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Knowledge and Prevalence of Energy Drinks Consumption among King Khalid University Female Students

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Editorial

Sultan, A.A., et al, assessed prevalence of energy drinks consumption and knowledge about its ingredient safety and side effects among female college students at King Khalid University (KKU). They followed a cross sectional study design. A self-administered questionnaire was constructed by the researchers and was validated and pretested. It consisted of socio-demographic characteristics, following unhealthy nutritional habits and knowledge about energy drinks, their effects and impact. A total of 300 female college students participated in this study. Their mean age was 20.9±1.6 years. Prevalence of energy drinks consumption was 31.3%. The commonest used one was Code Red (55.3%), Bison (40.4%), Red Bull (23.4%) and Power Horse (20.2%). The monthly intake of energy drinks ranged between 1 to 4 times among 61.7% of students. Overall, 64% of the students had poor knowledge about energy drinks, whereas only 0.7% had good knowledge. The authors concluded that energy drinks consumption is commonly practiced among female university students. It is frequently associated with fast food intake. Knowledge of female university students is generally poor to fair.

Alzahrani, M.A. et al , did a a deceptive cross sectional study to assess health-related knowledge and practices of patients with peptic ulcer at Abha, Saudi Arabia. A direct interview questionnaire constructed by researchers was used for data collection. A total155 patients were included with peptic ulcer aged from 20 to 60 years. Stomach pain was the most frequent symptom (88.4%) followed by hyperacidity (60.6%). Regarding the awareness of patients for their disease, 87.7% of them knew about symptoms of peptic ulcer followed with drugs and treatment methods (81.3%). In total 18.1% of the patients had good knowledge.

Patient's awareness level regarding their disease was poor especially the nature of the disease, risky population and its complications. As for health-related practice, the majority of patients had unhealthy behavior such as having drinks which may aggravate hyperacidity status. Also adherence for prescribed medication is not high and some have un-prescribed medications.

Mathkhor, A.J., et al looked at prevalence of fibromyalgia in patients with ankylosing spondylitis. A total of 40 (30 male and 10 female) patients with AS, diagnosed according to the modified New York criteria, were studied. Two stage classification process was applied to determine the presence of FMS in AS patients: Stage 1: diffuse wide spread pain questionnaire to a sample of 40 (30 male and 10 female) patients with AS. Stage 2: all patients with wide spread pain were examined for 18 tender points. A sample of 40(30 male and 10 female) healthy individuals were examined as controls. There were 10 patients met the criteria of FMS, with a prevalence of 25.0% among patients with AS, of them 80.0% were women. The authors concluded that FMS is more prevalent in patients with AS than in the general population, and the prevalence is comparable with other musculoskeletal disorders. There is a trend for an increased frequency of FMS in females with AS. AS patients with FMS may benefit from psychological evaluation as a part of their treatment. Further study needed to correlate between FMS and AS disease activity of patients.

Taher, M., et al, attempted to measure the global Emotional Intelligence among the family medicine residents in Qatar and to describe the distribution of emotional intelligence parameters among the family medicine residents also to examine the relationship between emotional intelligence parameters' level and selected demographic variables. The study targeted residents of the family medicine training programs in Qatar. Final number of questionnaires analyzed: 46 (90.2%), The study has used self-administered questionnaire which is in Arabic Language. Generally, residents of family medicine program in Qatar are reporting average scores in the global EI and related factors and facets ,males showed statistically significant higher global EI, emotionality factors and its related facets (emotion expressions & relationship) ,the results showed that residents who were raised in small town/village had higher perceived global EI and well-being factor and its related facets (happiness, optimism and self-esteem ,there was statistically significant difference between batches with regard to scores in the emotionality factor and its facet (empathy) where senior residents showed high scores in both. The authors concluded that Family Medicine residents perceived lower E.I. scores , reversed gender relationship with E.I. scores. Academic performance and seniority showed significantly different EI scores

Hayat, H.A reviewed the Importance of Screening - Screening Programs in Qatar. The author stressed that by offering screening to a population, often based on demographic factors including age or gender, the aim is to reduce the incidence of serious health problems at a late or symptomatic stage of disease. It is well documented that the introduction of screening programs has improved national mortality rates, globally. This is demonstrated well by the introduction of breast screening in various parts of the world. More locally in the MENA region, it is well identified that 'mortality rates have declined…with late detection of the disease dropping from 64% in 2009 to 16% in 2013' . It goes on to champion screening services claiming 'As in other countries, one of the most effective ways of lowering mortality rates from cancer can be to engage the public in an education campaign around possible signs or symptoms. This also includes engaging public health bodies in organising campaigns and funding for mammograms.'

Subhani, F. et al tried to identify the prevalence and risk factors of sleep apnea in Chitral, Pakistan. A cross sectional study was conducted at the THQ hospital Booni, Chitral. The survey was conducted on individuals who had come to the hospital as attendants, patients or visitors of the admitted patients. We used the Berlin questionnaire to identify individuals at risk for OSA. 52 of total 408 were at high-risk for OSAS according to Berlin scale Questionnaire. Hence, the prevalence estimates of individuals at high-risk for OSAS was 12.75%. These participants were more likely to have conditions such as previous coronary artery disease, high cholesterol, and hypertension. The authors concluded that there is a high prevalence of OSA in Chitral and it is also associated with obesity, coronary diseases, smoking, and hypertension which is why it is important to have a proper evaluation and early screening for it. Given the high prevalence and association of OSA with many diseases, it is also important to increase awareness among physicians and the general population of rural areas, about the clinical presentations, risk factors and complications of OSAS.

Magliah, T & Bardisi, S presented a 29-year old female, who complained of a recurrent cyclical itchy skin rash over the dorsum of her hands for the last four years. She used to develop the rash during the initial weeks of each pregnancy, which then subsides spontaneously. The symptoms markedly decreased when she used contraceptive pills. On examination, there were multiple scaly erythematous plaques over the dorsum of the hands with signs of lichenification. Intradermal progesterone test showed an itchy erythematous papule over a wheal, at the site of injection, sized about one cm, which appeared after 48 hours. Therefore, she was diagnosed as a case of "autoimmune progesterone dermatitis". Daily oral contraceptive pills (levonorgestrel/ethinyl estradiol, 0.1 mg to 20 ?g) were prescribed. There was a marked reduction in the number of lesions during her next menstrual periods.

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Knowledge and Prevalence of Energy Drinks Consumption among King Khalid University Female Students

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Abstract

Background: Consumption of energy drinks has become a global concern, and Saudi Arabia is not an exception. The Saudi Council of Ministers has decided to ban the advertisement of energy drinks after a recent rise in sudden cardiac deaths among healthy young Saudis.

Aim of Study: To assess prevalence of energy drinks consumption and knowledge about its ingredient safety and side effects among female college students at King Khalid University (KKU).

Methods: A cross sectional study design was followed. A self-administered questionnaire was constructed by the researchers and was validated and pretested. It consisted of socio-demographic characteristics, following unhealthy nutritional habits and knowledge about energy drinks, and their effects and impact.

Results: A total of 300 female college students participated in this study. Their mean age was 20.9±1.6 years. Prevalence of energy drinks consumption was 31.3%. The commonest drink used was Code Red (55.3%), Bison (40.4%), Red Bull (23.4%) and Power Horse (20.2%). The monthly intake of energy drinks ranged between 1 to 4 times among 61.7% of students. Overall, 64% of the students had poor knowledge about energy drinks, whereas only 0.7% had good knowledge.

Conclusions: Energy drinks consumption is commonly practiced among female university students. It is frequently associated with fast food intake. Knowledge of female university students is generally poor to fair.

Key words: Energy drinks, college students, females, knowledge and practice.

Introduction

The term "Energy drinks" is used to describe a wide variety of beverages that contain "caffeine, taurine, guarana, sugar, vitamins, herbal supplements, and other ingredients" (1). These beverages are being marketed as energy-improving, and are being used to boost their consumers' energy, which has made energy drinks a fast-growing market in a few years (2).

The prime marketing target for energy drinks is the youth, such as athletes and university students (2). The appeal to the consumers is that they are living busy lives, and need products that will help them to stay focused, alert, and productive while doing their tasks during the day (3).

Heckman et al. (2) noted the high demand of energy drinks among the population of students. It has been found that more than 33% of young people 18-24 years old were drinking energy drinks almost every day (4), while energy drink consumption among college students ranged from 39% to more than 57% (5). Malinauskas et al. (6) found that, during the last 30 days, 51% of college students drank one energy drink or more and 73% tried a cocktail of energy drinks mixed with alcohol.

Zucconia et al. (7) noted that consumption of energy drinks has become a global concern. In Europe, prevalence rate for consumption of energy drinks among adults was 30%, and 12% of adolescents were "High Chronic" users because they consumed almost seven liters of energy drinks over a 30-day period with four to five times during the week.

The Saudi Council of Ministers has decided to ban the advertisement of energy drinks due to a recent rise in sudden cardiac deaths among young healthy individuals. This ban also applies to the distribution of free energy drinks to consumers of all age groups and prohibits the sale of energy drinks in restaurants and canteens in government facilities, education and health facilities, halls of government and private sports clubs. A committed council resolution of factory owners and importers of energy drinks has warned against the harmful effects of energy drinks (8).

Morrone and Rathbun (9) reported that 17% of students in Ohio State University had diarrhea, which is a sign of using unsafe food or drink, and only 26.4% read the labels of products they buy and only 6.5% of students pay attention to the product labels (10).

Energy drinks have become a new surging public health concern. These products could lead to serious health issues that may either affect the person physically or mentally. Therefore, several papers are being published to explain energy drinks' negative side effects on health (10).

College students usually undertake stressful lives due to many reasons, e.g., study load, being away from family and home, pressure of competition, lack of adequate resources, and the influence of social environment, through peers, media, and exposure to violence (11).

Lack of proper education or experience about stress management, and poor skills to cope with stress may lead the students to use unhealthy or risky ways to relieve stress. Moreover, stress, sleep disturbances, anxiety, and depression are among the main factors that impact students' academic performance. Therefore, it has been suggested that energy drink consumption is an emerging issue, which is related to stress management among college students (6).

While consumption of energy drinks by college students is common, and increasing (2), it is unclear how aware the students are about actual effects or potential risks of energy drinks.

Therefore, this study aimed to assess prevalence of energy drinks consumption among female students at King Khalid University (KKU) and to assess their knowledge about energy drinks ingredients, safety, and side effects.

Subjects and Methods

A cross sectional study design was followed. A total of 300 female students at KKU during the academic year 2017-2018 were included. A multi-stage random sampling technique was used as follows:

- **Stage I:** All KKU health sciences colleges were selected (i.e., Medicine, Dentistry, Pharmacy, Nursing, Laboratory and Radiology).
- **Stage II:** Following a simple random sampling technique, 50 students were selected from each of the above-mentioned colleges.

Based on relevant review of literature, a self-administered questionnaire (in simple Arabic Language) was constructed by the researchers. It consisted of: Socio-demographic characteristics of participants; following unhealthy nutritional habits; and participants' knowledge regarding energy drinks.

The content validity of the study questionnaire was assessed by three faculty members at the Department of Family and Community Medicine in KKU. The questionnaire's reliability was assessed for internal consistency using Cronbach's alpha coefficient, which was 0.769. Moreover, a pilot study was applied on 20 students to explore clarity of included statements and necessary time to fill out the questionnaire. As feedback, the questionnaire was clear and an average 12 minutes was needed for its completion. Collected data were not included in the main study.

Scores were assigned for knowledge items related to energy drinks. A correct answer was assigned a score of (1) and an incorrect answer was assigned a score of (0). All knowledge scores were summed up (maximum was 20 and minimum was 0).

Collected data were verified by hand then coded before computerized data entry. The Statistical Package for Social Sciences (SPSS version 25) was used for data entry and analysis. Descriptive statistics (e.g. number, percentage, mean, and standard deviation) and analytic statistics using chi-square "χ2", Fisher exact and Student`s t-tests were applied. The total knowledge score was tested for normality by Shapiro-Wilk test and was found to not be normally distributed. Therefore, the non-parametric Mann-Whitney test was applied to compare knowledge score between two groups (energy drink consumers and non-consumers). P-values <0.05 were considered as statistically significant.

Results

Table 1 shows that participant students' age ranged between 18 and 26 years with a mean (±) standard deviation (SD) of 20.9±1.6 years. Exactly one-quarter of participant students were in third academic year, whereas only 7% were in the sixth academic year. Family size of 68.7% of students ranged between 6 and 10 persons. About one-fifth of them (19%) were first birth order, whereas 29.7% were more than the third. The majority of them (95.7%) had more than 95% academic achievement in the previous year. More than half of their fathers (51.1%) and 35.3% of their mothers were university graduated. The majority of them (90.7%) live with their families. The family income exceeded 10000 SR/month in 68.3% of the students as represented.

The prevalence of energy drink consumption among participants was 31.3% (Figure 1). The commonest used one was Code Red (55.3%), followed by Bison (40.4%), Red Bull (23.4%) and Power Horse (20.2%), as shown in Figure 2. The frequency of energy drinks consumption ranged between 1 and 4 times during the last month among 61.7% of students, whereas it exceeded 10 times per month among 13.8% of them (Figure 3).

Most participant students (84.7%) reported daily intake of tea and/or coffee, as shown in Figure 4. History of taking fast foods was reported by 81% of students, (Figure 5), with 65.8% of students taking fast foods more than once per week (Figure 6).

Table 2 shows that most students correctly knew that energy drinks contain caffeine (78.3%) and sugar (74%). However, only 25.7% knew that energy drinks contain vitamins and 19% knew that they contain taurine. Most students knew that energy drinks are harmful to teeth (82%) and about two-thirds knew that they are harmful to the digestive system (67.3%), heart (67.3%) and bones (66.3%). On the other hand, only 23.3% of them knew that energy drinks have no effect on the respiratory system. Insomnia and addiction were recognized by 83% and 62% of the students, respectively, as side effects of excessive consumption of energy drinks, whereas obesity was recognized by only 47.3% of them.

Overall, students' knowledge score percentage ranged between zero and 85%, with a mean of 50.27% and standard deviation of 16.84%, as illustrated in Figure 7.

Figure 8 shows that 64% of the students had poor knowledge whereas only 0.7% had good knowledge regarding energy drinks.

Table 3 shows that none of the studied socio-demographic characteristics of the students was significantly associated with energy drinks intake.

Table 4 shows that students who consume fast food were more likely to also consume energy drinks than those who did not consume fast food (34.2% versus 19.3%, p=0.03). Among those who consumed fast food, the frequency of consumption was not significantly associated with energy drinks intake. Students who drink tea/coffee daily were more likely to also consume energy drinks compared to those who did not consume fast food (33.5% versus 19.6%). However, this difference was not statistically significant.

Table 5 shows that students who reported energy drinks consumption were significantly more knowledgeable regarding the contents of energy drinks than those who did not consume energy drinks (mean ranks were 170.44 and 141.40, respectively, p=0.006). However, there was no significant difference between students who reported intake of energy drinks and those who did not report that regarding knowledge of impact of energy drinks on body systems and side effects of excessive consumption of energy drinks. Students who reported consumption of energy drinks had higher overall knowledge regarding energy drinks than those who did not consume them (mean ranks were 164.4 and 144.2, respectively). This difference was not statistically significant.

Table 1: Socio-demographic characteristics of the participants (n=300)

Characteristics	Frequency	Percentage
Age (years)		
• Range	18-26	
• Mean±SD	20.9±1.6	
Academic year		
• First	51	17.0
• Second	74	24.6
• Third	75	25.0
• Fourth	50	16.7
• Fifth	29	9.7
• Sixth	21	7.0
Family size		
• ≤5	54	18.0
• 6-10	206	68.7
• >10	40	13.3
Birth order		
• First	57	19.0
• Second	92	30.6
• Third	62	20.7
• >Third	89	29.7
Previous year academic achievement (%)		
• ≤95	13	4.3
• >95	287	95.7
Accommodation		
• Alone	21	7.0
• With family	272	90.7
• With relatives	4	1.3
• Shared	3	1.0
Paternal educational level		
• Illiterate	8	2.7
• Primary school	22	7.3
• Intermediate school	25	8.3
• Secondary school	91	30.3
• University	154	51.4
Maternal educational level		
• Illiterate	27	9.0
• Primary school	32	10.7
• Intermediate school	53	17.7
• Secondary school	82	27.3
• University	106	35.3
Family monthly income (in SR)		
• <5000	26	8.7
• 5000-10000	69	23.0
• >10000	205	68.3

Table 2: Responses of the participants to knowledge questions about energy drinks

	Correct answers	
	No.	%
Energy drinks contain:		
• Caffeine (√)	235	78.3
• Taurine (√)	57	19.0
• Sugar (√)	222	74.0
• Fats (X)	80	26.7
• Vitamins (√)	77	25.7
• Minerals (√)	86	28.7
• Antibiotics (X)	123	41.0
• Hormones (X)	105	35.0
Impact of energy drinks on body organs/systems		
• Digestive system (harmful)	202	67.3
• Heart (harmful)	202	67.3
• Bones (harmful)	199	66.3
• Respiratory system (no effect)	70	23.3
• Teeth (harmful)	248	82.7
• Nervous system (harmful)	159	53.0
• Eye (harmful)	110	36.7
Side effects of excessive consumption of energy drinks		
• Addiction (√)	186	62.0
• Allergy (X)	89	29.7
• Insomnia (√)	249	83.0
• Polyuria (√)	175	58.3
• Obesity (√)	142	47.3

Table 3: Association between socio-demographic characteristics of the students and intake of energy drinks

Variables		Energy drinks		p-value
		No (n=206)	Yes (n=94)	
Age (years)	Mean±SD	20.8±1.6	21.1±1.8	0.316°
College	• Nursing (n=50)	33 (66.0%)	17 (34.0%)	0.628*
	• Laboratory (n=50)	35 (70.0%)	15 (30.0%)	
	• Dentistry (n=50)	34 (68.0%)	16 (32.0%)	
	• Medicine (n=50)	38 (76.0%)	12 (24.0%)	
	• Pharmacy (n=50)	36 (72.0%)	14 (28.0%)	
	• Radiology (n=50)	30 (60.0%)	20 (40.0%)	
Academic year	• First (n=51)	34 (66.7%)	14 (33.3%)	0.151*
	• Second (n=74)	51 (68.9%)	23 (31.1%)	
	• Third (n=75)	53 (70.7%)	22 (29.3%)	
	• Fourth (n=50)	37 (74.0%)	13 (26.0%)	
	• Fifth (n=29)	22 (75.9%)	7 (24.1%)	
	• Sixth (n=21)	9 (42.9%)	12 (57.1%)	
Family size	• ≤5 (n=54)	34 (63.0%)	20 (37.0%)	0.465*
	• 6-10 (n=206)	146 (70.9%)	60 (29.1%)	
	• >10 (n=40)	26 (65.0%)	14 (35.0%)	
Birth order	• First (n=57)	40 (70.2%)	17 (29.8%)	0.848*
	• Second (n=92)	62 (67.4%)	30 (32.6%)	
	• Third (n=62)	45 (72.6%)	17 (27.4%)	
	• >third (n=89)	59 (66.3%)	30 (33.7%)	
Previous year academic achievement	• ≤95% (n=13)	10 (76.9%)	3 (23.1%)	0.376**
	• >95% (n=287)	196 (68.3%)	91 (31.7%)	
Paternal educational level	• Illiterate (n=8)	6 (75.0%)	2 (25.0%)	0.876*
	• Primary school (n=22)	15 (68.2%)	7 (31.8%)	
	• Intermediate school (n=25)	17 (68.0%)	8 (32.0%)	
	• Secondary school (n=91)	66 (72.5%)	25 (27.5%)	
	• University (n=154)	102 (66.2%)	52 (33.8%)	
Accommodation	• Alone (n=21)	12 (57.1%)	9 (42.9%)	0.546*
	• With family (n=272)	190 (69.9%)	82 (30.1%)	
	• With relatives (n=4)	2 (50.0%)	2 (50.0%)	
	• Shared (n=3)	2 (66.7%)	1 (33.3%)	
Maternal educational level	• Illiterate (n=27)	19 (70.4%)	8 (29.6%)	0.481*
	• Primary school (n=32)	21 (65.6%)	11 (34.4%)	
	• Intermediate school (n=53)	36 (67.9%)	17 (32.1%)	
	• Secondary school (n=82)	51 (62.2%)	31 (37.8%)	
	• University (n=106)	79 (74.5%)	27 (25.5%)	
Family monthly income (in Saudi Riyals)	• <5000 (n=26)	18 (69.2%)	8 (30.8%)	0.427*
	• 5000-10000 (n=69)	43 (62.3%)	26 (37.7%)	
	• >10000 (n=205)	145 (70.7%)	60 (29.3%)	

* Chi-square test ** Fisher Exact test ° Student's t-test

Table 4: Association between fast food, tea and coffee consumption and intake of energy drinks among the participants

Variables	Energy drinks		P value§
	No (n=206)	Yes (n=94)	
Fast food consumption			
• No (n=57)	46 (80.7%)	11 (19.3%)	
• Yes (n=243)	160 (65.8%)	83 (34.2%)	0.030
Frequency of fast food consumption (n=243)			
• Once/month (n=9)	4 (44.4%)	5 (55.6%)	
• Once/week (n=74)	46 (62.2%)	28 (37.8%)	0.237
• >once/week (n=160)	110 (68.8%)	50 (31.2%)	
Tea/coffee consumption			
• No (n=46)	37 (80.4)	9 (19.6)	
• Yes (n=254)	169 (66.5)	85 (33.5)	0.061

§ Chi-square test

Table 5: Association between knowledge about energy drinks and their intake among the participants

Knowledge about energy drinks	Energy drinks		P value§
	No (n=206)	Yes (n=94)	
Energy drinks' contents			
• Median	37.5	50	
• IQR	25-50	37.5-62.5	0.006
• Mean rank	141.40	170.44	
Impact of energy drinks on body organs/systems			
• Median	57.1	57.1	
• IQR	39.3-85.7	42.9-85.7	0.576
• Mean rank	152.35	146.4	
Side effects of excessive consumption of energy drinks			
• Median	60	60	
• IQR	40-80	40-80	
• Mean rank	146.5	159.2	0.228
Total knowledge about energy drinks			
• Median	50	55	
• IQR	40-60	45-65	0.059
• Mean rank	144.2	164.4	

§ Mann-Whitney test

Figure 1: Prevalence of energy drink consumption among female university students

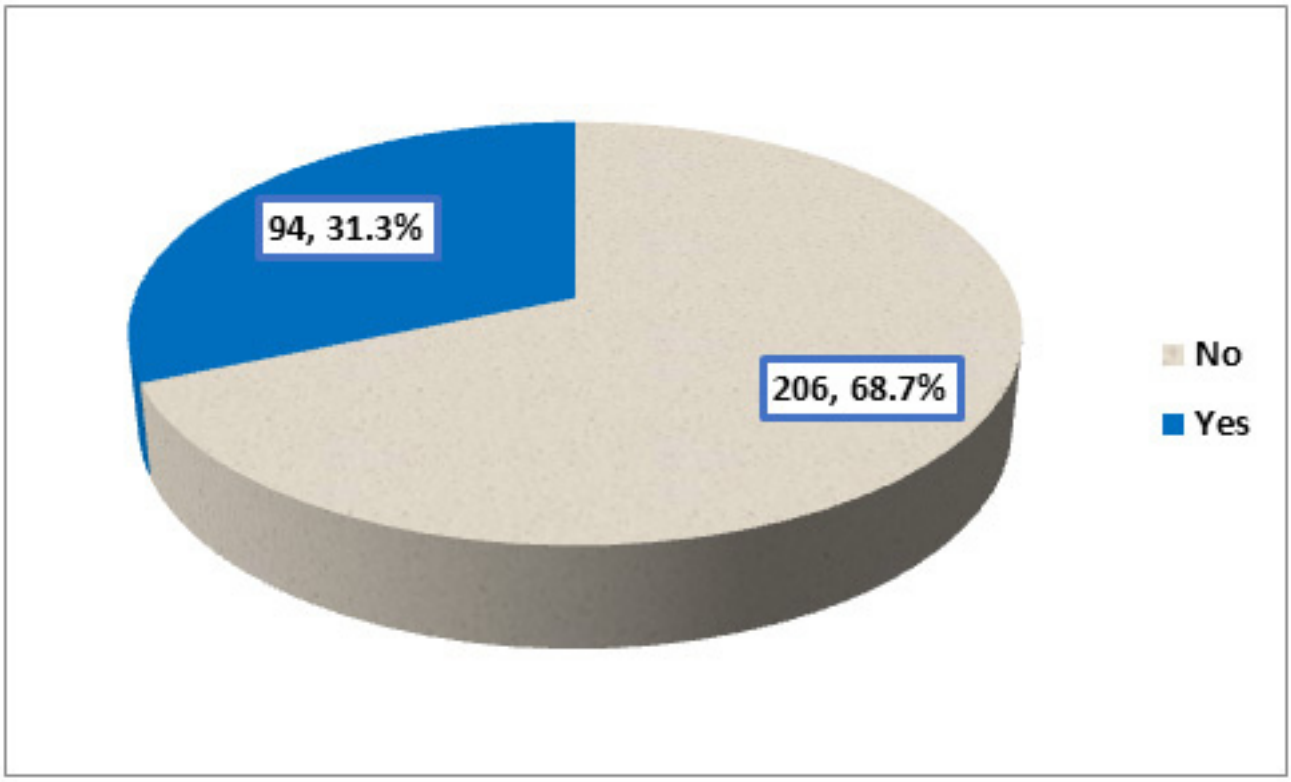


Figure 2: Types of different energy drinks consumed by female university students (n=94)

