completing the questionnaire.

Data Analysis: Data analysis was done by using the Statistical Package for the Social Sciences (SPSS) program version 25. Qualitative data was presented as number and percentage and Chi Squared test was performed to assess the relationship between variables. Quantitative data were expressed as mean ± SD and Student`s t-test was used to compare means of a continuous variable between two groups, whereas one-way analysis of variance (ANOVA) test was utilized to compare means of one continuous variable between more than two groups. A p-value of less than 0.05 was considered statistically significant.

Results

The study included 384 women. Their age ranged between 20 and 66 years with a mean of 34.7 years and standard deviation (SD) of (±8.1 years). Their children were aged between one and 6 years with a mean of 2.6 years and standard deviation (SD) of (±1.2 years). University graduated women represent 41.2% of the participants. Slightly less than half (47.4%) of their husbands were university graduated. Most of them (78.9%) were house wives while 47.6% of their husbands were governmental employees. Almost half of them (45.1%) had more than three children. Cesarean section was reported as a mode of delivery among 33.1% of the participants as in Table 1.

Having health education about breast feeding was mentioned by most of the participants (77.1%) as demonstrated in Figure 1. The main sources for breast feeding knowledge were doctors (42.5%), nurses (29.1%) and family/relatives (22%) as demonstrated in Figure 2.
Breast feeding knowledge

Table 2 presents the responses of the participants to knowledge statements about breast feeding. Regarding advantages to baby, most of the participants correctly recognized that breast feeding causes good development of baby teeth and gum (87.2%), increases the baby's intelligence (79.4%), reduces the risk of respiratory infection (76.6%) and helps to reduce the incidence of child abuse (74%). Concerning advantages to mothers, the majority of the participants knew that frequent breastfeeding may prevent breast engorgement (83.1%), mothers who practiced breastfeeding have a low risk of getting breast cancer (82%), and breastfeeding helps to stimulate uterine contraction (80.2%). Regarding colostrum, most of the participants (80.2%) knew that Colostrum is the mother's early milk, which is thick, sticky, and yellowish in color. The majority of the women could recognize that babies sleep well after they receive adequate breastfeeding (90.1%) and correct positioning helps to achieve effective breastfeeding (88.8%). Most of the participants (78.4%) knew that breastfeeding should be continued up to 2 years even though the baby has received complementary food and complementary feeding should be introduced at 6 months of age (82.6%). Less than half of them (45.1%) could recognize that breast engorgement may be reduced with cold packs. Most of the women knew that belching after feeding shows that the baby is full (74.5%).

Overall, about one quarter of the participants (26.6%) had a good level of knowledge regarding breast feeding whereas 15.6% had a poor level of knowledge. As in Figure 3.

Table 3 presents factors significantly associated with breast feeding knowledge level were maternal educational level, as the highest rate of poor knowledge (34%) was observed among the lowest educated women whereas the lowest rate of poor knowledge (8.8%) was observed among secondary school educated women, $p<0.001$. Also, husband`s educational level was associated significantly with breastfeeding knowledge as the highest rate of poor knowledge was observed among women whose husbands were primary school educated (44%) whereas the lowest level of poor knowledge was recorded among women whose husbands were university graduated (8.8%), $p<0.001$. Also, the number of children was significantly associated with breastfeeding knowledge as the lowest rate of good knowledge was observed among women with only one child (11.1%), 0.043.

Attitude towards breastfeeding
As demonstrated in Table 4, the majority of the participants either strongly agreed or agreed that doctors and nurses encourage breastfeeding (90.6%), breastfeeding being easier than feeding infant formula (87%), and breastfeeding is a good way to decrease family expenses (83%) whereas

almost two-thirds of them either strongly agreed or agreed that community encourages breastfeeding over feeding infant formula (69%) and breastfeeding has no negative effect on marital relationship (64.6%).

Overall, slightly more than half of the participants (52.3%) had a positive attitude towards breastfeeding as in figure 4. As obvious from Table 5, none of the study factors was significantly associated with attitude of the participants towards breast feeding.

Practice of breast feeding

It is realized from Figure 5 that almost two-thirds (64.1%) of the participants had given breast milk to their infants up to 6 months of age. The majority of them (76%) were breastfed in the first day after birth as demonstrated in Figure 6. Regarding supplementary feeding with breast milk in the first 6 months,as in figure 7, 25.8% gave artificial feeding whereas 17.2% and 2.1% gave water and oral medications, respectively. Almost one-fifth of the participants (19%) gave nothing but breast milk in the first 6 months of life.

Table 6 shows older women were significantly more likely to breastfeed in the first 6 months after birth compared to younger women (35.9±7.8 versus 32.6±8.1), p<0.001). Lowest educated women were significantly more likely to breast feed their babies compared to university graduated women (76.6% versus 56.3%), p=0.007. Similarly, women whose husbands were lowest educated were significantly more likely to breast feed their babies compared to those whose husbands were university graduated (87.5% versus 60.4%), p=0.047. The highest level of practicing breastfeeding till the age of 6 months was reported among women whose husbands were retired (83.3%) while the lowest rate was reported among those whose husbands were working in fields other than governmental, military, retired and private (50%). The difference was statistically significant, p=0.023. Number of children was significantly associated with breast feeding in the first 6 months as women with three children or more reported the highest rate (77.5%) and women with one child reported the lowest rate (48.9%), p<0.001. Women delivered by normal vaginal delivery were significantly more likely to breastfeed their children compared to those delivered by cesarean section (68.1% versus 55.9%), p=0.019. Having health education about breast feeding was significantly associated with its practice, p=0.034.

Figure 1: History of having health education about breast feeding among the participants

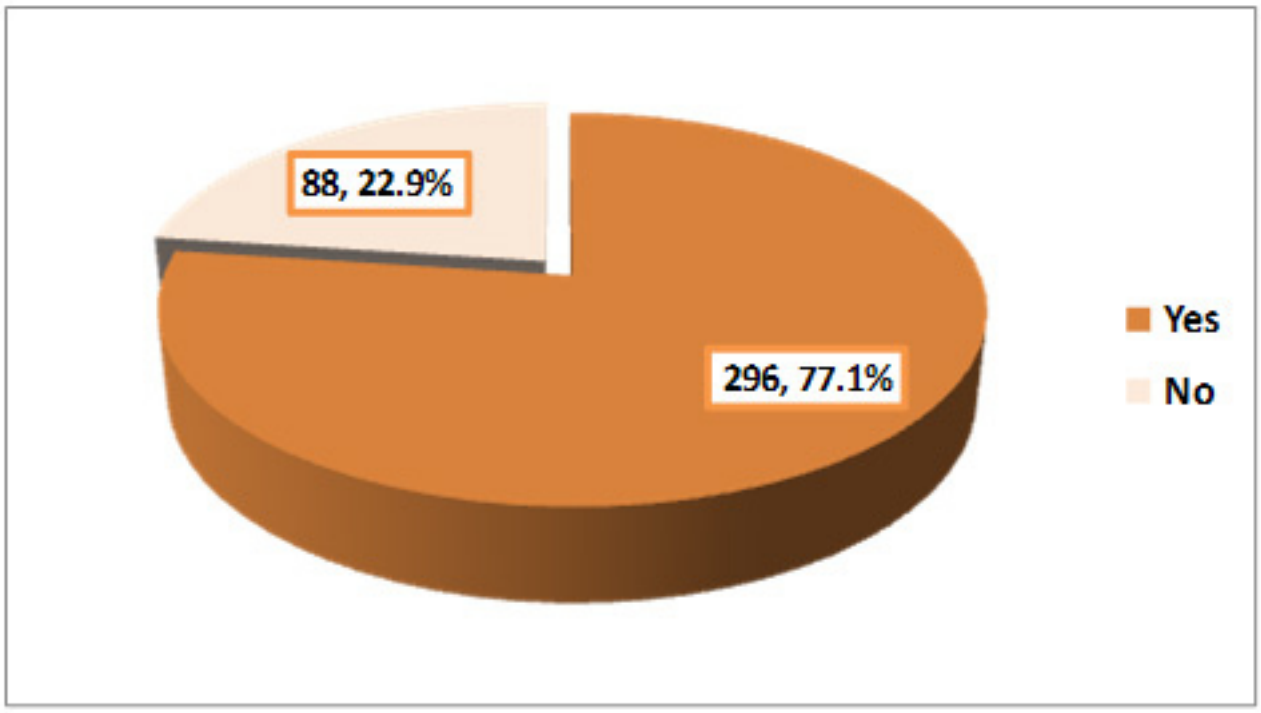

Table 1: Personal characteristics of the participants

Variable	Categories	Frequency	Percentage
Mother`s age (years) Range Mean±SD	20-66 34.7±8.1		
Child`s age (years) Range Mean±SD	1-6 2.6±1.2		
Mother`s education	No read/write Primary school Intermediate school Secondary school University	47 43 45 91 158	12.2 11.2 11.7 23.7 41.2
Husband`s education	No read/write Primary school Intermediate school Secondary school University	24 25 38 115 182	6.3 6.5 9.9 29.9 47.4
Mother`s occupation	House wife Working	303 81	78.9 21.1
Husband`s occupation	Governmental employee Private sector employee Military Retired Others	183 24 115 36 26	47.6 6.3 29.9 9.4 6.8
Number of children	One Two Three More than three	45 100 66 173	11.7 26.0 17.2 45.1
Mode of delivery of the last baby	Normal vaginal Caesarean section	257 127	66.9 33.1

Figure 2: Main source of health education about breastfeeding among the participants (n=296)

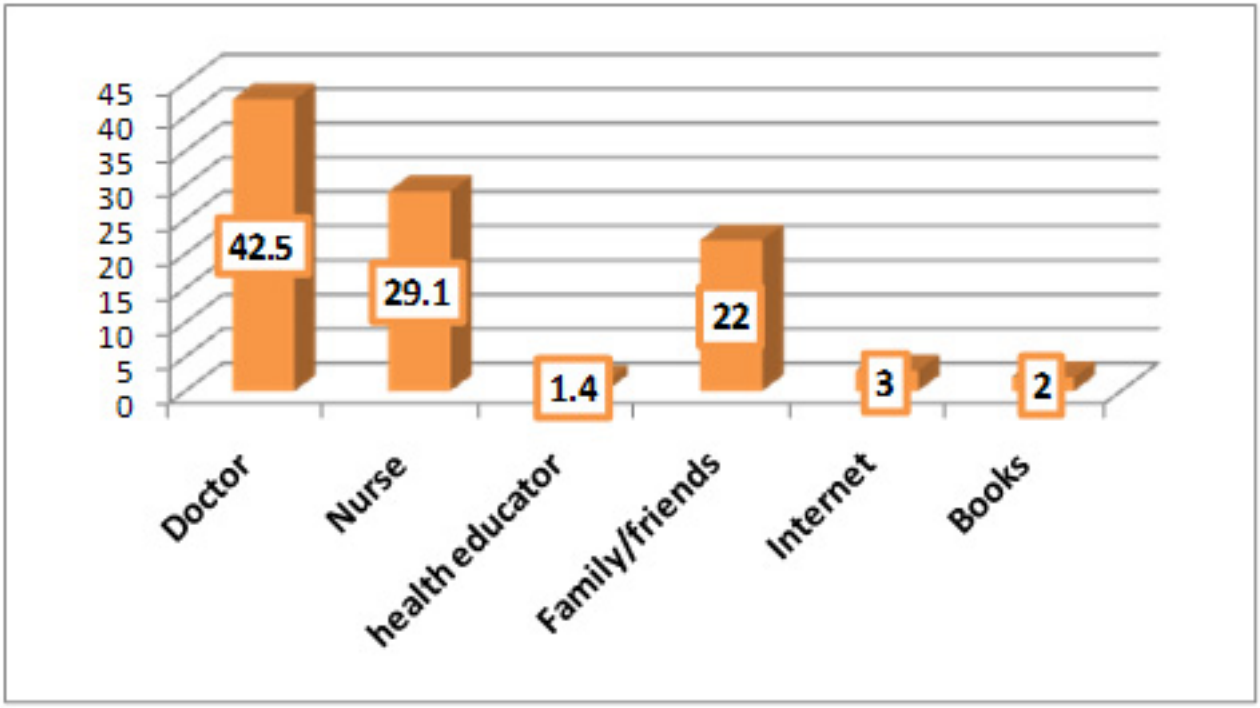

Figure 3: Overall breast-feeding knowledge level among the participants

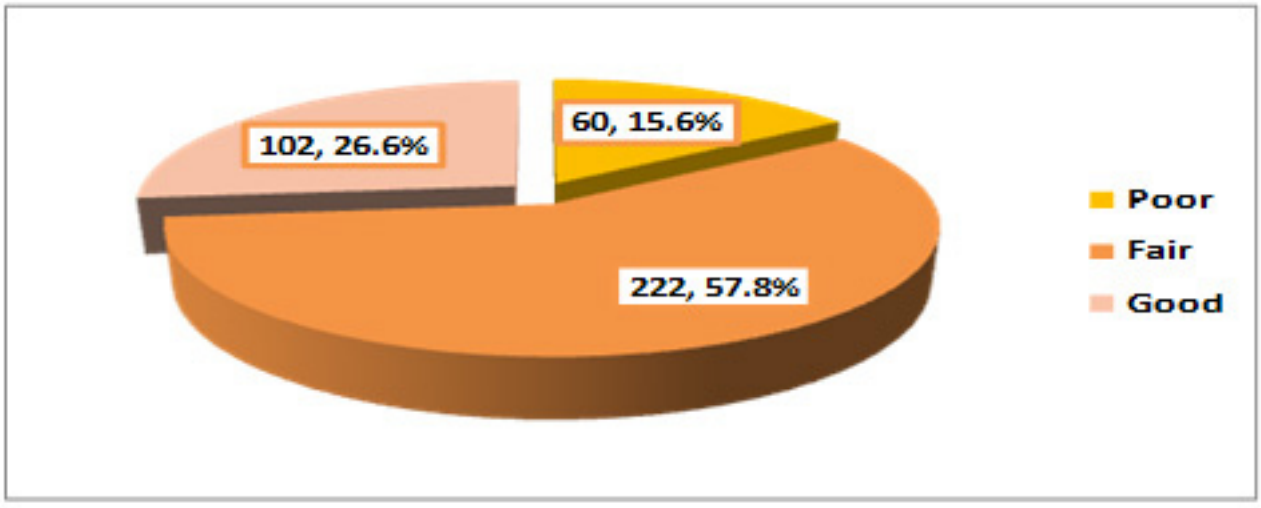

Table 2: Responses of the participants to breastfeeding knowledge statements

Variable	Right answer	
	No.	%
Advantages to baby		
Breast feeding reduces the risk of respiratory infection (√)	294	76.6
Breastfeeding increases the baby's intelligence (√)	305	79.4
Breast feeding helps to reduce the incidence of child abuse (√)	284	74.0
Baby who received breast feeding is less prone to get diarrhea (√)	276	71.9
Breast milk provides baby with more protection from allergy (√)	254	66.1
Breast feeding causes good development of baby teeth and gum (√)	335	87.2
Advantages to mother		
Exclusive breastfeeding is beneficial in spacing birth (√)	275	71.6
Breastfeeding helps to stimulate uterine contraction (√)	308	80.2
Mothers who practiced breastfeeding may achieve pre-pregnancy weight faster (√)	280	72.9
Frequent breastfeeding may prevent breast engorgement (√)	319	83.1
Mother who practiced breastfeeding has a low risk of getting breast cancer (√)	315	82.0
Breastfeeding may protect against osteoporosis (√)	151	39.3
Colostrum		
Colostrum is the mother's early milk, which is thick, sticky, and yellowish in color (√)	308	80.2
Colostrum is difficult to digest and needs to be discarded (X)	246	64.1
Colostrum causes constipation among babies(X)	238	62.0
Colostrum is not able to protect babies from jaundice(X)	150	39.1
Effective feeding		
Babies will gain weight if they receive effective feeding (√)	285	74.2
Correct positioning helps to achieve effective breastfeeding (√)	341	88.8
Babies sleep well after they receive adequate breastfeeding (√)	346	90.1
Duration of feeding		
Breastfeeding should be initiated within 30 minutes after delivery (√)	184	47.9
Breastfeeding should be given on demand (√)	258	67.2
Baby should be allowed to breastfeed for at least 10–20 minutes for each feeding (√)	231	60.2
Breastfeeding should be continued up to 2 years even though the baby has received complementary food(√)	301	78.4
Complementary feeding		
Complementary feeding should be introduced at 6 months of age (√)	317	82.6
Mothers may mix breastfeeding and formula feeding once baby starts taking complementary food (√)	280	72.9
Problem with breastfeeding		
Breast milk production is influenced by breast size(X)	213	55.5
Mothers with inverted nipples cannot breastfeed their babies(X)	86	22.4
Breastfeeding must be discontinued if mother has cracked nipple(X)	122	31.8
Breastfeeding must be discontinued if baby has jaundice(X)	198	51.6
Breastfeeding must be discontinued if mother has breast engorgement(X)	150	39.1
Breast engorgement		
Breast engorgement may be reduced with cold packs (√)	173	45.1
The use of cabbage may help to reduce breast engorgement (√)	81	21.1
Practical aspect of breastfeeding		
Exclusive breastfeeding must be practiced until the infant is 6 months old (√)	243	63.3
Massage may reduce breast engorgement (√)	278	72.4
Giving water to baby is encouraged after every breastfeeding(X)	192	50.0
Belching after feeding shows that the baby is full (√)	286	74.5
Babies who get enough feeding will pass urine more frequently (√)	221	57.6
Oral thrush frequently happens to babies who breastfeed (√)	119	31.0

Table 3: Factors associated with breastfeeding knowledge

Variable	Breast feeding knowledge level			p-value
	Poor N=60 N (%)	Fair N=222 N (%)	Good N=102 N (%)	
Mother`s age (years)				
Mean±SD	36.6±10.9	34.0±7.5	35.3±7.2	0.071*
Child`s age (years)				
Mean±SD	2.8±1.2	2.6±1.2	2.5±1.2	0.344*
Mother`s education				
No read/write (n=47)	16 (34.0)	21 (44.7)	10 (21.3)	
Primary school (n=43)	11 (25.6)	26 (60.5)	6 (14.0)	
Intermediate school (n=45)	10 (22.2)	20 (44.4)	15 (33.3)	
Secondary school (n=91)	8 (8.8)	53 (58.2)	30 (33.0)	
University (n=158)	15 (9.5)	102 (64.6)	41 (25.9)	<0.001**
Husband`s education				
No read/write (n=24)	8 (33.3)	8 (33.3)	8 (33.3)	
Primary school (n=25)	11 (44.0)	12 (48.0)	2 (8.0)	
Intermediate school (n=38)	9 (23.7)	19 (50.0)	10 (26.3)	
Secondary school (n=115)	16 (13.9)	74 (64.3)	25 (21.7)	
University (n=182)	16 (8.8)	109 (59.9)	57 (31.3)	<0.001**
Mother`s occupation				
House wife (n=303)	49 (16.2)	173 (57.1)	81 (26.7)	
Working (n=81)	11 (13.6)	49 (60.5)	21 (25.9)	0.811**
Husband`s occupation				
Governmental employee (n=183)	20 (10.9)	112 (61.2)	51 (27.9)	
Private sector employee (n=24)	4 (16.7)	12 (50.0)	8 (33.3)	
Military (n=115)	21 (18.3)	67 (58.3)	27 (23.5)	
Retired (n=36)	8 (22.2)	19 (52.8)	9 (25.0)	
Others (n=26)	7 (26.9)	12 (46.2)	7 (26.9)	0.377**
Number of children				
One (n=45)	11 (24.4)	29 (64.4)	5 (11.1)	
Two (n=100)	13 (13.0)	54 (54.0)	33 (33.0)	
Three (n=66)	5 (7.6)	43 (65.2)	18 (27.3)	
More than three (n=173)	31 (17.9)	96 (55.5)	46 (26.6)	0.043**
Mode of delivery of the last baby				
Normal vaginal (n=257)	35 (13.6)	158 (61.5)	64 (24.9)	
Caesarean section (n=127)	25 (19.7)	64 (50.4)	38 (29.9)	0.100**
Having health education about breast feeding				
Yes (n=296)	45 (15.2)	170 (57.4)	81 (27.4)	
No (n=88)	15 (17.0)	52 (59.1)	21 (23.9)	0.782**
Main source of health education about breastfeeding (n=296)				
Doctor (n=126)	17 (13.5)	74 (58.7)	35 (27.8)	
Nurse (n=86)	18 (20.9)	43 (50.0)	25 (29.1)	
Health educator (n=4)	0 (0.0)	2 (50.0)	2 (50.0)	
Family/friends (n=65)	7 (10.8)	44 (67.7)	14 (21.5)	
Internet (n=9)	1 (11.1)	5 (55.6)	3 (33.3)	
Books (n=6)	2 (33.3)	2 (33.3)	2 (33.3)	0.485**