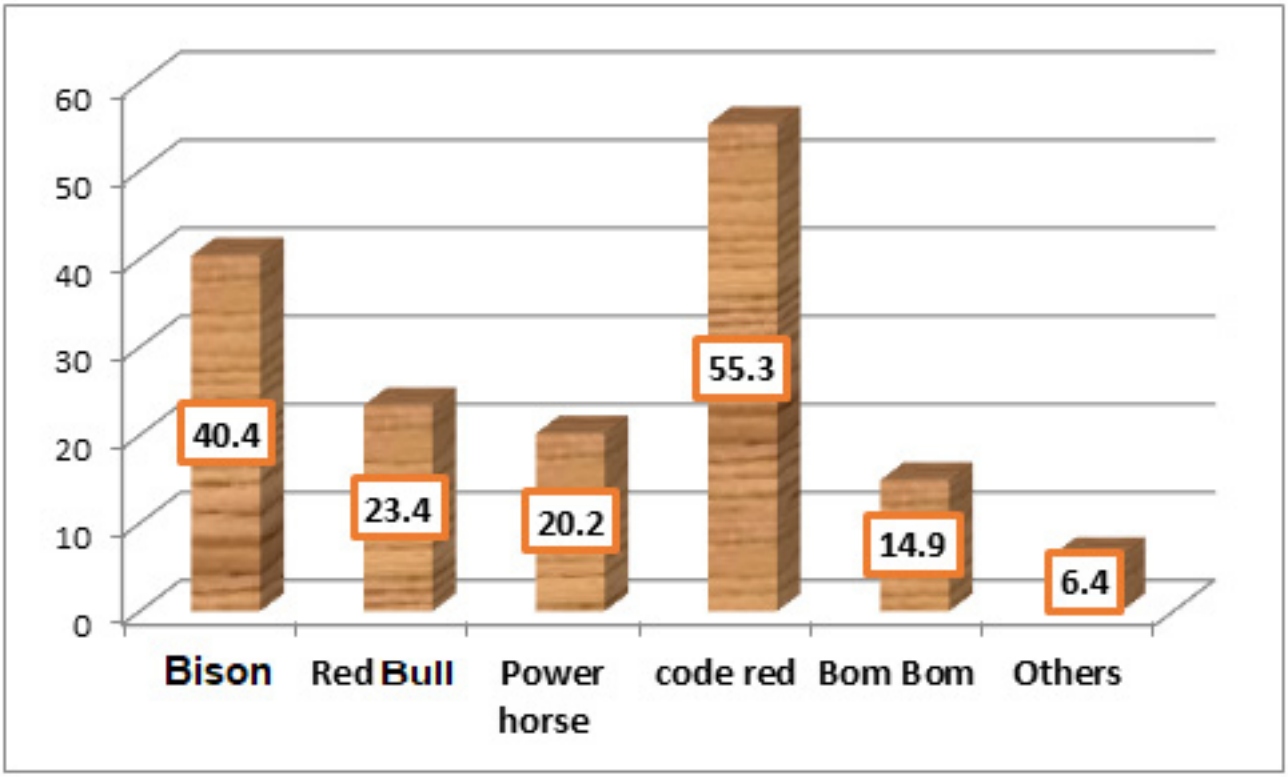


Figure 3: Frequency of energy drinks intake (per month) among the participants (n=94)

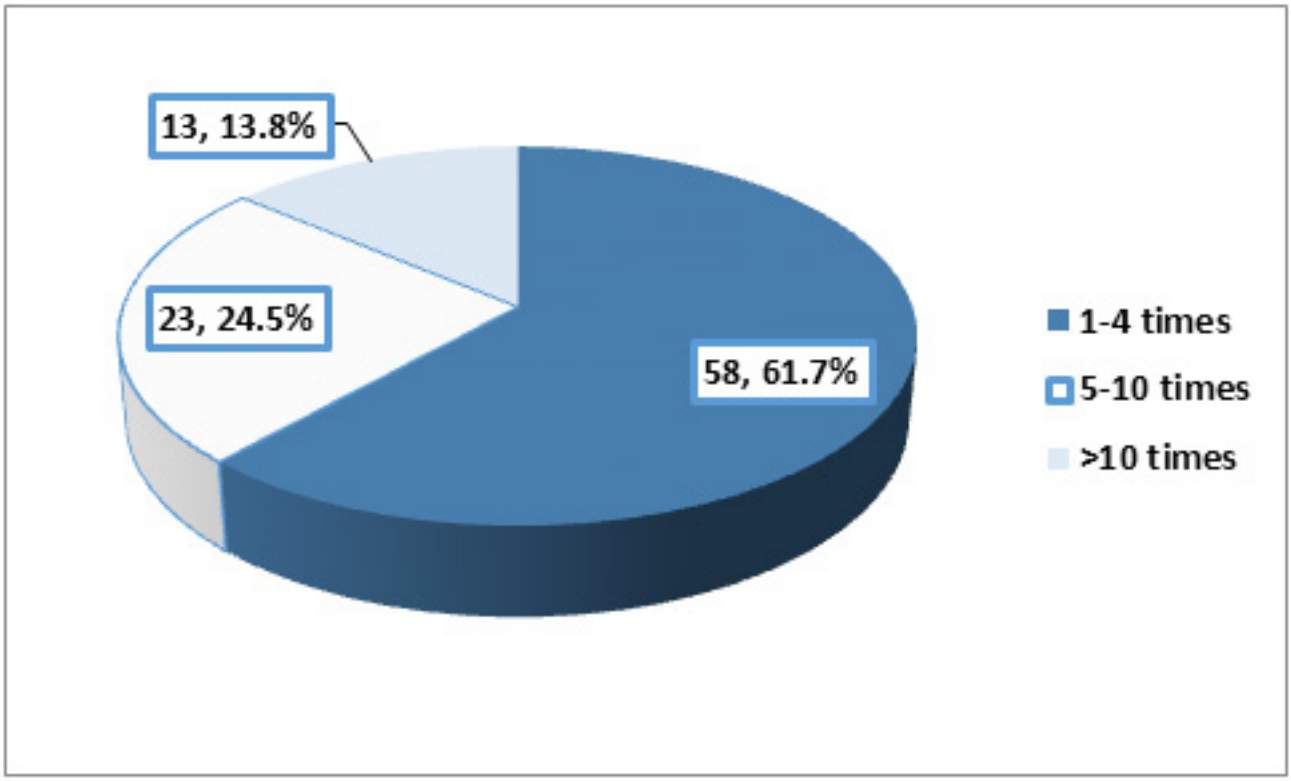


Figure 4: Daily intake of tea and/or coffee among the participants

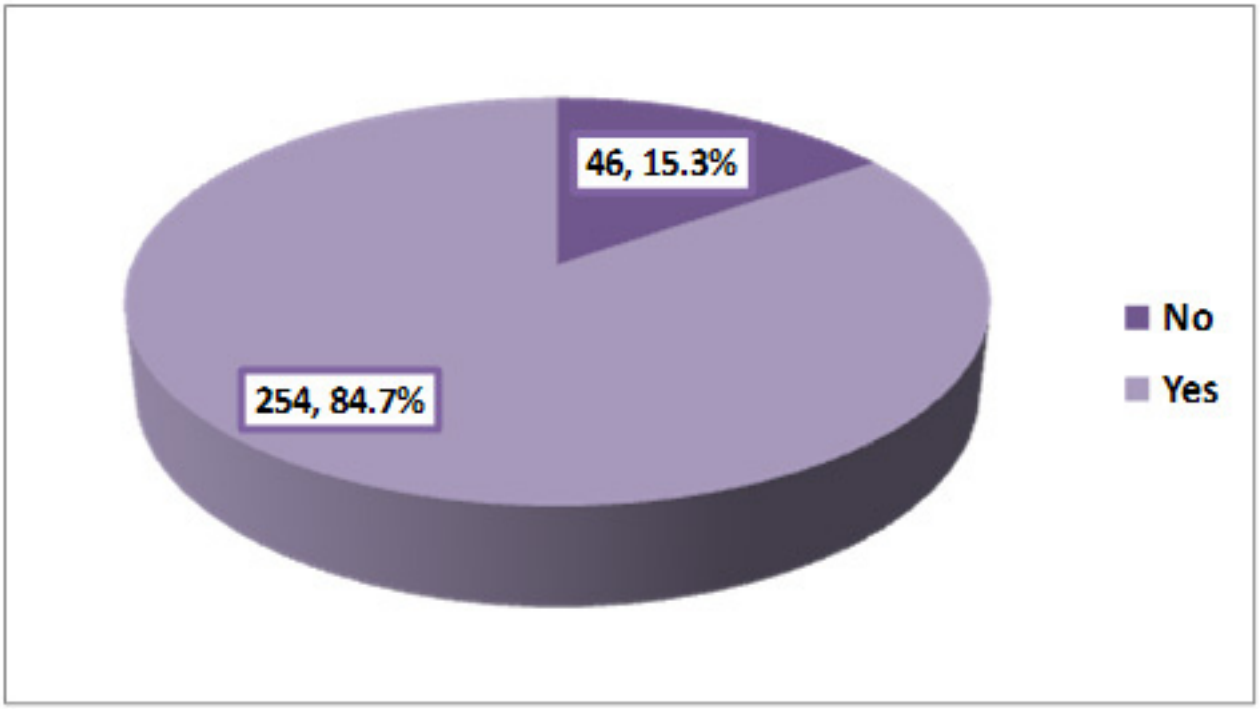


Figure 5: History of taking fast food among the participants

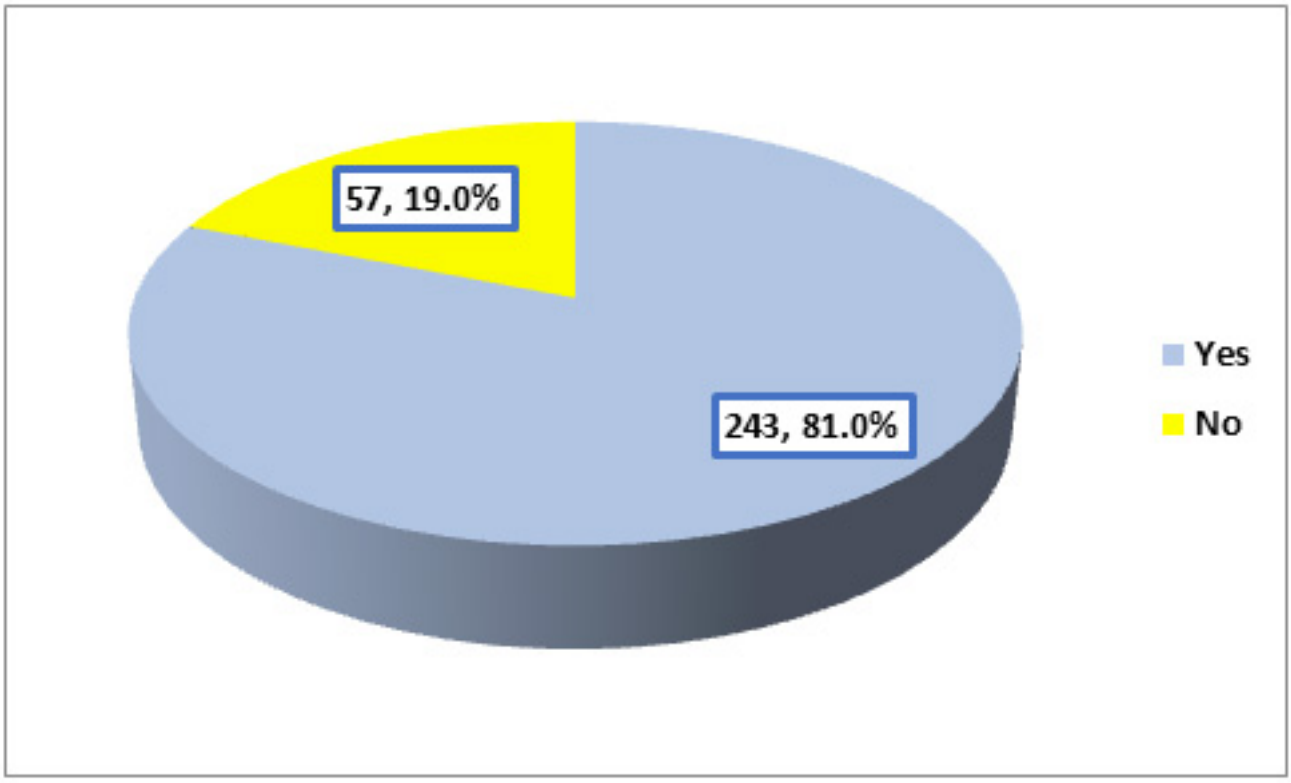


Figure 6: Frequency of taking fast food among the participants

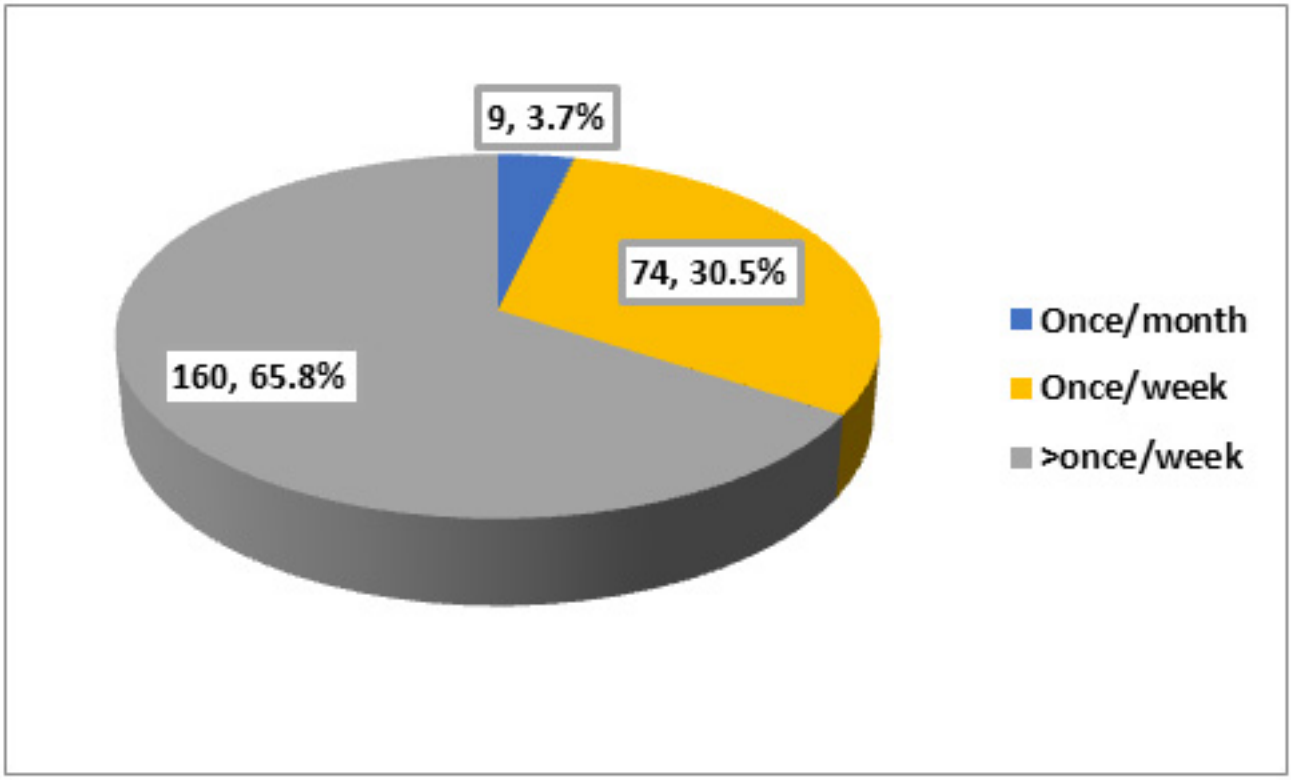


Figure 7: Percentage of energy drinks knowledge score among the participants

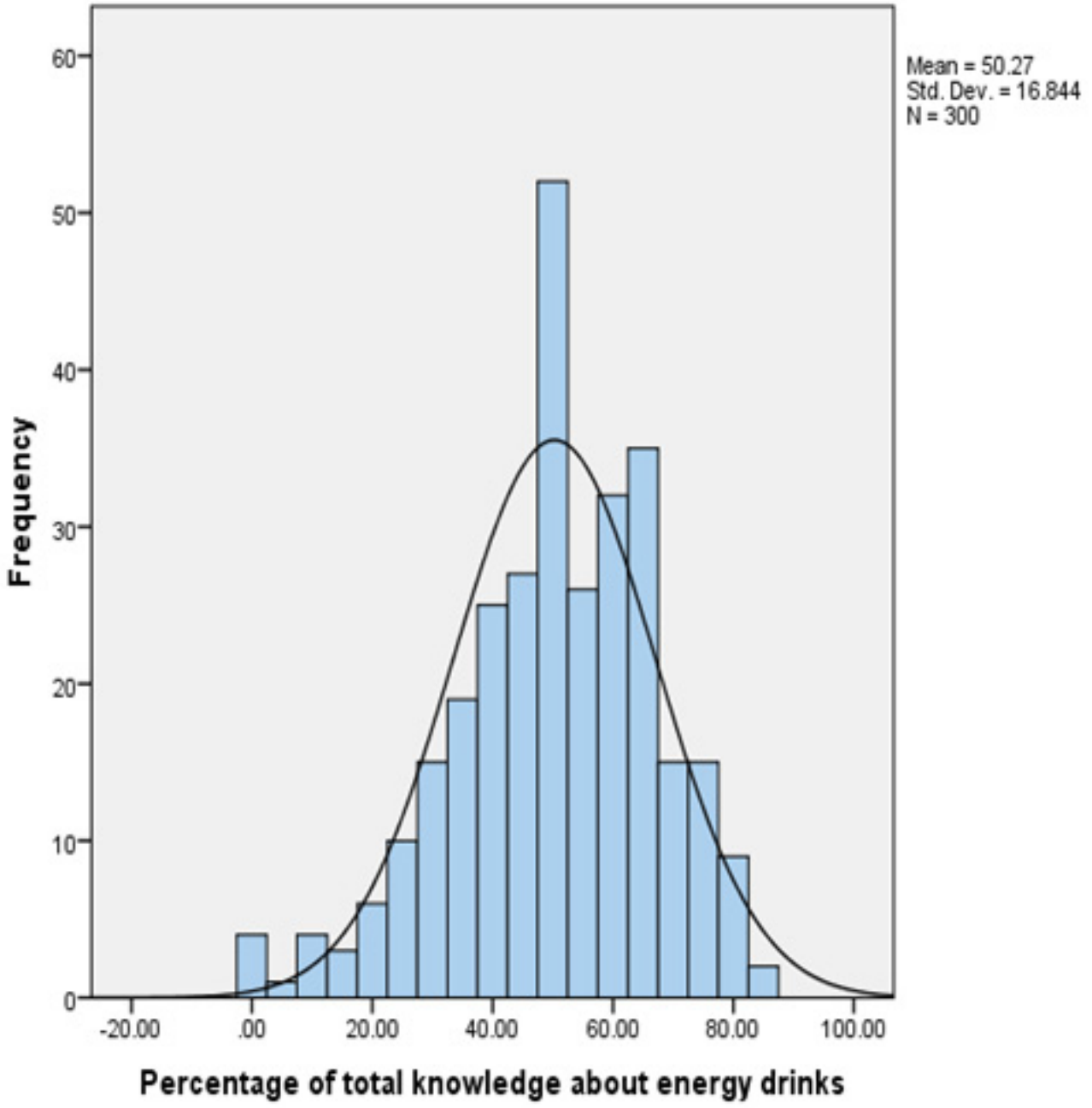
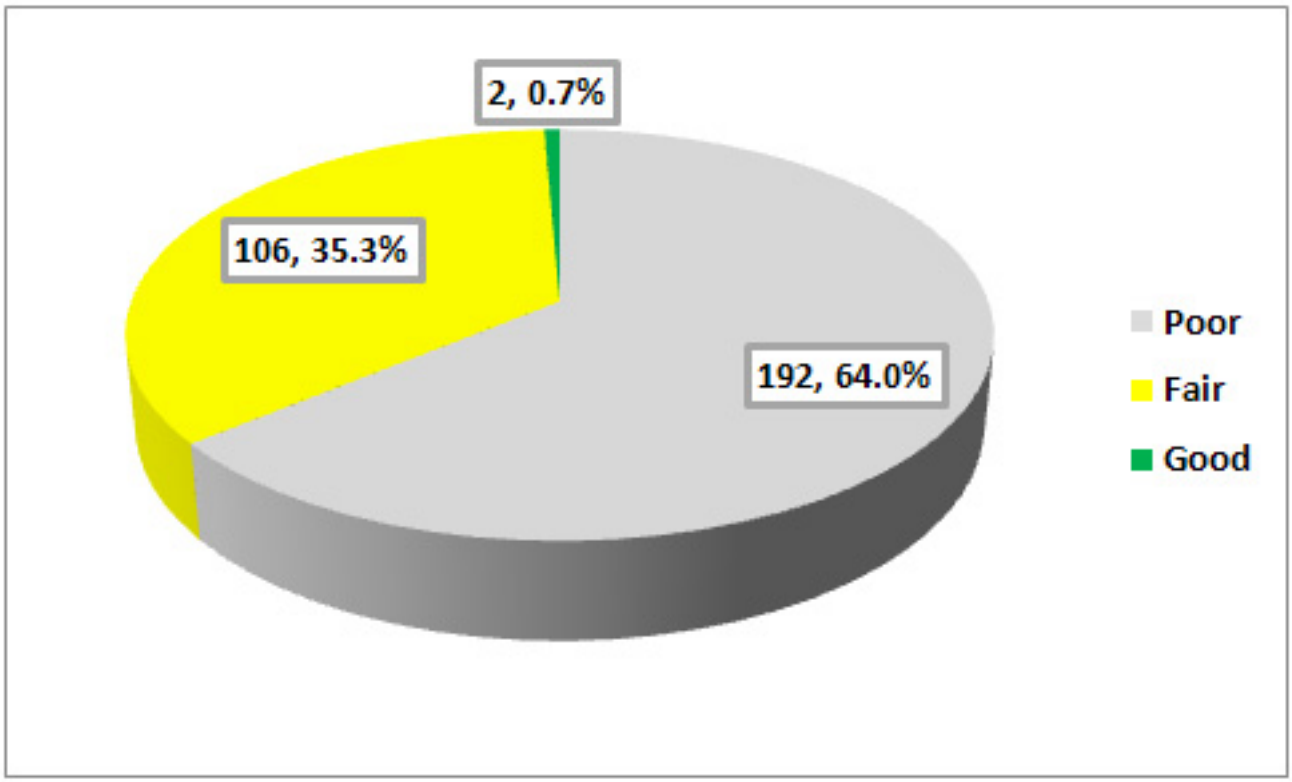


Figure 8: Overall level of knowledge regarding energy drinks among the participants



Discussion

Prevalence of energy drink consumption by female KKU university students of medical sciences was 31.3%. This figure is very close to what has been reported recently in a study carried out among female university students in Taibah University, Saudi Arabia (30.1%) (12). In another Saudi study carried out in Al-Dammam University, 26.2% of female medical students were energy drinks consumers (13). However, in Umm Al-Qura University, a lower prevalence (12.3%) has been reported among female medical students (14).

Higher rates of energy drink consumption were reported among secondary school and non-medical university students in Jeddah 2013 (45%) (15), Makkah 2016 (46.7%) (16), Riyadh 2016 (71.6) (8), Wadi Al-Dawaser, Riyadh province (76.5%) (17) and Hail (46%) (10). In addition, a meta-analysis study estimated the rate of energy drinks consumption as 46.9% among the population of the Gulf Cooperation Council countries (18).

In Turkey (19), prevalence of energy drinks consumption was 32.6%, while in Pakistan, it was 37.1% among female medical students (20). In Taiwan (21), 24.8% of the university students reported consuming energy drinks in the past 30 days. In Puerto Rico, the prevalence was 21% among university students (22). In Canada, despite the rate of energy drinks consumption being relatively low (9.1%), the majority of consumers reported mixing it with other stimulants (23). In USA, higher rates were also reported among non-medical university students as 51% and 48.3% of them consume energy drinks (6, 24).

In Poland and UAE, exceptionally high rates were reported among medicine students (61.8% and 92%, respectively) (25, 26).

The variations in rates of consumption of energy drinks between different studies may be due to cultural differences. The relatively low prevalence of energy drinks consumption in recent years in KSA could be attributed to the recent application of 100% taxes on energy drinks purchase which was implemented in 2017 (27).

The frequency of energy drinks consumption during last month ranged between 1 and 4 times among most of the students in the present study. The commonest used energy drinks in the current study were Code Red (55.3%), followed by Bison (40.4%), Red Bull (23.4%) and Power Horse (20.2%).

Similarly, in Madinah (12) and Riyadh,(8) the most frequent usage of energy drinks was one can per week. In UAE (25), Red Bull was the most commonly used.

Findings of the present study showed that students who consumed fast foods were more likely to consume energy drinks. This link between consumption of fast foods and energy drinks has been documented by other studies (28-30). French et al. (31) noted that consumption of fast foods is positively correlated with energy drink consumption, and negatively correlated with fruit, vegetable, and milk intake. Moreover, several studies documented a relationship between consumption of fast food and depressed mood, and lethargy in young people (29, 32, 33). Thus, combining energy drink and fast food consumption may possibly adversely affect young people`s mood and behavior.

Energy drinks consumption was also associated with intake of tobacco, tea, coffee and other stimulants (34). However, in the present study, consumption of tea and/or coffee was not associated with energy drinks consumption.

In the current study, the overall percentage of knowledge score about energy drink by female students at the health sciences colleges of KKU ranged between zero and 85% with a mean of 50.3%, while 64% of students had poor knowledge, and only 0.7% had good knowledge. Students who consumed energy drinks were more knowledgeable regarding energy drinks' ingredients than non-consumers. However, there was no statistically significant difference between both groups regarding impact of energy drinks on body organs/systems and side effects of excessive consumption of energy drinks.

Most participants in this study could correctly recognize caffeine and sugar as ingredients of energy drinks, while almost half of participant students were not aware about the adverse impact of energy drinks on the central nervous system.

A similar finding was found among university students in Riyadh (8). In a study carried out in Taiwan (21), almost half of the students were unaware of the energy drinks' ingredients. In Al-Madinah Al-Munawarrah, 69.6% of female secondary school students did not know the active ingredients of energy drinks (35). Park et al. added that consumption of energy drinks is associated with multiple mental and nervous system health problems (28).

Study Limitations

To the best of our knowledge, this is the first study in KSA investigating the association between consumption of energy drinks and fast foods. However, this study had two important limitations. The first is its cross-sectional research design, which is good only for hypothesis generation. The second is the inclusion of only female university students. Therefore, we were not able to compare our results with those of males.

In conclusion, consumption of energy drinks is a common practice among female students at medical sciences colleges. Almost one-third of female university students consume energy drinks. It is associated with fast food consumption. Overall knowledge about energy drinks is poor-to-fair among almost all female students. Less than 1% of students have a good level of knowledge. Students who consume energy drinks are more knowledgeable regarding the active ingredients of the energy drinks.

Therefore, it is recommended that curriculum of health sciences colleges should provide information on the potential health hazards related to excessive intake of caffeine-containing beverages. Health education intervention programs are needed to increase the awareness of students about the composition of energy drinks and their effects on health. Active ingredients of energy drinks should clearly appear on cans and consumers should be encouraged to be aware of them and of their adverse effects on their health. Family physicians should play role in health education regarding energy drinks, to the patients.

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The safest values of low density lipoproteins in the plasma

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Abstract

Background: We tried to understand the safest values of low density lipoproteins (LDL) in the plasma. Methods: Patients with plasma LDL values lower than 80 mg/dL were collected into the first, lower than 100 mg/dL into the second, lower than 130 mg/dL into the third, lower than 150 mg/dL into the fourth, and 150 mg/dL and higher into the fifth groups.

Results: The study included 815 cases (477 females), totally. Parallel to the higher LDL values, the mean age, body mass index (BMI), fasting plasma glucose (FPG), triglycerides, high density lipoproteins (HDL), and white coat hypertension (WCH) were the highest in the fifth and smoking, hypertension (HT), and diabetes mellitus (DM) were the highest in the fourth groups. Whereas chronic obstructive pulmonary disease (COPD), coronary heart disease (CHD), and chronic renal disease (CRD) were the highest in the first group in contrast to the lowest LDL and HDL values. Interestingly, FPG, triglycerides, HT, DM, COPD, CHD, and CRD were the lowest in the second group, significantly, and there was no difference according to the mean age and smoking between the first and second groups, significantly.