* ANOVA test
**Chi-square test

Table 4: Attitude of the participants towards breastfeeding

Variable	Strongly agree N (%)	Agree N (%)	Not sure N (%)	Disagree N (%)	Strongly disagree N (%)
Breastfeeding being easier than feeding infant formula	210 (54.7)	124 (32.3)	8 (2.1)	36 (9.3)	6 (1.6)
It is difficult for breastfeeding mother to care for family	38 (9.9)	78 (20.3)	40 (10.4)	177 (46.1)	51 (13.3)
Breastfeeding has no negative effect on marital relationship	112 (29.2)	136 (35.4)	51 (13.3)	73 (19.0)	12 (3.1)
Breastfeeding is a good way to decrease family expenses	140 (36.5)	179 (46.5)	29 (7.6)	31 (8.1)	5 (1.3)
Feeding infant formula keeps the body well shaped and prevents over-weight	78 (20.3)	74 (19.3)	55 (14.3)	135 (35.2)	42 (10.9)
Community encourages breastfeeding over feeding infant formula	139 (36.2)	126 (32.8)	46 (12.0)	67 (17.4)	6 (1.6)
Doctors and nurses encourage breastfeeding	235 (61.2)	113 (29.4)	23 (6.0)	10 (2.6)	3 (0.8)
Maternity leave of 3 months is enough for successful breastfeeding	91 (23.7)	112 (29.2)	68 (17.7)	83 (21.6)	30 (7.8)
Work places provide designated areas for breastfeeding	71 (18.5)	61 (15.9)	103 (26.8)	84 (21.9)	65 (16.9)

Figure 4: Overall attitude of the participants towards breastfeeding

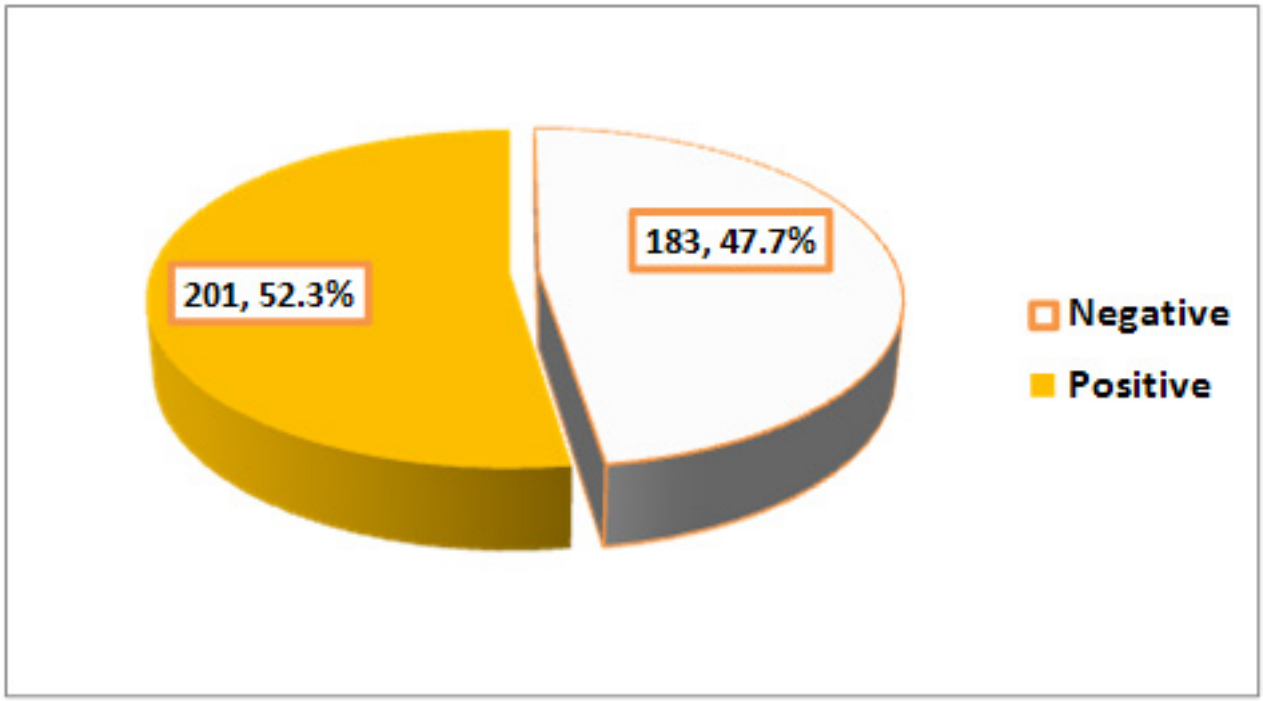

Table 5: Factors associated with attitude towards breastfeeding

Variable	Attitude towards breast feeding		p-value
	Negative N=183 N (%)	Positive N=201 N (%)	
Mother`s age (years)			
Mean±SD	34.5±8.5	34.9±7.7	0.623*
Child`s age (years)			
Mean±SD	2.6±1.1	2.6±1.3	0.754*
Mother`s education			
No read/write (n=47)	24 (51.1)	23 (48.9)	
Primary school (n=43)	20 (46.5)	23 (53.5)	
Intermediate school (n=45)	22 (48.9)	23 (51.1)	
Secondary school (n=91)	45 (49.5)	46 (50.5)	
University (n=158)	72 (45.6)	86 (54.4)	0.956**
Husband`s education			
No read/write (n=24)	8 (33.3)	16 (66.7)	
Primary school (n=25)	11 (44.0)	14 (56.0)	
Intermediate school (n=38)	21 (55.3)	17 (44.7)	
Secondary school (n=115)	55 (47.8)	60 (52.2)	
University (n=182)	88 (48.4)	94 (51.6)	0.554**
Mother`s occupation			
House wife (n=303)	141 (46.5)	162 (53.5)	
Working (n=81)	42 (51.9)	39 (48.1)	0.395**
Husband`s occupation			
Governmental employee (n=183)	82 (44.8)	101 (55.2)	
Private sector employee (n=24)	11 (45.8)	13 (54.2)	
Military (n=115)	64 (55.7)	51 (44.3)	
Retired (n=36)	15 (41.7)	21 (58.3)	
Others (n=26)	11 (42.3)	15 (57.7)	0.356**
Number of children			
One (n=45)	26 (57.8)	19 (42.2)	
Two (n=100)	47 (47.0)	53 (53.0)	
Three (n=66)	35 (53.0)	31 (47.0)	
More than three (n=173)	75 (43.4)	98 (56.6)	0.271**
Mode of delivery of the last baby			
Normal vaginal (n=257)	119 (46.3)	138 (53.7)	
Caesarean section (n=127)	64 (50.4)	63 (49.6)	0.450**
Having health education about breast feeding			
Yes (n=296)	139 (47.0)	157 (53.0)	
No (n=88)	44 (50.0)	44 (50.0)	0.616**
Main source of health education about breastfeeding (n=296)			
Doctor (n=126)	60 (47.6)	66 (52.4)	
Nurse (n=86)	36 (41.9)	50 (58.1)	
Health educator (n=4)	3 (75.0)	1 (25.0)	
Family/friends (n=65)	31 (47.7)	34 (52.3)	
Internet (n=9)	6 (66.7)	3 (33.3)	
Books (n=6)	3 (50.0)	3 (50.0)	0.605**

* Student's t- test
**Chi-square test

Figure 5: History of breast feeding of baby until he or she is six months old among the participants

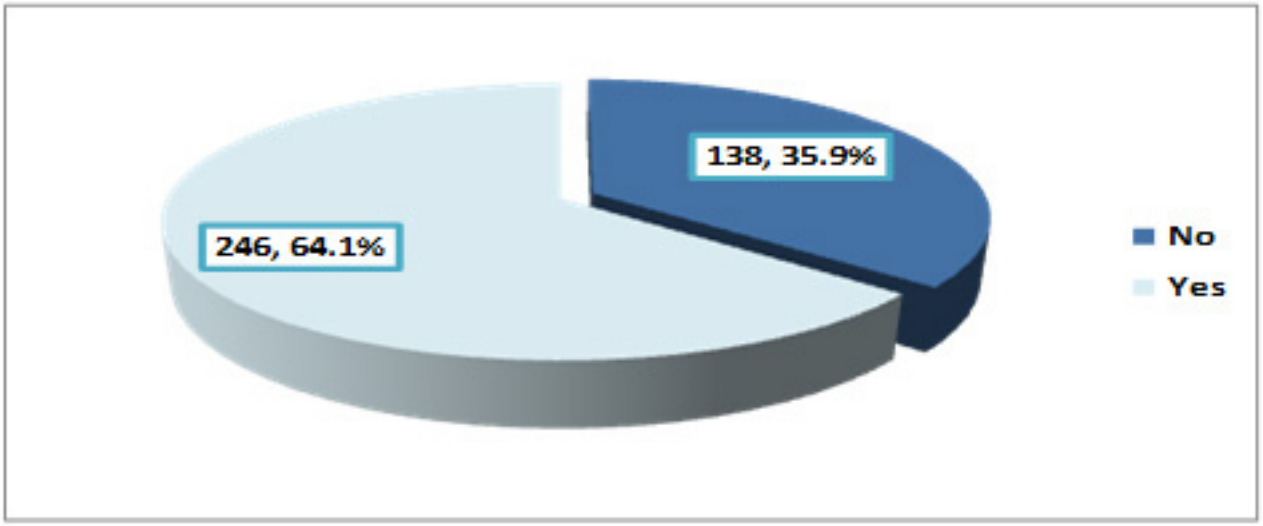

Figure 6: Time of starting breast feeding among the participants (n=246)

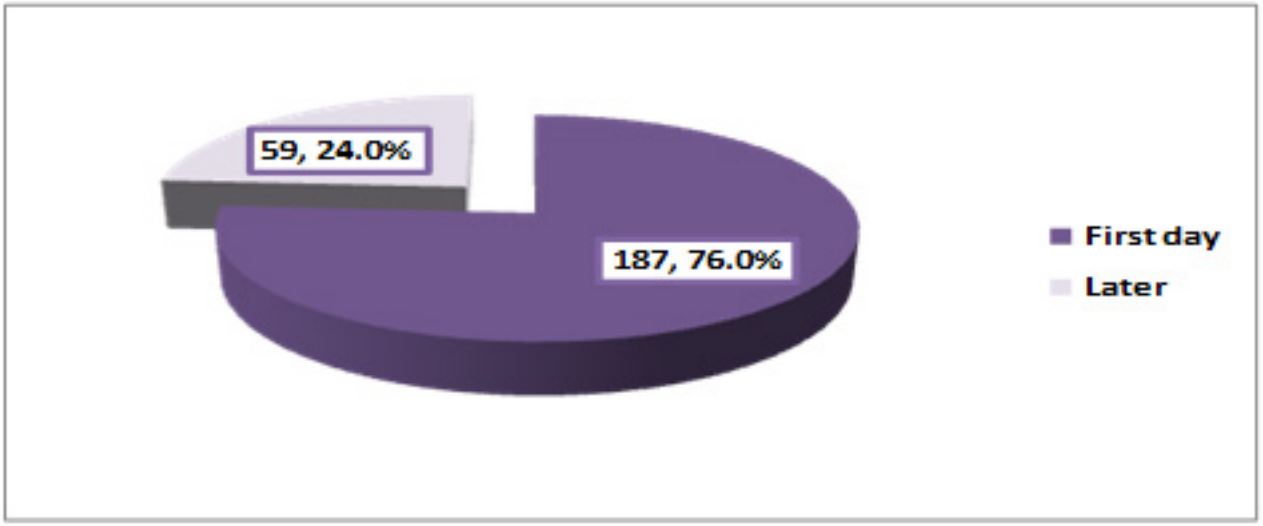

Figure 7: Supplementation with breast feeding in the first 3 months among the participants

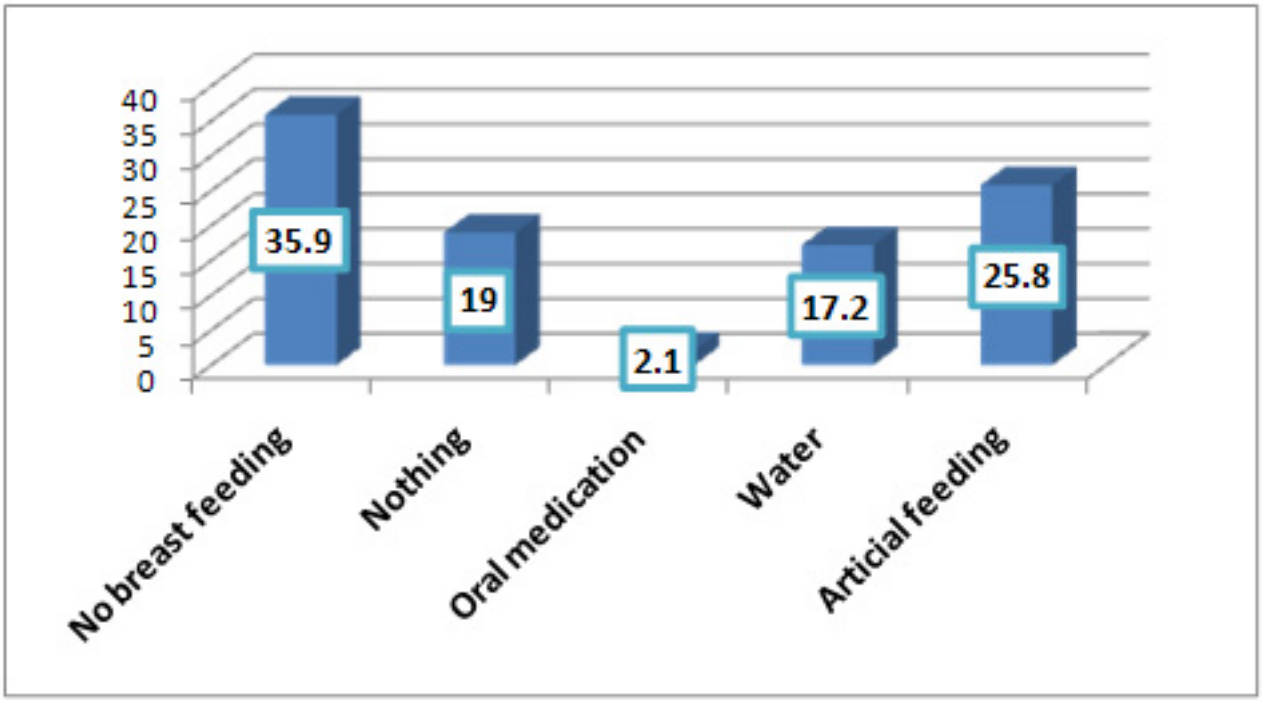

Table 6: Factors associated with breastfeeding in the first 6 months after birth

Variable	Breast feeding up to age of 6 months		p-value
	No N=138 N (%)	Yes N=246 N (%)	
Mother`s age (years)			
Mean±SD	32.6±8.1	35.9±7.8	<0.001*
Child`s age (years)			
Mean±SD	2.5±1.1	2.7±1.3	0.179*
Mother`s education			
No read/write (n=47)	11 (23.4)	36 (76.6)	
Primary school (n=43)	13 (30.2)	30 (69.8)	
Intermediate school (n=45)	15 (33.3)	30 (66.7)	
Secondary school (n=91)	30 (33.0)	61 (67.0)	
University (n=158)	69 (43.7)	89 (56.3)	0.007˚
Husband`s education			
No read/write (n=24)	3 (12.5)	21 (87.5)	
Primary school (n=25)	11 (44.0)	14 (56.0)	
Intermediate school (n=38)	11 (28.9)	27 (71.1)	
Secondary school (n=115)	41 (35.7)	74 (64.3)	
University (n=182)	72 (39.6)	110 (60.4)	0.047˚
Mother`s occupation			
House wife (n=303)	112 (37.0)	191 (63.0)	
Working (n=81)	26 (32.1)	55 (67.9)	0.418**
Husband`s occupation			
Governmental employee (n=183)	72 (39.3)	11 (60.7)	
Private sector employee (n=24)	5 (20.8)	19 (79.2)	
Military (n=115)	42 (36.5)	73 (63.5)	
Retired (n=36)	6 (16.7)	30 (83.3)	
Others (n=26)	13 (50.0)	13 (50.0)	0.023**
Number of children			
One (n=45)	23 (51.1)	22 (48.9)	
Two (n=100)	50 (50.0)	50 (50.0)	
Three (n=66)	26 (39.4)	40 (60.6)	
More than three (n=173)	39 (22.5)	134 (77.5)	<0.001˚
Mode of delivery of the last baby			
Normal vaginal (n=257)	82 (31.9)	175 (68.1)	
Caesarean section (n=127)	56 (44.1)	71 (55.9)	0.019**
Having health education about breast feeding			
Yes (n=296)	98 (33.1)	198 (66.9)	
No (n=88)	40 (45.5)	48 (54.5)	0.034**
Main source of health education about breastfeeding (n=296)			
Doctor (n=126)	37 (29.4)	89 (70.6)	
Nurse (n=86)	31 (36.0)	55 (64.0)	
Health educator (n=4)	3 (75.0)	1 (25.0)	
Family/friends (n=65)	22 (33.8)	43 (66.2)	
Internet (n=9)	3 (33.3)	6 (66.7)	
Books (n=6)	2 (33.3)	4 (66.7)	0.505**
Breast feeding knowledge			
Poor (n=60)	27 (45.0)	33 (55.0)	
Fair (n=222)	82 (36.9)	140 (63.1)	
Good (n=102)	29 (28.4)	73 (71.6)	0.094**
Attitude towards breast feeding			
Negative (n=183)	71 (38.8)	112 (61.2)	
Positive (n=201)	67 (33.3)	134 (66.7)	0.265**

* Student's t- test **Chi-square test ˚Chi-square for trend

Discussion

Recently, there has been a growing concern regarding the changing patterns of breastfeeding, particularly in rapid transition communities like Saudi Arabia (19). Although the World Health Organization (WHO) recommended exclusive breastfeeding up to the age of 6 months of infants, it was noticed that not many women in Saudi Arabia are following that (19,20,22,23). As there is limited data in the literature regarding knowledge, attitudes and practice of women toward breastfeeding in Taif, Saudi Arabia, the present study was done to explore this subject, which could help policy makers to set up strategies to improve the rate of breastfeeding.

Having health education about breast feeding was mentioned by most of the participants in this study and the main source for breast feeding knowledge was healthcare staff. In addition, having health education about breast feeding was significantly associated with its practice. This finding emphasizes the important role of educating women by healthcare staff regarding breast feeding.

In the current study, most of the mothers correctly recognized that breast feeding causes good development of baby's teeth and gum, increases the baby's intelligence, reduces the risk of respiratory infection and helps to reduce the incidence of child abuse, may prevent breast engorgement, lowers the risk of getting breast cancer, helps to stimulate uterine contraction, Colostrum is the mother's early milk, babies sleep well after they receive adequate breastfeeding, correct positioning helps to achieve effective breastfeeding, breastfeeding should be continued up to 2 years even though the baby has received complementary food and complementary feeding should be introduced at 6 months of age. However deficient knowledge was observed regarding problems with breastfeeding, breast engorgement and practical aspects of breastfeeding. This might be attributed to limited sources of education received by women on these topics.

Almost two-thirds of the women in the present study were aware of the benefits of colostrum to the child, with the exception of its ability to protect babies from jaundice. The same has been reported in UAE (24) and in another two Saudi studies (18,25). In another two Indian studies (26,27) the majority of women discard colostrum. The difference between findings of Saudi and UAE studies and Indian studies could be attributed to culture and belief differences.

In accordance with another Saudi study (19) the overall level of knowledge regarding breastfeeding in this study was not sufficient. Therefore, health education sessions organized by the healthcare staff in antenatal care clinics and immediately after birth are highly recommended.

Having more children was significantly linked to practice of breast feeding in this study which could be attributed to the role of experience from one side and the socio-economic status from the other side as women with more children may not be able to afford formula milk. The same has been observed in India (27).

Slightly more than half of the participants (52.3%) had a positive attitude towards breastfeeding in the present study. It has been documented that favorable attitude is one of the main indicators of starting and continuing breastfeeding (28).

In the present study, the majority of women (76%) gave breastfeeding in the first day after birth as recommended by WHO (29). This figure is comparable to what has been reported in a similar study carried out in Abu Dhabi where 72.6% of mothers started breastfeeding in the first day after delivery (24). However, a lower rate (31%) was reported in another Saudi study (18). The high rate reported in this study might reflect the efforts done to achieve WHO recommendations in these regards.

Almost one-fifth of the mothers (19%) gave nothing with breast feeding in the first 6 months of life in this study. This figure is close to those reported in another Saudi study (15.9%) (30), and UAE (16.9%) (24). However, it is higher than those reported in other studies. (18,31,32,33). In Uganda (34) a very high rate of exclusive breastfeeding was reported (49.8%). This rate was explained partly by feeding infant tradition and culture and partially by poverty and inability to afford formula milk (35).

Almost two-thirds (64.1%) of women had given breast milk to their infants up to 6 months of age in the current study; particularly older women. Unexpectedly, the lowest educated women and those with low educated husbands were more likely to breast feed their babies, despite having poorer knowledge regarding breastfeeding. The same has been reported by others (36,37). This could be attributed to the fact that educated women are usually workers and do not have sufficient maternity leave, in addition to absence of facilities at work places to breast feed their infants. However, maternity leave in KSA is two months with full salary and can be extended up to three years at 25% of the women's salary (38). Also, the low socio-economic status might prevent them from affording formula feeding and depending on breast feeding. This could explain also the finding that women with more children tended to breast feed their babies.

In this study, women delivered by normal vaginal delivery were significantly more likely to breastfeed their children compared to those delivered by cesarean section. The same has been reported by others elsewhere (39,40,41). This study has two important limitations that should be mentioned. Its cross-sectional design which lacks the temporal relationship between risk factor and the outcome, therefore we couldn't prove causality. Conduction of the study in one healthcare facility could impact the generalizability of results, despite those limitations, the study could be of great public health importance in exploring an important topic in Taif.

In conclusion, despite the attitude towards breastfeeding in Taif overall it is acceptable; its knowledge and practice need to be improved through health education organized programs and encouraging the role of healthcare workers.

Limitations

The limitations of the present study included the small sample size and conducting the research in one government hospital and didn't include the private sector.

Conclusion

The level of knowledge about breastfeeding in this sample was moderate and slightly more than half of the participants had a positive attitude towards breastfeeding. The main source of health education in our sample about breastfeeding was the doctors. The study calls for encouragement of early beginning of breastfeeding to babies in the hospital to ensure high-quality of breastfeeding. An educational program for both midwives and pediatric nurses about the importance and early initiation of breast feeding early after birth should be done. There is a need for further research during the antenatal period about breastfeeding self-efficacy within Saudi women.

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Knowledge, Attitude and Practice About Epilepsy among Elementary School teachers in Taif City, Saudi Arabia

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Abstract

Introduction: Epilepsy is a chronic brain disorder that has a major impact on children's development, mental health and social life. Teachers' knowledge and views on epilepsy can help or harm children with epilepsy as they spend a considerable time in school.

Objectives: We aimed to assess elementary school teachers' knowledge, attitude and practice towards epilepsy in Taif city, Saudi Arabia.

Methods: A cross sectional study was carried out on 400 elementary school teachers from 16 schools in Taif city using convenience sampling technique and data was collected between February and March 2017 using a 16-question questionnaire.

Results: 223 and 177 of the participants were males and females, respectively and the mean age was 37 ±8.21. (95%) of participants have heard of epilepsy and their source of knowledge was mostly public media (43%). (58.8%) believed that epilepsy is a result of multiple causes like head trauma, brain tumor and even spiritual illness. (15.5%) think that epilepsy can't be cured or controlled and (17.3%) think children with epilepsy can't practice their life normally. The majority of them (79%) will allow their children to play with an epileptic child but only (19%) will allow them to marry an epileptic patient in the future. If a child is having a seizure at school (40.3%) of the teachers chose to open their mouth forcefully to prevent tongue swallowing.

Conclusion: There is a gap in teachers' knowledge regarding epilepsy which necessitates the presence of education programs about dealing with epileptic children properly.

Key words: epilepsy, children, knowledge, practice, attitude, Saudi Arabia

Introduction

Among common non-communicable diseases, epilepsy is a chronic complex disorder of brain electrical activity that occurs worldwide and affects people of all age groups (1).

It is characterized by a recurrent, unprovoked, paroxysmal and transitory disturbance of brain function in which the patient presents with somatic (motor or sensory), autonomic or psychological disturbances and may be associated with disturbance of consciousness. Epilepsy is sudden in onset and ceases spontaneously and is commonly associated with electroencephalographic (EEG) changes (2).

It is a very common disease worldwide and incidence rates vary from country to country but generally about 50 million people live with epilepsy (3).

In the Kingdom of Saudi Arabia, the prevalence is 6.54 per 1000 (4).

Public attitude toward epilepsy in Saudi Arabia is influenced by level of education, cultural beliefs and social taboos, poor knowledge and lack of awareness which has a negative effect on both epileptic children and their families (5).

Schools are one of the social situations where epileptic children face the consequences of societal misunderstanding of epilepsy and how to deal with it, causing distress for the patient more than the disease itself as it may affect their mental health, learning abilities and social interactions (6).

Also, there are no training programs instructing school teachers proper first aid management to deal with a child having an epileptic seizure, leading to different practices that can be harmful (7).

Knowledge, awareness and attitude of school teachers about epilepsy and how to deal with it has a strong impact on the scholastic achievement of epileptic students and can improve their life quality to some extent.

Hence, the aim of this study is to evaluate knowledge, attitude and practice about epilepsy among elementary schoolteachers in Taif City, Saudi Arabia.

Methods

This study was approved by the Ethical Committee of Taif University.

It is a cross sectional study using the Arabic version of a modified questionnaire. 8 Questionnaires with 16 questions were distributed to 400 schoolteachers using convenience sampling in 16 randomly selected schools at elementary level of education, 8 were public schools (4 female schools and 4 male schools) and the others 8 were private schools (4 female schools and 4 male schools) in Taif, SA. The data was collected between February and March 2017. All of the schoolteachers responded. We discussed 4 issues, namely: (1) Demographic information; (2) Knowledge; (3) Attitude and (4) Practice of schoolteachers about Epilepsy. Schoolteachers who were not working at the chosen schools were excluded.

Data entry and statistical analysis was performed using SPSS V22 package. Frequencies, mean and standard deviation were analyzed as descriptive statistics. The research was self-funded.

Results

Table 1 shows that age of the participants ranged from 23 to 62 years old, and the mean of age was 37 ± 8.21 year. Most were of Saudi nationality and their experience of teaching ranged from 13 to 37 years, with a mean of 13 years.

Table 2 shows the total number of teachers who participated in our study which was 400. Of 223 (55.8%) of them were male and 177 (44.3%) were female.

Table 3 shows that 380 (95%) of the teachers knew about presence of a disease called epilepsy, whereas 20 (5%) of them never heard or read about it.

There was 44 (11%) of the teachers who had a family member with a history of seizure at least once, and there were 356 (89%) of them without.

Table 4 shows that (99%) of the study sample believe that epilepsy is not a contagious disease , (64.5%) think that the epilepsy can be cured or controlled, (78%) of the teachers think an epileptic child can practice her/his life normally, (66%) don't believe that an epileptic child can have a higher incidence of insanity.

There were (57%) of the teachers afraid of having a student with epilepsy in their class, and (83.5%) prefer to have a controlled epileptic student before entering their class but only (21%) prefer all epileptic students should be placed in a special classroom.

There were (79%) of the participants who would allow their children to play with epileptic child but (54%) would not allow their children to marry an epileptic in the future.

A (29.8%) of the teachers have at least one student who has been exposed to an epileptic seizure in their classroom but (77.5%) of all teachers have never performed first aid seizure management before.

Table 5 shows the majority of teachers believed that epilepsy can be caused by more than one reason 235(58.5%) including genetic abnormality, insanity, infection, head trauma or tumour, while others think that epilepsy is caused by one factor: 75(18.8%) think that the cause is head trauma, 36(9%) genetic disorders,10 (2.5%) brain tumour, 4 (1%) think it's from possession of an evil spirit and 40 (10%) don't know the cause.

Table 6 shows how the teachers will deal with the epileptic child during a fit; 40% of them will open the epileptic child's mouth and try to prevent tongue swallowing, 33% will call a doctor, 10% will put the child on left side and give breath and 5% decided that restriction of child movement is the best choice.

Table 1: Demographic Data

	Mean	Maximum	Minimum
Age	37	62 y	23 y
Years of experience	13	37 y	6 months

Table 2: Gender Data

	Frequency	Percent
male	223	55.8%
female	177	44.3 %
Total	400	100%

Table 3: Epilepsy Knowledge among teachers

Questions 1 on knowledge toward epilepsy	Yes N (%)	No N (%)
Heard or read about epilepsy	380 (95%)	20 (5%)
Has any family member ever had a seizure?	44 (11%)	356 (89%)

Figure 1: shows that the majority of teachers knew about the disease from public media, and only few of them knew from the parents of the epileptic students or from the doctors (5.8% and 2.8% respectively)

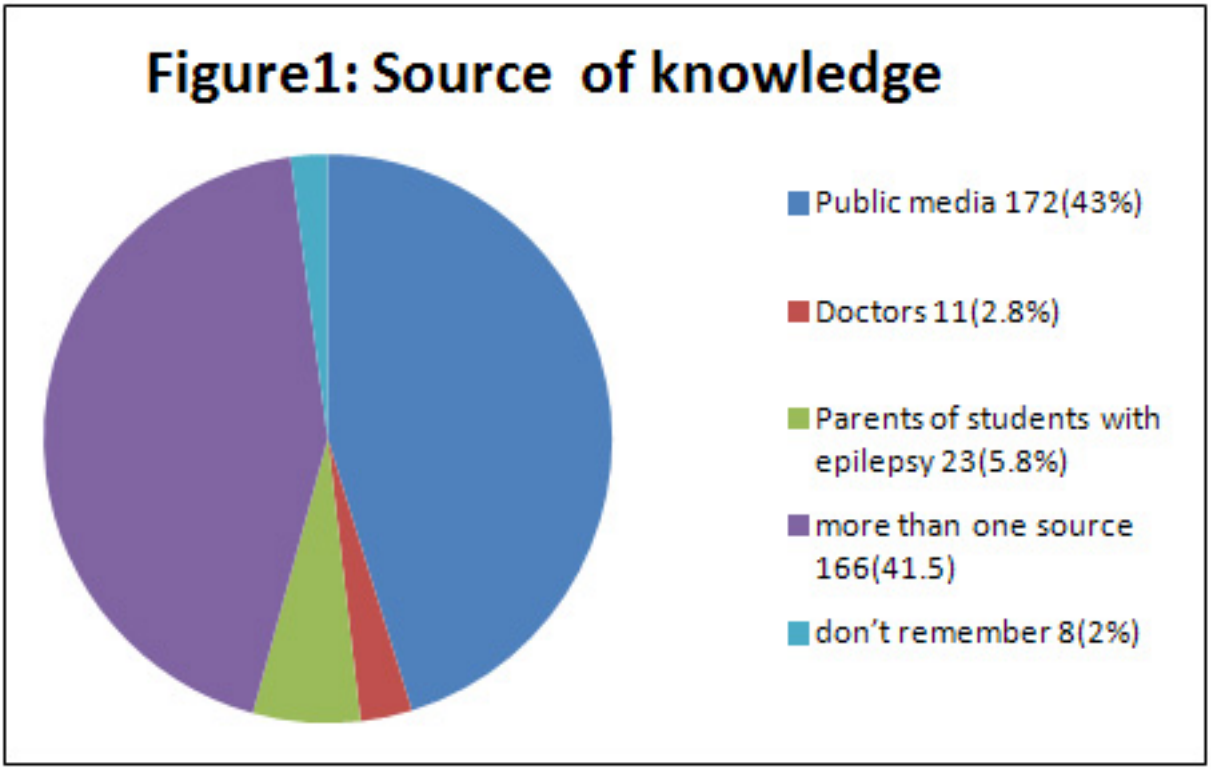

Figure 2: shows 78 % of the teachers thought that students with epilepsy have normal intelligence but 17% of the teachers felt that epileptic child's intelligence below the average and 5% thought that, it is above the average

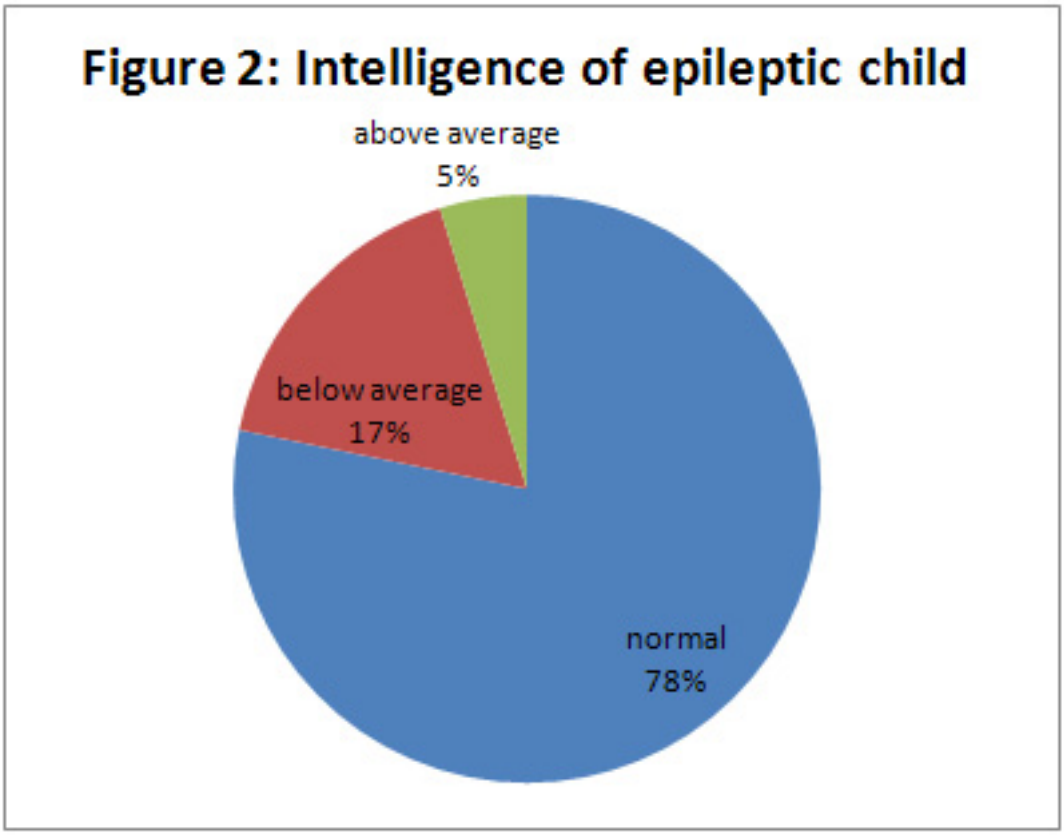

Table 4: Attitude about epilepsy

Questions on attitude about epilepsy	Yes N (%)	No N (%)	I do not know N (%)
Epilepsy is a contagious disease	4 (1%)	396 (99%)	
Epilepsy cannot be cured or controlled	62 (15.5%)	258 (64.5%)	80 (20%)
An epileptic child cannot practice her/his life normally	69 (17.3)	312 (78%)	19 (4.8%)
Epileptic child has a higher incidence of insanity	46 (11.5%)	264 (66%)	
I am afraid of having a student with epilepsy in my class	228 (57%)	165 (41%)	7 (1.8%)
I prefer to have a controlled epileptic student before entering my class	334 (83.5%)	45 (11.8%)	19 (4.8%)
I prefer all epileptic students to be placed in special classroom	84 (21%)	302 (75.5%)	14 (3.5%)
I will allow my child to play with an epileptic child	316 (79%)	63 (15.8%)	21 (5.3%)
I will allow my child to marry an epileptic child	76 (19%)	216 (54%)	108 (27%)
One of my students has been exposed to an epileptic seizure	119 (29.8%)	281 (70.3%)	
I performed first aid seizure management before	90 (22.5%)	310 (77.5%)	

Table 5: Causes of epilepsy

Causes of epilepsy	N (%)
Genetics	36 (9%)
Trauma	75 (18.8%)
Tumour	10 (2.5%)
Spiritual illness	4 (1%)
More than one reason	235 (58.8%)
I don't know	40 (10%)

Table 6:- Practices toward epilepsy

Teachers' Performance of first aid in case of epilepsy	N (%)
Calling doctor	132 (33%)
Open the mouth and prevent tongue swallowing	161 (40.3%)
Restriction of child movement	20 (5%)
Put the child on left side and give breath	43 (10.8%)
More than one	44 (11%)

Discussion

Epilepsy is a very common disease in the pediatric age group in Saudi Arabia with a frequency of 4-8 cases per 1,000 children (9).

Therefore it has an impact on children's educational achievement and learning process. It may also affect their self-esteem and affect their social life. It is quite difficult to deal with epileptic children without a full awareness of this disease and since they are an inseparable part of society, people might be prone to encounter epileptic fits, especially teachers who spend a long period of time with children.

The knowledge and attitudes conducted by teachers regarding epilepsy influences student's performance, social skills development, and even future employment making it a lot easier to overcome difficulties.

Our study was conducted in Saudi Arabia specifically in Taif city with a sample of 400 male/female teachers who were working in public and private schools and who were were included with ages ranging between 23 and 62 years (mean 37), Their years of experience ranged from 6 months to 37 years (mean 13 years).