Conclusions: The highest HT and DM parallel to the increased LDL and HDL and the highest COPD, CHD, and CRD in contrast to the lowest LDL and HDL values may show initially positive but eventually negative acute phase proteins functions of LDL and HDL in the metabolic syndrome. So the safest values of LDL were between 80 and 100 mg/dL in the plasma.

Key words: Low density lipoproteins, high density lipoproteins, negative acute phase proteins, triglycerides, body mass index, smoking, metabolic syndrome

Introduction

Chronic endothelial damage may be the most common type of vasculitis, and the leading cause of end-organ insufficiencies, aging, and death in the human being (1-4). Much higher blood pressure (BP) of the afferent vasculature may be the major underlying mechanism by inducing recurrent injuries on vascular endothelium. Probably, whole afferent vasculature including capillaries are chiefly involved in the process. Therefore the term venosclerosis is not as famous as atherosclerosis in the medical literature. Due to the chronic endothelial damage, inflammation, edema, and fibrosis, vascular walls thicken, their lumens narrow, and they lose their elastic nature; they eventually reduce blood flow to terminal organs and increase systolic BP further. Some of the well-known causes and signals of the inflammatory process are physical inactivity, sedentary lifestyle, animal-rich diet, smoking, alcohol, overweight, hypertriglyceridemia, hyperbetalipoproteinemia, dyslipidemia, impaired fasting glucose, impaired glucose tolerance, white coat hypertension (WCH), chronic inflammatory disorders, prolonged infections, and cancers for the development of terminal consequences including obesity, hypertension (HT), diabetes mellitus (DM), cirrhosis, peripheric artery disease (PAD), chronic obstructive pulmonary disease (COPD), coronary heart disease (CHD), chronic renal disease (CRD), mesenteric ischemia, osteoporosis, stroke, other end-organ insufficiencies, early aging, and premature death (5-10). Although early withdrawal of the triggering causes can delay terminal consequences, after development of HT, DM, cirrhosis, COPD, CRD, CHD, PAD, mesenteric ischemia, osteoporosis, stroke, other end-organ insufficiencies, and aging, endothelial changes cannot be reversed, completely due to their fibrotic nature. Up to now, the triggering causes and eventual consequences were researched under the titles of metabolic syndrome, aging syndrome, and accelerated endothelial damage syndrome in the literature, extensively (11-13). Although its normal limits have not been determined clearly yet, increased plasma triglycerides value may be one of the most sensitive indicators of the metabolic syndrome (14-17). Due to the growing proof about the strong association between higher plasma triglycerides values and prevalence of CHD, Adult Treatment Panel (ATP) III determined lower cutpoints for triglycerides abnormalities than did ATP II (18, 19). Although ATP II determined the normal plasma triglycerides values as lower than 200 mg/dL in 1994 (19), the World Health Organisation in 1999 (20) and ATP III in 2001 reduced the normal limits as lower than 150 mg/dL (18). Despite these cutpoints, there are still suspicions about the safest values of plasma triglycerides values in the plasma (15-17). Beside that, although the higher sensitivity of plasma triglycerides values in the metabolic syndrome, functions of high density lipoproteins (HDL) and low density lipoproteins (LDL) are suspicious (21). We tried to understand the safest values of LDL in the plasma.

Material and Methods

The study was performed in the Internal Medicine Polyclinic of the Dumlupinar University between August 2005 and March 2007. Consecutive patients above the age of 14 years were included into the study. Medical histories of the patients including HT, DM, COPD, and already used medications were learned, and a routine check up including fasting plasma glucose (FPG), HDL, LDL, and triglycerides was performed. Current daily smokers with six pack-months and cases with a history of three pack-years were accepted as smokers. Due to the low prevalence of alcoholism in Turkey (22), we did not include regular alcohol intake into the study. Patients with devastating illnesses including type 1 DM, malignancies, acute or chronic renal failure, chronic liver diseases, hyper- or hypothyroidism, and heart failure were excluded to avoid their possible effects on weight. Additionally, anti-hyperlipidemic drugs, metformin, and acarbose users were excluded to avoid their possible effects on blood lipid profiles and body weight (23, 24). Body mass index (BMI) of each case was calculated by the measurements of the Same Physician instead of verbal expressions. Weight in kilograms is divided by height in meters squared (18). Cases with an overnight FPG value of 126 mg/dL and greater on two occasions or already using antidiabetic medications were defined as diabetics (18). An oral glucose tolerance test with 75-gram glucose was performed in cases with a FPG value between 110 and 126 mg/dL, and diagnosis of cases with a 2-hour plasma glucose value of 200 mg/dL and greater is DM (18). CRD is diagnosed with a persistently elevated serum creatinine value of 1.3 mg/dL in males and 1.2 mg/dL in females. Additionally, office blood pressure (OBP) was checked after a 5-minute rest in seated position with a mercury sphygmomanometer on three visits, and no smoking was permitted during the previous 2-hours. A 10-day twice daily measurement of blood pressure at home (HBP) was obtained in all cases, even in the normotensives in the office due to the risk of masked HT after a 10-minute education session about proper BP measurement techniques (25). An additional 24-hour ambulatory blood pressure monitoring was not taken due to the similar effectivity with the HBP measurements (3). Eventually, HT is defined as a mean BP of 140/90 mmHg and higher on HBP measurements, and WCH as an OBP of 140/90 mmHg and higher but a mean HBP measurement of lower than 140/90 mmHg (25). An exercise electrocardiogram is performed just in cases with an abnormal electrocardiogram and/or angina pectoris. Coronary angiography is taken just for the exercise electrocardiogram positive cases. So CHD is diagnosed either angiographically or with the Doppler echocardiographic findings as the already developed movement disorders in the cardiac walls. The spirometric pulmonary function tests were performed in required cases after the physical examination, and the criterion for diagnosis of COPD is post-bronchodilator forced expiratory volume in one second/forced vital capacity of less than 70% (26). Finally, patients with plasma LDL values lower than 80 mg/dL were collected into the first, lower than 100 mg/dL into the second, lower than 130 mg/dL into the third,

lower than 150 mg/dL into the fourth, and 150 mg/dL and higher into the fifth groups, respectively. The mean age, female ratio, smoking, BMI, FPG, triglycerides, LDL, HDL, WCH, HT, DM, COPD, CHD, and CRD were detected in each group, and compared in between. Mann-Whitney U test, Independent-Samples T test, and comparison of proportions were used as the methods of statistical analyses.

Results

The study included 815 cases (477 females and 338 males), totally. Parallel to the higher plasma LDL values, the mean age, BMI, FPG, triglycerides, HDL, and WCH were the highest in the fifth, and smoking, HT, and DM were the highest in the fourth groups. Whereas COPD, CHD, and CRD were the highest in the first group in contrast to the lowest LDL and HDL values, significantly ($p<0.05$ for all). Interestingly, FPG, triglycerides, HT, DM, COPD, CHD, and CRD were the lowest in the second group, significantly ($p<0.05$ nearly for all), and there was no difference according to the mean age and smoking between the first and second groups, significantly ($p>0.05$ for both) (Table 1).

Discussion

Adipose tissue produces leptin, tumor necrosis factor-alpha, plasminogen activator inhibitor-1, and adiponectin-like cytokines acting as acute phase reactants in the plasma (27, 28). Excess weight-induced chronic low-grade vascular endothelial inflammation plays a significant role in the pathogenesis of accelerated atherosclerosis in whole body (1, 2). Additionally, excess weight may cause an increased blood volume as well as an increased cardiac output. The prolonged increase in the blood volume may lead to myocardial hypertrophy terminating with a decreased cardiac compliance. Combination of these cardiovascular risk factors eventually terminate with increased risks of arrhythmias, cardiac failure, and sudden cardiac death. Similarly, the prevalence of CHD and stroke increased parallel to the increased BMI values in the other studies (29, 30), and risk of death from all causes including cancers increased throughout the range of moderate to severe weight excess in all age groups (31). The relationship between excess weight, elevated BP, and plasma triglycerides is described in the metabolic syndrome (14), and clinical manifestations of the syndrome include obesity, dyslipidemia, HT, insulin resistance, and proinflammatory and prothrombotic states (12). For example, prevalence of excess weight ($p<0.01$), DM ($p<0.05$), HT ($p<0.001$), and smoking ($p<0.01$) were all higher in the hypertriglyceridemia (200 mg/dL and higher) group in a previous study (32). On the other hand, the prevalence of increased LDL cases were similar both in the hypertriglyceridemia and control groups in the same study (32). Similarly, although the higher plasma trigycerides ($p<0.001$), LDL and HDL values were lower in the group with plasma HDL levels (they were?) lower than 40 mg/dL in the other study ($p<0.000$ for both) (33).

Alcohol and smoking may also be found among the most common causes of vasculitis. Both of them cause a chronic inflammatory process on the vascular endothelium depending on the concentrations of products of alcohol and smoke in the blood that terminates with an accelerated atherosclerosis, end-organ insufficiencies, early aging, and premature death. Therefore both of them have to be added into the major components of the metabolic syndrome. Atherosclerotic effects of smoking are the most obvious in Buerger's disease. It is an obliterative vasculitis characterized by inflammatory changes in the small and medium-sized arteries and veins, and it has never been seen without smoking in the literature. Although there are well-known atherosclerotic effects of smoking, smoking in the human being and nicotine administration in animals may be associated with decreased BMI values (34). Nicotine supplied by patch after smoking cessation decreased caloric intake in a dose-related manner (35). According to an animal study, nicotine lengthens intermeal time and decreases amount of meal eaten (36). Additionally, the mean BMI seems to be the highest in the former, the lowest in the current, and medium in never smokers (37). Smoking may be associated with a postcessation weight gain (38). Similarly, although CHD was detected with similar prevalence in both genders, prevalence of smoking and COPD were higher in males against the higher BMI, LDL, triglycerides, WCH, HT, and DM in females (39). Similarly, the incidence of a myocardial infarction is increased six-fold in women and three-fold in men who smoke 20 cigarettes per day (40). In another definition, smoking may be more dangerous for women due to the associated higher BMI and its consequences. So smoking is probably a powerful atherosclerotic risk factor with some suppressor effects on appetite (41). Smoking-induced weight loss may be related with the smoking-induced chronic vascular endothelial inflammation all over the body since loss of appetite is one of the major symptoms of disseminated inflammation in the body. Physicians can even understand healing of the patients by means of normalizing appetite. Several toxic substances found in cigarette smoke get into the circulation by means of the respiratory tract, and cause a vascular endothelial inflammation until their clearance from the circulation. But due to the repeated smoking habits, the clearance process never terminates. So the patients become ill with loss of appetite, permanently. In another explanation, smoking-induced weight loss is an indicator of being ill instead of being healthy (35-37). After smoking cessation, normal appetite comes back with a prominent weight gain but the returned weight is the patient's physiological weight, actually.

Although ATP III reduced the normal values of plasma triglycerides as lower than 150 mg/dL in 2001 (18), much lower values may provide additional benefits for health (15-17). In the above study (16), prevalence of smoking was the highest in the group with the highest triglycerides values which may also indicate the inflammatory role of smoking in the metabolic syndrome, since triglycerides may actually be some acute phase reactants in the plasma. The mean age, male ratio, smoking, BMI, FPG, WCH, HT, DM, and COPD increased parallel to the

Table 1: Characteristics features of the study cases according to the low density lipoproteins values

Variable	Lower than 80 mg/dL	p-value	Lower than 100 mg/dL	p-value	Lower than 130 mg/dL	p-value	Lower than 150 mg/dL	p-value	150 mg/dL and higher
Number	81		103		277		168		186
Age (year)	40.1±18.0 (16-82)	Ns*	*39.6±17.8 (16-82)*	*0.005*	*44.6±15.2* (16-88)	*0.000*	51.5±13.4 (17-82)	Ns	*52.2±11.6 (22-86)*
Female ratio	*46.9%*	*0.05>*	59.2%	Ns	57.7%	Ns	57.1%	*0.05>*	*65.5%*
Smoking	24.6%	Ns	*19.4%*	*0.05>*	24.5%	*0.05>*	*31.5%*	Ns	26.8%
BMI† (kg/m²)	*26.4±5.6 (17.2-42.6)*	Ns	26.7±6.1 (16.7-48.6)	*0.008*	28.2±5.7 (17.6-50.5)	*0.003*	29.7±5.5 (18.1-51.0)	Ns	*30.1±5.8 (20.6-51.1)*
FPG‡ (mg/dL)	102.3±37.2 (59-288)	Ns	*99.3±26.6 (63-217)*	Ns	102.5± 37.3 (63-377)	*0.000*	114.1± 45.9 (70-338)	Ns	*115.8±53.1 (74-400)*
Triglycerides (mg/dL)	145.0±125.4 (30-617)	Ns	*122.8± 83.9 (27-518)*	Ns	135.8± 93.7 (39-896)	*0.000*	153.7± 79.1 (37-450)	*0.004*	*174.7±110.7 (47-1.350)*
LDL§ (mg/dL)	*65.1±12.7 (10-78)*	*0.000*	89.8±5.7 (76-99)	*0.000*	114.5±8.8 (100-129)	*0.000*	138.3±5.8 (130-149)	*0.000*	*171.9±22.1 (150-269)*
HDL‖ (mg/dL)	*37.5±10.8 (22-77)*	*0.006*	45.2±12.3 (28-80)	Ns	44.7±9.3 (26-72)	Ns	45.8±8.1 (33-72)	*0.006*	*50.8±10.4 (32-91)*
*WCH***	*17.2%*	*0.05>*	26.2%	Ns	24.9%	Ns	29.1%	*0.01>*	*39.7%*
*HT****	16.0%	Ns	*11.6%*	*0.01>*	16.9%	*0.001>*	*30.3%*	*0.05>*	22.0%
*DM*****	12.3%	Ns	*9.7%*	*0.01>*	14.8%	Ns	*17.8%*	Ns	16.1%
*COPD******	13.5%	*0.05>*	*5.8%*	*0.001>*	13.3%	Ns	*16.0%*	Ns	14.5%
*CHD*******	*16.0%*	*0.01>*	*5.8%*	*0.001>*	11.5%	Ns	14.2%	Ns	9.6%
*CRD********	*4.9%*	*0.05>*	*0.0%*	Ns	1.0%	Ns	2.3%	Ns	2.1%

*Nonsignificant (p>0.05) †Body mass index ‡Fasting plasma glucose §Low density lipoproteins
‖High density lipoproteins **White coat hypertension ***Hypertension ****Diabetes mellitus
*****Chronic obstructive pulmonary disease ******Coronary heart disease *******Chronic renal disease

increased plasma triglycerides values from the first up to the fifth groups, gradually (16). Significantly increased plasma triglycerides values by aging may be secondary to the aging-induced decreased physical and mental stresses, which eventually terminate with onset of excess weight and its consequences. Although the borderline high triglycerides value (150-199 mg/dL) is seen together with physical inactivity and overweight, the high (200-499 mg/dL) and very high triglycerides values (500 mg/dL and greater) may be secondary to smoking, genetic factors, and terminal consequences of the metabolic syndrome such as obesity, DM, HT, COPD, cirrhosis, CRD, PAD, CHD, and stroke (18). But although the underlying causes of the borderline high, high, and very high plasma triglycerides values may be a little bit different, probably risks of the terminal consequences do not change in them. For instance, prevalence of HT, DM, and COPD were the highest in the group with the highest triglycerides values in the above study (16). Eventually, although some authors reported that lipid assessment can be simplified as the measurements of total cholesterol and HDL alone (42), the present study and some others indicated significant relationships between plasma triglycerides, HDL, and LDL values and terminal consequences of the metabolic syndrome (33, 43).

Cholesterol, triglycerides, and phospholipids are the major lipids of the body. Cholesterol is an essential structural component of the animal cell membrane, bile acids, adrenal and gonadal steroid hormones, and vitamin D. Triglycerides are the major lipids in the blood and body's fat tissue. Phospholipids are triglycerides that are covalently bound to a phosphate group, and they regulate membrane permeability, remove cholesterol from the body, provide signal transmission across the membranes, act as detergents, and help in solubilization of cholesterol. Cholesterol, triglycerides, and phospholipids do not circulate freely in the plasma, instead they are bound to proteins, and transported as lipoproteins. There are five major classes of lipoproteins in the plasma. Chylomicrons carry exogenous triglycerides to the liver via the thoracic duct. Very low density lipoproteins (VLDL) are produced in liver, and carry endogenous triglycerides to the peripheral organs. In the capillaries of adipocytes and muscle tissue, VLDL are converted into intermediate density lipoproteins (IDL) by removal of 90% of triglycerides by lipases. Then IDL are degraded into LDL by removal of more triglycerides. So VLDL are the main source of LDL in the plasma, and LDL deliver cholesterol from the liver to the peripheral organs. Although the liver removes the majority of LDL from the circulation, a small amount is uptaken by scavenger receptors of the macrophages which migrate into the arterial walls, and become the foam cells of atherosclerotic plaques. HDL remove fats and cholesterol from cells including the arterial wall atheroma, and carry the cholesterol back to the liver and steroidogenic organs such as adrenals, ovaries, and testes for excretion, re-utilization, and disposal. All of the carrier lipoproteins are under dynamic control, and are readily affected by diet, illness, drug, and BMI. Thus lipid analysis should be performed during a steady state. But the metabolic syndrome alone is a low grade inflammatory process on vascular endothelium. Thus the metabolic syndrome alone may be a cause of abnormal lipoproteins levels in the plasma. On the other hand, although HDL are commonly called 'the good cholesterol' due to their roles in removing excess cholesterol from the blood and protecting the arterial walls against atherosclerosis (44), recent studies did not show similar results, and low plasma HDL values may alert us to searching for some inflammatory pathologies in the body (45-47). Normally, HDL may show various anti-atherogenic properties including reverse cholesterol transport and anti-oxidative and anti-inflammatory properties (45). However, HDL may become 'dysfunctional' in pathological conditions which means that relative composition of lipids and proteins, as well as the enzymatic activities of HDL are altered (45). For instance, properties of HDL are compromised in patients with DM due to the oxidative modification and glycation of HDL, as well as the transformation of HDL proteomes into the proinflammatory proteins. Additionally, three highly effective agents for increasing HDL levels including niacin, fibrates, and cholesteryl ester transfer protein inhibitors did not reduce all cause mortality, CHD mortality, myocardial infarction, and stroke (48). In other words, while higher HDL values may correlate with better cardiovascular health, specifically increasing one's HDL may not increase cardiovascular health (48). So they may just be indicators instead of the main actors in the metabolic syndrome. Beside that, HDL particles that bear apolipoprotein C3 are associated with increased risk of CHD (49). For example, although the similar mean age, gender distribution, smoking, and BMI in both groups, DM and CHD were higher in the group with the plasma HDL values lower than 40 mg/dL in the above study (33). Similarly, although the lower mean age, smoking, BMI, FPG, LDL, and HDL, the highest COPD, CHD, and CRD may also indicate functions of LDL and HDL as the negative acute phase proteins in the present study.

APP are a group of proteins whose plasma concentrations increase (positive APP) or decrease (negative APP) as a response to inflammation, infection, and tissue damage (50-52). In case of inflammation, infection, and tissue damage, neutrophils and macrophages release cytokines into the blood, most notable of which are the interleukins. The liver responds by producing many positive APP. At the same time, production of some proteins are reduced. Thus these proteins are called negative APP. Some of the well-known negative APP are albumin, transferrin, retinol-binding protein, antithrombin, and transcortin. The decrease of such proteins is also used as an indicator of inflammation. The physiological role of decreased synthesis of such proteins may be protection of amino acids for production of positive APP, effectively. Due to the same reason, production of HDL and LDL may also be suppressed in the liver. In this way, although the similar mean age, gender distribution, smoking, and BMI in both groups, the higher triglycerides, DM, and CHD against the significantly lower HDL and LDL values in patients with plasma HDL values lower than 40 mg/dL can be explained in the above study (33). Beside that although

the lower mean age, smoking, BMI, FPG, LDL, and HDL, the highest COPD, CHD, and CRD of the first group can also be explained by the same theory in the present study. Similarly, although the mean triglycerides, fibrinogen, C-reactive protein, and glucose values were significantly higher in cases with ischemic stroke, the oxidized LDL values did not correlate with age, stroke severity, and outcome in another study (53). Additionally, significant alterations occurred in lipid metabolism and lipoproteins composition during infections, and triglycerides increased whereas HDL and LDL decreased in another study (54). Furthermore, a 10 mg/dL increase of LDL was associated with a 3% lower risk of hemorrhagic stroke in another study (55).

As a conclusion, the highest HT and DM parallel to the increased LDL and HDL and the highest COPD, CHD, and CRD in contrast to the lowest LDL and HDL values may show initially positive but eventually negative acute phase proteins functions of LDL and HDL in the metabolic syndrome. So the safest values of LDL were between 80 and 100 mg/dL in the plasma.

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Prevalence of Symptoms and Risk of Sleep Apnea in the northern Population of Pakistan

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Abstract

Background: Sleep apnea is a chronic condition characterized by frequent episodes of upper airway collapse during sleep causing episodes of apnea and hypo-apnea. These episodes of apnea and hypo-apnea can cause repetitive hypoxia and awaken one from sleep. Increasingly, obstructive sleep apnea is also being recognized as an independent risk factor for several clinical consequences, including systemic hypertension, cardiovascular disease, stroke, and abnormal glucose metabolism.

Objective: To identify the prevalence and risk factors of sleep apnea in Chitral, Pakistan.

Method: A cross sectional study was conducted at the THQ hospital Booni, Chitral. The survey was conducted on individuals who had come to the hospital as attendants, patients or visitors of the admitted patients. We used the Berlin questionnaire to identify individuals at risk for OSA. The Urdu version of the Berlin questionnaire was embedded in our survey questionnaire. Written consent was obtained. Data was collected and analyzed using SPSS.

Results: 52 of a total 408 were at high-risk for OSAS according to the Berlin scale Questionnaire. Hence, the prevalence estimates of individuals at high-risk for OSAS was 12.75%. These participants were more likely to have conditions such as previous coronary artery disease, high cholesterol, and hypertension.

Conclusion: There is a high prevalence of OSA in Chitral and it is also associated with obesity, coronary diseases, smoking, and hypertension which is why it is important to have a proper evaluation and early screening for it. Given the high prevalence and association of OSA with many diseases, it is also important to increase awareness among physicians and the general population of rural areas, about the clinical presentations, risk factors and complications of OSAS.

Key words: sleep apnea; prevalence; moking; coronary disease

Introduction

Defined as upper airway collapse during sleep, Obstructive sleep apnea (OSA) is the most common sleep-related breathing disorder worldwide,which causes intermittent apneas or hypo-apneas in breathing. These episodes of apnea and hypo-apnea can cause repetitive hypoxia and awaken one from sleep (1). OSA status can be determined by the frequency of apnea and hypopnea events per hour by polysomnography and it is defined as an apnea-hypopnea index (AHI) of at least five events per hour (2).

These repeated episodes of complete or partial cessation of breathing can cause multiple adverse effects. It is associated with stroke, the second leading cause of death worldwide and the leading cause of long-term disability(3,4). Apnea and hypopnea in OSA can cause temporary elevations in blood pressure due to blood oxygen desaturation, arousal, and sympathetic activation and may cause elevated blood pressure during the daytime and, ultimately, sustained hypertension(5). It has been found to be an independent risk factor for hypertension and associated with drug-resistant hypertension and treatment of OSA with continuous positive airway pressure (CPAP) has resulted in better control of hypertension.(6,7). It has also been associated with insulin resistance and dyslipidemia.(8,9). OSA can cause excessive daytime sleepiness and impairment in the ability to sustain attention to tasks and decreased alertness, all of which have been associated with an increased risk of motor vehicle accidents (10). Epidemiological studies have consistently demonstrated the link between OSA and quality of life(11), cognitive impairment(12), and depression(13,14). These studies indicated a two-fold increase in depression in participants with mild OSA and two-to-six-fold increase with moderate to severe OSA.

OSA remains a significant public health problem in both developed and developing countries. According to early population-based epidemiological studies, the prevalence of OSA was 3% to 7% in men and 2% to 5% in women in the Western Caucasian population (15). Similar proportions have been noted in Asian countries, with a prevalence of 4.1 to 7.5% in men and 2.1 to 3.2% in women (16). South Asians, including India, Pakistan, Bangladesh, Sri Lanka, and Nepal, make up a quarter of the world's population and South Asians were found at an elevated risk for OSA compared to their Caucasian counterparts (17).

In South Asia countries, the majority of the population lives in rural villages and the prevalence of OSA may remain substantial but underappreciated due to the lack of resources like polysomnography. Studies in developed countries such as in the United States show 75% to 80% of OSA cases that could benefit from treatment remained undiagnosed(18,19). Diagnosis of OSA with polysomnography remains a challenge for studies in developing countries and particularly in rural settings. Berlin questionnaire is one of the screening instruments to identify subjects at risk of OSA with high sensitivity and negative predictive value and it has been validated in the South Asian population (20). In Pakistan, very few population-based data were available on the prevalence of OSA. We conducted the current study to identify the prevalence of OSA, and to determine its predictors in the villages of Chitral, Pakistan.

Material and Methods

Study population:
Chitral is a mountainous area in the extreme north of Pakistan. It is divided into small valleys by the mighty Hindu Kush ranges. Chitral Valley is at an elevation of 1128 meters. It is surrounded by Afghanistan, Dir, Gilgit, and Swat Kohistan. Villagers of Chitral are subsistence farmers and the inaccessibility of the area has been a strong impediment to development and health care. Diet of the mountain population consists of whole grain, fresh fruit, fresh vegetables, goat's milk, cheese, grape wine, with little intake of animal proteins. This study was conducted at the THQ hospital Booni, Chitral. The survey was conducted on individuals who had come to the hospital as attendants, patients or visitors of the admitted patients.

Inclusion criteria
All healthy individuals, above 18 years of age, who were visiting clinics, accompanying a patient or who were visiting a relative admitted in the hospital, were included. Study objectives were explained and verbal consent was obtained prior to inclusion in the survey.

Exclusion criteria
The following individuals were excluded from the sample
- Any individual not willing to participate in the survey.
- All persons associated with health care including doctors and nursing staff.
- Any individual below the age of 18.

Sample size and questionnaire
We required a sample size of 400 subjects to fulfill the objectives of our study at a 95% confidence level. After rounding-off the required sample, we conducted the Berlin questionnaire on a total of four hundred and twenty individuals. Twelve individuals did not answer one or more questions or dismissed the interview before completion. A total of 408 completed the interview (questionnaire) and were included in the final analysis

Hospital staff members included trained nurses and lady health care workers, accompanied by trained medical students collected the data by interviewing the subjects. Research staff used standard instruments (SECA, Germany) to measure weight and height. Weight was measured to the nearest 0.1 kg with the subject standing motionless on SECA electronic weighing machine without shoes. Height was measured to the nearest 0.1 cm using SECA portable Stadiometer with the subject standing erect against the vertical surface of Stadiometer without shoes. Staff members also took at least two measurements, each of weight, height, waist and hip circumference.