In our study we found that 380 (95%) of schoolteachers had heard or read about epilepsy from more than one source, mostly from public media 172 (43%), Doctors 11 (2.8%), parents of students with epilepsy 23(5.8%), more than one 166 (41.5%) and some of them don't remember 8 (2%). While there was a study about Knowledge and Attitudes toward Students with Epilepsy among Middle and High School Teachers in Kuwait 2016, it showed that most of them (60.5%) had their information from public media, followed by the Internet (41.3%), education (25.4%), parents of students with epilepsy (19.2%), and health care professionals (19.3%) (10).

In comparison with a recent study done in Riyadh 2017 they found that 99.4% of school teachers had heard about epilepsy and 38% of them know epilepsy from media, 22.1% from friends, 19.4% from relatives, 12% from affected members in their families and 8.4% from other sources (11).

A study was done about awareness and attitude of teachers on epilepsy in Istanbul, Turkey, 2004 and showed only 69.3% of the participating teachers had either read or heard about epilepsy (12) In n 2001 in Brazil however , a study conducted about knowledge and attitudes toward epilepsy among primary, secondary and tertiary level teachers they found 98% of primary school teachers have heard or read about epilepsy (13). In a study from Khartoum State, Sudan in 2016, Knowledge, Attitude, and Practice about Epilepsy among Secondary School Teachers found (92.7%) teachers had heard about epilepsy (7). In Karachi, Pakistan in 2014 there was study about Knowledge, attitude and practices of school teachers towards epileptic school children which showed that 90.9% of them had heard about epilepsy, with print media (60.9%) being the commonest source of information, followed by friends and family (50.9%) electronic media (25.5%) and doctors (13.6%). Only 8.2% of respondents had no knowledge of the disorder at the time (1).

Also a study done in India in 2008 which was about Knowledge awareness and attitudes about epilepsy among schoolteachers found most of the school teachers knew about epilepsy from public media or parents of the students with epilepsy (37.9% and 35.7%, respectively). Only 4.9% of the responders got information from the doctors (8).

In studying the teachers' familiarity with epilepsy, it was found that 44(13%) of the teachers have a relative with epilepsy, and 356 (89%) do not.

In Khamis Mushate, Southern Saudi Arabia in 2015, a study was done about Knowledge and practice of schoolteachers towards students with epilepsy which found that 13% of the teachers had a relative with epilepsy (6).

In Pakistan, 31.8% knew someone with epilepsy.

In Brazil , 88% of them know someone with epilepsy.

In Indian, only 7.9% admitted that they had seizures in their family.

There are different beliefs among people in the society regarding the cause of the disease; we found that the majority of teachers reported that it could be more than one reason 235 (58.5%) including genetic abnormality, insanity, infection, head trauma or tumour ,while others think that epilepsy is caused by one factor. Seventy five(18.8%) think that the cause is head trauma, 36 (9%) genetic disorders, 10 (2.5%) brain tumour, 4 (1%) think it's from possession by an evil spirit and 40 (10%) don't know the cause.

In comparison with other research that was conducted in different cities in Saudi Arabia, it indicated that 70.3% of teachers in Riyadh think that epilepsy has one cause which is abnormal electrical activity in the brain, 23.8% think it's due to brain trauma, 21.6% due to brain infections, 14.4% due to genetic defect, 14.1 due to anxiety and stress, 7.8% due to birth defect, 4.1% due to brain cancer and about 12% don't know the cause. Also they found most teachers think that epilepsy is a neurological disease (84%), 6.9% think it's a psychiatric disease, 5% think it's a hereditary disease and 4.4% think it's from evil spirit or spell. While in Jeddah, in 2013 up to 27% continued to believe that spirit possession or evil eye are causes of epilepsy (16).

In Khamis Mushate in 2015 the study revealed that most schoolteachers (82.2%) believed that epilepsy was not infectious. Some schoolteachers believed epilepsy to be hereditary (34.3%), whereas others thought it was an acquired disease (36.5%), and 46.0% believed that epilepsy was caused by electrical discharges. The Kuwait study showed causes of epilepsy as reported by teachers were:

(73.0%) genetic disorders, 47.4% head trauma, 47.3% brain disease, 24.0% possession of evil spirit, 14.7% insanity,10.1% punishment from God, and 1.3% brain electricity.

The study in Sudan showed that most of the teachers, 245 (77.3%), believe in the neurological etiology as a cause of epilepsy; however, 68 (21.5%) reported the devil and superstitious causalities and 136 (42.9%) related the cause to other organic diseases.

In an Indian study the majority (44.4%) think it is a brain disease and only a minority (5.5%) think it a supernatural possession. The other causes attributed to ir were genetic (10.4%), trauma (8.5%), infection (3.3%), tumour (3.5%) and insanity (1.5%).

Regarding teachers' thoughts on if epilepsy is a contagious disease or not, we found that 396 (99%) correctly answered "epilepsy is not a contagious disease," and this result is similar to what was found in the Kuwait study, where 82.4% answered epilepsy is not a contagious disease, in Istanbul 97.6% of the responders thought that epilepsy is not a contagious disease, also in India only 4.9% of the teachers think epilepsy is a contagious disease and in Brazil, 2% .

In our study the majority of the school teachers think that epilepsy can be cured or controlled 258 (64%) while 62 (15.5%) think that it can't be cured or controlled and 80 (20%) don't know.

In the Istanbul study (80.4%) think that it is a treatable disease.

In the India study the majority felt that it can be cured or controlled (62%).

There was a study in 2013 about Primary School Managers' Knowledge of and Attitude towards Epilepsy among Children in Erbil City, Iraq which showed that over half of the respondents (53.75%) stated that epilepsy cannot be treated or prevented (15).

A total of 312 (78%) think that an epileptic child can have a normal life while 69 (17.3%) think they can't and 19 (4.8%) don't know.

In the Sudan study (35.6%) would prevent their children from playing football if they had the disease, (53.3%) would prevent them from swimming, and (46.4%) would prevent them from riding bicycles.

In a Riyadh study, regarding the impact of the disorder on social behavior of epileptic children most of the teachers didn't notice any behavioral issues.

In the Khamis Mushate study, overprotection and feelings of fear, worry, and insecurity can interfere with the epileptic child's personal relationships and academic life but (50.5%) chose 'prevented from participating in sporting activities'.

In the study from Iraq, (92.5%) of the school managers' think that children who have epilepsy cannot perform any physical exercises.

When teachers were asked about the average intelligence of epileptic children, more than half of the study sample think that epileptic students have normal intelligence 313 (78.3%), but 68 (17%) felt that their intelligence is below average and 19 (4.8%) think that it is above the average which was also found in a study in Brazil where they found that 83% of school teachers think that a student with epilepsy is as intelligent as others. While in the Indian study, (47.7%) opined that epileptics have a normal intelligence but 31.7% of teachers felt that their intelligence is below average. In the Iraq study, more than half of the respondents thought that children with epilepsy are mentally under developed. In the Jeddah study, 25% of the teachers felt that the intelligence of children with epilepsy is below average.

We also found that more than half of the respondents think that an epileptic child is not at a higher risk of insanity 264(66%), only 46(11.5%) think the epileptic students may have a higher incidence of insanity and 90 (22.5%) don't know.

This result is similar to the Indian study where they found that only 13.7% think that children with epilepsy have a high incidence of insanity.

228 (57%) of teachers stated that they are afraid when asked about their feeling of presence of an epileptic student in their classrooms while 165 (41.3%) were not; 7(1.8%) don't know and 334(83.5%) prefer to have student's epilepsy under control before entering their classrooms; 47(11.8%) don't prefer that and 19 (4.8%) don't know.

32.2% of the teachers in the Indian study were afraid of having epileptic students in their classroom, but only 20.8% felt that they need a special classroom. In the study from Brazil, 93% of the teachers were afraid of having epileptic students in their classroom.

12.1% agreed to have students with epilepsy in their classroom.

When we asked about their opinion regarding placing epileptic children in a special classroom, 84(21%) opined that they need a special classroom room while 302 (75.5%) think that there is no need for doing that; 14(3.5%) don't know.

In the Jeddah study, 28% of teachers thought that children with epilepsy should be placed in a special classroom.
In the KhamisMushate study, 79.7% of the schoolteachers did not believe that these children should be taught in separate classes.

This can be compared to 55.0% of Iraq teacher participants who thought that children who have epilepsy should be taught separately and in a different classroom from non-epileptic children. And in the Indian study, 20.8% of Indian teachers felt a need for a special classroom for epileptics.

Regarding teacher's children, more than two thirds of the teachers choose "to allow to their children to play with an epileptic child" 316 (79%), while 63(15.8%) choose not to allow them and 21(5.3%) don't know.

But 216 (54%) don't want their children marrying a person with epilepsy in the future, 76 (19%) opined that there is no problem and 108 (27%) don't know.

In comparison with other studies which were done outside Saudi Arabia, such as in Istanbul, (93.7%) stated that they will let their children play with epileptic children but 26.2% seemed less willing to approve of their children marrying a person with epilepsy.

However only half of Indian teachers (55.3%) preferred their children to play or sit in the same class with a child with epilepsy but on epilepsy and marriage, a clear no was obvious (86.8%) with regards to marriage with epileptics. Only 6.9% approved their children marrying a person with epilepsy.

We found that 119 (29.8%) of teachers have witnessed an epileptic fit in their classes and 281 (70.3%) have not been. 90 (22.5%) of them had performed first aid seizure management before while 310 (77.5%)had not.

When we asked about how they would perform the first aid in managing a child who is seizing, 161(40.3%) chose to open the mouth strongly and put something in their mouth to prevent tongue swallowing; 132 (33%) chose calling doctors for help; 43 (10.8%) would put the child on the left side and give breath if he\she cannot breathe, 20 (5%) choose to restrict the child's movement and 44 (11%) of them chose more than one answer.

In comparison with the previous studies which were done inside Saudi Arabia they found in a Riyadh study that 55.2% of teachers have witnessed an epileptic fit in their classes and 44.8% had not.. 43% of teachers' first reaction to an epileptic fit was trying to help, 10.5% felt afraid and stepped back, 19.8% called for help and stoodby and about 27% didn't know what to do. 59% of teachers knew the first aid in an epileptic fit, 41.4% didn't know.

In a Jeddah study, 58% of the teachers did not know what to do and the majority felt that putting something in the student's mouth to prevent tongue swallowing was a proper maneuver.

In the Khamis Mushate study, 31.7% had seen a student having a seizure; of those teachers who had witnessed an epileptic seizure, 64.1% were unable to give first aid treatment. About 84% of teachers needed some information on epilepsy, and 86.7% needed some instruction on giving first aid to someone who is having an epileptic seizure.

While in the previous studies which were done outside KSA, they found that in Pakistan, 26.4% of the teachers had witnessed a student in class having a seizure.

In a Kuwait study, 29.3 % of the respondents had dealt with a person having epilepsy, but surprisingly only 8.5% of participants thought that they had sufficient training in first-aid management of seizures.

In the study from Sudan, the majority of the teachers witnessed an epileptic seizure (83.5%). But their knowledge about the etiology and treatment was generally poor, (48%). Only 19 (6%) of the teachers had received first aid training regarding an epileptic seizure episode but the majority of the teachers would do the following to the patient with a seizure: (76.3%) would put them on the ground carefully, (78.2%) would remove any harmful surroundings, (55.8%) would put a soft pillow under the seizing patient's head, and (62.1%) would remove any tight clothes. There is also a high level of negative practice that can harm patients like tying them, 12.9% and putting a spoon in their mouths 47.6%.

In India the majority of the teachers (68.2%) disclosed that they have not performed any first aid measure during the fit. Only 27.8% of the respondents confirmed that they had performed first aid seizure management and the most prompt answer to this was calling the doctor immediately (44.7%). However, only 16.3% could give some proper first aid.

Our study showed in many ways that most schoolteachers have poor knowledge regarding dealing with a seizure attack in regards to first aid. This problem may result in a very serious situation such as head injury. What we really need is to provide courses on how teachers can perfectly manage such situations in a way that will minimize the risks.

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Awareness and knowledge of congenital infections (TORCH) among women and health care providers in Al Taif area Saudi Arabia

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Abstract

Background: Women should be aware of preventive measures against congenital infections transmitted from mother to the embryo, fetus, or baby during pregnancy or childbirth.

Objectives: This study aimed at assessing the awareness of vertically transmitted infections (TORCH) among health care providers, female students in Taif University, and women of reproductive age.

Methods: A cross sectional study was done on a convenient sample of 100 women of reproductive age; 139 female students of Taif university, and 96 health care providers at a primary health care clinic in Taif city, Saudi Arabia. A pre-designed questionnaire was used to collect data on the women and students' knowledge of vertically transmitted infections (TORCH). Health care providers were asked about the laboratory tests for serological detection of early infection with the vertically transmitted organisms.

Results: About 87% and 71% of students and mothers respectively, did not know that congenital infections are contagious, and 57.46% and 75% of them did not know that congenital infections can cause congenital anomalies. Both students and mothers with college level of education had a significant higher percentage of those who had satisfactory knowledge. The most common source of the students' information about congenital infection was the media, parents and friends (32.37%) and for mothers, it was the media (65%) then the Gynecologists / Obstetricians.

Conclusion: The deficient knowledge of studied females regarding congenital infections observed in this study calls for health education programs on congenital infections to be directed toward female students and women in the reproductive age. about.

Key words: Awareness, congenital, infections, women, providers, Saudi Arabia

Introduction

Congenital infection is a vertically transmitted infection caused by bacteria, viruses, or in rare cases parasites transmitted directly from the mother to an embryo, fetus, or baby during pregnancy or childbirth. It can occur when the mother acquires an infection as an inter-current disease in pregnancy (1).

Congenital anomalies (birth defects, congenital disorders or congenital malformations) are a structural or a functional anomaly (e.g. metabolic disorders) that occur during intrauterine life and can be identified prenatally, at birth or later in life (2).

In spite of approximately 50% of all congenital anomalies not being linked to a specific cause, congenital anomalies risk factors might be TORCH, which includes Toxoplasmosis, Other (syphilis, varicella-zoster, parvovirus B19), Rubella virus, Cytomegalovirus and Herpes simplex virus (2).

These groups of infections are the main cause of fetal damage or other anomalies. The infection in most cases can be severe enough to cause more serious damage to a fetus than his/her mother. The gestational age of the fetus influenced the degree of severity (3,4). All the infections spread through poor hygienic conditions, contaminated blood, water and soil or airborne respiratory droplet.

Information on the risks of congenital infection and clinical signs may be useful for women deciding on whether to proceed with amniocentesis or a termination of pregnancy (5).

Congenital CMV infection can result in major neurological disorders such as sensorineural hearing loss and developmental disabilities (6), as treatments and vaccinations against CMV are currently under development (7). Rubella virus might cause congenital rubella syndrome if the mothers are infected with rubella virus during the first trimester of pregnancy (8). Toxoplasma gondii causes congenital toxoplasmosis. Toxoplasma gondii maternal medication does not always prevent the development of congenital toxoplasmosis (9). Parvovirus B19 causes hydrops fetalis and fetal anemia, miscarriage, fetal or neonatal death, or severe disability in infected infants, and there is currently no effective treatment or vaccination against parvovirus B19 (10). The most susceptible time of mother-to-fetus infection that can cause severe disease for all pathogens is the first trimester (11). Rubella virus is transmitted by droplets (9,12) while Parvovirus B19 is transmitted by droplets and contaminated blood. Toxoplasma gondii is transmitted by cat faeces or eating unwashed fruit or vegetables, and undercooked meat. The transmission route for CMV is via body fluids including saliva, urine, blood, breast milk and tears through kissing and sexual intercourse and transmission routes for CMV occurs through organ transplantation or blood transfusions (13). Transmission of HBV, human immunodeficiency virus occurs during and soon after delivery, through direct contact of the infant with infectious blood and other body fluids (14), while Herpes Simplex virus is transmitted through direct contact with an infected vaginal canal during birth. Infections with syphilis can be transmitted through direct contact with a spirochete containing lesion, sexually, or trans-placentally. Congenital syphilis transmitted from mother has primary and secondary stages of the disease rather than the tertiary stage (15).

Serology, culture, histopathology, and PCR technique are the specific techniques for detection of TORCH disease (16).

Several studies have reported the awareness and knowledge of pregnant women about congenital infection (16,17,18). No studies have evaluated the awareness and knowledge about pathogens that may cause severe congenital diseases or anomalies by vertical transmission in Al Taif region Saudi Arabian women.

Women should be aware of, and know the prevention measures, against maternal infection with mother-to-child infections during pregnancy to reduce the incidence of infants with congenital infections.

The present study aimed at assessing the awareness and knowledge of vertically transmitted infections (TORCH) among three different groups; the first group was the health care providers, the second group was the students in Al Taif university, girls section, and the third group was women at reproductive age (18 - 49) at Al Taif area Saudi Arabia aiming to decrease the incidence of congenital infections via increasing their knowledge of the causative organisms, symptoms, ways of transmission and the preventive method of vertically transmitted infection and to increase the awareness of the importance of antenatal care.

Materials and Methods

Study design: A cross sectional study was done
Time frame: The study period was from May 2016 till October 2017.
Sampling methodology: The study participants were a convenient sample of 100 women of reproductive age (18-49) who attended the Gynecology and Obstetrics outpatient clinics of King Abdul-Aziz hospital in Al Taif , and another sample of 139 students in Al Taif university, girls section, in addition to 96 health care providers at primary health care units in Al Taif area, Saudi Arabia who were invited to participate in the study.
Study instrument: A questionnaire was prepared by the researchers for the women of reproductive age and female students in Al Taif University, girls section containing demographic data (age, academic class) and special questions about their knowledge of vertically transmitted infections (TORCH).

Knowledge questions included whether TORCH infection is contagious, does (TORCH) in pregnant women cause birth defects, mode of transmission, preventive method of infection, presence of a vaccine to prevent, or medicine to treat. Finally, the questionnaire asked about the source of

any knowledge about (TORCH). The questionnaire item options were " know, or do not know" for each item. If they answered with 'I know' for any question, they should clarify (11).

Another questionnaire was prepared by the researchers for the health care providers at primary health care units in Al Taif Area, Saudi Arabia containing specific laboratory tests for serological detection of early infection with the vertically transmitted organisms (17).

Statistical analysis

Recorded data were analyzed using the Statistical Package for Social Sciences, version 20.0 (SPSS Inc., Chicago, Illinois, USA). Quantitative data were expressed as mean ± standard deviation (SD). Qualitative data were expressed as frequency and percentage, and Chi-square (x2) test was applied to assess the relationship between variables, and a p-value less than 0.05 was considered significant.

Results

Table 1 shows that an average of 78.13% of the sample of health care providers, were aware of the important investigations needed during pregnancy follow up, for the prevention of congenital infections.

Table 2 shows a statistically significant relation (p 0.032) between total knowledge of providers and the scientific degree of the health care providers, as consultants had a significant higher percentage of those who had satisfactory knowledge.

In Table 3, about (87.8% - 71%) of the students and mother group respectively didn't know that congenital infections are contagious (transmitted from mother to fetus), while only (12.2 % - 29%) knew. (57.46% & 75%) of the students and mother group respectively didn't know that congenital infections can cause congenital anomalies and 42.54% - 25% knew.