We used the Berlin questionnaire, a validated instrument in the South Asian population (20), to identify individuals at risk for OSA. The Urdu version of the Berlin questionnaire was embedded in our survey questionnaire. This questionnaire includes questions about snoring, witnessed apneas, self-reported hypertension, and obesity. This questionnaire was found to predict an AHI >5 with a sensitivity of 86 percent, the specificity of 95 percent, and positive and negative predictive values of 96 and 82 percent respectively in the South Asian population(20). 1

Data entry and statistical analysis

Data were double entered and statistical analysis was conducted using the Statistical Package for Social Sciences (SPSS) version 25. Descriptive statistics including frequencies, means ± standard deviations (SD) were calculated. Based on the responses of the participants to the Berlin questionnaire they were grouped into either high or low risk for OSAS.

Section 1:

Positive score for risk was defined as an answer in the agreement either of the following questions: snoring with intensity "louder than talking" or very loud, snoring frequency > 3–4 times a week, snoring enough to bother other people or witnessed apneas during sleep > 3–4 times per week.

Section 2:

The positive score was defined as a patient having a frequency of symptoms >3–4 times per week for two or more questions about drowsy driving or/and waking time sleepiness.

In the original Berlin questionnaire in Section II respondents are asked how often they feel tired or fatigued after sleep, and whether they ever fall asleep driving a car. We included questions such as a history of sleepiness while waiting for an appointment with the doctor, while watching television at home or while in a queue, instead of sleepiness while driving a car, as few people have had a car in these mountain villages. This modification was done in the Indian validation study (20).

Section 3:

We used measured weight and height to calculate Body Mass Index (BMI) and categorized according to the WHO cut-off for South Asian population, less than 18.5 kg/m2 for underweight, 18.5-23 kg/m2 for normal, 23-27.5 kg/m2 for overweight and 27.5 kg/m2 or higher for obesity(21).

Individuals were considered high risk for OSAS if they scored positive in two or more categories. Those who did not have symptoms or scored positive in less than two categories were placed in the low-risk group.

In the Berlin questionnaire, a section is considered positive if there are two affirmative answers in either section I or II or one affirmative response in section III. Individuals who have positive scores in two of the three sections are considered to be at risk for OSA.

In addition, the subjects were asked to report if they have been diagnosed by any health care worker with any of the following conditions: hypertension, or coronary artery diseases. Also, subjects were asked about their smoking status (smoker, ex-smoker, no smoking). Similarly, hip and waist of patients were measured to calculate their central obesity.

Results

Our study population consisted of individuals above 18 and mean age of 42.98 (+-15.03) years and BMI of 22.3. 23.3% were males and 76.7% were females. 52 of the total 408 were at high-risk for OSAS according to Berlin scale Questionnaire. Hence, the prevalence estimate of individuals at high-risk for OSAS was 12.75% as shown in Table 1.

52 of the total 408 participants were at high risk for OSA. These participants were more likely to have conditions such as previous coronary artery disease, high cholesterol, and hypertension (Table 2). In addition, they were more likely to have higher BMI, central obesity, low education, be smokers or ex-smokers, alcohol user and pipe/hookah user. However, subjects considered high risk were comparable with those considered low risk with regards to their sex and marital status (Table 2).

Discussion

This study is among the earliest surveys for investigating OSA in Pakistan, using the internationally validated Berlin Scale Questionnaire. We found the prevalence of high risk of having OSA to be 12.75%. Almost similar prevalence was reported in a study conducted in Karachi, Pakistan, which showed a prevalence of 10% high risk of having OSA (22). Another study separately reports the prevalence of symptoms suggestive of OSA without showing the relationship of them with the risk for OSA. (23)

Only a few studies have looked into the prevalence of OSA in the Asian population especially in the rural community. It is also difficult to compare studies because of the different methods for estimating the prevalence of OSA. A study done in the rural population of south India using the Berlin scale showed an overall prevalence of 8.72% (24). A similar study done in the rural population of Odisha, India reported a prevalence of 25% (25). The study was community-based. Out of the 223 households visited, 200 community dwellers were surveyed using the BQ, and 25% (50/200) had a high likelihood of OSA (25). An Iranian study using BQ found the prevalence of OSA to be 27.3% (26). Studies in China, however, report a lower prevalence of Sleep Disordered Breathing (3.7%) and OSAS (2.1%). The methodology employed in this study was different from our Berlin Questionnaire-based study. We used the Berlin questionnaire which was found to predict an AHI >5 with sensitivity of 86 percent, specificity of 95 percent, positive and negative predictive values of 96 and 82 respectively in the South Asian population (20). It is, therefore, reasonable to compare results with these regional studies.

Table 1

	Total		High-risk group		Low-risk group	
	n=408		n=52		n=356	
	n	%	n	%	n	%
1. Do you snore?						
◻ a. Yes	67	16.4	45	86.5385	22	6.17978
◻ b. No	341	83.6	7	13.4615	334	93.8202
◻ c. Don't know	0	0	0	0	0	0
2. Your snoring is:						
◻ a. Slightly louder than breathing	12	17.9	8	15.3	4	1.12
◻ b. As loud as talking	20	29.9	11	21.15	9	2.528
◻ c. Louder than talking	31	46.3	22	42.3	9	2.52
◻ d.very loud. Can be heard in adjacent rooms	4	6	4	7.69	0	0
3. How often do you snore?						
◻ a. Almost every day	13	19.4	7	13.4 6	6	1.68 8
◻ b. 3-4 times per week	22	32.8	20	38.4	2	0.5
◻ c. 1-2 times per week	25	37.3	12	23	13	3.6
◻ d. 1-2 times per month	7	10.4	6	11.5	1	0.28
◻ e. Rarely or never	0	0	0	0	0	0
4. Has your snoring ever bothered other people?						
◻ a. Yes	26	38.8	19	36.5	7	1.9
◻ b. No	22	32.8	14	26.9	8	2.2
◻ c. Don't know	19	28.4	12	23.07	7	1.96
5. Has anyone noticed that you stop breathing during your sleep?						
◻ a. Almost every day	1	1.5	1	1.92	0	0
◻ b. 3-4 times per week	8	11.9	8	15.3	0	0
◻ c. 1-2 times per week	9	13.4	7	13.46	2	0.561
◻ d. 1-2 times per month	12	17.9	7	13.46	5	1.4
◻ ◻ e. Rarely or never	37	55.2	22	42.3	15	4.2
6. How often do you feel tired or fatigued after your sleep?						
◻ a. Almost every day	60	14.7	13	25	47	13.2
◻ b. 3-4 times per week	15	3.7	10	19.23	5	1.4
◻ c. 1-2 times per week	24	5.9	2	3.84	22	6.17
◻ d. 1-2 times per month	49	12	2	3.84	47	13.2
◻ e. Rarely or never	260	63.7	25	48.07	235	66.01
7. During your waking time, do you feel tired, fatigued or not up to par?						
◻ a. Almost every day	83	20.3	17	32.69	66	18.5
◻ b. 3-4 times per week	15	3.7	3	5.769	12	3.37
◻ c. 1-2 times per week	49	12	12	23	37	10.3
◻ d. 1-2 times per month	74	18.1	0	0	74	20.78
◻ e. Rarely or never	187	45.8	20	38.4	167	46.91

(Table 1 continued)

8. Have you ever nodded off or fallen asleep while driving a vehicle?						
◻ a. Yes	55	13.5	9	17.3	46	12.9
◻ b. No	353	86.5	43	82.6	310	87
For the following question q9, all percentages are from the 55 people who said yes to the previous question rather than the total sample size						
9. How often does this occur?						
◻ a. Almost every day	16	29.1	7	13.4	9	2.5
◻ b. 3-4 times per week	8	14.5	1	1.92	7	1.96
◻ c. 1-2 times per week	17	30.9	1	1.92	16	4.49
◻ d. 1-2 times per month	1	1.8	0	0	1	0.28
◻ e. Rarely or never	13	23.6	0	0	13	3.651
10. Do you have high blood pressure?						
◻ Yes	95	23.3	38	73.0769	57	16.0112
◻ No	301	73.8	12	23.0769	289	81.1798
◻ Don't know	12	2.9	2	3.84615	10	2.80899
11. BMI						
underweight (<=18.5)	86	21.08	2	3.84615	84	23.5955
normal (18.5-23)	181	44.36	8	15.3846	173	48.5955
overweight (23-27.5)	82	20.1	13	25	69	19.382
Obese (>= 27.5)	59	14.46	35	67.3077	24	6.74157

Table 2

Risk factors	High risk	Low risk	
Coronary Artery Disease	73.1	10.7	<0.001
Diabetes	0	0.3	0.691
High blood cholesterol	73.5	17.6	<0.001
HTN	73.1	16	<0.001
Body mass index, (kg/m2)± (STD)	28.9 (6.6)	21.2 (4.0)	<0.001
Waist, cm, mean ± (STD)	97.63 (9.46)	81.55 (10.01)	<0.001
Hip, cm, mean ± (STD)	106.44 (7.79)	95.59 (8.62)	<0.001
Cigarettes/cigars/biddies history	21.2	5.9	<0.001
Drinking history	28.8	4.7	<0.001
Naswar history	28.8	13.6	0.005
Pipe/hookah history	7.7	0	<0.001
Waist-to-hip ratio, mean ± (STD)			
Central obesity [(≥0.90 cm (M); ≥0.85 cm (F)], %	0.92	0.85	<0.001
(based on waist to hip ratio)			
No	7.7	55.2	
Yes	92.3	44.8	<0.001
Height, cm, mean ± (STD)	160.25 (11.06)	162.99 (8.93)	<0.001
Weight, kg, mean ± (STD)	75.46 (12.37)	56.12 (10.52)	<0.001

However, in contrast to our study, western studies report much higher prevalence of OSA e.g. studies done in the United States using the Berlin questionnaire reported a 26% prevalence estimate of High Risk for OSAS [27].

The possible explanation for the difference in prevalence is perhaps that western populations have a higher prevalence of obesity and higher mean BMI [28]. Another possible explanation for the difference has been attributed to cephalometric differences (different mandibular lengths and the anteroposterior dimensions of the nasopharynx-pharyngeal tubercle to posterior nasal spine) (29).

We reported 16.4% prevalence of snoring in our population, which is almost similar to that reported in other studies of the Indian and Pakistani populations (22) (25). However, studies in the United States report 52% prevalence of snoring symptoms [27] which is much higher and this difference can once again be attributed to the differences mentioned before.

Excessive daytime sleepiness and morning fatigue are good indicators of OSAS (27). In our study the symptoms were significantly more prevalent among the high-risk group. A higher prevalence of fatigue and sleepiness can depend on working hours and total hours of sleep. It may prove helpful to record the total sleeping hours of an individual and the working hours along with the Berlin questionnaire in further studies.

In the original Berlin questionnaire in section II, respondents are asked how often they feel tired or fatigued after sleep, and whether they ever fall asleep driving a car. We included questions such as a history of sleepiness while waiting for an appointment with the doctor or while watching television at home or while in a queue instead of sleepiness while driving a car as a few people have cars in these mountain villages. This modification was also done in the Indian validation study (20). Almost eleven percent of our total study population reported positively. Our reported rate is similar to that reported in prior studies [22,27,30). This is an important public health hazard and needs attention as it puts many drivers at a greater risk for road traffic accidents(31).

Low level of education is an associated factor in the high-risk group for OSA in our study with a p-value of 0.001; a similar association has been reported in previous studies(26).

Knowing that our study consisted of a sample of middle-aged individuals (mean age 42.98 years) suggests that

the symptoms are more prevalent in middle-aged and older individuals. These results are consistent with other reported studies (26,24).

In our study we found that Central Obesity was identified as risk factor for OSA. As indicated in Table 2, 92.3% of people with Central Obesity reported OSA. Central Obesity was measured by waist to hip ratio as indicated in Table 4. This finding correlates to a similar cross-sectional study done on OSA at Aga Khan University Hospital in Karachi(22). Our findings also correlate with findings in studies done in rural India\ (24,25). 1

People with Coronary Artery Disease, hypertension and high blood cholesterol were identified as a high-risk group. In our study, about 73.1% ,73.1 % and 73.5% of people with Coronary Artery Diseases, hypertension and high cholesterol respectively, were found to be at high risk of OSA. Similar studies were done in our neighbouring countries e.g India and Iran (26) which also classified CAD, hypertension and high blood cholesterol as one of the high risk factors for OSA (22, 24,25), in addition smoking and alcohol use were also found to be directly associated with the incidence of OSA.

Limitations

• The results are based only on data from a single hospital that is not representative of the whole rural population of Pakistan. Secondly, we used convenience sampling, and so it is not possible to generalize results to the entire rural population of Pakistan.
• The use of the structured and validated Berlin questionnaire in our study strengthens the reliability of our results but the Berlin questionnaire has not been particularly validated for the Pakistani population.
• We also did not use any validated questionnaire to define comorbidity of the subjects, instead subjects were asked to report if they have been diagnosed by any health care workers.
• We also did not exclude participants with specific medical conditions, such as hypothyroidism, asthma, acromegaly, heart disease, renal disease, pregnancy, hormonal replacement therapy, etc, which may further limit the strength of our study.
• We were unable to assess facial abnormalities which we know are important factors in OSA related symptoms.
• It may prove helpful to record the total sleeping hours of an individual and the working hours along with the Berlin questionnaire in further studies.

Conclusion

This study on the rural community of Chitral, Pakistan estimates the prevalence of OSA to be 14.2%. Also, OSA is associated with obesity, coronary diseases, smoking, and hypertension which is why it is important to have a proper evaluation and early screening for it. Unfortunately, sleep medicine in Pakistan is in its very early stage and efforts are needed at the national and regional levels to address this problem. Given the high prevalence and association of OSA with many diseases, it is also important to increase awareness among physicians and the general population of rural areas, about the clinical presentations, risk factors and complications of OSAS.

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Assessment of Health-Related Knowledge and Practices among Patients with Peptic Ulcer

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Abstract

Background: Peptic ulcer disease (PUD) is defined as an ulcerative disorder in the lower esophagus, lower portion of the stomach, and upper duodenum. It is a serious global health problem. Appropriate care for peptic ulcer patients becomes dynamic when physicians affect their responsibility meaningfully and competently through assessment, planning, implementation and evaluation.

Aim: This study aimed to assess health-related knowledge and practices of patients with peptic ulcer at Abha, Saudi Arabia.

Methodology: It is a descriptive cross sectional approach that targeted all accessible patients with peptic ulcer attending or admitted to the study settings during the period from January 2019 to March 2019. A direct interview questionnaire constructed by researchers was used for data collection. It was composed of three parts (patients' socio-demographic and clinical data- PU patient's knowledge interview tool, and data regarding patients' health-related practices).

Results: A total 155 patients with peptic ulcer, aged from 20 to 60 years were included. 52.3% of the patients were males and 44.5% were not working. Stomach pain was the most frequent symptom (88.4%) followed by hyperacidity (60.6%). Regarding the awareness of patients about their disease, 87.7% of them knew about symptoms of peptic ulcer followed with drugs and treatment methods (81.3%). In total 18.1% of the patients had good knowledge regarding peptic ulcer.

Conclusions & recommendations: The study revealed that patients' awareness level about their disease was poor especially regarding the nature of the disease, at risk population and its complications. As for health-related practice, the majority of patients had unhealthy behavior such as having drinks which may aggravate hyperacidity status. Also adherence to prescribed medication is not high and some have un-prescribed medications.

Key words: Peptic ulcer, Gastric ulcer, duodenal ulcer, Awareness, knowledge, Practice, Hyperacidity, gastric erosion

Background

Health-related behavior in early life influences later risks for lifestyle-related disorders. It is therefore important to investigate health behaviors among young people. University students represent a major segment of the young adult population.Peptic ulcer disease (PUD) is defined as ulcerative disorders in the lower esophagus, lower portion of the stomach, and upper duodenum (1). Helicobacter Pylori infection, non-steroidal anti-inflammatory drugs (NSAIDs) and associated health-related practices are the main factors behind peptic ulcer. These causes have led to important changes in diagnostic and treatment strategies, with the potential for improving the clinical outcomes, decreasing health care costs and have made health-related practices become the fundamental area of interest of practitioners and scientists of many disciplines (2-4).

As a serious and global healthcare issue, PUD accounted for roughly 10% of medical costs for digestive diseases in the last two decades, and it is still a major cause of morbidity and mortality (3). Previous studies have shown differences in the prevalence of peptic ulcer disease among various communities to be associated with variation in diet and eating patterns (2, 4).

A variety of organic etiologies and risk factors are associated with PUD, like H. pylori infection, NSAID use, being unmarried, smoking, type O blood group, and eating irregular meals (5,6). According to the American Psychological Association, psychosocial factors and stress play a significant role in the incidence and recurrence of peptic ulcers (7-9). It is also possible to develop peptic ulcer disease with or without the risk factors (10-12). Other less common causes are hypersecretory states, such as Zolinger-Elison syndrome, cell hyperplasia, macrocytosis, and basophilic leukemia (13).

The most common symptom of peptic ulcer is a burning or gnawing epigastric pain. Weight loss, bloating and nausea are comparatively inferior indicators (6, 14). Therapeutic management of PUD has changed dramatically, and aims to eliminate conditions that aggravate it and to prevent recurrence or complications. The treatment has evolved from dietary modifications only and surgery to acid suppression with antacids, H2 receptors antagonist (H2RAs), proton pump inhibitors and eradication of H. Pylori infection (15). Recurrence of PUD is increased due to poor health-related practices followed by peptic ulcer patients. Furthermore, modifying health-related practices are always needed to help in minimizing the chances of peptic ulcer disease from recurring (16). Therefore, proper care for peptic ulcer patients becomes important when physicians affect their responsibility meaningfully and competently through assessment, planning, implementation and evaluation. So, there is great importance to investigate health related knowledge and practices among those patients about the disease and the different therapeutic maneuvers (17).The current study therefore aimed to assess health-related knowledge and practices of patients with peptic ulcer, at Abha, Saudi Arabia.

Methodology

A descriptive cross-sectional approach was applied for this current research study. The research targeted all accessible patients with peptic ulcer attending or admitted to the study settings during the period from January 2019 to March 2019. A total sample of 155 peptic ulcer patients was required to estimate awareness level regarding peptic ulcer of 63% (18) using a precision of 7% at a 95% confidence level. The sample size was calculated using STATA 11 software using previously listed parameters. Patients fulfilling the inclusion criteria were consecutively included in the study after explaining the objectives and importance of the research until the total required sample size was obtained. The patients eligible for being included were those who had a peptic ulcer for at least 3 months and were able to communicate. After obtaining permission from the Institutional ethics committee, a direct interview questionnaire was used for data collection. A questionnaire was constructed by researchers based on intensive literature review and expert consultations. The questionnaire was composed of three parts. The first part included patients' socio-demographic and clinical data like Patient diagnosis, present medical history, associated diseases, family history, signs and symptoms and peptic ulcer complications. The second part consisted of peptic ulcer patient's knowledge interview tool. This part covered the definition of peptic ulcer, signs and symptoms of the disease, risk factors for having the disease, medication, management and complication of peptic ulcer diseaseetc. The third part focused on patients' health-related practices such as eating habits, activities of daily living, smoking, medication (prescribed and over the counter) and compliance with their therapeutic regimen.

Data analysis

Questionnaires were collected then coded and revised, and data was entered into Statistical Software IBM SPSS version 22. The given graphs were constructed using Microsoft Excel software. All statistical analysis was done using two-tailed tests and an alpha error of 0.05. A P-value less than 0.05 was considered to be statistically significant. Frequencies and percentages were used to describe the distribution of patients' demographic and clinical data. Knowledge and practice questions were isolated and scored. One (+1) mark was given for every correct response and zero (0) for an incorrect response. The total knowledge score was the sum of all correct answers and was divided into two categories: poor and good knowledge level according to the median. Chi-square / Monte Carlo exact test and Fishers exact test were used to test for the association between patients' knowledge level and different demographic, clinical and practice variables.

Results

The study included 155 patients with peptic ulcers with their ages ranging from 20 to 60 years and mean age of 38.6 ± 11.8 years old. Males were 52.3% of the sampled patients and 44.5% were not working. About 68% of the patients were from rural areas and 61.3% were married. A total of 38.1% were illiterate while 18.7% were university educated. About 52% of the patients had a chronic health problem mainly GIT disorder. Previous infection with H. pylori bacteria was recorded among 71% of the patients and 30.3% had a family history of peptic ulcer from the first degree and 16.1% of other relatives (Table 1).

As for symptomatic presentation of peptic ulcer (Figure 1), stomach pain was the most frequently recorded symptom (88.4%) followed by hyperacidity (60.6%), underweight (57.4%), vomiting (40.6%), loss of appetite (39.4%) while vomiting of blood was found to be least frequent (7.7%). Table 2 illustrates data regarding peptic ulcer. A total 58.7% of the patients had gastric ulcer followed by duodenal ulcer (36.8%) and 4.5% did not know about their disease. As for peptic ulcer duration, 50.3% were diagnosed for more than one year and 14.8% were diagnosed 6 months ago. About 25.5% of the patients consulted physicians with symptoms while 57.4% only did when symptoms were increased. Regarding complications, 45.2% of the patients had no complications while 31% complained of loss of appetite and 9% complained of vomiting of blood and black stool. Considering regular doctor visits for follow up, 14.2% of the patients did and 61.3% comply with doctor's advice and treatment.

Regarding the awareness of patients about their disease (Figure 2), 87.7% of the patients knew about symptoms of peptic ulcer followed by drugs and treatment methods (81.3%), complications (63.2%) while 46.5% of the patients defined peptic ulcer correctly. In total 18.1% of the patients had good knowledge regarding peptic ulcer.

As for patients health-related practices (Table 3), 54.2% of the patients had two meals daily and 44.5% had three meals. About 32% of the patients did not have snacks in between meals. A total of 53% of the patients had a special diet due to their ulcer and 31.6% avoided hunger. 80.6% of the patients had drinks containing caffeine,more than twice daily among 34.4% of them. About 37% of the patients had soft drinks, once daily among 32% of the peptic ulcer patients. As for smoking, 28.4% of the patients were current smokers and 13.5% were ex-smokers. About 27% of the smokers had cigarettes for 4 to 6 years while 21.5% smoked for more than 6 years. As for sleeping hygiene, 58.7% of the patient's slept for 6 to 8 hours and 36.8% slept for less than 6 hours daily. Also 30.3% experienced problems with sleeping. As for medications, 75.5% of the patients knew about medication and 16.1% took their medications without prescription.

Finally, on relating awareness level with patients' demographic data, clinical data and behavior (Table 4) it was clear that 21.6% of patients aged 20-30 years had good knowledge regarding peptic ulcer compared to 2.9% of old aged patients (50-60) with statistically significant difference (P=.001). Also 47.1% of working patients had good knowledge compared to 14.5% of those who did not work (P=.001). Considering the residence area, 34.7% of the patients were from urban areas with good knowledge compared to 10.4% of rural residence (P=.001). The level of education was also found to be statistically significant; 58.6% of university graduate patients had good knowledge compared to none of the illiterate patients (P=.001). Also 23.6% of patients with a history of H. pylori infection had good knowledge compared to those with a negative history. Patients with a family history of peptic ulcer had significantly higher knowledge level than others without (29.8% and 14.5%, respectively). Also medication awareness was significantly related to disease awareness among 39.4% of the total patients (P=.001).

Table 1: Bio-Demographic characteristics of patents with peptic ulcer attending ACH, Saudi Arabia

Bio-Demographic data		No	%
Age in years	20-	51	32.9%
	30-	41	26.5%
	40-	29	18.7%
	50-60	34	21.9%
Gender	Male	81	52.3%
	Female	74	47.7%
Occupation	Office work	34	21.9%
	Manual work	52	33.5%
	Not-working	69	44.5%
Area of residence	Rural	106	68.4%
	Urban	49	31.6%
Marital Status	Single	47	30.3%
	Married	95	61.3%
	Divorced / widow	13	8.4%
Educational degree	Illiterate	59	38.1%
	Basic	33	21.3%
	Secondary	34	21.9%
	University	29	18.7%
Chronic health problem	No	74	47.7%
	Yes	81	52.3%
If yes, mention	GIT	41	50.6%
	Cardiac	7	8.6%
	Others	33	40.7%
Have you ever been infected with H pylori bacteria?	No / don't know	45	29.0%
	Yes	110	71.0%
Does one of your family have a history of peptic ulcer?	No / don't know	83	53.5%
	First degree relative	47	30.3%
	Others	25	16.1%

Table 2: Peptic ulcer data for patients attending ACH, Saudi Arabia

Peptic ulcer data		No	%
Type of ulcer	Gastric ulcer	91	58.7%
	Duodenal ulcer	57	36.8%
	Don't know	7	4.5%
Duration of PUD	Less than 6 months	23	14.8%
	6-12 months	54	34.8%
	More than one year	78	50.3%
When did you expose yourself to the doctor?	With onset of symptoms	44	28.4%
	When symptoms increased	89	57.4%
	With complications	22	14.2%
Have you ever suffered from one of these complications?	No	70	45.2%
	Bloody vomiting	15	9.7%
	Black stools	14	9.0%
	Loss of appetite	48	31.0%
	All	8	5.2%
Do you go to the doctor on a regular basis?	No	115	74.2%
	Sometimes	18	11.6%
	Yes	22	14.2%
Do you comply with the regimen prescribed by your doctor?	No	60	38.7%
	Yes	95	61.3%

Table 3: Health related practice among patients with peptic ulcer attending ACH, Saudi Arabia

Health related practice		No	%
How many meals covered in a day?	One meal	2	1.3%
	Two meals	84	54.2%
	Three meals	69	44.5%
Do you eat any food between meals?	Permanently	23	14.8%
	Sometimes	83	53.5%
	I do not ever	49	31.6%
Are you on a special diet because of peptic ulcer?	No	73	47.1%
	Yes	82	52.9%
Do you avoid hunger because of an ulcer?	No	106	68.4%
	Yes	49	31.6%
Are you taking drinks containing caffeine (stimulants such as tea, coffee, Nescafe)	No	30	19.4%
	Yes	125	80.6%
If yes or sometimes how many times per day?	Once	40	32.0%
	Twice	37	29.6%
	More than two times	48	38.4%
Are you taking any soft drinks?	Sometimes	57	36.8%
	Yes	58	37.4%
If your answer is yes how many times a day?	Once	73	62.6%
	Once per week	42	36.5%
Are you a smoker?	No	90	58.1%
	Ex-smoker	21	13.5%
	Yes	44	28.4%
How long have you smoked?	Lessthan two years	9	13.8%
	2 -> 4 years	14	21.5%
	4 -> 6 years	18	27.7%
	6 - > 10 years	14	21.5%
	10+	10	15.4%

(Continued form previous page)

How many hours of sleep do you have per day?	4 -> 6 hours	57	36.8%
	6 -> 8 hours	91	58.7%
	8 -> 12 hour	7	4.5%
Are there any problems with sleep	No	64	41.3%
	Sometimes	44	28.4%
	Yes	47	30.3%
Do you know the medication that you take?	No	38	24.5%
	Yes by format	46	29.7%
	Yes by name	71	45.8%
Are you regular in taking medication on time?	No	28	18.1%
	Sometimes	39	25.2%
Do you take medication without a doctor's prescription?	No	66	42.6%
	Sometimes	64	41.3%
	Yes	25	16.1%

Figure 1: Symptoms of Peptic ulcer among patients attending ACH, Saudi Arabia

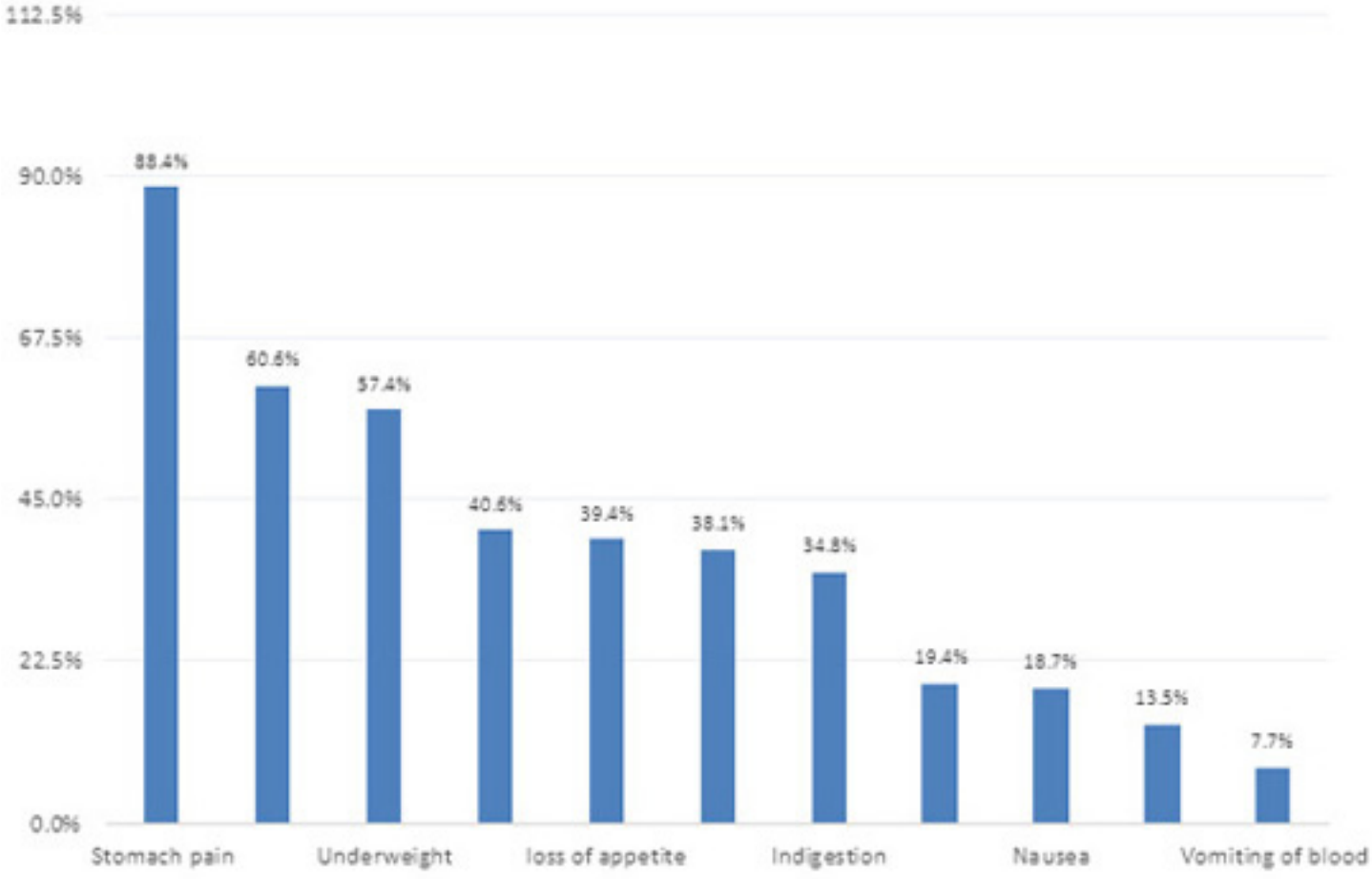


Table 4: Predictors of awareness level among patients with peptic ulcer, ACH, Saudi Arabia

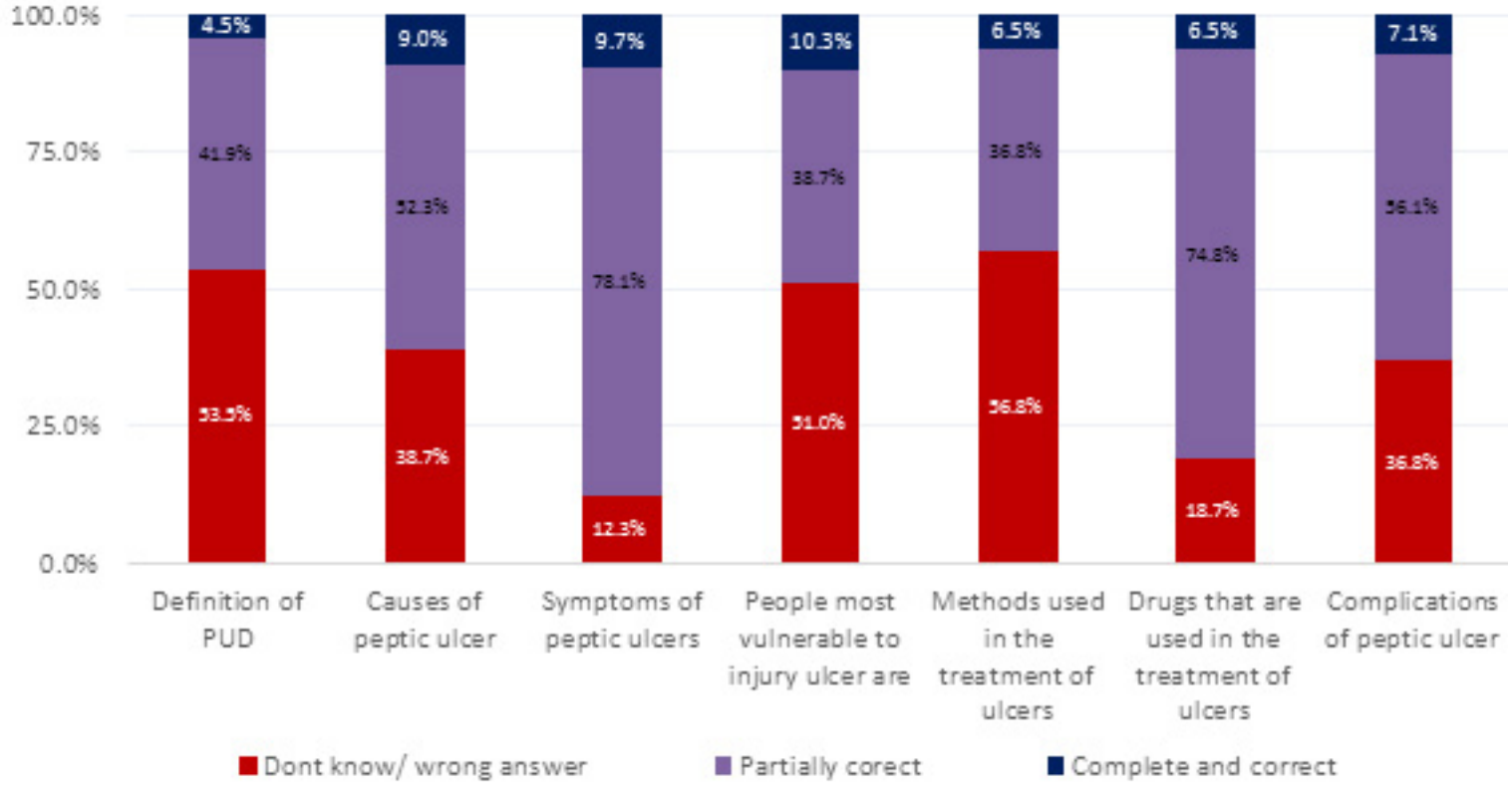
Factors		Knowledge level				P-value
		Poor		Good		
		No	%	No	%	
Age	20-	40	78.4%	11	21.6%	.001*
	30-	26	63.4%	15	36.6%	
	40-	28	96.6%	1	3.4%	
	50-60	33	97.1%	1	2.9%	
Gender	Male	64	79.0%	17	21.0%	.322
	Female	63	85.1%	11	14.9%	
Occupation	Office work	18	52.9%	16	47.1%	.001*
	Manual work	50	96.2%	2	3.8%	
	Not-working	59	85.5%	10	14.5%	
Area of residence	Rural	95	89.6%	11	10.4%	.001*
	Urban	32	65.3%	17	34.7%	
Educational degree	Illiterate	59	100.0%	0	0.0%	.001*
	Basic	33	100.0%	0	0.0%	
	Secondary	23	67.6%	11	32.4%	
	University	12	41.4%	17	58.6%	
Have you ever been infected with H pylori bacteria?	No / don't know	43	95.6%	2	4.4%	.005*
	Yes	84	76.4%	26	23.6%	
Does one of your family have a history of peptic ulcer?	No / don't know	71	85.5%	12	14.5%	.033*
	First degree relative	33	70.2%	14	29.8%	
	Others	23	92.0%	2	8.0%	
Are you on a special diet because of peptic ulcer?	No	57	78.1%	16	21.9%	.239
	Yes	70	85.4%	12	14.6%	
Are you taking any soft drinks?	No	40	100.0%	0	0.0%	.001*
	Sometimes	53	93.0%	4	7.0%	
	Yes	34	58.6%	24	41.4%	

(Continued from previous page)

Are you a smoker?	No	75	83.3%	15	16.7%	.745
	Ex-smoker	16	76.2%	5	23.8%	
	Yes	36	81.8%	8	18.2%	
Do you know the medication that you take?	No	38	100.0%	0	0.0%	.001*
	Yes by format	46	100.0%	0	0.0%	
	Yes by name	43	60.6%	28	39.4%	

* P < 0.05 (significant)

Figure 2: Awareness regarding peptic ulcer of patients attending ACH, Saudi Arabia



Discussion

Helicobacteria pylori is a gram-negative bacteria that usually attacks the gastric mucosa. H. pylori are associated with chronic gastritis, peptic ulcer disease, and gastric cancer (1). Gastric and duodenal ulcers are two types of peptic ulcers. An ulcer is defined as a break in the stomach mucosain the upper part of the small intestine, or sometimes in the lower esophagus. Around 4% of the global population complains of peptic ulcer (19). The lifetime risk of developing a peptic ulcer among the general population is about 10% (20). Peptic ulcers contributed to 301,000 deaths in 2013, which is less than 327,000 deaths in 1990 (21). With a gastric ulcer, stomach pain may become worse after eating. It may appear other symptoms like poor appetite, belching, weight loss and vomiting. There are no symptoms in around one-third of the geriatric population (19-22).

Patients' awareness about their illness plays an important role in the management and prevention of recurrence of peptic ulcer disease. The current study aimed at assessing peptic ulcer patients' awareness and health-related behavior regarding their illness which helps in controlling diseases advances and complications.

The current study revealed that most of the sampled peptic ulcer patients were at a young age (below 40 years) and predominantly males. Also non-working status was the most recorded profile which may be associated with stress and worry due to lack of regular income resulting in stress ulcers. As for symptoms, gastric pain was the most frequently recorded symptom followed by hyperacidity and underweight with loss of appetite that resulted in reduced weight as the patient became afraid of eating. Vomiting of blood and black stool was recorded but in comparatively less number of cases.

Considering peptic ulcer data the gastric ulcer was the most frequently reported, which lasted for more than one year among half of the cases. The majority of patients seek medical advice after aggravation of symptoms due to gastric pain which is a problem as symptoms may be more severe with or just before having complications. This area of defect in patients' awareness may result in more prevalent complications and delay in the therapeutic management reducing the chance for early recovery. More than half of the cases had at least one type of peptic ulcer complications especially loss of appetite due to fear of eating. This high rate of complications is associated with delayed medical consultation. Also about one-third of the patients who had medical treatment did not comply with the treatment plan.

As for patients' awareness regarding their disorder, the majority of patients know about signs and symptoms. This high level of awareness may be because they are now experienced and may have been unaware of it before. Also, good awareness level was recorded for drugs used in treatment, complications, and causes. Poor awareness was recorded for the definition of peptic ulcer, and at risk people, and strategy of treatment. Overall knowledge was poor as nearly one of each five patients had good knowledge regarding their disorder. Young age, high education, urban residence and family history of peptic ulcer were the most important detectors of the patient's awareness level.

These findings were in concordance with that recorded by Lee MG et al. in 1995 (23) in Jamaica. The study revealed that sixty-three percent of patients knew their ulcer location but 37% were unaware of their diagnosis. Twenty-nine percent received most of their information from their pharmacists. Another study was conducted by Charles C et al. 2000 (24) who found that most respondents recorded that peptic ulcer is a common disorder. Also gastritis as a common cause of dyspepsia. X-ray/ Gastroscopy can be considered as the preferred confirmatory diagnostic approach.

Considering health-related practices of peptic ulcer patients, the current study revealed that the majority of cases have three meals daily and have special food due to peptic ulcer. Having drinks or foods which may induce peptic ulceration was recorded among a significant portion of the patients. Also smoking as a risk factor was recorded among nearly half of the cases. Sleep disorders due to peptic ulceration were recorded among more than half of the sampled cases. These findings were also confirmed by Lee MG et al 1995 (23).

Saudi patients' awareness of their ulcer disease is inadequate. More attention should be paid to improving patients' awareness and their health-related behavior. Physician education of their patients as well as public health promotion about peptic ulcer disease may be the most adequate and applicable methods to be implemented in future.

Conclusions and Recommendations

In conclusion, the study revealed that patients' awareness level regarding their disease was poor, especially the nature of the disease, risky population and its complications. The poor knowledge was mainly recorded among old aged patients with low education levels and resident in rural areas. As for health-related practice, the majority of patients had unhealthy behavior such as having drinks which may aggravate hyperacidity status. Also adherence to prescribed medication is not high and some have un-prescribed medications. Researchers recommend that more attention should be paid to peptic ulcer patients' awareness regarding disease nature, risk factors and complications with health education sessions to improve their health-related practice. This is the role of medical staff and health care providers which may have a crucial role in reducing this chronic healthcare issue.

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Prevalence of Fibromyalgia in Patients with Ankylosing Spondylitis

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Abstract

Ankylosing spondylitis (AS) is defined as a chronic inflammatory disorder which influences the axial skeletal system, resulting in pain and functional disabilities. Fibromyalgia (FM) is one of the main causes of generalized pain and can coexist with other disorders. Few researchers have found association between FM and AS. The present study obtained data regarding the prevalence of FM in patients with AS.

Methods: A total of 40 (30 male and 10 female) patients with AS, diagnosed according to the modified New York criteria, were studied. Two stage classification process was applied to determine the presence of FMS in AS patients: Stage 1: diffuse wide spread pain questionnaire to a sample of 40 (30 male and 10 female) patients with AS. Stage 2: all patients with wide spread pain were examined for 18 tender points. A sample of 40 (30 male and 10 female) healthy individuals were examined as controls.

Results: 10 patients met the criteria of FMS, with a prevalence of 25.0% among patients with AS, of whom 80.0% were women.

Conclusions: FMS is more prevalent in patients with AS than in the general population, and the prevalence is comparable with other musculoskeletal disorders. There is a trend for an increased frequency of FMS in females with AS. AS patients with FMS may benefit from psychological evaluation as a part of their treatment. Further study is needed to correlate between FMS and AS disease activity of patients.

Key words: Fibromyalgia, Ankylosing Spondylitis, spondyloarthropathy

Introduction

Ankylosing spondylitis (AS) is defined as a chronic inflammatory disease which influences greatly the skeletal system, mainly the spine and in some cases peripheral joints and can cause stiffness and progressive functional limitations of the axial skeletal system and extra articular clinical features

[1, 2]. AS is most common in young adults, of 2-40 years age of onset and is more common in Caucasians and human leukocyte antigen (HLA)-B27-positive individuals and the male sex [1, 2,3]. AS is one of the spondyloarthropathy complexes, which is greatly associated with HLA-B27, whose presence ranges from 80-98% of the cases respectively [4].The presenting clinical manifestation involves inflammatory low back pain correlated with morning stiffness [1,2]. AS of spine causes vertebral fusion, osteoporosis, ligament ossifications causing a weakened and remodeled vertebral column, with a powerful tendency toward deformation and fractures [1, 5]. AS is one of the enthesopathy of spondyloarthropathies and is characterized by inflammation at the tendon and/or ligament insertions on bones and influences commonly the calcaneal tendon insertion and plantar fascia [1]. New York modified criteria, with clinical and radiographic manifestation, are used to confirm AS diagnosis. The coexistence of both clinical and radiographic features is mandatory to attain AS diagnosis [6]. Garret et al. established a questionnaire for AS activity evaluation [7].

One of the most prevalent causes of generalized musculoskeletal pain is Fibromyalgia (FM). It is of unknown etiology, but its origin is of an inflammatory process. It is regarded to be a pain amplification syndrome, related to sensitization mechanism of the central nervous system [13,14]. It is more common in females and most cases are between age of 35-50 years. The clinical examination typically does not include synovitis and/or other symptoms pointing to inflammatory disease; the main feature is the presence of tender points found on palpation [14,15]. FM can associate with other rheumatologic disorders, like psoriatic arthritis, systemic lupus erythematosus, rheumatoid arthritis, and Crohn's disease [13, 16-17]. Essentially, the diagnosis is mainly on the clinical background and is based on the detection of tender points and the absence of symptoms or laboratory findings that can point to a degenerative or inflammatory disorder. Normal results of muscle enzymes, inflammatory activity tests and electromyography are common findings [13, 15]. The criteria of the American College of Rheumatology (ACR) are used in research [14]. There have been some researchers who revealed an association between FM and AS [18]. The present study aimed at identifying FM prevalence in patients with AS.

Patients and Methods

A cross-sectional study was carried out at the department of Rheumatology and Rheumatic outpatients in Basra Teaching Hospital from October 2016 till July 2018. A sample of 40 (30 males and 10 females) patients with AS, diagnosed according to the modified New York criteria, were included in the study. Patients who presented another concomitant rheumatologic disease that could justify the presence of chronic generalized pain were excluded from the study. The patients answered a questionnaire that included the following information: Age, sex, disease duration and drug history. Diagnosis of FM was confirmed according to the two stage classification process that was proposed by the 1990 ACR classification criteria for FM. Stage 1: composed of diffuse pain questionnaire. Stage 2: evaluation of all patients and controls complaining of diffuse pain; evaluation included the assessment of 18 tender points and 4 control non-tender points by digital palpation with an approximate force of 4 kg (the amount of pressure required to blanch the nail.

The four control non-tender points are; the middle of forehead, the volar aspect of mid forearm, the thumb nail and the muscles of anterior thigh. To meet the diagnostic criteria, musculoskeletal pain must have been present for at least 3 months, and pain present in 11 or more out of 18 specific tender points on digital palpation. A randomly selected sample of 40 (30 males and 10 females) healthy individuals matched for age and sex were questioned as a control group. All patients and controls were asked about FMS associated symptoms which are, fatigue, morning stiffness, sleep disturbance, headache, anxiety, and irritable bowel.

Results

The demographic distributions of both AS patients and control group are shown in Table 1. From the total sample; 30 (75.0%) were males and 10 (25.0%) were females. There were 34 (85.0%) patients of the AS group with widespread pain compared with 3 (7.5%) individuals with widespread pain in the control group which is a statistically significant difference with p value of 0.0001.

Only 10 (25.0%) (8 females and 2 males) patients fulfilled the 1990 ACR criteria for classification of FMS in the patients group, compared to 1 (2.5%) in the control group which is also statistically highly significant with p value of 0.003. FMS affects older more than younger AS age group patients as shown in Table 2.

Mean age and mean disease duration were 43.6 (SD=7.47), and 10.58 (SD=2.36) respectively. FMS associated symptoms appeared more obvious in the patient group when compared with the control group and more obvious in patients with FMS; the difference is statistically highly significant with p value of 0.0001 for all symptoms as shown in Table 3.

Table 1: Demographic distributions of patients and control groups

Characteristics	Patients	Control	P value
Total No.:	40	40	
Men	30 (75.0%)	30(75.0%)	
Women	10 (25.0%)	10(25.0%)	
Widespread pain	34 (85.0%)	3(7.5%)	0.0001
In men	24	2	
In women	10	1	
FMS:	10 (25.0%)	1(2.5%)	0.003
In men	2 (20.0.0%)	0	
In women	8 (80.0%)	1(100%)	
Age (years)	43.6 (SD=7.47)	41.85 (SD=7.33)	
Symptoms duration (years)	10.58 (SD=2.36)		
Drug history	NSAID,SSZ, anti TNF		

Table 2: Distributions of FMS according to the age groups

Age group (years)	No of patients	FMS
22- 45	21	2 patients with FMS
46- 57	19	8 patients with FMS

Table 3: Percentage of FMS associated symptoms in both patients and control groups

FMF associated symptom	AS No (%)	AS/ FMS No %	Controls No. (%)	P value
Headache	12 (30.0%)	10 (100%)	2(5.0%)	0.0001
Anxiety	11 (27.5%)	10 (100%)	1(2.5%)	0.0001
Fatigue	17 (42.5%)	10 (100%)	1(2.5%)	0.0001
Sleep disturbance	18 (45.0%)	10 (100%)	3(7.5%)	0.0001
Irritable bowel	14 (35.0%)	10 (100%)	2(5.0%)	0.0001
Morning stiffness	32 (80.0%)	10 (100%)	1(2.5%)	0.0001

Discussion

In this study widespread pain was found to be more prevalent in the patients group than in the control group in a prevalence rate of 85.0% and 7.5% respectively, whereas the prevalence rate of FMS among patients with AS was found to be 25.0% which is higher when compared to a study done by Amiri AH. [14] showing a prevalence rate of 19.4%. However the prevalence rate of FMS in AS patients in our study was comparable to the prevalence rates of 25% in patients with RA [15], 30% in patients with SLE [16], and it seems to be low when compared to the prevalence rate of FMS in patients with Sjogren syndrome which is 50% [17], and it is considered high when compared to the prevalence rate in the control group and in the general population [18]. In this study females were obviously affected with FMS more than males in the patient group, 80.0% and 20.0% respectively, while the ratio is 3:1 in the general population, so there is a trend for an increased frequency of FMS in females with AS more than that in general population. This result is consistent with Amiri's observation [14]. The present study shows that FMS is more prevalent in the older age group among AS patients, a result similar to that seen in the general population where there is a linear increase in the prevalence of FMS up to the eighth decade [18]. Morning stiffens, sleep disturbance, fatigue, irritable bowel, headache and anxiety were the most common non-musculoskeletal manifestations recorded in AS patients in the study. These FM associated symptoms were highly prevalent in AS patients with FMS and were found to be more when compared with other studies [19, 20].

Conclusion

FMS is more prevalent in patients with AS than in the general population, while it is less prevalent when compared with other musculoskeletal disorders. There is a trend for an increased frequency of FMS in females with AS. AS patients with FMS may benefit from psychological evaluation as a part of their treatment. Further study is needed to correlate between FMS and AS disease activity.

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Kidney stones in children aged less than 5 years in Aden, Yemen

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Abstract

Background: Kidney stone disease is increasing in incidence and healthcare costs.

Objective: To describe the frequency, clinical profile and treatment of nephrolithiasis and to assess the effectiveness of extracorporeal shock wave lithotripsy and pyelolithotomy.

Patients and method: This was a retrospective study of all children aged less than 5 years who suffered from kidney stone seen at urology center in Aden during period of 2 years.

Results: The total number of patients was 50. They were 29 (58%) males and 21 (42%) females. The male to female ratio was 1.4:1, and the mean age was 2.86 ± 1.4 years.

The predominant age group involved was 1 – 3 years with 31 (62.0%), while the group 4 – <5 years was 19 (38.0%).

Most patients were from rural areas 31 (62.0%). The biggest stone size 44 (88.0%) was ≤ 20 mm. The mean size of stones was 14.2 ± 5.9 mm, (Range between 8 – 30 mm).

Forty four (88%) patients were treated by extracorporeal shock wave lithotripsy (ESWL) and 6 (12%) were treated by pyelolithotomy.

ESWL was performed for 44(88.0%) cases and their stone sizes more than 20 mm and pyelolithotomy for patients who had stones sizes ≤ 20 mm, (p = 0.000).

In ESWL, stone was removed completely in 39 (78.0%). Six patients were treated by pyelolithotomy and stone removed completely was in 5(10%).

Conclusion: Most patients were treated by ESWL and the stones were removed completely in (78.0%).

Key words: nephrolithiasis, extracorporeal shock wave lithotripsy, pyelolithotomy, children, Aden

Introduction

Whilst still rare, the incidence of nephrolithiasis in children is increasing in developed countries and is associated with significant morbidity [1,2,3]. It is especially important in children to understand the epidemiology of kidney stone disease in order to provide adequate treatment and to develop preventive strategies [4].

Nephrolithiasis in children has been increasingly recognized as a major source of morbidity and cost in the United States. The disease incidence has risen 6–10% annually over the last two decades [3,5] with accompanying increases in frequency of hospitalizations, emergency department visits, and surgical interventions [5-8].

Population-based observational studies have estimated contemporary incidence to range from 36 to 145 per 100,000 children [5-7]. One study noted a more than four-fold increase in incidence over a 12 year span [8]. Of note, one specific subpopulation of children that appears to be at particularly higher risk is adolescent females [5-7,9], though the etiology is not clear.

The type of urolithiasis in children has been changing in the past three decades from infectious to metabolic with hypercalciuria and hypocitraturia being the most common metabolic derangements. The incidence of stones in both adults and children has increased over the last decade with one single center experience showing a fivefold increase [8].

Objective

- To describe the frequency, clinical profile and treatment of nephrolithiasis.
- To assess the effectiveness of treatment procedures, extracorporeal shock wave lithotripsy (ESWL) and pyelolithotomy.

Patients and Method

This was a retrospective study of all children aged less than 5 years who suffered from kidney stone and were seen in a private Urology Center in Al-Mansoura, Aden over a two-year-period, from January 2017 to December 2018.

During this period, a total of 50 patients were found with nephrolithiasis.

All patients were diagnosed by: medical history, symptoms, family history of kidney stones, physical exam, laboratory (urinalysis, blood test) and imaging tests. The imaging tests were ultrasound, abdominal x-ray and computed tomography (CT) scans.

We retrospectively reviewed the records of all children up to age < 5 years in whose renal calculi was treated at a private Urology Center and we obtained information about sex, age, residency, stone size, diagnosis, treatment procedures and outcome.

The data was entered into a computer and analyzed using SPSS version 17 statistical package. For variables difference, chi-square tests, and P values were calculated, with differences at the 5% level being regarded as significant.