Regarding mode of transmission, (65.40% - 51%) of the students and mother group respectively didn't know that congenital infections with Rubella and Parvovirus B19 can be transmitted by contact with drops of respiratory secretions. (71.20% - 45%) of the students and mother group respectively didn't know that the CMV congenital infections can be transmitted by child care implement exchange, (53.20% - 50%) by sexual intercourse and (41.00% - 45%) by infected hands. (56.80% - 47%) of the students and mother group respectively didn't know that tToxoplasma gondii congenital infections can be transmitted by contact with cat faeces, (69.10% - 48%) by eating raw meat, (70.50% - 48%) by drinking of contaminated water, (67.00% - 49%) by unpacked Goat Milk. (75.50% - 59%) of the students and mother group respectively didn't know that Herpes Simplex Virus can be transmitted by direct contact with infected areas and (76.20% - 63%) by physical contact of the infected areas.

Of the participants, (51.10% - 47%) of the students and mother group respectively didn't know that HBV can be transmitted by contamination with blood or body fluids during birth, (56.80% - 38%) by contamination with polluted blood (69.80% - 38%) by direct contact with blood or urine.

Table 4 demonstrates that, regarding infection prevention, (61.20% - 35%) of the students and mother group respectively didn't know that avoiding kissing on the child's mouth can prevent congenital infection, (44.60% - 36%) didn't know that vaccination before and during pregnancy can prevent infection with Rubella virus, but (95.60% - 46%) of the students and mother group respectively didn't know that using a condom during sexual intercourse can prevent congenital infection with CMV. (44.60% - 38%) of the students and mother group respectively didn't know that avoiding cleaning the cat box and (59.00%-52%) didn't know that eating raw meat and unprocessed dairy products can prevent congenital infection with Toxoplasma gondii. (52.50% - 25%) of the students and mother group respectively didn't know that avoidance of contact with blood, urine and saliva can prevent congenital infection with HBV. Of the participants, (75.50% - 59%) of the students and mother group respectively didn't know that Herpes simplex virus can be prevented by Cesarean delivery.

Table 5 shows a statistically significant relation (p 0.018) between total knowledge of student and their educational level, as those with college level of education had a significant higher percentage of those who had satisfactory knowledge. On the other hand, a non-significant relationship was found between the total knowledge of student and their age and social status.

Table 6 shows a statistically significant relation (p=0.021) between total knowledge of mothers and their educational level, as those with college level of education had a significant higher percentage of those who had satisfactory knowledge. On the other hand, a non-significant relationship was found between the total knowledge of student and their age and social status.

Figure 1 demonstrates that the most common source of the students' information about congenital infection was the media, parents and friends (32.37%) while information from Gynecologist /Obstetricians represented only (5.75%), and general Physician represented (8.6%). On the other hand, the most common source of the mothers' information about congenital infection was the media (65%) then from Gynecologist / Obstetricians who represented (42%), media, parents and friends (47%) while General Physician represented only (7%).

Table 1: Distribution of items knowledge of health care providers in the study group (N=96)

Item knowledge of Caregivers	Know		Don't know	
	No.	%	No.	%
1- Do you know the importance of some investigations during pregnancy follow up	95	98.96%	1	1.04%
Rubella virus				
Rubella virus (IgM)	85	88.54%	11	11.46%
Rubella virus (IgG)	83	86.46%	13	13.54%
Rubella virus RNA , Qualitative , Real-Time PCR from Amniotic fluid	66	68.75%	30	31.26%
Cytomegalovirus				
Cytomegalovirus (IgM)	72	75.00%	24	25.01%
Cytomegalovirus (IgG)	72	75.00%	24	25.00%
Cytomegalovirus DNA PCR (qualitative or quantitative)	59	61.46%	37	38.55%
Toxoplasma gondii				
Toxoplasma (IgM)	82	85.42%	14	14.59%
Toxoplasma (IgG)	78	81.25%	18	18.75%
Toxoplasma (PCR)	70	72.92%	26	27.08%
Treponema pallidum				
Treponema pallidum antibody (IgM)	76	79.17%	20	20.83%
Treponema pallidum antibody (IgG)	72	75.00%	24	25.00%
Treponema pallidum (PCR)	59	61.46%	37	38.55%
Hepatitis B virus				
HBsAg	90	93.75%	6	6.26%
HB DNA qualitative PCR	69	71.88%	27	28.13%
Anti-hepatic B core (anti-HBc) , IgM	79	82.29%	17	17.17%
Varicella Zoster				
Varicella Zoster virus or Herpes simplex virus (IgM)	79	82.29%	17	17.71%
Varicella zoster virus or herpes simplex virus (IgG)	74	77.08%	22	22.92%
Varicella Zoster virus or Herpes simplex virus (PCR)	68	70.83%	28	29.17%
Total	75	78.13%	21	21.88%

Table 2: Relation between total knowledge of health care providers according to degree of the health care providers (N=96)

Variable	Beck Depression Inventory Score (a) (Mean ± SD)	Multidimensional Assessment of Fatigue Scale (b) (Mean ± SD)
Mean	(17.7213 ± SD 10.131)	(29.9132 ± 8.176)
Minimum	0.00	6.36
Maximum	53.00	43.73

*p-value <0.05 S

Table 3: Comparison between the percentage of Items knowledge among the students and mothers group (No: 139 - 100 respectively).

Items knowledge of student	Know		Don't know	
	students %	mothers %	students %	mothers %
Is congenital infection contagious (transmitted from mother to infant)?	12.2%	29%	87.80%	71%
Is it dangerous?	56.8%	57%	43.20%	43%
Congenital infection cause:				
Hearing loss?	45.3%	33%	54.70%	67%
Mental retardation?	50.4%	28%	49.70%	72%
Jaundice	28.8%	29%	71.20%	71%
Convulsions	34.5%	20%	65.50%	80%
Small head?	47.5%	32%	52.50%	68%
Heart deformity	46.0%	32%	54.00%	68%
Death?	45.3%	2%	54.60%	98%
average	42.54%	25%	57.46%	75%
Mode of transmission:				
Rubella, Parvovirus B19				
Contact with drops of respiratory secretions	34.5%	49%	65.40%	51%
CMV				
Child implement exchange?	28.8%	55%	71.20%	45%
Sexual intercourse?	46.8%	50%	53.20%	50%
Infected hands	59.0%	55%	41.00%	45%
Toxoplasma gondii				
Contact with cat faeces?	43.2%	53%	56.80%	47%
Eating raw meat?	30.9%	52%	69.10%	48%
Drinking of contaminated water?	29.5%	52%	70.50%	48%
Unpacked Goat Milk?	33.1%	51%	67.00%	49%
Herpes simplex virus				
Direct contact with infected areas?	24.5%	41%	75.50%	59%
Direct physical contact?	23.7%	37%	76.20%	63%
HBV				
Contamination with blood or body fluids during birth?	48.9%	53%	51.10%	47%
Contamination with polluted blood?	43.2%	62%	56.80%	38%
Direct contact with blood or urine?	30.2%	62%	69.80%	38%

Table 4: Comparison between the percentage of preventive methods of congenital infections knowledge among the students and mothers group (No: 139 - 100 respectively)

Items knowledge of student	Know		Don't know	
	students %	mothers %	students %	mothers %
What can people do to prevent infection?				
Rubella virus				
Be away from people with fever or rash	18.0%	43%	82.00%	57%
Avoid kissing on child mouth?	38.8%	65%	61.20%	35%
Vaccination before and during pregnancy?	55.4%	64%	44.60%	36%
Parvovirus B19				
Wear a mask	55.4%	6%	44.60%	94%
Keep away from crowded places	48.9%	3%	51.10%	97%
CMV				
Cleaning hands after diaper change?	50.4%	62%	49.60%	38%
Do not share child implements?	60.4%	59%	39.60%	41%
Use a condom during sexual intercourse	4.3%	54%	95.60%	46%
Toxoplasma gondii				
Avoid cleaning the cat box?	55.4%	62%	44.60%	38%
Avoid eating raw meat and unprocessed dairy products?	41.0%	48%	59.00%	52%
Drinking of contaminated water?	32.4%	19%	67.60%	81%
HBV				
Avoid contact with blood, urine and saliva?	47.5%	75%	52.50%	25%
Herpes simplex virus				
Cesarean delivery	24.5%	41%	75.50%	59%
Total	**41.0%**	49%	59.00%	51%

Table 5: Relation between total knowledge of students according to demographic data of students (N=139)

Demographic Data of students	Total Knowledge of students		Chi-square test	
	Unsatisfied (N=69)	Satisfied (N=70)	x2	p-value
	%	%		
Age (years)	97.1%			
From 18- 29years	2.9%	97.1%	1.334	0.513
From 30-49 years		2.9%		
Educational level				
Secondary education	23.2%	5.7%	4.194	0.018*
(New comers)	76.8%	94.3%		
College				
Social status	0.0%	1.4%		
Widow	88.4%	85.7%	1.060	0.589
Single	11.6%	12.9%		
Married				

**p-value <0.05 S*

Discussion

Mother-to-child infections (congenital infections) occur when pathogens are transmitted from mother to child during pregnancy or the perinatal period. These pathogens can lead to severe congenital neonatal diseases including anomalies, or childhood and adulthood diseases, spontaneous abortion, fetal death or intrauterine growth restriction (11). To reduce the incidence of infants with congenital infections, pregnant women, and females of childbearing age, need to be aware of, and know the pathogens' way of transmission and prevention of maternal infection with pathogens capable of mother-to-child transmission.

Although vaccination is the most effective preventive method for congenital infection, vaccinations against some pathogens (such as cytomegalovirus [CMV], Toxoplasma gondii, and parvovirus B19) are not currently available (6).

This study demonstrated the awareness of and knowledge about pathogens, routes of transmission, and ways of prevention of mother-to-child infections among students, mothers, and health care providers in Al Taif area, Saudi Arabia. We found that healthcare providers have more awareness and knowledge about mother-to-child infections during pregnancy (78.13%) while 21.88% didn't know, especially for PCR technique as Cytomegalovirus DNA PCR qualitative or quantitative (38.55%) then HB DNA qualitative PCR (28.13%) Rubella virus RNA, Qualitative, Real-Time PCR from Amniotic fluid (31.26%) and Treponema Pallidum (PCR) (38.55%). These results can be explained by that PCR technique needs more specialty or even needs consultants.

Comparing our study result with similar study on healthcare professionals in Japan done by Ross et al. 2009, Cordier et al. 2012b) (17,19) they reported the same results as our study, that generally healthcare professionals have more awareness and knowledge about mother-to-child infections during pregnancy and there were no physicians, and only four healthcare professionals and 11 care workers, had more awareness of Toxoplasma gondii as mother-to-child infection.

According to the demographic data of the study group results, we showed that increasing the educational levels of the population will reflect on increasing of the awareness and the knowledge. The current study has confirmed these results by a statistically significant relation (p 0.032) between total knowledge of health care providers and their scientific degree. Also, there was a statistically significant relation between total knowledge of congenital infections of the student and the mothers and their educational level. (p 0.018), (p 0.021) respectively.

According to the student's group results of the current study, we found that their total knowledge was (41.0%). Most of their knowledge was about mode of transmission of rubella syndrome, the awareness and knowledge of the infection and the preventive methods of rubella syndrome which might be due to the compulsory vaccine program of Saudi health ministry to prevent rubella infection (20).

According to the mothers' group results of the current study, we found that their total knowledge of congenital infections was (49%). Most of the mothers' group knowledge about mode of transmission was via contamination with polluted blood and direct contact with blood or urine (62%), contact with cat faeces, eating raw meat, drinking of contaminated water (53%), child care implement exchange (55%) contamination with blood or body fluids during birth (50%), sexual intercourse (50%) contact with drops of respiratory secretions (49%).

The high percentage of total knowledge of the mothers' group (49%) in comparison with the percentage of total knowledge of the students' group (41.0%) regarding congenital infection may be due to the source of knowledge; the mothers' group got their knowledge from the media (65%) , while (42%) of the mothers' group got their knowledge from specialists as Gynecologist and Obstetrician doctors while students group source of knowledge was from the Media, Parents and friends (32.37%), while only (5.75%) got their information from specialists such as gynecologist and obstetricians and (8.6%) from general physicians.

In comparison to our study the knowledge and awareness of congenital rubella syndrome was relatively well known in Japan (76%) as well as in France (97%) (17), Brazil (74%) (21), and USA (53%) (16).

Lim et al. 2012 (16) reported that the percentage of women in Singapore who were aware of CMV was (18%). Low percentages of awareness for CMV were also demonstrated in France (34%) (17) and USA (22%) (16).

In the current study we reported less knowledge about mode of transmission and preventive method of other congenital diseases especially Parvovirus B19 infection. Also, a low proportion of Japanese women (28%) was aware of and had knowledge about parvovirus B19 infection during pregnancy. The percentages of awareness for parvovirus B19 were similar in France (24%) (17) and USA (32 %(16)).

Parvovirus B19 infection occurs via contact with infected children at home. The pregnant women who has older children should be aware of a route of transmission and preventive method of parvovirus B19 infection due to high risk of family transmission (10).

The percentage of women who were aware of Toxoplasma gondii in our study is nearly similar to the percentage reported in the USA (48%) (14) while it was 58% in Japan, and 98% in France (17). The women before pregnancy or early in gestation had to be informed not to eat uncooked meat and wear gloves during any contact with soil(16).
Current study results showed that the health care providers are more informed and prepared to raise awareness in their communities. The mothers were obtaining their

information from many sources especially when attending the gynecological and obstetric outpatient clinic, and from general doctors, and reading to increase their knowledge after getting pregnant, and from social media.

Awareness of and knowledge about congenital infections were found to be low in our study especially among the students group. Counseling and education for women of childbearing age, to prevent maternal infection should be urgently developed to reduce the incidence of these mother to child infections. The best options to prevent maternal infection are by behavioral and educational interventions (6).

Our study results strongly suggest that women should receive counseling and more education about congenital infection pathogens, transmission, infection and preventive methods prior to pregnancy or early in pregnancy.

The first step for prevention of congenital infections is via raising the awareness and the knowledge of the pathogens, ways of transmission and the methods of prevention of congenital infections among women (the students and the mothers) and their healthcare providers. Such awareness can lead to improvement in hygiene behaviors among pregnant women. Furthermore, as the women and their healthcare providers become educated about congenital infection, they will better appreciate the potential for interventions such as prenatal screening and diagnosis (22), newborn screening (23), and antiviral (24) or hyper-immunoglobulin treatments (25), and they will see the urgent need for the development of an effective vaccine (26).

Increasing public awareness by talking to the local community, by sharing information on social media, regional radio as well as newspapers, public awareness campaigns, workshops, community meetings, house visits and pamphlets are good ways of spreading information about prevention, non-discrimination and care (27).

Limitations

One of the limitations of this study was using a self-reported questionnaire that may be prone to recall bias. The use of a cross-sectional study showed the relation between variables without closing a cause-effect relationship.

Conclusion

About 87% and 71% of students and mothers respectively didn't know that congenital infections arecontagious, and 57.46% and 75% of them didn't know that congenital infections can cause congenital anomalies. Of them, 61.% and 35% didn't know that avoiding kissing a child's mouth can prevent congenital infection and 44.60% and 36% didn't know that vaccination before and during pregnancy can prevent infection with Rubella virus. Both students and mothers with college level of education had a significant higher percentage of those who had satisfactory knowledge. The most common source of the students' information about congenital infection was the media, parents and friends (32.37%) and for mothers, it was the media (65%) then the Gynecologist / Obstetricians. The present study demonstrates deficient knowledge of female students and women in the reproductive age regarding congenital infections. The study calls for health education programs about congenital infections directed to female students and women in the reproductive age.

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School-entry Screening Program for Ear and Hearing Problems in Tikrit, Iraq

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Abstract

Introduction: Hearing is the most essential perceptive sense for child development, especially in the childhood period, facilitating the ability of the child to interact with the surrounding environment and other persons. Hearing deprivation can have dangerous complications on different aspects of childhood development, like acquisition of speech and language and pre-reading skills. This study aimed at performing hearing screening of children aged 6 years to detect the prevalence, incidence, and degree of hearing loss in this age group.

Patients and methods: This is a cross sectional study, which involved a randomly selected sample of 425 students from primary school children in Tikrit, of age of school entry (6 years); 850 ears, were examined and screened for ear and hearing problems. A questionnaire was designed to collect information concerning patients' age, history of impairment of hearing, duration, onset, family history of ear problems (including impairment of hearing, discharging ear, vertigo, otalgia, nasal obstruction, recurrent tonsillitis), prenatal, natal and post natal period history, and impaired performance in school or disabilities of learning. Full E.N.T examination was done stressing on the ear examination. For all students with risk factors and having clinical hearing problems, pure tone audiometery was carried out.

Results: This study involved screening of a randomly selected number of (425) students and examination of 850 ears at the main primary health care center inTikrit city. Females constituted 342 (80.6%) versus 83 (19.4%) males. Impacted wax was found in 3 patients but they were excluded from the study because they regained hearing function after removal of wax. Hearing loss was found in 30 students, (7.1%) of the study sample. Hearing Impairment (HI) was found in thirty students from a total of 425 students (7.1%) in this age group, twenty eight of the Hearing Impaired students (6.63%) had conductive hearing loss, and the remaining two students between (0.47%) had Sensori Neural Hearing Loss (SNHL).

Conclusion: The commonest type of hearing loss in children is Conductive Hearing Loss (CHL) which is amenable for medical or surgical treatment. But the SNHL is due to genetic or postnatal causes and is usually permanent and needs hearing aids to improve school performance and normal social communication ability.

Key words: Hearing Screening Program in School, Hearing Problems in schools students.

Introduction

There are countries that have applied programs for newborn hearing screening, leading to early detection and intervention and therapy. In spite of this program, still there is a big number of school-age children with hearing problems for which there is need for a program of hearing screening in school children(1). There is a significant increase in hearing impairment prevalence in the age group 1-6 years of life because of progressive and acquired hearing impairment especially in the developing world where environmental risks are more prevalent(2, 3). Unidentified pediatric hearing impairment has historically been found to dramatically inhibit educational learning achievement and ultimately vocational outcomes(4). Poor school performance, elevated incidence of failed grades and higher dysfunction in aspects such as energy, behavior, self-esteem and socio-emotional ability may follow even minimal and unilateral permanent hearing loss(5,6,7). In countries like Iraq, where absence of healthcare mandates and legislation for obligatory hearing screening of newborns and infants, school entry screening is very important. The program of school-entry screening is considered the first point of access to diagnose childhood hearing loss (8). The aim of this study is to assess a screening program for hearing impairment, to identify the types and common causes of hearing loss among school age children in Tikrit primary schools.

Patients and Methods

This is a cross sectional study, that included a randomly selected sample of (425 students) from primary school children in Tikrit, of age between 6-7 years, (850 ears), who were examined and screened for ear and hearing problems. A questionnaire was designed to collect information concerning patients' age, history of impairment of hearing, duration, and onset. Also information was collected concerning; family history of ear problems (including impairment of hearing, discharging ear, vertigo, otalgia, nasal obstruction, recurrent tonsillitis), prenatal, natal and post natal period history, and impaired performance in school or disabilities of learning. Full E.N.T examination was done stressing on the ear examination including: external ear inspection for any deformity or congenital anomalies, discharge, etc. Otoscopic examination looking for any abnormality in external auditory canal, wax, discharge. The color, integrity hair line, air bubble, contour and mobility of tympanic membrane were examined. Nasal, nasophyranx, oropharynx, facial nerve, neurological and neck examinations were also carried out for all patients. Gross assessment of hearing and differentiation between conductive from sensorineural hearing impairment was performed in a quiet room. Weber's, Renne, and absolute bone conduction test. For all students with risk factors and clinical hearing problems, pure tone audiometery was carried out. This study attempted to perform school entry hearing screening of Tikrit school aged children in Salah Al-Deen Governorate. The study included a randomly selected sample of all children who attended the obligatory health examination for kindergarten and primary school entry in their study year.