Results

A total number of 50 patients, who were seen at our clinic and admitted in a private Medical Center during the study period, were included in this study. Table 1 show that twenty nine (58%) were males and 21 (42%) were females. The male to female ratio was 1.4:1, and the mean age was 2.86 ± 1.4 years. The age of patients ranged between 1 to < 5 years.

The predominant age group involved was 1 – 3 years with 31 (62.0%), while the group 4 – <5 years was 19 (38.0%). Patients from rural areas were 31 (62.0%) while from urban areas were 19 (38.0%). The predominant diagnoses were single kidney stone 44 (88.0%), while multiple kidney stones were 6 (12.0%).

The biggest stone size 44 (88.0%) was ≤ 20 mm and only 6 (12.0%) were more than 20 mm. The mean size of stones was 14.2 ± 5.9 mm, and they ranged between 8 – 30 mm.

Table 2 and Figure 1 revealed the treatment procedures which were applied for the study patients, and their outcome. Forty four (88%) patients were treated by extracorporeal shock wave lithotripsy (ESWL) and 6 (12%) were treated by surgical intervention, pyelolithotomy.

Figure 2 shows the treatment outcome in which free stones were (88%), failure in ESWL (10%) and (2.0%) remnant.

Table 3 reveals the distribution of treatment procedures related to stone sizes. Extracorporeal shock wave lithotripsy (ESWL) was performed for all the patients 44(88.0%) who have stone sizes more than 20 mm and pyelolithotomy for the study patients who have kidney stones with the sizes ≤ 20 mm. The difference between values is statistically significant, (p = 0.000).

In Table 4 we illustrate the distribution of treatment outcome related to treatment procedures. In ESWL we found failure after 2 sessions in 5(10%) study patients, while stones were removed completely in 39(78.0%). Six patients were treated surgically. Stones were removed completely in 5(10%) patients and in 1(2.0%) study patient a remnant one stone was found. The difference between values is statistically not significant (p = 0.063).

Table 1: Distribution of variables among study patients

Variables	No	%	Mean
Sex:			
Male	29	58.0	
Female	21	42.0	
Age group(years):			
1 - 3	31	62.0	
4 – <5	19	38.0	
Mean age (years):			2.86 ±1.4
Residency:			
Urban area	19	38.0	
Rural area	31	62.0	
Diagnosis:			
Single kidney stone	44	88.0	
Multiple kidney stone	6	12.0	
Stone size (mm):			
≤ 20	44	88.0	
> 20	6	12.0	
Mean size (mm):			14.2 ±5.9

Table 2: Distribution of treatment and outcome

Variables	No	%
Treatment procedure:		
ESWL	44	88.0
Pyelolithotomy	6	12.0
Outcome:		
Free stones	44	88.0
Fail ESWL	5	10.0
Remnant	1	2.0

Figure 1: Proportions of study patients related to treatment procedure

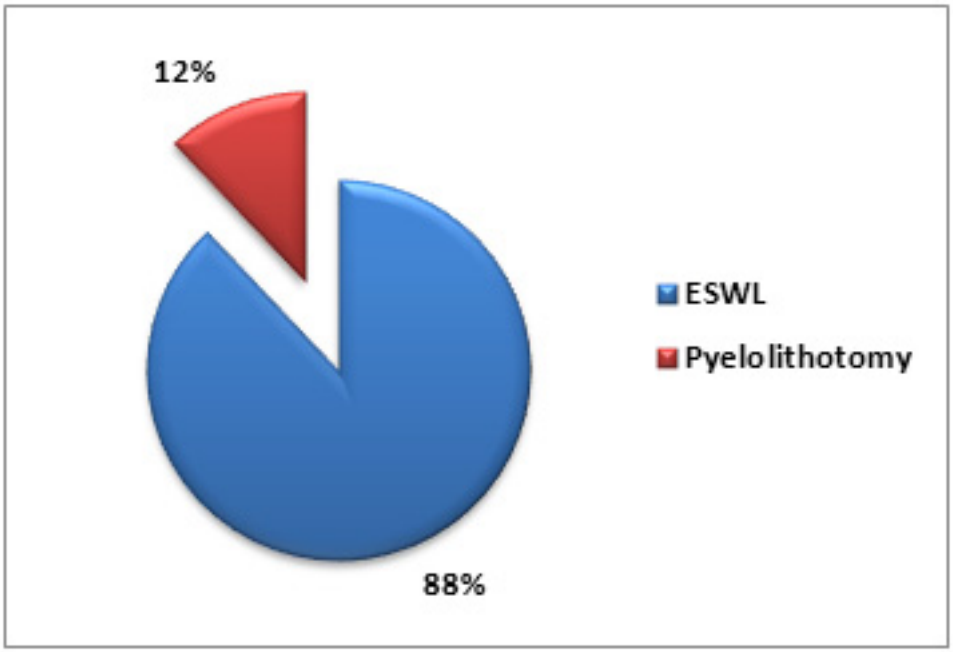

Figure 2: Proportions of treatment outcome

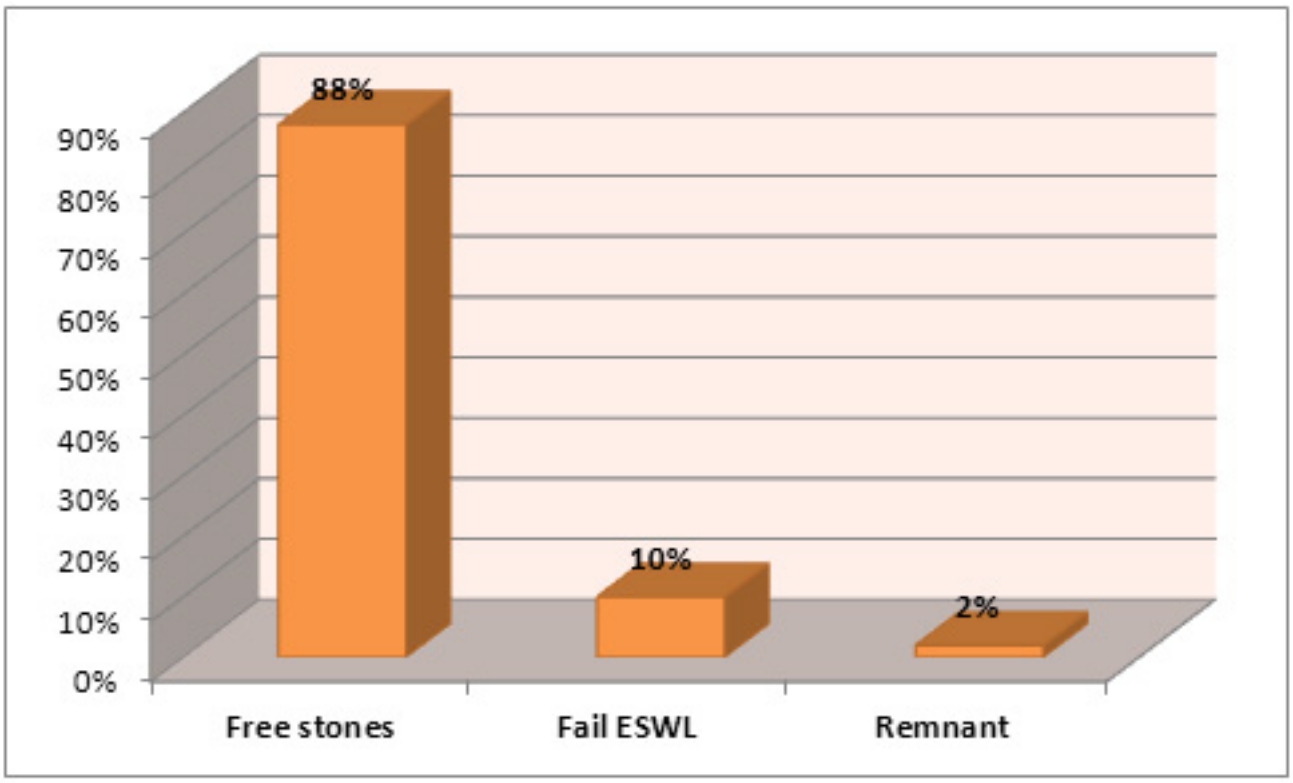

Table 3: Distribution of treatment procedures related to stone sizes

Variables	Stone size (mm)				Total		p-value
	≤ 20		> 20				
	No	(%)	No	(%)	No	(%)	
Treatment procedure:							
ESWL	44	(88.0%)	0	(0.0%)	44	(88.0%)	P=0.000
Pyelolithotomy	0	(0.0%)	6	(12.0%)	6	(12.0%)	
Total	44	(88.0%)	6	(12.0%)	50	(100%)	

Table 4: Distribution of treatment outcome related to treatment procedures

Variables	Treatment				Total		p-value
	ESWL		Pyelolithotomy				
	No	(%)	No	(%)	No	(%)	
Outcome:							
Failure ESWL in 2 sessions	5	(10.0%)	0	(0.0%)	5	(10.0%)	
Remnant one stone	0	(0.0%)	1	(2.0%)	1	(2.0%)	P=0.063
Stone Removed completely	39	(78.0%)	5	(10.0%)	44	(88.0%)	
Total	44	(88.0%)	6	(12.0%)	50	(100%)	

Discussion

Nephrolithiasis is an important cause of morbidity worldwide, while the exact incidence of kidney stone disease in children is unknown [10,11].

The strong male predominance [12-14] seen in the adult population is less clear in children, with more recent studies suggesting a roughly equal gender distribution [15,16], or even a female predominance [17]. While nephrolithiasis can occur in any pediatric age group, infants represent roughly 20% of pediatric stone cases and tend to have a distinct history and presentation [18].

In the present study the male patients were predominant with a ratio male to female of 1.4:1. Publications in developing countries registered a variable proportion between the male and female genders, of 1.2:1 to 4:1 [19].

In our study the mean age of children was 2.86 ± 1.4 years and their age ranged between 1 to <5 years. We found also, predominance of age group 1 – 3 years with 31(62.0%).

Guan et al [20] reported that kidney stone (nephrolithiasis) is a common disorder responsible for significant human suffering as per studies and surveys done over the last half century reporting steadily increasing cases.

Nephrolithiasis is a global problem affecting all geographical regions [21].

Hussain et al [22] mentioned this era of globalization is witnessing increased cases of acute renal injury and emerging epidemic of renal calculi among all age groups including children of East Asia, mainly Macau, Taiwan, Hong Kong and China due to the use of different type of milk and milk product, like milk powder, melamine-tainted milk, cookies, candies and chocolates.

In the year 2008 approximately 290,000 cases were diagnosed with renal stones, including children below age of 3 year [20]. A high incidence rate is reported in the Middle East (20-25%) due to the hot climate with increased chances of dehydration [23].

In our current study we found patients from rural areas were 31 (62.0%) while from urban areas were 19 (38.0%).

Alaya et al [24] reported in their study that patients were predominantly from the rural areas (107 patients, 79.8%) of the central coast of Tunisia.

In this study we found the biggest stone size 44 (88.0%) was ≤ 20 mm and only 6 (12.0%) were more than 20 mm. The mean size of stones was 14.2 ± 5.9 mm, and they ranged between 8 – 30 mm.

Badawy et al [25] reported in their study that the mean size of stones was 11.45 ± 5.16 mm and the size of the stones ranged between 3 – 36 mm.
Our study revealed that 44(88%) patients were treated by ESWL and 6 (12%) were treated by surgical pyelolithotomy. ESWL has long been considered as the first-line therapy for pediatric urolithiasis less than 20 mm [26]. The European Association of Urology guidelines state that ESWL is the first choice for treating most renal pediatric stones [27].
Pyelolithotomy is one option for treating complicated cases of large renal pelvic stones. It may be indicated in cases in which percutaneous nephrolithonomy (PCNL) is not available. It affords a high chance of complete stone removal even with large stones and corrects a concomitant ureteropelvic junction obstruction [28,29].

Pyelolithotomy was once frequently used and occasionally is still undertaken. There are limited functional data reported on this procedure [30].

Lifshitz et al [31] reported in their study that ESWL as a non-invasive technique becomes the most acceptable method of treatment for management of urinary tract calculi. However, its pediatric use has lagged behind the widespread use in adults, probably because of concerns over the potential adverse effects of ESWL on developing organ systems in children.

Bartosh [32] mentioned in 2004 that in recent years, pediatric urolithiasis has become a major health problem due to the high morbidity and high recurrence rate. Many reports showed its safety and effectiveness for stones in urinary tract of children and is considered a minimally invasive method.

Badawy et al [25] reported that (89.4%) of their study children in Egypt received only one session of ESWL and (10.6%) received more than one session of ESWL. They found in their study the overall success rate for renal stones was 86% for stones located in the renal pelvis.

We observed in this study there was a significant positive correlation between the size stone and the treatment procedures - ESWL and pyelolithotomy ($p = .000$).

We found in our present study the treatment outcome in ESWL found failure after 2 sessions in 5 (10%) study patients while stones were removed completely in 39 (78.0%).

In the current study we observed six patients were treated surgically. Stones removed completely in 5(10%) patients and in 1 (2.0%) patient a remnant one stone was found. The difference between values is statistically not significant ($p = 0.063$).

Abid et al [33] reported in their study, three (5.4%) patients non-responding to ESWL after three sessions were treated by another modality.

Conclusion

Nephrolithiasis is an important cause of morbidity worldwide. While the exact incidence of kidney stone disease in children is unknown.

Most patients were treated by ESWL and the stones removed completely in (78.0%). In pyelolithotomy stones were removed completely in 5 patients and in one patient a remnant one stone was found.

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The Importance of Screening - Screening Programs in Qatar

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Screening is defined as a 'test to detect potential health disorders or diseases in people who do not have any symptoms of disease' (1). It is a method of detecting possible pathology in a pre-determined high-risk population to better inform decision making with regards to further investigations or management (2). It is not necessarily intended to be a means of diagnosis.

By offering screening to a population, often based on demographic factors including age or gender, the aim is to reduce the incidence of serious health problems at a late or symptomatic stage of disease. It is well documented that the introduction of screening programs has improved national mortality rates, globally. This is demonstrated well by the introduction of breast screening in various parts of the world. A study in Norway concluded that 'After 15 years of follow up, a 43% reduction in mortality was observed among women who attended the national mammographic screening program in Norway (3). Blanks R G et al commented on a 21.3% reduction in mortality for women aged 55-69 years in 1998, when 'compared to predicted mortality in the absence of screening or other effects' (4). In April 2010 – a study in Canada found that 'initiation of the screening program led to a significant reduction in breast cancer mortality within five years of its initiation' (5). More locally in the MENA region, it is well identified that 'mortality rates have declined with late detection of the disease dropping from 64% in 2009 to 16% in 2013' (6). It goes on to champion screening services claiming 'As in other countries, one of the most effective ways of lowering mortality rates from cancer can be to engage the public in an education campaign around possible signs or symptoms. This also includes engaging public health bodies in organising campaigns and funding for mammograms.
'

Screening for disease successfully translates into benefits in terms of patient health outcomes, improved health economics and more cost-effective healthcare provision. The World Health Organisation (WHO) has categorized a 10-point screening criterion before accepting a test as appropriate for task (Figure 1).

These criteria are based on findings of the report entitled 'Principles and Practice of Screening for Disease', by James Mawell Glover Wilson, Principal Medical Officer at the Ministry of Health (London) and Gunner Jungner, Chief of Clinical Chemistry Department of Sahlrgren's Hospital in Gothenburg (Sweden) in 1968. They were able to identify and recognise the importance of early disease detection. This report looked at current practice of the time and attempted to standardise efforts for the future, becoming the gold standard for screening considerations in public health.

Figure 1: Principles of Screening, Wilson and Jungner (8)

1	The condition sought should be an important health problem
2	There should be an accepted treatment for patients with recognized disease
3	Facilities for diagnosis and treatment should be available
4	There should be a recognisable latent or early symptomatic stage
5	There should be suitable test or examination
6	The test should be acceptable to the population
7	The natural history of the condition, including development from the latent to declared disease, should be adequately understood
8	There should be an agreed policy on whom to treat as patients
9	The cost of case-finding (including diagnosis and treatment of patients diagnosed) should be economically balanced in relation to possible expenditure on medical care as a whole
10	Case-finding should be a continuous process and not a 'once and for all' project

In reality, with advancements in modern-day medicine, these essential principles may be enhanced in context of emerging patient needs – with newer tools being developed to guide the synthesis of screening programs (7).

Based on these principles, Primary Health Care Corporation (PHCC) launched its own 'Screen for Life' bowel and breast screening program in December 2015 to 'deliver Qatar's new wellness model of healthcare as outlined in its National Health Strategy (NHS) 2011-2016. The implementation of the program is consistent with the National Cancer Strategy's key recommendation….which states the need in Qatar for a population-based cancer screening program' (9).

PHCC forms the front-line for community based primary care in Qatar, following its establishment through Emiri Decree No. 15 on 20 February 2012. The primary health centres provide a wide range of preventative, diagnostic and treatment healthcare services, including dental, antenatal care, immunization, pharmacy, ophthalmology, audiology, radiology and wellness services - across 26 centres in Qatar (10). They were 'given the authority to spearhead the initiative under Qatar's National Cancer Program, which was initiated by the Ministry of Public Health upon review of international best practices of excellent cancer care' (9).

It offers breast screening for women aged 45-69 with no signs of breast cancer symptoms, advising three year follow up for normal screening results. It is also offering bowel screening for men and women aged 50-74, with no signs or symptoms, with yearly follow up if normal (11).

The 'Screen for Life' Program regularly initiates campaigns to improve uptake of screening and educate the population about the intended benefits. This is of course supported by ongoing efforts from family medicine physicians to convey health promotion messages to the target population.

There are regular national drives for public health awareness through campaigns in malls and health centres, access to lectures to better understand the conditions, with additional training for physicians as well. In addition to the three long-term health-centre based screening units, they have also commissioned routine availability of mobile units, most recently seen during the 'Put Yourself First' Campaign of October 2019 – as part of International Breast Cancer Awareness Month (12). There is easy access to all these units, with walk-in and appointment-based systems in place to encourage attendance at patient convenience. Educational efforts have been extended to secondary schools, including information for parents and teachers. This allows an opportunity for lectures about the benefits of timely screening and once again, offered access to mobile screening units (13).

Wilson and Jungner quoted '…screening for disease will grow in importance with time' (9). As public health efforts continue in this endeavor and awareness of its importance increases, we can only hope this stands true for a healthier future, not only in Qatar, but internationally.

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Emotional Intelligence of Family Medicine Residents in Qatar

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Abstract

Background: Emotional Intelligence is the ability to recognize, control, and express one's own emotions and to recognize and react appropriately to the emotions of others. Principles of Emotional Intelligence include: self-awareness, managing your emotions, self-motivation, empathy, social skills.

Objectives of the Study: To measure global Emotional Intelligence among the family medicine residents in Qatar and to describe the distribution of emotional intelligence parameters among the family medicine residents; also to examine the relationship between emotional intelligence parameters' level and selected demographic variables.

Methods: The study targeted residents of the family medicine training programs in Qatar. The final number of questionnaires analyzed was 46 (90.2%). The study used a self-administered questionnaire in Arabic Language. The questionnaire had two parts: Section A: included personal information (e.g. Age, gender, marital status, number of children, PGY level, ethnicity) and Section B: Emotional Intelligence standardized questionnaire which is 153-items Trait Emotional Intelligence Questionnaire.

Results: Generally, residents of the family medicine program in Qatar are reporting average scores in the global EI and related factors and facets; males showed a statistically significant higher global EI, emotionality factors and their related facets (emotion expressions and relationship). The results showed that residents who were raised in small town/village had higher perceived global EI and well-being factor and its related facets (happiness, optimism and self-esteem). There was a statistically significant difference between batches with regard to scores in the emotionality factor and its facets (empathy) where senior residents showed high scores in both.

Conclusion: Family Medicine residents perceived lower E.I. scores, reversed gender relationship with E.I. scores. Academic performance and seniority showed significantly different EI scores.

Key words: Emotional, Intelligence,
Family Medicine, Residency Program, Qatar

Background

Emotional intelligence is an individual characteristic that reflects the 'ability to monitor one's own and others' emotions, to discriminate among them, and to use this information to guide one's thinking and actions [1].

There was further addition to the concept of EI as enumerated by Salovey et al. For them, EI concerned the way in which an individual processes information about emotions and emotional responses. These findings pointed to different ways in which competencies such as empathy, learned optimism, and self-control contributed to important outcomes in the family, the workplace, and other life arenas [2].

The use of a variety of terms makes it difficult to agree on an overarching definition of EI. It has been referred to as emotional literacy, the emotional quotient, personal intelligence, social intelligence and interpersonal intelligence. Perhaps one of the best and most circumspect definitions of EI is 'a set of abilities (verbal and non-verbal) that enable a person to generate, recognize, express, understand and evaluate their own and others' emotions in order to guide thinking and action and successfully cope with environmental demands and pressures' [3].

The concept of EI is derived from extensive research and theory about thoughts, feelings, and abilities that, prior to 1990, were considered to be unrelated phenomena. Today, EI is gaining interest worldwide, contributing to critical reflection as well as to various educational, health and occupational outcomes [4].

Medical education aims to cultivate doctors with a broad range of skills which will ultimately enable them to provide patient care that is clinically sound and emotionally responsive(5).

In order to improve and streamline this endeavor, there has been an increased drive to define and assess the core characteristics of professional competence. Many of the skills that contribute towards this are thought to be underpinned by emotional intelligence (EI) [6].

Based on findings in the business literature indicating that EI may be an ingredient to professional success, there is increasing interest in developing physician EI as a way to improve work performance. Few studies, however, have described resident EI profiles at all. Jensen et al. described the EI of surgical residents at a university program; these residents scored highest in stress tolerance and lowest in social responsibility. EI did not correlate with age or training level. This study did not comment on gender differences within the resident group, nor did it attempt to establish the predictive validity of EI on resident performance [7].

In another study, investigators attempted to demonstrate a link between resident physician EI and performance as indicated by whether a resident was selected to serve as chief administrative resident and found that there was no significant difference between the scores of residents selected to be administrative chiefs and those not selected. Additionally, linear regression analyses failed to demonstrate a significant association between EI scores and gender, age, or training level [8].

One study of resident physicians in a university-based Internal Medicine Department demonstrated both an increase in resident physician EI over time and a positive relationship between resident EI and clinical performance, but there were no gender differences [9].

Finally, a study conducted by Harvard Medical School in Dec 2014 showed that resident physicians demonstrated Global EI similar to that of the general population. This Global EI was not significantly different between specialty groups. Moreover, across all specialties, men and women residents scored similarly on Global EI. Finally, there was a Stepwise linear regression that identified only age as a significant demographic predictor of global EI with a possible increase in Global EI with every year in training [10].

Methods

Study Design: The study used observational analytical cross-sectional design.

Study setting:
This study was conducted in West Bay Training Health Center affiliated to Primary Health Care Corporation in Qatar the Family Medicine Residency Program runs its activity in the form of academic days and continuity care clinic.

Study Subjects:
There was a non-probability target sampling (all the residents were included in the study. (Target number was 51.)

Inclusion criteria:
- Family medicine residents at different levels of training.

Exclusion criteria:
- Any resident who refused to participate.
- Any resident who was on leave/absent during the study period.
- Any questionnaire with invalid entries.

Total number of residents eligible for the study:
51 residents; Number of residents on leave: 1 (maternity Leave); Number of residents who refused to participate: 1; Number of discarded Questionnaires: 3; Final number of questionnaires analyzed: 46 (90.2%).

Data Collection Methods:
The study used a self-administered questionnaire which is in Arabic Language. The study used a questionnaire with two parts:

Section A: included personal information (e.g. Age, gender, marital status, number of children, PGY level, ethnicity)

Section B: Emotional Intelligence standardized questionnaire which is 153-items Trait Emotional Intelligence Questionnaire (TEIQue) downloaded from:

http://www.psychometriclab.com/ (11)

- (TEIQue questionnaire), is psychometrically validated and available in many languages (including Arabic).
- The questionnaire takes approximately 15-25 minutes to complete.
- Comprised of 153-item self-assessment tool for E.I. in which each item is answered on a seven-point Likert scale ranging from [1=completely disagree] to [7=completely agree].
- These 153 items yield scores for global E.I. score in addition to scores of 4 factors and 15 emotional intelligence facets.
- The 4 broader emotional intelligence factors are Well-being, Self Control, Emotionality and Sociability.
- The 15 E.I. facets include: Happiness, Optimism, Self-esteem, Emotion regulation, Impulse control, Stress management, Empathy, Emotion perception, Emotion expression, Relationships, Emotional management, Assertiveness, Social awareness, Self-motivation, and Adaptability

Data Analysis:
- Data was entered in Excel spreadsheet and the scores on the 153-items were uploaded to psychometric lab website for calculating the global EI and associated factors and facets.
- Subsequent analyses on TEIQue Global, Factor, and Facet raw scores were completed.
- Using STATA 9.0 Intercooled Comparisons between groups were conducted using two-tailed Student's t-test or one-way Analysis of Variance (ANOVA) when appropriate.

Results

Table 1: distribution of study respondents according to their background:
It shows that females represented 58.7% , age more than or equal 30 represented 56.5% , lives in city represented 84.8% and 63% were married.

Table 2: Summary of emotional intelligence score :
Generally, residents of the family medicine program in Qatar are reporting average scores in the global EI and related factors and facets.

Table 3: THE RELATIONSHIP BETWEEN Gender and EI global and subset scores:
Males showed statistically significant higher global EI, emotionality factors and its related facets (emotion expressions & relationship).

Table 4: THE RELATIONSHIP BETWEEN Upbringing and EI global and subset scores :
Residents who were raised in a small town/village had higher perceived global EI and well-being factor and its related facets (happiness, optimism and self-esteem).

Table 5: THE RELATIONSHIP BETWEEN Academic Performance and EI global and subset scores:

Those who were classified as higher academic performers showed higher scores on the self-control factor and its facets (emotional regulation and stress management) and also, in the emotional management scores.

Table 6: THE RELATIONSHIP BETWEEN PGY level and EI global and subset scores :

There was a statistically significant difference between batches with regard to scores in the emotionality factor and its facet (empathy) where senior residents showed high scores in both.

Table 1: Distribution of respondents by their background factors (N=46)

No.	Variable	Values	Frequency	Percentage
1	Gender	Male Female	19 27	41.3 58.7
2	Age groups	Less than 30 years 30 year and more	20 26	43.5 56.5
3	Place of upbringing	City Town / Village	39 7	84.8 15.2
4	Marital status	Ever married Never married	29 17	63.0 37.0
5	Batch	PGY-1 PGY-2 PGY-3 >PGY-3	12 08 10 16	26.1 17.4 21.7 34.8
6	Academic performance	Average or higher Below average	24 22	52.2 47.8
	Total		**46**	**100**

Table 2. Summary of intelligence emotional score among residents

No.	Item	Mean	SD	Minimum	Maximum
1	Global EI	31.4	0.49	2.42	4.52
2	Well-being factor	2.68	0.82	1.43	5.10
3	Self control factor	3.64	0.79	2.24	5.53
4	Emotionality factor	2.87	0.60	1.64	4.49
5	Sociability factor	3.26	0.75	1.76	4.90
6	Happiness	2.43	1.06	1.00	5.50
7	Optimism	2.87	0.99	1.50	5.63
8	Self-esteem	2.73	0.88	1.18	5.64
9	Emotion regulation	3.69	0.89	2.08	5.67
10	Impulse control	3.45	0.98	1.33	5.33
11	Stress management	3.78	0.83	2.60	6.10
12	Empathy	3.04	0.69	1.67	5.00
13	Emotion perception	2.85	0.65	1.70	4.50
14	Emotion expression	3.39	1.27	1.20	6.60
15	Relationships	2.21	0.72	1.00	4.78
16	Emotional management	2.93	0.70	1.56	4.56
17	Assertiveness	3.55	1.02	1.22	5.67
18	Social awareness	3.30	0.91	1.27	5.36
19	Self-motivation	3.54	0.71	1.80	5.20
29	Adaptability	3.30	0.73	1.67	4.89

Table 3: The Relationship Between Gender and EI global and subset scores

No.	Item	Gender		P-value
		Male Mean (SD)	Female Mean (SD)	
1	Global EI	3.29 (0.51)	3.03 (0.45)	0.080
2	Well-Being factor	2.87 (0.82)	2.54 (0.81)	0.181
3	Self-control factor	3.61 (0.81)	3.66 (0.79)	0.819
4	Emotionality factor	3.16 (0.57)	2.67 (0.55)	0.005*
5	Sociability factor	3.37 (0.82)	3.19 (0.69)	0.416
6	Happiness	2.47 (0.95)	2.41 (1.15)	0.838
7	Optimism	3.13 (0.84)	2.68 (1.06)	0.130
8	Self-esteem	3.01 (0.99)	2.54 (0.74)	0.067
9	Emotion regulation	3.71 (0.99)	3.69 (0.83)	0.938
10	Impulse control	3.47 (1.00)	3.43 (0.98)	0.889
11	Stress management	3.64 (0.74)	3.87 (0.88)	0.362
12	Empathy	3.08 (0.73)	3.01 (0.67)	0.740
13	Emotion perception	2.99 (0.65)	2.74 (0.65)	0.197
14	Emotion expression	4.05 (1.28)	2.92 (1.06)	0.002*
15	Relationships	2.53 (0.71)	1.99 (0.65)	0.011*
16	Emotional management	3.14 (0.72)	2.78 (0.65)	0.086
17	Assertiveness	3.63 (1.07)	3.50 (1.00)	0.666
18	Social awareness	3.34 (0.98)	3.28 (0.88)	0.828
19	Self-motivation	3.71 (0.62)	3.42 (0.75)	0.179
20	Adaptability	3.40 (0.63)	3.23 (0.80)	0.436

*p value ≤ 0.05

Table 4: The Relationship Between Upbringing and EI global and subset scores

No.	Item	Upbringing		P-value
		City Mean (SD)	Town/village Mean (SD)	
1	Global EI	3.07 (0.40)	3.54 (0.75)	0.017*
2	Well-Being factor	2.55 (0.66)	3.42 (1.25)	0.008*
3	Self-control factor	3.59 (0.76)	3.90 (0.97)	0.3463
4	Emotionality factor	2.80 (0.54)	3.24 (0.83)	0.076
5	Sociability factor	3.21 (0.76)	3.58 (0.60)	0.230
6	Happiness	2.30 (0.94)	3.16 (1.48)	0.049*
7	Optimism	2.72 (0.87)	3.70 (1.26)	0.015*
8	Self-esteem	2.61 (0.77)	3.40 (1.19)	0.026*
9	Emotion regulation	3.64 (0.84)	4.00 (1.17)	0.328
10	Impulse control	3.44 (1.02)	3.49 (0.79)	0.902
11	Stress management	3.70 (0.76)	4.21 (1.08)	0.129
12	Empathy	2.99 (0.65)	3.30 (0.90)	0.281
13	Emotion perception	2.77 (0.59)	3.27 (0.84)	0.060
14	Emotion expression	3.30 (1.23)	3.87 (1.47)	0.279
15	Relationships	2.15 (0.63)	2.52 (1.14)	0.216
16	Emotional management	2.89 (0.72)	3.13 (0.59)	0.422
17	Assertiveness	3.47 (1.02)	4.03 (0.93)	0.180
18	Social awareness	3.26 (0.94)	3.57 (0.75)	0.407
19	Self-motivation	3.47 (0.67)	3.90 (0.85)	0.143
20	Adaptability	3.27 (0.72)	3.49 (0.82)	0.462

*p value ≤ 0.05

Table 5: The Relationship Between Academic Performance and EI Global and Subset Scores

No.	Item	Academic Performance		P-value
		Average & above Mean± (SD)	Average & above Mean± (SD)	
1	Global EI	3.23 (0.50)	3.04 (0.46)	0.196
2	Well-Being factor	2.73 (0.88)	2.63 (0.78)	0.690
3	Self-control factor	3.86 (0.79)	3.40 (0.73)	0.047*
4	Emotionality factor	2.90 (0.62)	2.84 (0.60)	0.713
5	Sociability factor	3.42 (0.82)	3.09 (0.63)	0.137
6	Happiness	2.43 (1.06)	2.44 (1.09)	0.987
7	Optimism	2.84 (0.99)	2.90 (1.02)	0.842
8	Self-esteem	2.91 (0.96)	2.55 (0.75)	0.166
9	Emotion regulation	3.95 (0.93)	3.41 (0.77)	0.039*
10	Impulse control	3.64 (0.97)	3.24 (0.97)	0.163
11	Stress management	3.99 (0.80)	3.55 (0.81)	0.069
12	Empathy	3.05 (0.73)	3.04 (0.66)	0.958
13	Emotion perception	2.92 (0.58)	2.77 (0.73)	0.447
14	Emotion expression	3.38 (1.20)	3.40 (1.37)	0.948
15	Relationships	2.27 (0.74)	2.14 (0.71)	0.543
16	Emotional management	3.18 (0.73)	2.66 (0.56)	0.009*
17	Assertiveness	3.68 (1.01)	3.41 (1.04)	0.382
18	Social awareness	3.40 (1.06)	3.20 (0.73)	0.475
19	Self-motivation	3.51 (0.70)	3.56 (0.73)	0.810
20	Adaptability	3.27 (0.61)	3.34 (0.86)	0.751

*p value ≤ 0.05

Table 6: The Relationship Between PGY level and EI global and subset scores

No.	Item	Batch Mean (SD)				P-value
		PGY-1	PGY-2	PGY-3	> PGY-3	
1	Global EI	2.90 (0.35)	3.17 (0.45)	3.27 (0.56)	3.21 (0.53)	0.275
2	Well-Being factor	2.29 (0.43)	2.92 (0.53)	2.76 (1.11)	2.79 (0.93)	0.297
3	Self-control factor	3.65 (0.69)	3.56 (0.44)	3.57 (1.01)	3.72 (0.90)	0.956
4	Emotionality factor	2.49 (0.53)	2.74 (0.72)	3.09 (0.42)	3.08 (0.57)	0.032*
5	Sociability factor	3.05 (0.80)	3.36 (0.81)	3.63 (0.50)	3.15 (0.77)	0.284
6	Happiness	1.96 (0.78)	2.80 (0.93)	2.61 (1.38)	2.50 (1.06)	0.306
7	Optimism	2.41 (0.66)	3.13 (0.84)	2.88 (1.28)	3.08 (1.04)	0.283
8	Self-esteem	2.52 (0.70)	2.85 (0.74)	2.80 (0.74)	2.80 (1.14)	0.805
9	Emotion regulation	3.60 (0.77)	3.51 (0.73)	3.45 (1.09)	4.01 (0.90)	0.375
10	Impulse control	3.51 (0.80)	3.39 (0.78)	3.63 (1.16)	3.32 (1.13)	0.879
11	Stress management	3.83 (0.83)	3.78 (0.56)	3.62 (1.01)	3.84 (0.87)	0.927
12	Empathy	2.79 (0.76)	2.68 (0.35)	3.51 (0.34)	3.12 (0.77)	0.027*
13	Emotion perception	2.61 (0.56)	2.71 (0.75)	3.23 (0.63)	2.85 (0.63)	0.143
14	Emotion expression	2.69 (1.07)	3.55 (1.87)	3.38 (0.88)	3.83 (1.15)	0.126
15	Relationships	1.89 (0.65)	2.00 (0.68)	2.24 (0.60)	2.53 (0.77)	0.094
16	Emotional management	2.81 (0.64)	2.72 (0.83)	3.26 (0.52)	2.92 (0.75)	0.359
17	Assertiveness	3.23 (1.03)	3.89 (0.99)	3.93 (0.78)	3.39 (1.12)	0.281
18	Social awareness	3.12 (1.03)	3.45 (0.93)	3.69 (0.69)	3.13(0.92)	0.385
19	Self-motivation	3.29 (0.46)	3.70 (0.86)	3.78 (0.47)	3.49 (0.87)	0.384
20	Adaptability	3.31 (0.81)	3.40 (0.31)	3.04 (0.99)	3.40 (0.66)	0.652

*p value ≤ 0.05

Discussion

Generally, residents of the family medicine program in Qatar are reporting average scores in the global EI and related factors and facets in comparison with international scores. Our findings are however, consistent with findings in family medicine residents who demonstrated average overall EI (12). Despite the Global EI score of the residents being average, Residents scored highly in self-control, emotional regulation, stress management, assertiveness and self-motivation. They may reflect the areas of EI most practiced and therefore developed during residency training.

Males showed statistically significant higher global EI, emotionality factors and its related facets (emotion expressions & relationship) which is opposite to what one study showed. Across all specialties, men and women residents scored similarly on Global EI, a finding which counters our hypothesis and stands in contrast to the finding that women have higher overall EI than men in several studies of medical students and medical school applicants (13). Men and women undergo the same training to become physicians, and there may be effects of training on EI which erode gender differences by moulding men and women towards a common type with regard to particular facets of emotional intelligence.

There was a statistically significant difference between those who were raised in a city and those raised in small-town/village. The results showed that residents who were raised in a small town/village had higher perceived global EI and well-being factor and its related facets (happiness, optimism and self-esteem), in comparison to our study which showed there was no significant difference between the emotional intelligence of the rural and urban students (14).

There was a statistically significant difference between those who are classified as above average in their academic performance and their colleagues. Those who were classified as higher academic performers showed higher scores on the self-control factor and its facets (emotional regulation and stress management) and also in the emotional management scores. Much of the interest in EI in medical training pertains to its potential value as an additional predictor in subsequent performance either on the medical school or residency level (15). Extension of the present study to incorporate evaluation of the work performance characteristics of participating resident physicians could contribute to current knowledge of the predictive power of EI on clinical performance.

There was a statistically significant difference between batches with regard to scores in the emotionality factor and

its facet (empathy) where senior residents showed high scores in both.

Stepwise linear regression identified only age as a significant demographic predictor of Global EI with a possible increase in Global EI with every year in training. This increase may not be a consequence of the training itself, but rather the accumulation of another year of life experience. According to this model, older residents at the same training level as younger residents will have higher Global EI, possibly due to the additional life experience accumulated prior to entering residency training (10).

Conclusions

Family Medicine residents in Qatar achieved lower E.I. scores. Results showed reversed gender relationship with E.I. scores. Academic performance and seniority showed significantly different EI scores while age and marital status did not.

Recommendation:
- Conducting the study on a higher scale by increasing the sample size of the study through incorporating different departments under medical education.

- Inclusion of more variables in the future studies including cultural background and language thus to validate or refute the lower EI scores obtained.

- Conducting an emotional intelligence development training in Qatar followed by administering a second EI assessment to residents.

Competing interests:
No conflict of interest.

Ethical Considerations:
This research project was approved from IRB (Institutional Review Board) in Primary Health Care Corporation in Qatar. We ensured confidentiality throughout the research where the participants' identities were not requested in the self-administered questionnaire. Moreover, the study data was stored and secured and only the primary investigator had access to the confidential research information.

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Personal Development Plan (PDP)

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Abstract

This paper outlines the processes followed in an Individual approach to developing a Personal Development Plan (PDP).

Key words: Personal development plan, trainers, trainees

Introduction

As said by Benjamin Franklin, ‘‘By failing to prepare, you are actually preparing to fail.’’ Planning is the most important stage before an individual aims to do anything. Planning is required in every stage of an individual's life no matter how big or small the aim is. This makes the work go better as the individual has an outline or a map in their mind as to what they want to achieve from this objective. Here we outline how to set PDP for a new GP who is training to become a trainer.

With the recent development of modern education and training in medicine, personal development planning has taken the key role in helping the trainers as well trainees to attain their educational goals and demonstrate the evidence of continuous professional development (CPD). Hence, PDP has taken a core place in all the medical portfolios of doctors in training as well as senior doctors in the UK. The development of (Personal Development Plans) PDPs and the evidence of their completion has become an essential part of doctors' portfolios as directed by General Medical Council (2012). This is now an essential requirement for revalidation. ‘’Revalidation is a process, by which doctors demonstrate that they are up to date and fit to practice’’ (RCGP). It has also been highlighted in the good medical practice report by GMC that all doctors are legally responsible to keep their knowledge and skills up to date through CPD and PDPs (GMC CPD for all doctors 2012). So, PDP has become an integral part of RCGP Toolkit (Clarity).

Despite the popularity of PDP, it is not without arguments. Greenan (2016) proved in a case study, that there is an orientation in the participants to choose their favourite areas of skills and direct their PDPs in the same line. Some participants found it a laborious and time wasting exercise. However, these pitfalls can be rectified in the medical profession with yearly appraisals and the appraisers and trainers guiding the appraisees and the GP trainees towards areas which need more professional development than their own areas of interest. A good trainer should be able to learn this behavioural propensity in his / her trainees quite early.

According to Beausaert et al (2011), PDP is a cyclical process which requires setting goals, then setting out an action plan for it, recording the outcome, evaluating it and then identifying further areas of development and setting up the next plan (Figure 1).

Keeping this model of PDP, now we will move onto the three main areas of my personal development plan as an educator. The PDP is summarised in tabulated form at the end of the essay.

Science of Learning Behaviours

In any form of teaching, it is natural and very important for a teacher or trainer to understand the learning behaviour of each trainee along with their educational background. This is key information which is required to deal with the huge educational diversity, a GP trainer has to deal with all the time. In the same surgery, under the same trainer, there could be trainees from ST1, 2 or 3 years and all of those could have a different level of previous clinical experience, knowledge and skills. Moreover, they could all be from different cultural backgrounds, i.e., International Medical graduates or UK medical graduates, etc. It is a well-accepted fact that learning behaviours can differ on the basis of the background of a learner.

There are various learning theories described in literature, however broadly speaking, the theories include the behavioural theories, cognitive learning theories and developmental learning theories. The behavioural learning theories involve learning through the environment. They are more likely to focus on the stimuli and the response (Pedler, Burgoyne, and Boydell, 2013). They tend to believe in the phenomena of learning through observation. Learning through observation is done in the environment a person lives in.(Figure 2)

The implication of this theory to the medical educator is that the educator can make the students learn on specific subjects by planning certain activities through which the students are likely to learn by observing the people around them or by reacting to the stimuli presented to them. The medical educator can reward those who perform well. This will make the students repeat the same behaviour in the future (Dowling, 2014). This way they will get first-hand experience of what they are learning and what the educator is trying to teach them.

Another theory which can be used by the medical educator is the cognitive learning theory. The cognitive learning theory states that the individuals tend to learn only by the mental inputs and processes present within them (Kolb, 2014). The role of environment in the learning process is very minimum and the cognitive processes and inputs presented to the individuals contribute to their learning to a great extent.

The cognitive learning theory can be implicated by a GP trainer. The trainer can make the students learn through the verbal lectures given in the class. The students can listen to the lectures carefully and input what the educator has taught them with the aid of their mental processes (Beausaert, Segers, and Gijselaers, 2011). The mental processes present within the students will help them retain the elements of the lecture within their mind so that whenever they need to use the required knowledge in their professional life they are able to recall.

Figure 1

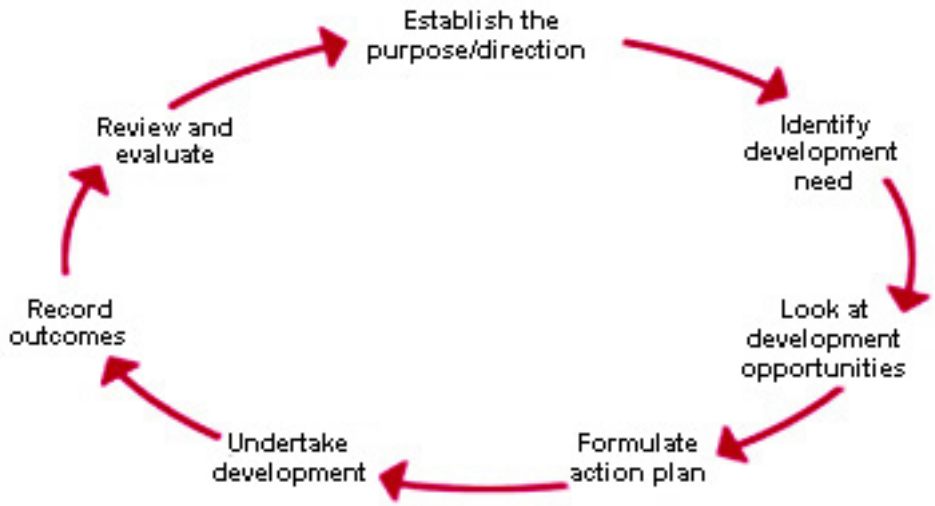


Figure 2

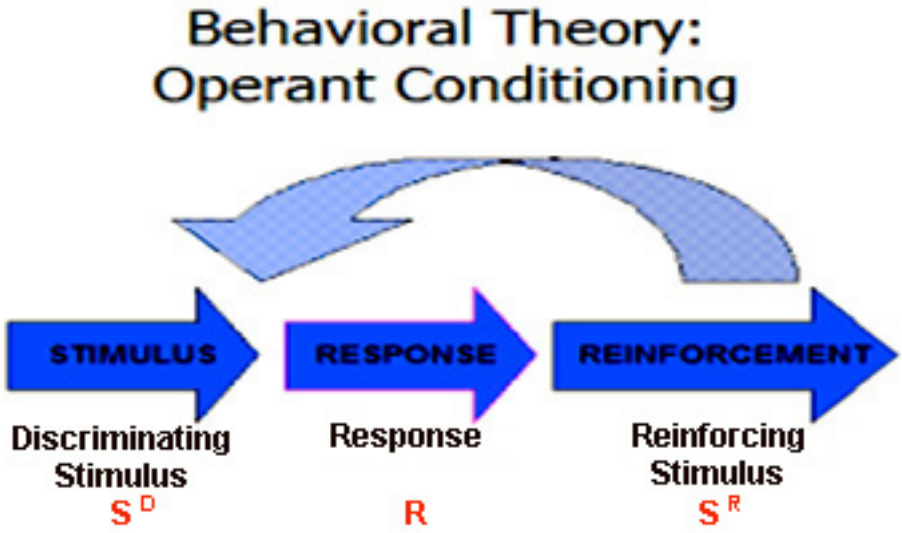
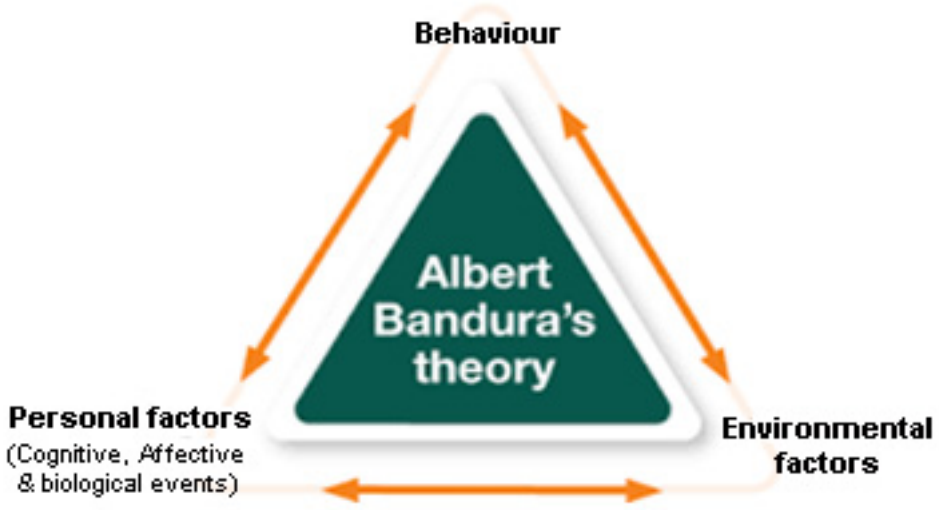


Figure 3



PERSONAL DEVELOPMENT PLAN:

Personal Goals	Learning Objectives	Time Scale	Activities to be used	Outcomes or evidence
To make myself well educated about learning behaviours of various trainees with various cultural and educational backgrounds (Diversity).	Knowing the individual learning behaviour and habits of trainees is the key to deliver any sort of education or training. Improving this key skill then can help me tailor the delivery of training according to the individual needs of the trainees with diverse backgrounds.	18 months	Attending 3 courses on education and learning behaviours. National Resource Centre for Supplementary Education offers a number of courses	Attendance at the course. Discussion with senior trainers in the practice. Feedback from trainees.
Improving my tutorial skills (Small Group teaching skills).	Tutorial is an important tool of delivering training to GP trainees. This helps delivering clinical knowledge and skills as well as giving an opportunity to the trainer to understand educational and cultural diversity of various trainees. Improving this skill will improve me as a GP trainer.	12 months.	Attending tutorials with senior trainers and learn the tips from them. Inviting the senior trainers to supervise my tutorial sessions. Recording the tutorial sessions.	Feedback from the senior trainers as well as from trainees Watching, comparing and analysing the recorded tutorial sessions with senior trainers and recording the feedback.
Improving my feedback skills	Delivery effective and constructive feedback is perhaps the most important educational skill. Improving on this skill, not only helps with the delivery of day to day training but also with writing up the educational reports for trainees.	12 months.	Attending workshops on feedback skills Attending and recording at least 2 ESR / CST meetings with senior trainers.	Collecting feedback from trainees. Collecting feedback from senior trainers.

The implication of developmental theory of learning to the medical educator is that the students in GP training are mature enough to learn things as they exhibited in the environment on their own. They are likely to grow more when they reach their professional career. During their professional career, they will be able to exhibit a lot of new things which they will not able to get experience of during the GP training (Beausaert, Segers, and Gijselaers, 2011). The educator can leave some of the learning parts for their actual professional career which the students will enter. With time their minds will develop and they will be able to learn new things.

Another theory which the medical educator can use is the Humanistic theory of learning. The humanistic theory of learning was developed by Albert Bandura. The theory states that the individuals are likely to learn by observing each other i.e. through modelling (Busse, Aboneh, and Tefera, 2014). The individuals are likely to adopt a certain behaviour if they see another person doing the same behaviour. The individuals are more inclined towards learning the desired behaviour if they see someone similar to them doing that behaviour (Figure 3).

The implication of the humanistic theory of learning to the medical educator could be that the medical educator can arrange a pseudo model as their classmate (Ward, 2016). The classmate can act accordingly to the desired behaviour and the students will copy the behaviour of this pseudo model as they are likely to learn more from each other by observing. This purpose can be achieved by mixing GP registrars during their half day release sessions and arranging some small group learning sessions where they may have an opportunity to learn from each other.

Similar concepts pertaining to learning theories are also well explained and well supported by Bloom's taxonomy (Bloom et al 1956). As we found a number of examples of evidence in literature about the importance of learning the learning behaviours of students to educate them better; no evidence was found against it. This further signifies how important this skill is in the personal development of a GP trainer.

With this brief introduction to various learning theories, I plan to attend few training courses on this topic to develop this skill in myself as a future GP trainer and medical educator. There are a number of institutions that offer a large number of courses With these learning courses, I plan to discuss the summary of each course with senior trainers in the practice and take feedback from them as well as from the trainees.

Improving Tutorial (Small Group Learning) Skills

Small Group Learning or tutorial sessions are no novel teaching tool. They have been under use since the time of Socrates more than 2,000 years ago. This method allows a closer relationship amongst the participants of the group and enhances contribution from the participants. This is a more interactive way of teaching and learning. It encourages reflective practice. Especially in GP settings, teaching a group of GP registrars with massive educational and cultural diversity, tutorial is a very helpful tool to promote self-directed learning amongst registrars. Jones (2007) defined it as a small group of learners demonstrating three common characteristics; active participation, a specific task and reflection.

Rotem and Menzie (1980) described the role of small group learning in medical education. While describing the underlying issues with small group learning, they also gave practical suggestions to facilitate the learning activity. Jones (2007) rightly posed some limitations to small group learning as this is an expansive tool of teaching due to the high tutor: student ratio. Hence if the teacher is not well skilled, the activity is not only a waste of time but money also. In fact, if this type of teaching activity is held by an inexperienced teacher or facilitator, it may actually become a didactic lecture (Jason et al 1982). However, the lecture still remains the most popular way of delivering education in most institutions. This is because, this is the most suitable way of delivering knowledge in large groups. However, a well-skilled teacher can make even the lectures, more interactive and interesting (Mehay R, 2012).

In small group learning, a teacher should behave as a facilitator and not as a lecturer. All the participants should be encouraged to participate in the discussion or the activity. There is always a risk of some difficult questions posed by the participants which could be difficult for the facilitator to answer. However, the facilitator need not to be able to answer all the questions, and the un-answered questions can highlight the areas of further development and can be a topic for the next session.

In order to achieve this PDP, I will first, observe few tutorials delivered by senior trainers, and if possible, with permission, will film those sessions. Then while organising my own sessions, I will invite my senior trainers to supervise the session and again, possibly record it. Then collecting the feedback from the senior trainer as well as the trainees, this session can be viewed again at a later time and discussed with the colleagues and senior trainers. An overall improvement should be evident after around 5 sessions. This may take up to twelve months.

Improving Feedback Skills

I chose this as a third part of my PDP, because giving effective feedback has a key role in motivating the trainees and guiding them in a positive direction. It is easy to give good feedback to a good trainee, however, dilemma comes when it is time to deliver difficult feedback to a trainee in need. When I was a GP trainee, my trainers used to give feedback in a somewhat good-bad-good style.

Effective feedback skills are not only useful for trainers but have utmost importance for trainees to guide them in positive direction and avoid negative behaviour. On the contrary, bad feedback can seriously affect the trainee, by undermining his / her confidence and can create a negative attitude. Brukner et al (1999) and Krackov (2011) conducted large studies which concluded that a negative experience of feedback was a result of cultural hierarchy, where feedback was a one-way delivery of information from teacher to student. Ramani and Krackov (2012) set out twelve tips for delivering useful feedback (Table 2).

This list looks exhaustive and a bit difficult to put fully into practice. However, the gist is simple. The feedback should be based on facts, delivered as close to the event as possible, and the way of delivery should be constructive and non-judgemental. Using neutral language, it should conclude with a mutually agreed plan for further development (Mehay, 2012).