Results

This study involved screening of a randomly selected number (425) of students and consequent examination of (850) ears at the main primary health care center in Tikrit city. Females constituted 342 (80.6%) versus 83 (19.4%) males of the sample group. Impacted wax was found in 3 patients who were excluded from the study because they regained hearing function after removal of wax. HI was found in thirty students from a total 425 student (7.1%) in this age group, 28 (6.63%) students had hearing impairment and had CHL, and the remaining 2 students (0.47%) had SNHL (Table 1). CHL was present in 28 (6.63%) of the sample, and 21 (75%) of them were males and 7 (25%) were females. The average hearing loss was 30 dB. OM with effusion was found in 20 (71.4%), Bilateral OME was found in 18 (90%) of cases and unilateral in 2 (10%). COM was found in 8 (28.6%), mainly unilateral 6 (75%), and the remaining 2 (25%).

Table 1: Characteristics of the study sample

Age group	6-7 years
No. of students	425
Ears	850
Males	342 (80.6%)
Females	83 (19.4%)
NO. of HL	30 students (7.1%)
CHL	28 (6.63%)
Males	*21 (75%)*
Females	*7 (25%)*
Average HL	30 dB
OM with effusion	20 (71.4%)
Unilateral	2 (10%)
Bilateral	18 (90%)
COM	8 (28.6%)
Unilateral	6 (75%)
Bilateral	2 (25%)
SNHL	2 (0.47%)
Impacted wax	3 excluded from study due to reversible cause of HL

Discussion

Neonatal hearing screening programs are reliably good, but they have the limitation of missing out children with delayed-onset HL and also those with acquired causes which are commonly seen in the developing world (9-11). In the absence of Neonatal hearing screening programs such as in Iraq there will be an increasing number of children with undetected HL, and there is an urgent need to have a school entry screening program for early detection and therapeutic intervention of HL (12). Our study results are near to the WHO that has shown 6.3% prevalence of hearing impairment in India of all ages with hearing loss > 41dBHL. The differences in prevalence rate in different studies may be due to the difference in the protocol used in the two studies (13,14). Our study results were lower than prevalence rate of HL at age around 6 years as reported b; Ojha M et al, Piotr HSkarzynski et al; as 20.2%, (22-50%) respectively. This increased rate might be due to difference in the time period of the prevalence rate being surveyed and an overall increase in the prevalence of hearing impairment. This may be explained by the fact that our study only involved children at age 6 years at school-entry (15,16).

In the current study, OME was reported in 20 (71.4%), Bilateral OME found in 18 (90%) of cases and unilateral in 2 (10%). OME is the most frequent cause of acquired HL in childhood (17), because of adenoid hypertrophy which is common between ages of 3-7 years and which is due to Eustachian tube ET obstruction (18) as well as recurrent upper respiratory tract infection, tonsil, and sinus infections which are more active in the age group (4-10) years (19). CHL is related to recurrent OM in children and may interfere with delay in language competency at age of seven years (20). Relatively wide, short, and more horizontal ET in children compared to adults may predispose them to OM because secretion from nasopharyngeal secretion can readily pass through a horizontal ET (21). OM frequency is more between the ages of 2-7 years old (80%) and most children are under 9 years. The present study revealed that CHL was present in 28 (6.63%) of the sample, and 21 (75%) of them were males and 7 (25%) were females. The average hearing loss was 30 dB. This agrees with a fact suggesting that chronic or severe infection of middle ear is more common among males (22, 23).

But it is different from Sarhat AR; who reported equal frequency between males and females (23). This may be explained by the sample differences. Our study results show predominance of CHL SNHL. Acquired CHL is commonly caused by OME and is usually bilateral (23, 24). In our study we found that 73% of students with CHL were due to OME, 90% of them with bilateral hearing loss and this is statistically significant, because of adenoid hypertrophy which obstructs both ET. Regarding SNHL, we found 2 students (0.47%) with SNHL. Recent studies estimate that the SNHL in children, (68%) of them, is due to genetic or congenital factors, (20-25%) of them due to identifiable environmental causes; prenatal, natal, and postnatal, and (25-30%) of them are sporadic with unknown etiology (23, 25). Bacterial meningitis causes (5-20%) of severe SNHL; viral infections such as, mumps, measles, and rubella cause (6%) of SNHL in children (24). This cannot be studied.

Conclusion

CHL is the commonest type of HL in children that is amenable for treatment. Genetic or postnatal SNHL is mainly permanent and needs hearing aids to improve learning abilities and normal social communication capability.

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Knowledge and awareness of community about pediatric nocturnal enuresis in Taif city, 2019

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Abstract

Background: Nocturnal enuresis (NE) is a health issue suffered in childhood. There is a lack in parents knowledge of the effective treatments and causes for NE.

Objectives: The aim of the present study was to determine the population's knowledge and awareness about pediatric nocturnal enuresis in Taif city.

Methods: A cross-sectional design was was done on 301 participants from the adult population of Taif city, of both genders, Saudis and non Saudis, of all educational levels and marital status. A self- administered questionnaire was distributed via social media to subjects who live in Taif city and who agreed to participate in the study.

Result: The majority of the respondents (90.1%) were females and 76.7% reported that they had education at university level. The participants with higher educational qualification had a significantly higher percentage of prior knowledge about enuresis than those with lower educational qualification. The majority of the participants (61.8%) didn't have any idea regarding the different types of enuresis.

Conclusion: Study findings reveal even though nocturnal enuresis is a commonly reported childhood problem, the knowledge regarding its causes and effective management is still lacking in the parents who participated in our study.

Key words : Knowledge, community, pediatric, nocturnal, enuresis, Taif

Abbreviations:

NE	*Nocturnal Enuresis*	*MNE*	*Monosymptomatic Nocturnal Enuresis*
PNE	*Primary Nocturnal Enuresis*	*KSA*	*Kingdom of Saudi Arabia*

Introduction

Nocturnal enuresis (NE) is a health issue suffered in childhood [1]. It is known as an uncontrollable voiding of urine during sleep time with repetitive episodes of 2 times a week minimally in the pediatric population above 5 years old, without congenital or acquired abnormalities of the nervous system [1]. There are two main types of enuresis in children; primary enuresis is defined as when a child has never achieved bladder control. The secondary enuresis is when a child has achieved bladder control for six months duration, then retgresses and starts wetting [2].

The major pathophysiological mechanisms of primary nocturnal enuresis (PNE) consist of decreased functional bladder capacity, raised night-time urine secretion (reduction in antidiuretic hormone secretion), and also fails to suppress bladder emptying due to lack of arousal from sleep [3]. The secondary nocturnal Enuresis is associated with other causes like organic or psychological causes [3].

Some studies that focus on nocturnal enuresis showed large differences in prevalence even within countries in the same geographic region, and considered it as a global problem [2]. The prevalence of enuresis was found to be high in studies done in Africa and India [4,5].

In the Kingdom of Saudi Arabia (KSA), a study done in 2013 found that the prevalence of NE was 28.6%, with a predominance of girls, and the prevalence decreased with increasing age [1]. Another recent study done in 2019 found that 76.4% of school-age children had NE [6].

Studies have found that 50% of parents with children who have MNE were unaware that there are specific treatments available for MNE and only 24.11% of the parents had taken their child to a doctor for this problem [7,8].

As a result of PNE, it has a lower quality of life of affected children; other children also express distress through lower self-esteem, and lower performance in schools [9,10].

To establish diagnosis with nocturnal enuresis, a patient must be aged at least 5 years old or have a catch-up development age of 5 years. Beneath this age, issues with bladder control are believed to be normal [11,12].

There is a lack in parents' knowledge of the effective treatments and causes for NE. Around 60% would seek medical care and around 30% had awareness about effective treatments [13,14,15].

Careful literature research has found that no study was done in KSA to assess the population's knowledge about NE. The aim of this study was to estimate the population's knowledge, awareness and attitude towards nocturnal enuresis in Taif city which will limit excessive stress and anxiety associated with misinformation, and also for parents to have reasonable, proper behavior when they face this health problem.

Subjects and methods

Study design and time frame: This study was a cross-sectional observational descriptive study that was conducted during the period from October to January 2018.

Study setting: The study was conducted in Taif City, Saudi Arabia

Sampling methodology: Adult population of Taif city of both genders, including Saudi and non Saudis population, of all educational levels and marital status constituted the target population of this study.

Inclusion criteria: The study population consisted of the following: Adult population aged between (18- 65) years old, who were living in Taif city and accepted to participate in our study.

Exclusion criteria:
1- People who refused to participate in the study.
2- Those whose questionnaires were incomplete.
3-Adults who lived outside Taif city.
4- Population group aged less than 18 or more than 65 years old

Sample size: Sample size (n) = 301 participants were included in this study.

Study instrument: The researchers were responsible for distribution of electronic questionnaires to the population, both male and female, via social media. A pre-designed Arabic self-administered questionnaire was introduced online to both males and females of the Taif city population. This questionnaire had the following items :

1- Demographic data including: Gender, Age, Educational level, Social status and the presence of children.

2- A group of questions to evaluate the subjects' knowledge's about NE; including: evaluation of prior knowledge of nocturnal enuresis in children , the causes of NE, age of children in which to consider NE, number of times of urinating at night to diagnose NE, types of NE, when to consider medical advice, methods to manage NE and psychological effects of NE on children.

Ethical considerations: This study was approved by the research ethic committee of Taif University. All participants responded online and were informed that their information would be confidential.

Data analysis: Collected data were coded, verified and analyzed with the help of a biostatistician using Statistical Package for the Social Sciences (SPSS) program version 20 developed by International Business Machines (IBM®) Corporation. Qualitative data was presented as number and percentage and Chi Squared test was performed to assess the relationship between variables. A p-value of less than 0.05 was considered as statistically significant.

Results

The results of the study showed that the majority of the respondents were females and 90.1%, 62.5% were in the age group of 18-30 years, 32.6% (98) in the age group of 30-45 years and the remaining 5%(15) were in the 45-60 years category (Table 1).

When the respondents' highest educational qualifications were recorded, the majority of the participants 76.7% (231) reported that they had education at university level, whereas 18.3 % had qualification at high school level and 4% (12) had only Secondary education. Three of the participants (1%) reported that they were illiterate or had no secondary education (Table 1). The participants with higher educational qualifications had a significantly higher percent of those with prior knowledge about enuresis than those with lower educational qualification ($p<0.05$) (Table 2). When the opinion regarding the cause of enuresis in children was enquired about, 17.3% of the participants mentioned that the causes are psychological and social causes, while the majority of the participants 63.8% had the opinion that enuresis is a result of multiple factors or causes (Table 3). When the participants were asked about the age at which children most commonly encounter enuresis, 53.2% (160) had the opinion that it is 'above 5 years'; 28.2% (85) mentioned it as '5 years', 10.3% (31) reported it as '3-4 years' (Table 3). Most of the participants (40.2%) had the view that children need a certain number of times to urinate at night to consider it as enuresis and the number of times reported differed among the participants. Of the participants, 29.6% (89) reported that children need to urinate at night more than two times in a month to consider it as enuresis, while most of the participants (63.5%) did not have an idea regarding the number of times children need to urinate to consider having enuresis (Table 3).

On asking about the appropriate time to consult a doctor, 23.6% of the participants had the opinion that 'the child should reach the age of five and still suffer from enuresis' to do so, 15.6% had the opinion that they should consult the doctor only if there are 'symptoms of uncontrolled urination during the day or presence of urinary infections'. A few participants (3.7%) believed that they should consult a doctor 'if this problem is absent for a period and then returns again'. Some of them (3.7%) were totally unaware about the time to consult the doctor (Table 3). Most of the participants (61.8%) didn't have any idea regarding the different types of enuresis, and only 27.9% were aware of the different types of enuresis (Table 3).

When participants were asked about the methods or treatment to solve enuresis in children, 80.1% responded they are aware of effective methods of curing enuresis. Most of the participants (70.4%) reported that 'both pharmacological and behavioural treatment' is needed to cure or solve enuresis, 7.6% thought that 'only behavioural treatment' is needed to cure enuresis, and very few participants mentioned that 'only pharmacological treatment' is required (Table 3).

When the participants were asked whether enuresis influences the psychological health of the child, 90.7 % believed that it has an effect. According to 14% of the participants 'shyness and isolation' is the psychological effect, 15.6% believe it as 'low self-esteem' and 4.7% mentioned it as 'aggressiveness' (Table 3).

Table 1: Socio-demographic characteristics of the participants

Variable		Frequency (n)	Percent
Gender	Male	26	9.9 %
	Female	271	90.1 %
Age	18-30	188	62.5%
	30-45	98	32.6%
	45-60	15	5%
Educational level	University	231	76.7%
	High school	55	18.3%
	Secondary	12	4%
	Illiterate	3	1%
Marital status	Single	122	40.5%
	Married	160	53.2%
	Divorced	13	4.3%
	Widowed	6	2 %
Do you have children	Yes	146	48.5%
	Married and No children	36	12%
	Others (Unmarried/ single)	119	39.55

Table 2: Relationship of Education level of parents with prior knowledge of enuresis

Educational level	Do you have any prior knowledge of enuresis in children		Total	Pearson Chi-Square test	p -value
	Yes	No			
University	168	63	231	8.816	0.031
High school	34	21	55		
Secondary	5	7	12		
Illiterate	1	2	3		

Table 3: Knowledge, attitude and opinion of participants related to nocturnal enuresis (Part 1)

Variable		Frequency	Percent
Do you have any prior knowledge of enuresis in children?	Yes	208	69.1%
	No	93	30.9%
In your opinion, what are the causes of enuresis in children?	Organic causes such as (urinary tract infections, small bladder size, diabetes, severe constipation)	18	6%
	Psychological and social causes such as (violence against children, family disintegration)	52	17.3%
	Genetic factors	6	2%
	Frequent fluid consumption	28	9.3%
	Deep sleep	5	1.7%
	Multiple causes	192	63.8%
At what age can the child be considered to have enuresis?	3-4years.	31	10.3%
	5 years	85	28.2%
	More than 5 years	160	53.2%
	Others	25	8.3
Does the patient need a certain number of times to urinate at night to be considered to have enuresis?	Yes	121	40.19%
	No	91	30.23%
	I do not know	86	28.57%
	Other	3	0.01%
If the answer of previous question is yes, how many times should the urination to recur in the child?	Once a month	7	2.3%
	Twice a month	14	4.7%
	More than twice a month	89	29.6%
	Other	191	63.5%
Are you aware of the types of enuresis?	Yes	83	27.9
	No	28	9.3
	I don't know	186	61.8

Table 3: Knowledge, attitude and opinion of participants related to nocturnal enuresis (Part 2)

In your opinion, are there any effective methods to solve the problem of enuresis?	Yes	271	80.1
	No	7	2.3
	I don't know	53	17.6
If the answer is yes, what is the nature of these solutions?	Only Pharmacological treatment	7	2.3%
	Only behavioural treatment	23	7.6%
	Pharmacological and behavioural treatment	212	70.4%%
	Don't match	59	19.6%
In your opinion, what are the psychological treatment methods for nocturnal enuresis?	Use timer connected to bed	9	3%
	Teach child urination control for increased bladder capacity	14	4.9%
	Restrict fluids before bed time	27	9%
	Psychological support	34	11.9%
	Others	217	72.1%
Do you think that enuresis has effects on the psychological health of the child?	Yes	273	90.7
	No	25	8.3
	Others	3	1
If previous question was answered yes, what are the psychological effect of nocturnal enuresis?	Shyness and isolation	42	14
	Low self esteem	47	15.6
	Aggressiveness	14	4.7
	Other	173	57.5
	No answer	25	8.3
In your opinion when should you consult a doctor when he/she has enuresis?	If the child reaches the age of five and still suffers from enuresis	71	23.6%
	If there are symptoms of uncontrolled urination during the day or presence of urinary infections	47	15.6%
	If this problem is absent for a period of time and then returns again	11	3.7%
	As soon as the child urinates in their bed at any age	13	4.3%
	I don't know	11	3.7%
	More than one option	148	49.2%

Discussion

The study findings revealed that 69.1% of the participants were aware about enuresis in children. The reported unawareness may be because; their children might have never encountered enuresis or can also be due to lack of knowledge regarding the same.

The opinions regarding the causes of enuresis were different among the participants, as 17.3% of them believed that emotional or psychological causes such as violence, and family disintegration could lead to nocturnal enuresis in children. Only 1.7% of the participants reported that 'deep sleep' is the cause of enuresis in children. These findings are similar to other studies done by Haque M et al [7] and Shelov SP [8].

The developmental delay of antidiuretic hormone production at night, delay of appropriate arousal threshold in children and nocturnal detrusor hyperactivity are currently considered to be the primary causes of monosymptomatic nocturnal enuresis [16,17,18,19,20].

The majority of the participants (53.2%) believed that a child needs to be above 5 years to consider this as nocturnal enuresis. The attainment of bladder control is considered to be a milestone in child development and this could mark the end of toilet training in them. According to Campbell (1970), a child achieves the control of the bladder movement between 3-4 years [13]. Epidemiological surveys in other countries reported a prevalence of 13-19% at 5 years old and 1-2% at 6 years old in boys, while the prevalence was 9-16% at 5 years and 1-2% in girls [21]. As the age increases, bedwetting becomes more socially unacceptable and children sometimes feel shy to report the situation maybe because parents may respond intolerantly and be frustrated by this [22,23].

In our study, only 27.9% of the parents reported that they are aware of the types of nocturnal enuresis. Nocturnal enuresis is divided into primary and secondary forms [24]. The primary form is when enuresis is present in a child of age ≥5 years old who has never achieved an asymptomatic period (≥ 6 months) of consistent night time dryness and the secondary form when enuresis is present in a child ≥5 years old who has achieved an asymptomatic period (≥ 6 months) of consistent nighttime dryness in the past [25].

In our study, 70.4% of the participants believed that a child requires a combination of both pharmacological and behavioural treatment to effectively manage enuresis. In one of the studies, it was reported that parents use strategies like lifting (or waking) during sleep and restricting drinks before bedtime to reduce the night bedwetting in children [26].

The education of both the child and the parent should be the first line of treatment of NE before giving pharmacological interventions. Education is provided on normal bladder function, normal voiding habits, how the child differs from normal, and how to change voiding behaviour [10]. Motivational therapy (positive reinforcement) is also found to be effective in the management of NE [27]. Punishment is not an acceptable method to manage this condition, and can become counterproductive by enhancing stress-related accidents [28]. Some authors suggest using alarms if behavioural and motivational therapy is ineffective after 6 weeks [29].

A combination of Desmopressin and alarm has been suggested as effective treatment for children with primary NE [16]. Oxybutynin, an anticholinergic medication and Desmopressin have been suggested for children with severe symptoms [30].

Limitations

A limitation of the present work was the small sample size. Being an online survey made the generalization of results very difficult.

Conclusion

Study findings reveal that even though nocturnal enuresis is a commonly reported childhood problem, the knowledge regarding its causes and effective management is still lacking in parents who participated in our study.

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Knowledge of diabetes mellitus risk factors and complications among the students at Taif University

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Abstract

Background: Awareness and level of understanding of the complications, risk factors, and management of DM are major determinants for prevention of this silent disease, and its comorbidities.

Objectives: The purpose of this study was to explore the awareness of female students in Taif university (TU) about diabetes mellitus risk factors and complications and to promote public health awareness.
Methods: This cross-sectional study was conducted among 400 students (average age was 26 years and ages ranged between 18-33 years) who were selected randomly from university colleges, excluding medical students. Consent was taken from the participants. We used a paper questionnaire that was designed by researchers then translated to Arabic language. Collected data was analyzed utilizing SPSS program version 18. Results were expressed as mean +SD.