In another study done by Hattie et al (2007), four levels of feedback are mentioned. Level-1 is about the subject or the case discussed, level-2 is about trainee's strategies to perform the task. Then level 3 and 4 were about the trainee himself / herself and his / her confidence level. Dweck el al (2006) also supported this idea and further emphasized that praise and admiration in levels 3 and 4 can actually be a negative factor on performance. Daniels et al (2001), however, differed from this opinion and proved in their study that the more positive feedback a trainee received the more self-confidence he / she develops towards achieving mutually agreed goals. I guess, this is all based on cultural and educational diversity and learning behaviours.

Although numerous feedback models have been described by various authors, however, Pendleton et al (2003) simplified the process of delivering feedback, based on his study about the consultation model. The study suggested mainly three areas of delivering feedback; firstly, clarifying the facts with the trainee, secondly, focussing on what went well (both, what trainee thinks went well and what trainer thinks went well), lastly, focussing on a mutually agreed improvement plan. Pendleton's work is not without criticism. Mehay (2012) stated that in Pendleton's rules, trainees are allowed to give their feedback on their own performance in a judgemental way which should be discouraged by the trainers.

As a conclusion, feedback should be based on facts and not personal opinions; it should be tailored according to individual trainee's needs and cultural and educational diversity. It should be delivered as close to the event as possible, so both the trainer and the trainee remember the events well. The goal of feedback should be positive, appreciating the good work however, keeping the language neutral and non-judgemental while delivering the feedback regarding areas of improvement. Both the trainer and the trainee need to agree towards the end on further development plans and common goals.

Conclusions

• In my personal development plan (PDP), the first domain (learning behaviours) holds the key role in the whole process which then can help in improving the small groups learning practice as well as developing effective feedback skills.
• By attending the training courses as mentioned earlier, and participating in feedback sessions, tutorials and ESRs (Educational Supervisor's Report) and CSRs (Clinical Supervisor's Report) will certainly help me to achieve all domains of my PDP.
• Requesting senior trainers to supervise my sessions and then getting feedback from them along with feedback from the trainees can improve my personal skills to a great extent which would eventually improve me as medical educator.

Table 2

Practice points
Establish a respectful learning environment.
Communicate goals and objectives for feedback.
Base feedback on direct observation.
Make feedback timely and a regular occurrence.
Begin the session with the learner's self-assessment.
Reinforce and correct observed behaviours.
Use specific, neutral language to focus on performance.
Confirm the learner's understanding and facilitate acceptance.
Conclude with an action plan.
Reflect on your feedback skills.
Create staff-development opportunities.
Make feedback part of institutional culture.

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Unwitnessed Oesophageal Foreign Body Ingestion: A Case Report

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Introduction

Children frequently ingest foreign bodies by accident. The diagnosis should be straightforward when the ingestion is witnessed and reported by the care giver or the child.

Making a diagnosis however becomes challenging when the episode is not witnessed because many of the children are asymptomatic at presentation and when present, the symptoms can be subtle and non-specific.

Case Study

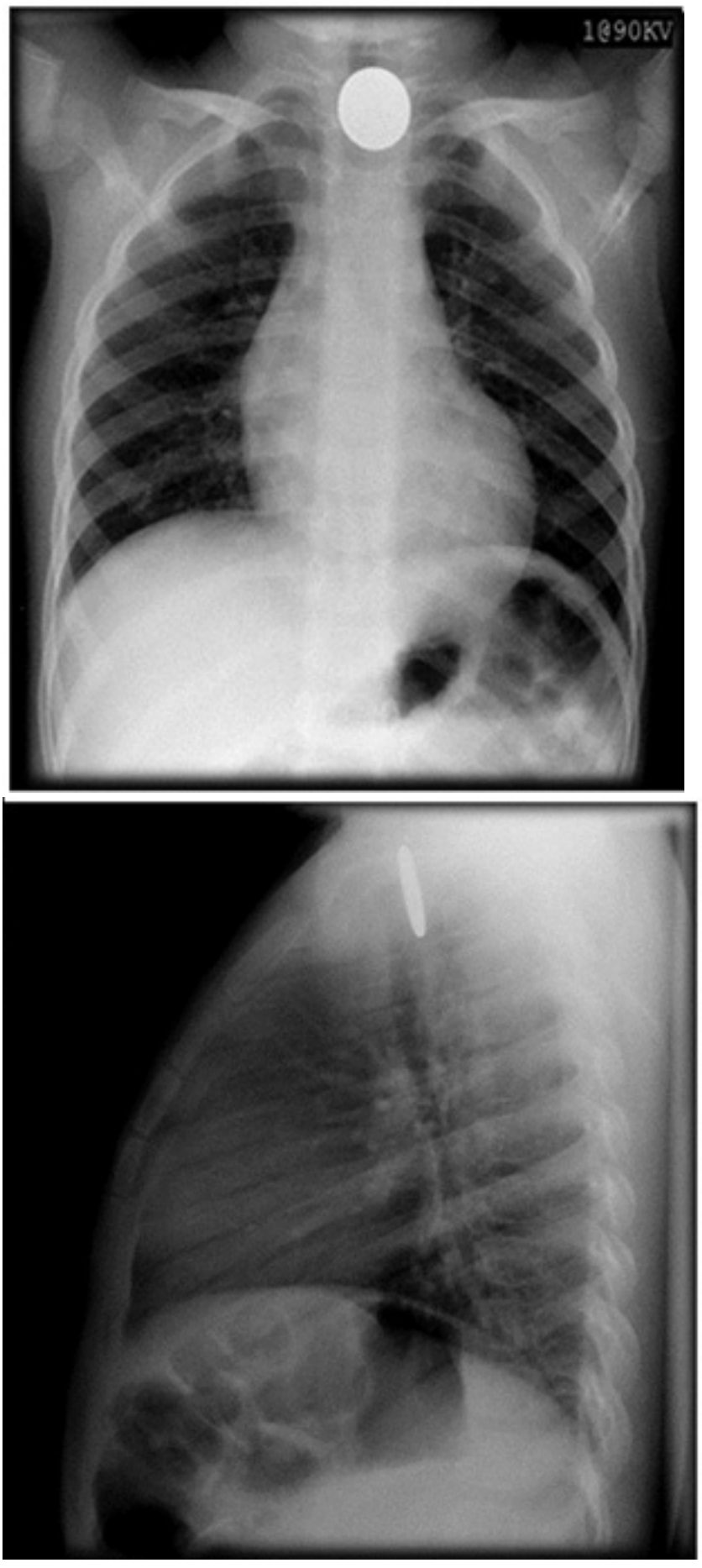
A father brought his three-year-old son into the clinic concerned that his son had lost his voice and had stopped talking 3-4 hours prior to presentation. The father also noted that he had started drooling saliva which was unusual for him. He had consumed milk without difficulty a few hours prior to presentation.

The child had a history of speech delay for which he was under the speech therapy team. He had been discharged six months prior to presentation, as he had made progress with his speech.

On examination, the child was alert and responsive. He was subdued but still playing with his soft toys. His temperature and vital signs were within normal range. Examination of the mouth, chest and abdomen were all unremarkable.

The family physician was unable to explain why he had stopped talking or drooling saliva but felt reassured that the child was not acutely unwell. He advised that he thought it was a viral illness and advised the child's father to manage him conservatively with analgesia if needed and to return if the symptoms did not improve in a few days, or earlier if he deteriorated.

The drooling of saliva however continued at home and he became more tired, his parents contacted the ambulance service and he was taken to the emergency department of the local hospital. The clinicians at the emergency department suspected a swallowed foreign body, a metal detector confirmed the presence of a metallic foreign body. X-rays of the chest, neck and upper body revealed a radio opaque object in the oesophagus at the C5/C6 region and a two pence coin was removed by ears, nose and throat surgeons under general anaesthesia endoscopically.



Frontal and lateral x-rays demonstrating an ingested coin lying in the oesophagus of a 3 year old boy.

Courtesy of A.Prof Frank Gaillard, Radiopaedia.org, rID: 8286

Discussion

Accidental foreign body ingestions are common in children, of the over 100,000 cases reported each year in the United States, 80% occur in children(1), mostly between the ages of six months and three years(2), and in older children with developmental delay and behavioural problems (3). Children tend to explore objects by putting them in the mouth and their poor coordination of swallowing, lack of molars and the small size of their oesophagus puts them at a higher risk of accidental ingestion (4).

Coins, as with this case, are the most commonly ingested foreign objects in children and infants, accounting for up to 42% of cases (5,6). Other commonly ingested foreign bodies are batteries, food boluses, fish bones, marbles, pieces of plastic and glass materials(7). Fortunately, the majority of the foreign bodies pass through spontaneously with only about 10-20% needing interventions (2) . The obstructed foreign bodies tend to lodge in areas of physiological and pathological narrowing; they are most common in naturally narrow areas such as the upper oesophageal sphincter area, the level of the aortic arch and at the lower oesophageal sphincter area, and in areas of pre-existing oesophageal pathologies such as strictures and fistulas (3). Coins measuring greater than 23.5mm in diameter are more likely to be impacted in the oesophagus and those greater than 25 mm in diameter are unlikely to pass through the pylorus in children younger than 5 years old(2) The ingested coin in this case, had a diameter of 25.9mm and was in the superior part of the oesophagus at the C5/C6 region, which is consistent with the upper oesophageal sphincter area, where 74% of obstructions occur (8).

Care givers bring the majority of the children to the physician after witnessing a foreign body ingestion or if the child reports it, however over 40% of ingestions are estimated to be unwitnessed and unreported(7), as in this case, posing a diagnostic challenge because of the nonspecific and sometimes absent signs and symptoms. Clinicians need to have a high index of suspicion since less than 20% of patients present with symptoms that are specifically indicative of foreign body ingestion and 20-38% are asymptomatic altogether(9) . Careful history and examination are essential to the diagnosis.

Drooling of saliva and vomiting have been reported as the most common symptoms of oesophageal impactions (6); other symptoms include dysphagia, refusal to eat and respiratory symptoms such as wheezing, stridor or choking. Older children may be able to localise the sensation of something stuck in their neck or lower chest (10). Complete occlusion will result in more dramatic symptoms. Long standing oesophageal obstruction can cause weight loss due to reduced intake and recurrent aspiration pneumonia because of the poor handling of oral secretions (10).

Sialorrhea (drooling or excessive salivation) is normal in infants up to the age of 24 months because of their immature oral neuromuscular development and the lack of front teeth to serve as a dam(11). A sudden onset of sialorrhea in an older child should raise the suspicion of an acute pathology such as inflammation or infection in the mouth or an anatomical obstruction that impairs the ability of the child to swallow the saliva. The attending physician in this case, commented that the history of milk consumption prior to presentation and the absence of gagging and respiratory symptoms did not make him consider oesophageal obstruction as a possible cause of the drooling.

Dysphagia is a common sign in oesophageal ingestions and was a symptom in one third of cases in a study (6). The history of milk consumption without difficulty may suggest that the oesophagus was not completely obstructed at the time of consumption. Inflammation around the obstruction or movement of the foreign body may have led to a further occlusion resulting in the sialorrhea. It is also possible that the milk consumption was before the coin ingestion.

Gagging protects against swallowing unwanted objects by triggering contraction of the pharyngeal muscles. It would usually be expected in a small child swallowing a coin of about 25mm in diameter; it is possible that gagging was not witnessed and hence not reported.

Although more typical of foreign body inhalations, respiratory symptoms such as wheeze, stridor and dyspnoea have been reported with ingestions when large oesophageal foreign bodies compress against the trachea (11). The history of aphonia in this case is interesting and unusual as aphonia is more commonly seen with airway inhalations often in association with respiratory distress. There is another published case of a child with oesophageal foreign body ingestion and aphonia without respiratory distress. The aphonia was secondary to vocal cord dysfunction thought to result from compression of the recurrent laryngeal nerve that supplies the vocal cords (12).

Findings on examination are often unremarkable, as in this case, except when complications set in. The physical examination in a child with suspected oesophageal ingestion should assess the airway, vital signs and the ability to handle secretions. Pooling of saliva in the mouth may be suggestive of an obstruction whilst tenderness or swelling in the neck may indicate upper oesophageal perforation. Chest examination may reveal wheeze or stridor which can be suggestive of tracheal compression by an oesophageal foreign body. Abdominal examination may reveal signs of perforation or small bowel obstruction.

The main aim of investigations is to locate the foreign body. A handheld metal detector, as was used in this case, has been proven to be sensitive and specific in detecting metallic foreign bodies such as coins (13). It is however

less commonly used nowadays because radiographs are readily available and are more reliable in detecting metallic foreign bodies. A metal detector may still be useful in detecting materials that are metallic but not radiopaque such as aluminium e.g. flip top of the can of a soft drink (14).

Anteroposterior and lateral radiographs of the neck, chest and abdomen are advised in all patients with suspected foreign body ingestions, even if the foreign body is thought to be radiolucent. This is to investigate for the possibility of other swallowed objects or for indirect evidence of the radiolucent object e.g. air fluid level in the oesophagus or free air representing a perforation(10). If plain radiographs do not reveal foreign bodies in a symptomatic child with a strong suspicion of foreign body ingestion, diagnostic endoscopy, computed tomography (CT) or magnetic resonance imaging (MRI) may be considered.

Asymptomatic patients with blunt oesophageal foreign body ingestion like coins may be managed by close observation within the first 24 hours before intervention; 20-30% of coins have been observed to pass spontaneously during the observation period(10). Blunt objects shorter than 5cm, that have passed into the stomach can also generally be managed in an expectant manner in asymptomatic patients. The objects in the stomach can be removed endoscopically if still present after four weeks(10). Repeat radiographs can be helpful in determining the progression of a foreign body.

Magnets and disc batteries are exceptions. Multiple magnets can attract each other across layers of gastrointestinal mucosa, leading to pressure necrosis and perforations (10). Electric current from batteries can lead to liquefaction, ulceration and subsequent oesophageal perforation (16). Emergency removal of oesophageal magnets and disc batteries is advised (15,16).

Endoscopy is the procedure of choice for removing oesophageal foreign bodies; over 90% of foreign bodies are removed endoscopically without any complications (2). The speed of intervention is dependent on the nature, location, duration and ability to handle secretions. For instance, emergency interventions will be required for patients with compromised airway, inability to handle secretions, or patients who have swallowed sharp objects, button batteries or high-powered magnets because of the risk of perforations (10).

Conclusion

Early diagnosis of oesophageal foreign body ingestion is essential to preventing serious complications. This case highlights the diagnostic challenge when the ingestion is unwitnessed. It highlights the need for a high index of suspicion when young children present with unexplained and nonspecific gastrointestinal and respiratory symptoms. Drooling, dysphagia and respiratory symptoms are some of the common symptoms of oesophageal foreign body ingestion. Aphonia, although more common in laryngeal foreign bodies can occur very rarely in oesophageal foreign body ingestion.

When suspected, radiographs are helpful in locating and sometimes identifying the type of foreign bodies. Some blunt foreign bodies can be observed for spontaneous passage within 24 hours of ingestion, disc batteries and high power or multiple magnets need to be removed emergently because of the risk of perforation. Removal by endoscopy is the often the treatment of choice.

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Autoimmune Progesterone Dermatitis: A Case Report

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Abstract

In this case report, we present a 29-year old female, who complained of a recurrent cyclical itchy skin rash over the dorsum of her hands for the last four years. She used to develop the rash during the initial weeks of each pregnancy, which then subsided spontaneously. The symptoms markedly decreased when she used contraceptive pills. On examination, there were multiple scaly erythematous plaques over the dorsum of the hands with signs of lichenification. Intradermal progesterone test showed an itchy erythematous papule over a wheal, at the site of injection, sized about one cm, which appeared after 48 hours. Therefore, she was diagnosed as a case of “autoimmune progesterone dermatitis”. Daily oral contraceptive pills (levonorgestrel/ethinyl estradiol, 0.1 mg to 20 µg) were prescribed. There was a marked reduction in the number of lesions during her next menstrual periods.

Key words:
Autoimmune progesterone dermatitis, progestogens hypersensitivity, Intradermal progesterone test, contraceptive pills.

Introduction

Autoimmune progesterone dermatitis (APD) is one of the rare dermatoses. It is characterized by recurrent skin eruptions that appear during the luteal phase of the menstrual cycle (1). The nature of skin eruption varies and is diverse, and so, its diagnosis is challenging. But with a history of recurrent cyclical skin eruptions and symptomatic improvement after inhibition of progesterone, with an intradermal positive result of progesterone test can help to confirm the diagnosis (2).

In this case report, we present a rare case of a mother with APD dermatitis, who is probably the first documented case of APD to be reported in Saudi Arabia.

Case Report

A 29-year old female, not known to have any medical illness, came complaining of recurrent skin rash for the last four years. The rash is characterized by its cyclical pattern, itchy eczematous-like over the dorsum of the hands.

The patient denied history of any food or drug allergy, recent medication use, or history of animal contact. She is married and a mother of two children. During her pregnancies, she used to develop the same rash in a few initial weeks of each pregnancy, which then subsided spontaneously. Moreover, when she used contraceptive pills between the two pregnancies, the rash and the symptoms markedly decreased.

She visited several dermatology clinics but her condition was diagnosed as atopic dermatitis, contact dermatitis or urticaria. She was advised to avoid stress and to use topical steroids and antihistamine, but minimal improvement occurred.

When the patient was examined, there were multiple scaly erythematous plaques over the dorsum of the hands with signs of lichenification, indicating prolonged rubbing due to itching (Figures 1,2). There were no other skin areas or mucosal involvement.

Intradermal progesterone test showed an erythematous papule over a wheal, sized about one cm at the site of injection, itchy, which appeared after 48 hours (Figure 3).

Therefore, our patient was diagnosed as a case of “autoimmune progesterone dermatitis” based upon her history, physical examination and the positive results of the intradermal progesterone skin test.

Since the patient wanted to postpone pregnancy, daily oral contraceptive pills (levonorgestrel/ethinyl estradiol, 0.1 mg to 20 µg) were prescribed to her and she was asked to come to our clinic every month for follow up.

There was a marked reduction in the number of lesions during her next menstrual period. After three menstrual cycles, no lesions appeared peri-menstrually. Our patient continued using levonorgestrel/ethinyl estradiol for a total of six months, after which her symptoms were successfully controlled. Afterwards, her lesions did not return despite the discontinuation of contraceptive pills.

Figures (1,2): Erythematous scaly plaques over the dorsum of both hands with signs of lichenification

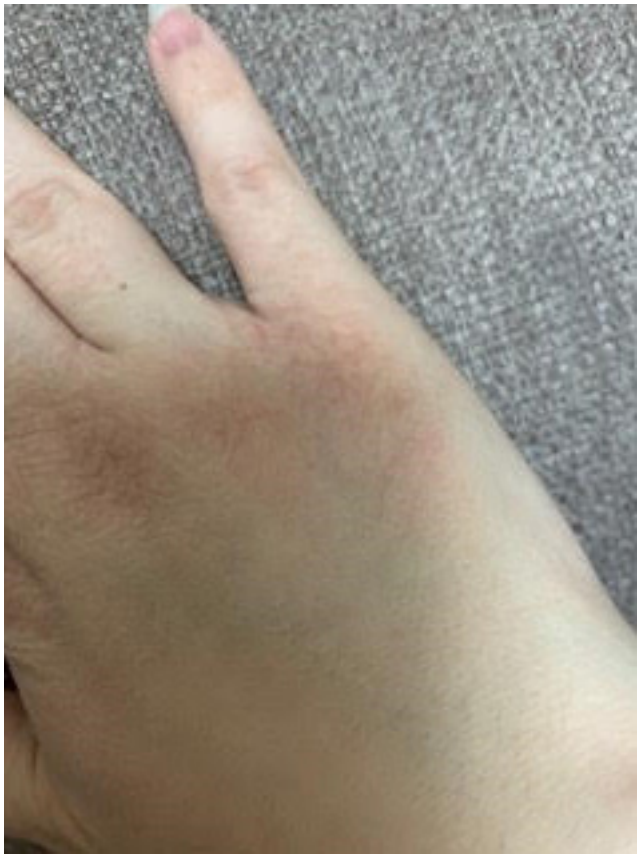

Figure 1

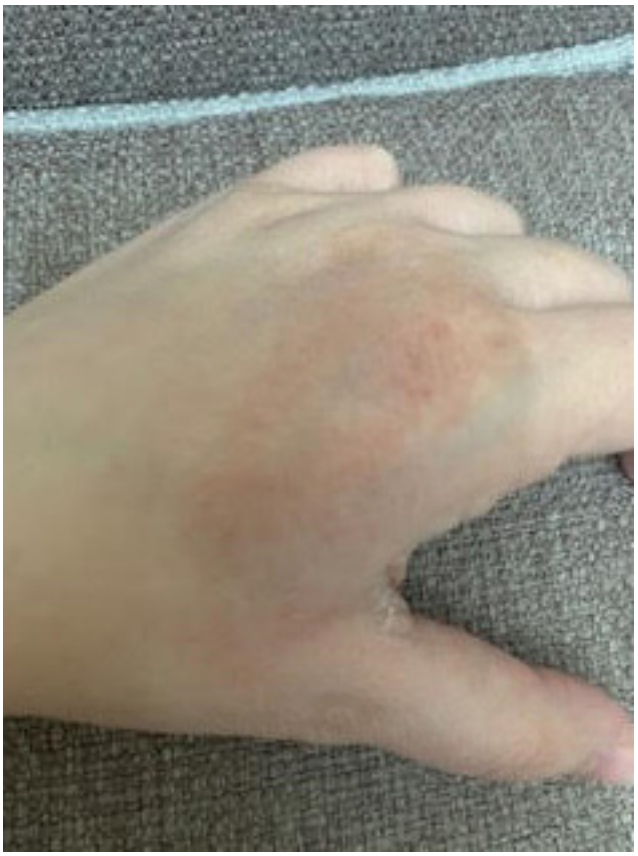

Figure 2

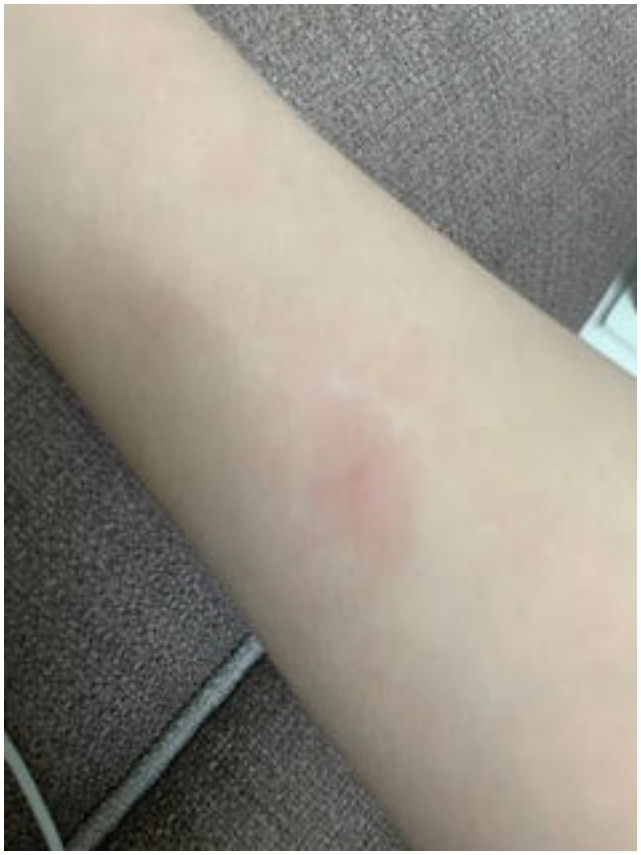

Figure 3: Erythematous papule surrounded by wheal at the site of intradermal progesterone injection, which appeared after 48 hours

Discussion

Our patient presented with a recurrent cyclical itchy eczematous-like skin rash over the dorsum of her hands, which was characterized by its cyclical behavior. She noticed that her rash used to flare during the initial weeks of each pregnancy, then partially subside. Moreover, after labor, her complaints markedly decreased when she used contraceptive pills.

Gupta et al. (3) stated that hypersensitivity responses to progestogens occur among women during their reproductive age and can present with a heterogeneous group of skin and/or systemic reactions that are temporally associated with relative peaks of serum progesterone levels. These reactions are usually affected by sources of progesterone, endogenously or exogenously.

The menstrual cycle has been associated with a variety of skin eruptions, including eczema, prurigo, erythema multiforme, stomatitis, bullous-vesiculo pustular eruptions, folliculitis, angioedema, and urticarial plaques (4). The first documented case of APD was in 1921, in which a patient's premenstrual serum caused acute urticarial lesions (5).

The association between pregnancy and onset of symptoms in cases of APD has been reported by Nguyen and Razzaque Ahmed (6), who noted that out of 89 cases of APD, 13 were related to a pregnancy, while 7 occurred during their postpartum period. Yavuz et al. (7) stated that pregnancy can interfere with symptoms of APD. This can be explained by that pregnancy is associated with an increase in maternal progesterone levels by 10 to 5,000 times relative to non-pregnancy levels (8).

Our patient went to several dermatology clinics, for which her condition was misdiagnosed as atopic dermatitis, contact dermatitis or urticaria. However, her diagnosis could be reached based upon her history, physical examination and the positive results of the intradermal progesterone skin test.

It has been observed that among some women, there are several skin diseases that may be associated with their menstrual cycle which has been associated with the spectrum of skin diseases, e.g., eczema, erythema multiforme, folliculitis, angioedema, and urticaria. These lesions may appear as typical urticaria or erythema multiforme in various stages of healing. These lesions may be present on the lips, palms of hands, trunk, or feet (8).

However, the diagnostic criteria for APD were proposed by Warin (9), which include: skin lesions associated with the menstrual cycle (premenstrual flare); a positive progesterone intradermal test; and the improvement of symptoms after inhibiting progesterone secretion by suppressing ovulation.

Our patient stated that before being diagnosed, she received antihistamines, but with no marked improvement. However, symptoms were successfully controlled after receiving oral contraceptive pills for a total of six months.

Yavuz et al. (7) stated that, although antihistamines are considered first line therapy, APD is usually resistant to antihistamines. Several treatments that suppress ovulation can be used to control APD. Oral contraceptive pills are the most commonly used therapy. Even a short course of oral contraceptive pills can provide long-lasting improvement of the condition, probably due to desensitization to progesterone (10-11). Danazol has been reported to be effective in some cases. Gonadotropin-releasing hormone agonists were also used since their administration inhibits ovulation and decreases sex hormone production (11). However, they should not be used for more than six months due to their negative effects on bone metabolism and the cardiovascular system (12). Tamoxifen is another therapeutic agent that is used to suppress ovulation and improve symptoms (8). In refractory cases, and as a last resort, bilateral oophorectomy was done (13).

In conclusion, autoimmune progesterone dermatitis is a rare cyclical dermatosis. Its differential diagnosis includes atopic dermatitis, contact dermatitis and urticaria. Its diagnosis is based upon history, physical examination and positive results of intradermal progesterone skin test. Several treatments that suppress ovulation can be used to control APD, but oral contraceptive pills are the most commonly used therapy.

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