Results: In our study, the participants were classified depending on socio-demographic characteristics of students. Regarding the faculty, a high percentage of participants were from literature colleges, (55:3%) while the rest (44:8%) of students were from science colleges. 98.2% of participants were non-diabetics while only 1.8% were diabetics. However, more than half of participants had a family history of DM. Participants had a good knowledge of DM symptoms and risk factor regardless of DM history, while there was significant unfamiliarity of DM complications.

Conclusion: This is the first study to show the knowledge of DM risk factors and complications among girl students in Taif university. The results of our study emphasized the importance of increasing the efforts to educate the general population about DM.

Key words: Knowledge, Diabetes, risk, complications, students, Taif

Introduction

Diabetes mellitus is one of the most expensive serious diseases [1,2]. It is a chronic, incurable disease which leads to significant morbidity and mortality globally [3,4]. It raises public health concerns and become the leading cause of death and disability nowadays [5].

The global prevalence of diabetes in 2014 among adults over 18 years of age was 8.5% [6]. WHO projects that diabetes will be the seventh leading cause of death in 2030 [6]. Diabetes mellitus (DM) remains an expanding global health crisis, from 30 million people affected 10 years ago to about 135 million today, and an estimated 300 million by 2025[7]. One of the highest incidence areas of diabetes mellitus around the world is Saudi Arabia, reaching 23.7% [8].

Diabetes is a silent disease that will affect the body slowly and the individual will not recognise it until it becomes life-threatening [9]. Diabetes mellitus in many individuals is undetected for 4 to 7 years, therefore by this time the patient will already be having signs of micro-and macro-vascular complications [10].

Individuals with diabetes are at higher risk of many complications like heart disease, stroke, high blood pressure, blindness, kidney disease, nervous system disease, amputations, dental disease, and complications of pregnancy [11].

Diabetes Mellitus is thought to be main cause of death as a result of CVD (MI, PVD, and stroke) among diabetic patients [12]. There are some risk factors correlated with the development of diabetes such as old age, unhealthy dietary habits, obesity, sedentary lifestyles, lack of physical activities, and socioeconomic factors as: failure to access healthcare facilities in both rural and urban areas, urbanization, a country's economic and health transition has also been partly responsible for the high incidence of diabetes mellitus; a positive family history of the disease also contributes to increased cases of the disease [13,14].

Ignorance of the symptoms and risk factors by the population will prevent the early detection of the disease [15]. Moreover, in the future this silent disease will be remarkably challenging to the healthcare system, and its high cost will affect the economy of the country [16].

Awareness and understanding about DM, its complications, risk factors, and management are important issues for good control of the disease and improving quality of life [17]. Many patients only become aware that they have diabetes after having serious complications. Media and Healthcare professionals have dedicated a lot of effort to alert the population about the impact of diabetes [18].

An important step is to stop the increasing rate of diabetes mellitus and to raise public awareness about the disease [19]. In Taif city, it is not known how much the public actually know about diabetes and its associated secondary complications. This study aimed to assess the level of knowledge and awareness of DM among female individuals in Taif University, Taif city, Kingdom of Saudi Arabia (KSA(. This study aimed to assess Knowledge of diabetes mellitus risk factors and complications among the students at Taif University.

Subjects and Methods

Study design and duration: This was a cross-sectional study for 6-month duration, in the period from 1 October 2018 to 25 March 2019.

Study settings and sampling methodology: This study included 400 non-medical students chosen randomly from Taif University Saudi Arabia. Students had an average age between 18-33 years. The inclusion criteria were all Taif University students, and the exclusion criteria were all medical students.

Tools and data collection procedure: A paper questionnaire was designed for data collection by the researchers at Taif University which included 16 questions organized into five parts as follows:

I. The first part: social and historical data.
II. The second part: family history of diabetes and importance of glycemic control.
III. The third part: symptoms of diabetes.
IV. The fourth part: risk factors of diabetes.
V. The fifth part: complications of diabetes

Ethical approval: Ethical approval for this study was obtained from the ethical review committee of the college. Participants were informed about the nature of the study, and verbal and written consent was obtained from them all.

Data analysis

Data were analyzed using SPSS program version 18. The demographic variables of Participants (Academic year, college, personal and family history of DM) were expressed as number and percentage. Chi-squared test was used to find the association between knowledge of students about symptoms of diabetes with personal and family history. Knowledge about risk factors and complications were expressed as percentage and frequency. Good knowledge was considered if the participants correctly answered more than half of the questions about risk factors and complications of DM. A p-value of <0.05 was considered as statistically significant.

Results

In this study the total number was 400 female participants. Mean age was 20.9 ± 2.1. Minimum age was 18 years and maximum age was 33 years. Regarding faculty, 55.25% of students were from the literature college, 44.75% from science colleges. Most participants were from 3rd year (28.75%) and 1st year (25.5%). Regarding the disease state, only 1.8% of the students were diabetic and the

remaining 98.2% were non-diabetic. Slightly more than half of the participants (57.75%) have someone in the family suffering from DM (Table 1).

The relationship between knowledge about symptoms of DM and presence of histories revealed insignificant results in family history with a p value of 0.119. However, that relationship was significant (p value of 0.031) with personal history (Table 2).

Regarding the importance of glycemic control most of the participants agreed that glycemic control is important in management of the disease 66.5% (Figure 1).

About 49% (49.5%) of the participants agreed that there is no need to worry about complications if the disease is under control (Figure 2).

Participants were asked about their knowledge regarding risk factors and complications of DM, and the percentages of correct responses for the seven questions were 81.5%, 81.75%, 56% 46.25%, 39.5%, 28%,77.75%, 57% respectively (Table 3).

Discussion

This study was conducted to assess the knowledge of diabetes among female students at Taif university. In the present paper, the participants' knowledge was evaluated based on their perception of DM, which involved the symptoms, risk factors and complications.

Participants in this study have a good knowledge of diabetes symptoms whether they have a family member diagnosed with diabetes (57.7%) or not (42.3%). This indicates a correlation between level of education and the increase in DM knowledge, which is consistent with former research that has been done all over the world [20]. And moreover, because of the high occurrence of DM among Saudi population in Makkah region, which gives rise to the good knowledge of the symptoms of DM in this study. That was reassuring because early knowledge of the symptoms of diabetes means the person notices the disease and seeks medical help.

For the risk factors section, we noticed that the majority of the participants identify obesity and genetics as risk factors, 81.5% and 81.8% respectively. The agreement of obesity as the main risk factor among the participants is in line with the results and findings of a research study done in Jordan [21]. This knowledge is due to concentration of educational programs on obesity. With that said if we increase our efforts there will be a higher perception for all risk factors which can lead toward prevention of DM. Risk awareness within the community is the primary key to behavioral changes among the community [22]. When susceptible people have better risk perception the development of diabetes can be avoided.

In comparison to the good knowledge on symptoms and risk factors of DM, this paper showed significant unfamiliarity about the complications of DM among female students. Our study revealed serious levels of unawareness about the cardiovascular complications of DM (39.5%), even though, adults with diabetes are two to four times more likely to die from heart disease than adults without diabetes [23]. Only 28% of participants showed to have knowledge of stroke which is one of the serious complications. In fact, diabetes increases the risk of stroke as shown in the Framingham study [24], as there is almost 2.5-fold incidence of ischemic stroke in men with and a 3.6-fold risk in women with diabetes mellitus. 77% of participants were well informed about visual problems as a complication of diabetes and even 82.0% of them knew that they should have an eye exam once a year.

According to the Saudi MOH amputation prevalence due to diabetes is 51.5% [25] which is a preventable long-term outcome of diabetes; cases of unawareness of arising neuropathy were found to be about 57% in this study. The application of public education regarding diabetes symptoms and complications will help in decreasing the burden of diabetes among the people and their families followed by a decrease the entire diabetes burden among the society [18].

Strength and limitation

In our study we didn't enquire about sources of information. In addition, being a cross-sectional study it showed the relation between variables without concluding a cause-effect relationship.

Conclusion

This is the first report to show the Knowledge of diabetes mellitus risk factors and complications among the non-medical students at Tail University. Our data showed overall high knowledge levels about risk factor and complications of diabetes mellitus. At the same time, the present study showed strong relations between Knowledge about signs and symptoms of DM and the presence of a personal history of DM. In conclusion, our study indicates we need more efforts made in the university to increase the knowledge about risk factors and complications of diabetes, enhance general health and reduce the risks of complication and give more attention to individual health among Taif university students.

Table 1: Socio-demographic characteristic of the study participants

Age	Mean ± SD	
	20.9 ± 2.1	
Characters	**No.**	**percent**
Academic year		
1st year	102	25.5
2nd year	58	14.5
3rd year	115	28.75
4th year	66	16.5
5th year	33	8.25
6th year	26	6.5
Collage		
Sciences	179	44.75
Literature	221	55.25
Personal history of DM		
Yes	7	1.75
No	393	98.25
Family history of DM		
Yes	231	57.75
No	169	42.25

Table 2: Relationship between knowledge of students about symptoms of diabetes with personal and family history

Characters	Personal history of DM				*	p-value	Family history of DM				*	p-value
Knowledge about symptoms of DM	Yes		No				Yes		No			
	No.	%	No.	%			No.	%	No.	%		
Yes	5	71.4	363	92.4	6.94	.031	218	94.4	150	88.8	4.256	.119
No	0	0	9	2.3			4	1.7	5	3		
Don't know	2	28.6	21	5.3			9	3.9	14	8.3		

N.B.: * Chi-squared test

Figure 1: Participants response to question: "Do you know why glycemic control is important?"

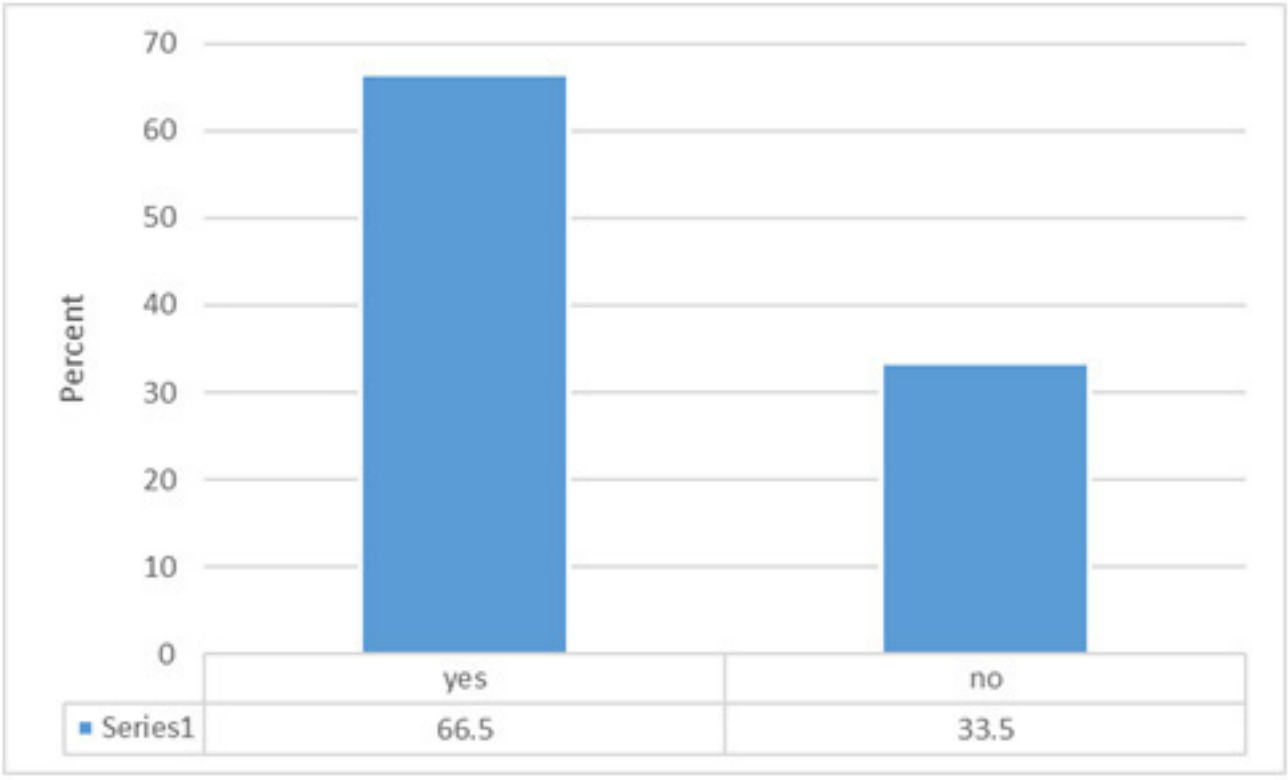


Figure 2: Participants response to: "As long as the diabetes is kept under control, there is no need worry about diabetic complications"

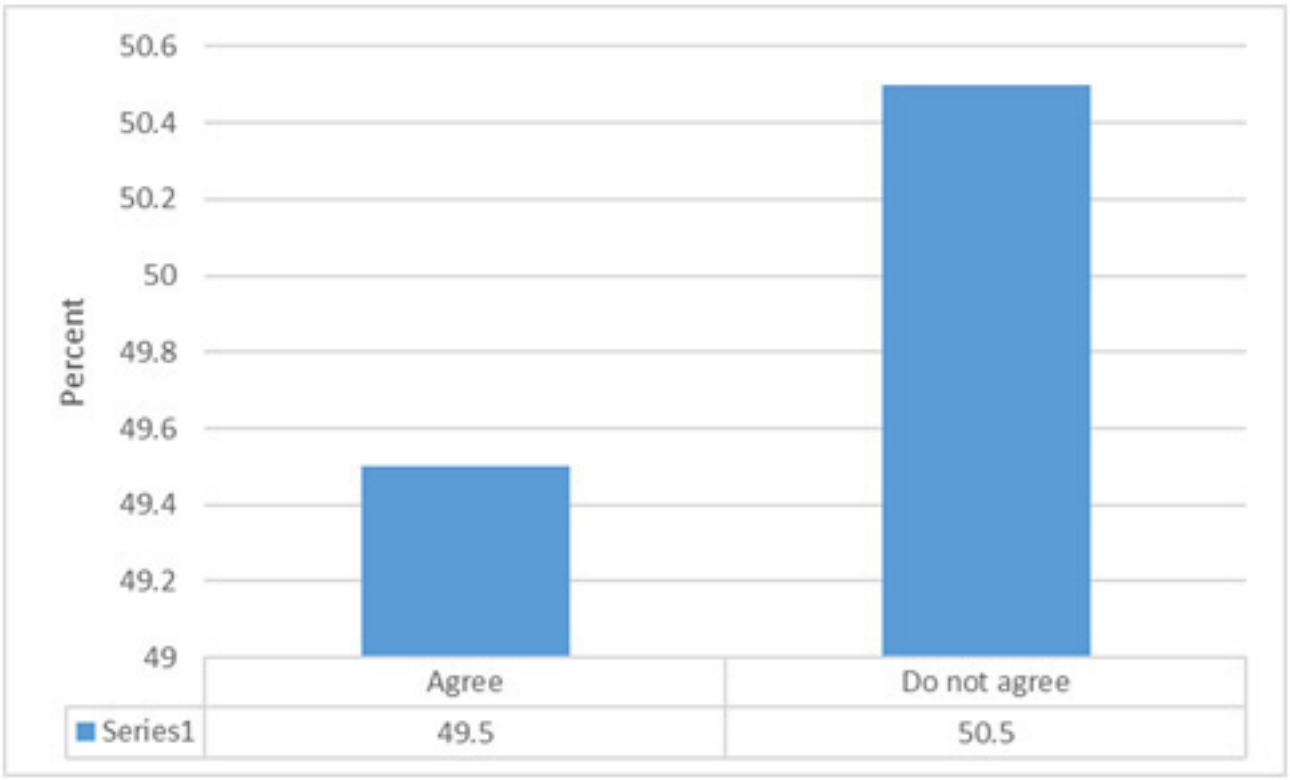


Table 3: Knowledge about risk factors and complications of diabetes among TU students

Risk Factors	No.	Percent
Obesity		
Yes	326	81.5
No	22	5.5
Don't know	52	13
Genetic factors		
Yes	327	81.75
No	26	6.5
Don't know	47	11.75
Aging		
Yes	224	56
No	77	19.25
Don't know	99	24.75
Complications	**No.**	**Percent**
Damages the kidney		
Yes	185	46.25
No	42	10.5
Don't know	173	43.25
Heart attack		
Yes	158	39.5
No	45	11.25
Don't know	197	49.25
Stroke		
Yes	112	28
No	63	15.75
Don't know	225	56.25
Visual problems or blindness		
Yes	311	77.75
No	32	8
Don't know	57	14.25
Loss of feeling in hands, fingers and feet		
Yes	228	57
No	23	5.75
Don't know	149	37.25

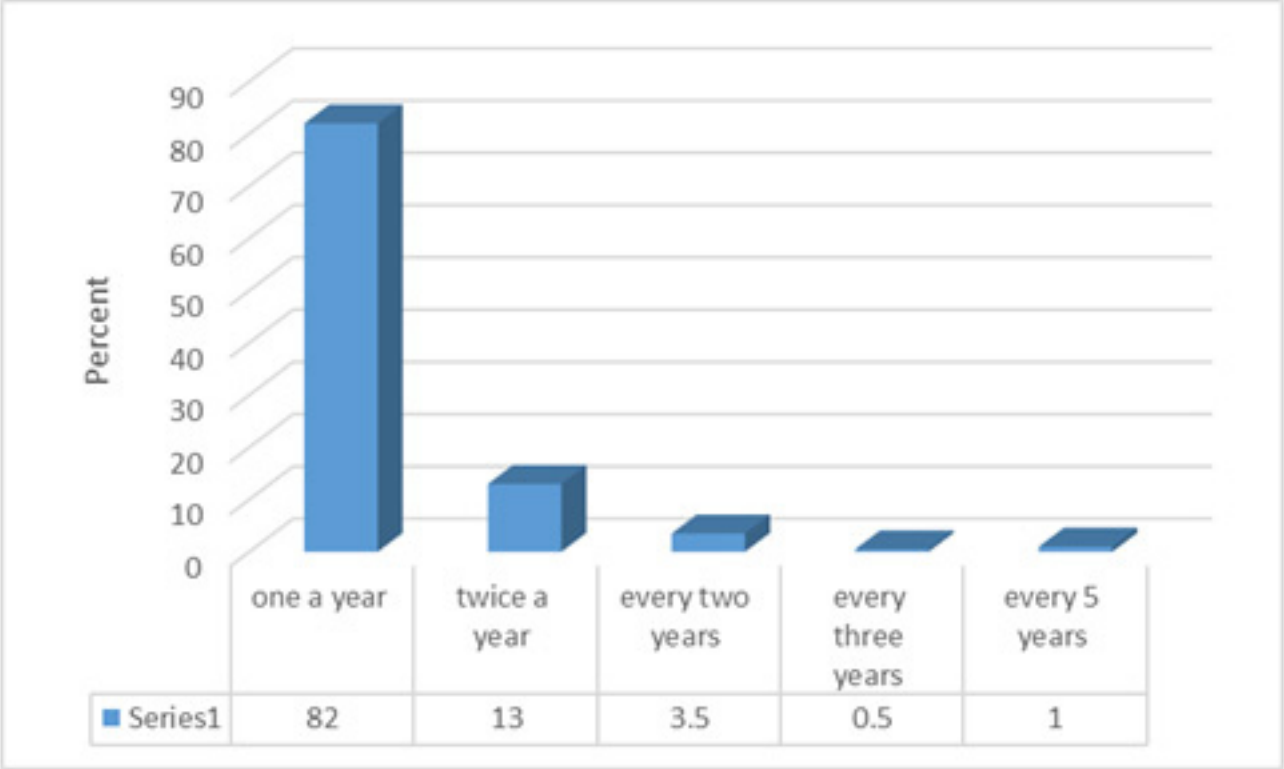
Table 4. Distribution of answers about risk factors of diabetes among TU students

Number of correct answers	Frequency	Percent
No correct answer	9	2.3
1 correct answer	25	6.3
2 correct answers	86	21.5
3 correct answers	174	43.5
4 correct answers	106	26.5
Total	400	100

Table 5. Distribution of answers about complications of diabetes among TU students

Number of correct answers	Frequency	Percent
No correct answer	4	1.0
1 correct answer	22	5.5
2 correct answers	43	10.8
3 correct answers	73	18.3
4 correct answers	89	22.3
5 correct answers	66	16.5
6 correct answers	61	15.3
7 correct answers	27	6.8
8 correct answers	15	3.8
Total	400	100

Figure 3. Participants response to question: "How often should you see the eye care practitioner if you have diabetes?"



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CDH3 mutation associated with ectodermal dysplasia and hair abnormalities

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Abstract

Background: Hypotrichosis with juvenile macular dystrophy (HJMD) is a rare autosomal recessive disorder characterized by impaired hair growth and progressive macular degeneration, leading to blindness.

Objectives: The aim of this study is to present a case of HJMD from Saudi Arabia.

Methods: We present a six-year-old Saudi girl who was referred to the Dermatology Clinic at King Faisal Specialist Hospital and Research Center (General Organization) in Jeddah, Saudi Arabia because of sparse hair with no other phenotypic abnormalities. She had multiple short sparse, lusterless hair appearance with a few alopecic patches and plaques. Her macula exhibited retinal and choroidal dystrophy with parapapillary retinal pigmentation. Genetic test showed positive homozygous pathogenicvariant in the CDH3 gene, which is linked to HJMD.

Results: Hair examination revealed multiple short, sparse and lusterless appearance with few alopecic patches and plaques. The skin was dry with normal temperature. The Macula exhibited retinal and choroidal dystrophy with parapapillary retinal pigmentation with no decrease of the retinal nerve fiber layer in both eyes. Hair biopsy was taken, and it showed trichorrhexis nodosa. The genetic test showed a positive homozygous pathogenic variant in the CDH3 gene, which is linked to autosomal recessive congenital hypotrichosis and macular dystrophy syndrome.

Conclusion: HJMD is a rare genetic cause of hypotrichosis that should be considered when assessing patients with abnormal hair growth. Fundus examination is important in suspected cases even with no visual symptoms. Further molecular DNA analysis is needed to identify the type of mutation in our patient.

Key words: CDH3, mutation, ectodermal, dysplasia, hair, abnormalities

Introduction

Ectodermal dysplasia (ED) comprises a group of rare inherited disorders characterized by defects in the development of two or more of ectodermal derived tissues. The involved tissues include hair, nail, teeth, and sweat glands, as well as parts of the eyes, ears, neural and adrenal tissues to various degrees [1]. The estimated prevalence of ED is approximately 7 cases in every 100,000 live births [2]. There are primarily two forms of ED, i.e. hypohidrotic type and hydronic type based on the role of the sweat gland. Hypohidrotic / anhidrotic ED means defects in the sweat glands [3].

Hypohidrotic-shaped individuals typically show heat intolerance. Diagnosis is sometimes made during infancy because the baby seems to have a fever of unknown origin [4]. Other features are fine sparse hair and decreased density of eyebrows and eyelashes [5]. The mid-face shows hypoplasia which results in protuberant lips, and periorbital area may show wrinkling and increased pigmentation. Nails may also appear dystrophic and brittle [6].

In 1935, Wagner first described congenital hypotrichosis with juvenile macular dystrophy (HJMD; OMIM 601553), a rare autosomal recessive disorder characterized by sparse scalp hair and progressive macular degeneration resulting in severe visual impairment and early blindness in childhood [7]. HJMD is caused by loss-of-function mutations in the cadherin-3 (CDH3) gene [8,9].

The CDH3 gene, located on chromosome 16q22.1, encodes for P-cadherin, which is expressed in a variety of tissues including retinal pigmented epithelial cells and hair follicles. P-cadherin is a transmembrane glycoprotein that is responsible for adherents junctions (calcium-dependent cell-cell adhesion) in these and other epithelial tissues [10,11]. Ectodermal dysplasia, ectrodactyly and macular dystrophy (EEM) is also caused by mutations in the CDH3 gene and is associated with hypotrichosis and macular dystrophy with the additional features of ectrodactyly with split hand/foot malformations [12]. The exact prevalence of HJMD is unknown, however, worldwide around 50 cases of HJMD have been described [13]. The aim of this study is to present a case of HJMD from Saudi Arabia.

Case report

A six-year-old Saudi girl was referred to the Dermatology Clinic at King Faisal Specialist Hospital and Research Center (General Organization) – Jeddah, Saudi Arabia with a chief complaint of fine sparse hair since birth. The patient was given several shampoos and multi-vitamins which did not help. She is the second in order of birth of first cousin consanguineous parents. There was no history of perinatal complications and no other live family member with the same condition. She is thriving well with no history suggestive of developmental delay. On clinical examination, patient's vitals and systemic examination were within normal according to her age.

Hair examination revealed multiple short, sparse and lusterless appearance with few alopecic patches and plaques (Figures 1). There was no evidence of scalp scarring and no follicular tufting was seen either. Eye and ear examination revealed no abnormality with no associated dysmorphic features. Bilateral hand examination revealed normal shaped fingers with no abnormality (\Figure 2). The skin was dry with normal temperature. She has no missing or abnormally shaped teeth. No evidence of gingivitis or involvement of the mucous membrane was seen (Figure 2).

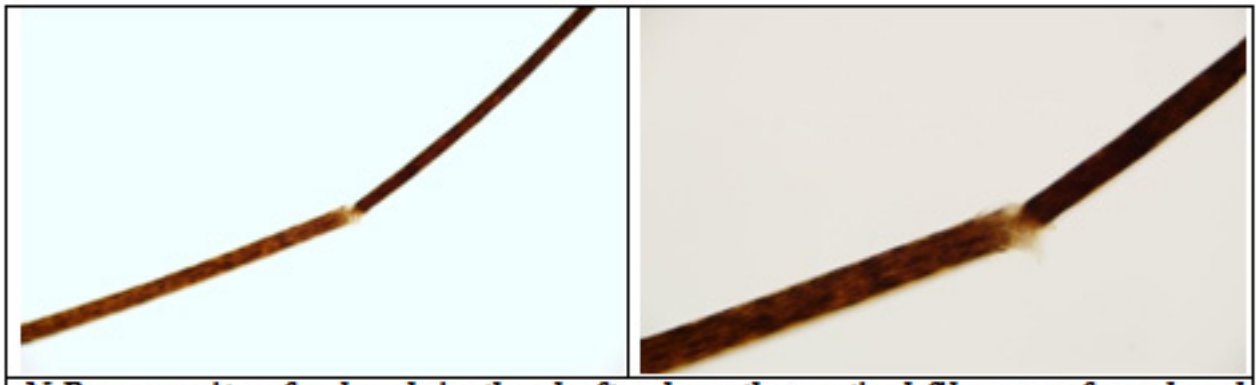
The ophthalmological exam was done with Fundus examination and Optical Coherence Tomography (OCT). The Macula exhibited retinal and choroidal dystrophy with parapapillary retinal pigmentation with no decrease of the retinal nerve fiber layer in both eyes. The patient's complete blood count (CBC), comprehensive metabolic panel, and urine analysis reports were normal. Hair biopsy was taken and it showed trichorrhexis nodosa. The parents were informed that they needed further genetic testing to rule out Menkes kinky hair versus Netherton syndrome. The genetic test showed a positive homozygous pathogenic variant in CDH3 gene, which is linked to autosomal recessive congenital hypotrichosis and macular dystrophy syndrome.

Parents were counseled about this finding. We explained to them that the recurrence risk of this disorder in each future pregnancy is 25%, which can be reduced by preventive measures such as prenatal pre-implantation genetic diagnosis or antenatal molecular testing for this gene. Unfortunately, there are no good treatment options for this entity. Further research is needed in this area.

Figure 1: different views of the head of the subject

Figure 2: Feet, hands, mouth and teeth views of the subject

Figure 3: Microscopic hair shaft examination



N.B.: rare site of a break in the shaft, where the cortical fibers are frayed and splayed, but remain largely attached. (200x) (inset: 400x)

Discussion

We present a case of Hypotrichosis with juvenile macular dystrophy (HJMD) from Saudi Arabia. This is the fifth case to be reported from Saudi Arabia. HJMD is a rare inherited disorder caused by mutations in the CDH3 gene (MIM 114021), encoding the classical cadherin molecule P-cadherin [9]. Cadherins are integral membrane glycoproteins expressed in a variety of tissues, including hair follicles and retinal pigment epithelium [14]. HJMD is mainly found in the Drouze population of Northern Israel and some Mediterranean areas [15].

In 2001, Sprecher et al. [9] studied the molecular background of HJMD, and they presented the first mutation in the CDH3 gene causing HJMD in a Druze-origin family. They indicated that HJMD is caused by the loss of function of P-cadherin resulting from a frameshift mutation in CDH3. Later on, several studies identified around 19 different CDH3 mutations in 28 separate families of different ethnic origins who have HJMD [5,9,16,17,18,19,20,21,22,23]. However, Kjaer et al. [12] found that mutations in the CDH3 gene also caused ectodermal dysplasia, ectrodactyly, and macular dystrophy (EEM syndrome; OMIM 225280).

Moreover, Basel-Vanagaite et al. [24] suggested that these syndromes act as a continued phenotypic spectrum that is linked to mutations in the CDH3 gene; therefore, they might be classified as CDH3-related syndromes instead of other genetic syndromes. Hypotrichosis and macular dystrophy are common features that exist over these two overlapped syndromes. Although EEM syndrome thought to be different from HJMD due to limb anomalies presence, genetic analysis report found these abnormalities in both syndromes [5].

Our six-year-old female patient presented with fine, short, sparse and lusterless hair since birth. The skin was dry with normal temperature. No other phenotypic abnormalities were noted on clinical examination. She had no visual complaints, however, fundus examination showed macular retinal and choroidal dystrophy with parapapillary retinal pigmentation and no decrease of the retinal nerve fiber layer in both eyes.

Khan and Bolz [25] presented four affected individuals from three consanguineous Saudi families (two sisters, 17 and 13 years old, and two unrelated males, 5 and 26 years old). They had visual loss since birth or early childhood. All had circumscribed central macular dystrophic changes that did not respect the horizontal arterioles, and associated with polygonal pigment clumps. One of the affected patients did not have frank hypotrichosis but had relatively slow hair growth. None had dental or digital abnormalities.

Saeidian et al., 2019 [26] found no systematic correlation between phenotypic findings and the type (missense vs. nonsense and/or frameshift) or location of the CDH3 mutations among the affected members of an Iranian family and the 19 previously reported mutations. Phenotypic heterogeneity of the disorder and absence of genotype-phenotype correlations were also observed among the studied family members. They found variations in the severity of alopecia with or without nail dystrophy. Also, they found variation in the age of onset and degree of visual disabilities. Singh et al. [7] presented the case of an 11-year-old boy who developed blurred vision in his right eye for one year duration and was found to have sparse hair.

Fundus examination revealed features of macular dystrophy including symmetrical areas of retinal pigment epithelium (RPE) hypopigmentation extending from the optic discs to the temporal maculae in the right and left fundi and similar to our study there were no other affected family members. Another report described an 11-year-old Iranian boy born with a missing left index fingernail and sparse scalp hair; the hair follicles were examined dermato-pathologically and no abnormalities were found, and there were no other dermatologic conditions, except for mild eczema. The dilated fundus examination at that time showed stable primarily macular pigmentary changes [27]. Jelani et al. [21] studied another large consanguineous pedigree from Pakistan with nine affected individuals. They were born with sparse scalp hair but otherwise normal integumentary and teeth. Examination showed degeneration of the macular pigmented epithelium. Electroretinogram (ERG) testing of two of the affected individuals showed severe retinal dysfunction. A 13-year-old Turkish girl was clinically diagnosed with congenital hypotrichosis, and was

presented with progressive deterioration of vision since the age of 8 years. Clinical examination revealed she had short, sparse and slow-growing hair without scalp erythema or scales. However, no abnormalities in eyebrows, eyelashes, nails, teeth, and limbs were reported. [28].

Conclusion

HJMD is a rare genetic cause of hypotrichosis that should be considered when assessing patients with abnormal hair growth especially when no other cause of hair loss could be detected. Fundus examination is important in suspected cases even with no visual symptoms. Further molecular DNA analysis is needed to identify the type of mutation in our patient.

Declaration of patient consent
This research was approved by the local ethics committee and was conducted in accordance with the principles of the Declaration of Helsinki. The authors certify that they have obtained all appropriate patient consent forms for pictures and clinical information to be reported in the study. The patient understands that her name and initials will not be published, and due efforts will be made to conceal their identity.

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Conflicts of interest: There are no conflicts of interest.

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Clinic at King Faisal Specialist Hospital and Research Center (General Organization) in Jeddah, Saudi Arabia because of sparse hair with no other phenotypic abnormalities. She had multiple short sparse, lusterless hair appearance with few alopecic patches and plaques. Her macula exhibited retinal and choroidal dystrophy with parapapillary retinal pigmentation. Genetic test showed positive homozygous pathogenic variant in CDH3 gene, which is linked to HJMD.

Abdulrahman, Z.N et al carried a descriptive study with analytic component carried out on secondary schools students in Tikrit district looking at looking at Returnee's Depression Epidemiology among Secondary School Students in Tikrit-Iraq after Internal Displacement. Study revealed that 64 (23.8%), 26 (9.7%) are of returnee's were of moderate and high depression score respectively. The authors concluded that depression prevalence rate in IDPs who are living in Tikrit city found to be (33.5%) of returnee's, and the rate of depression is higher among of returnee's female than male.

Al-Obeidy S.H et al, aimed at performing hearing screening of children aged 6 years to detect the prevalence, incidence, and degree of hearing loss in this age group. This is a cross sectional study, involved a randomly selected sample of (425 students) from primary school children in Tikrit. The hearing loss found 30 students (7.1%) of the study sample. HI found in thirty students from total 425 student (7.1%) in this age group, twenty eight of the H Impaired students (6.63%) were have conductive hearing loss, and the remaining two students between (0.47%) were have SNHL. The authors concluded that the commonest type of hearing loss in children is CHL which is amenable for medical or surgical treatment. But the SNHL due to genetic or postnatal cause which is usually permanent and needs hearing aids to improve school performance & normal social communication ability.

Arain F.R looked at the Level of Patient Empathy among medical students of Saudi Medical College. He followed a cross sectional study conducted among 545undergraduated medical student in Faculty of medicine at Taif University. Mean score of empathy was found to be65.21±7. 24. Mean score of empathy was found to be better among male students (66.31±7.78) as compared to female students (64.37±6.68). Difference between scores among male and female students was found to be statistically significant (T=3.09, p value<0.05). The author concluded that the mean empathy score among Medical students found to be decreased with academic year. And it is found to be better among male student.

Ibrahim S.H looked at tympanometric findings among adults with chronic nasal obstruction due to sinonasal pathology. He did a prospective case study of (310) adult patients with chronic nasal obstruction were subjected to tympanometry for study of middle ear pressure in the private ENT clinic for a period of two years in the Salah Al-Deen governorate. The author conclude that adults with chronic nasal obstruction due to mucosal inflammation differs from others due to anatomical and structural causes in the following; 1.The incidence of abnormal tympanogram (type B and C) is more. 2.The type B (OME) was more than type C (Eustachian tube dysfunction). 3.In the treatment ,it was found that the need to VT insertion was more.

Issa Z.A et al, aim was to compare two methods for cervical cancer screening (conventional Pap smear and colposcopy). The authors followed a cross sectional study carried out on 38 patient presented to the private clinic. All cases underwent the Pap smear, a colposcopy, and a cervical biopsy, with the latter being considered as the gold-standard test. The overall sensitivity of pap smear was (93%) , with largest sensitivity among those aged ≤ 44 years (100%), while among those aged ≥ 45 years was decreased (86%) was 100%. The author concluded that the sensitivity and specificity results indicate that the cytologist need more training as it is operator dependent.

Younis H.A et al looked at the Prevalence of Dry Eye Disease in Rheumatoid Arthritis Patients. A descriptive cross-sectional study was conducted at the Rheumatology Unit in Baghdad Teaching Hospital, a tertiary referral center in Iraq. Total of 103 adult Iraqi patients with rheumatoid arthritis were enrolled in this study. Dry eyes found among (27.2%) of RA cases. The age of study group ranged between 23-60 years with a mean of 41.5 years. Females were more frequent than males with a female to male ratio of 7.6 to 1. The authors concluded that the prevalence of dry eye was 27.2%. There was significant association between ocular dryness with RF, ACPA, high disease activity, family history of RA and treatment with biological drugs.

Alsaleh R et al looked at the Knowledge and awareness of health practice during pregnancy among females of Jeddah City in Saudi Arabia. An observational cross-sectional study was done carried out on 445 females from general population in Jeddah city, Saudi Arabia from January to June 2019. The authors concluded that the overall Knowledge about correct and poor practice during pregnancy was low to moderate. So, the study group recommended formation and implementation of health education programs to be given to expectant mothers especially issues related to nutrition and activity, Evaluation of its impact on mothers and babies can be applied at a later stage.

Sultan I et al, evaluate the knowledge and awareness of Saudi Arabian population in the western region regarding old age related eye diseases i.e. cataract, glaucoma, and diabetic retinopathy. They followed an observational cross-sectional study was performed on 580 from general population from different cities in Saudi Arabia. This study reported good knowledge of participants about cataract, diabetic retinopathy and glaucoma (84.1 %, 57.2% and 71.1%) while there was poor knowledge regarding age-related macular degeneration with statistically significant differences between them with the best knowledge in all aspects was about cataract (p value <0.001). The authors concluded that the Saudi population who are 45 years or older had relatively good knowledge about diseases such as cataract, DR and glaucoma while they had poor knowledge about macular degeneration.

Albishri J.A et al attempt to assess the presence of fatigue and mood disturbances among RA patients in Saudi Arabia and possible association between depression and fatigue in RA.

A cross sectional study was carried out on rheumatoid arthritis (RA) patients using convenient sampling. RA patients had a mean MAF-GFI score of (29.91 ±8.17) and a mean Beck score (17.72 ±10.13). 28.7% of RA patients had mild mood disturbance, and depression was significantly correlated with fatigue in RA Patients. The authors concluded that depression and fatigue show a clear association in RA patients. Depression is prevalent enough to warrant regular screening for warning signs of mood disturbance, particularly when fatigue has been established.

Algethami, A.F et al attempted to determine the population's knowledge and awareness about pediatric nocturnal enuresis in Taif city. The authors followed a cross-sectional design was was done on 301 participants from adult population of Taif city of both genders, saudis and non saudis, of all educational levels and marital status. The majority of the respondents (90.1%) were females and 76.7% reported that they had education at university level. The participant with higher educational qualification had a significantly higher percentage of prior knowledge about enuresis than those with lower educational qualification. The majority of the participants (61.8%) didn't have any idea regarding the different type of enuresis. Study findings reveal even though nocturnal enuresis is a commonly reported childhood problem, the knowledge regarding its causes and effective management is still lacking in parents who participated in our study.

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