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Research Article

Food Consumption Pattern and their Association with Physical Activity Level Among Medical and Para-Medical Students

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Abstract

Impaired dietary habits of young people, such as irregular meals, snacking, eating away from home, and following unbalanced dietary patterns are thought to be related to physical inactivity. Thus we aimed to examine the relationship between food consumption pattern and physical activity level in college students.

A cross- sectional study was conducted among 160 medical and paramedical students at King Abdulaziz University, Saudi Arabia. Demographics, lifestyle habits and dietary practices were estimated by a semi-structured questionnaire in all study subjects.

Overall, 89% of the study population was nonsmokers and 66% were of low physical activity level. The light intensity exercises being higher among females than males ($p<0.05$). Almost 54% of the females spent over 6hr in daily use of computers of watching TV compared with 51% of males spending only 1-3hr ($p<0.01$). While 49% of females dine out 1-2 times per week, males were dinning out or consuming takeaway meals more frequently as follows: 23% on a daily basis, 28% 3-5 times weekly and 30% 1-2 times per week ($p<0.05$).

Strategies need to be adopted to improve young youths' nutritional status, such as improving their dietary knowledge, promoting healthy eating habits and establishing a healthy lifestyle via an increase of physical activity.

Keywords: Food consumption; Physical activity; Males; Females

Introduction

Eating behaviour of young people has become increasingly investigated in recent years amid observations that many are having a poor diet [1]. Young people are easily influenced by their peers, advertisements, particularly television (TV) advertising [2] whereas their food habits, meal patterns, physical activity, smoking and alcohol habits are influenced by the socio-economic conditions of the family [3]. Snacking and breakfast skipping are frequent in young youth [4,5]. It is recognized that those who develop healthy eating habits early in life are likely to maintain them into adulthood, and have a reduced risk of chronic diseases [6]. Thus a balanced and appropriate diet during childhood and adolescence is likely to reduce the risk of diseases. These diseases have been strongly associated with unhealthy lifestyle habits, including lack of exercise, smoking, caffeine overuse and improper sleeping habits [7,8].

In Kingdom of Saudi Arabia (KSA), the traditional diet characterized by high fiber content and low fat and cholesterol has changed to a more Westernized diet with high levels of fat, free sugars, sodium, and cholesterol [9]. High-energy Western fast food for meals or snacking is becoming very popular among young youth especially with the enormous economic transition occurring in the Gulf countries for the past three decades [10]. Because most overweight children are at a higher risk of remaining overweight and obese into adulthood and consequently at higher risk of related metabolic disorders and diseases, this causes a great public health concern [11].

Healthy dietary habits among medical students are even more important as they are future physicians. Amongst this college population, it is assumed that the medical and paramedical students have a great knowledge about healthy lifestyle and dietary habits. However there is no evidence to indicate that this knowledge translates into practices in terms of maintaining good health.

Physical activity and fitness are positive factors for health maintenance of the adolescent and the future adult [12]. Sedentary behavior is not simply a lack of physical activity but is a cluster of individual behaviors where sitting or lying is the dominant mode of posture and energy expenditure is very low [13]. Saudi people are living a sedentary life, cars, houses and workplaces are air-conditioned and physical exercise has become a leisure activity. Many national studies show increasing in the body weight due to physical inactivity among adolescents [14].

Because eating behavior takes place in the context of many simultaneously occurring factors, studies involving a very limited number of variables could result in an incomplete and overly simplistic depiction of the eating behavior of young youth. The purpose of this study was to examine the relationship between food consumption pattern and physical activity level of medical and paramedical students in KAU, KSA, thereby providing a more comprehensive and meaningful explanation of their eating behavior.

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Table 1: Socioeconomic characteristics of the study population (N=160).

	All (N=160)	Females (n=80)	Males (n=80)	p
Race				
Arabian tribes	130 (81)	62 (78)	68 (85)	
Mediterranean	8 (5)	6 (8)	2 (3)	
Far Eastern Asians	9 (6)	6 (8)	3 (4)	NS
Africans	3 (2)	1 (1)	2 (3)	
Indian Asians	5 (3)	3 (4)	2 (3)	
Caucasian Mid-Asians	5(3)	2 (3)	3 (4)	
Marital status				
Single	150 (94)	75 (93)	75 (93)	NS
Engaged	6 (4)	3 (4)	3 (4)	
Married	4 (3)	2 (3)	2 (3)	
Living arrangement				
students dorm	8 (5)	3 (4)	5 (6)	NS
living alone	9 (6)	4 (5)	5 (6)	
with parents	143 (89)	73 (91)	70 (88)	
Residency types				
Rented flat	29 (18)	17 (22)	12 (15)	
Rented villa	4 (3)	2 (3)	2 (3)	NS
Owned flat	46 (29)	24 (30)	22 (28)	
Owned villa	81 (51)	37 (46)	44 (55)	
Father education				
Secondary school or less	38 (24)	16 (20)	22 (28)	
High school graduate College degree	68 (43)	32 (40)	36 (45)	NS
Postgraduate degree	38 (24)	21 (26)	17 (21)	
	16 (10)	11 (14)	5 (6)	
Mother education				
Secondary school or less	16 (10)	12 (15)	4 (5)	
High school graduate College degree	83 (52)	35 (44)	48 (60)	NS
Postgraduate degree	29 (18)	15 (19)	14 (18)	
	32 (20)	18 (23)	14 (18)	
Father occupation				
Retired/ unemployed	57 (35)	31 (39)	26 (33)	NS
Government officer	56 (35)	32 (40)	24 (30)	
Businessmen	47 (29)	17 (21)	30 (38)	
Mother occupation				
Housewives	91 (57)	44 (55)	47 (59)	
Government officer	58 (36)	27 (34)	31 (39)	NS
Businesswomen	11 (7)	9 (11)	2 (3)	

Categorical data as number and percentage. Categorical data were compared by $\chi 2$ test. NS: non-significant.

Methods

Study design

A cross- sectional study was conducted at King Abdulaziz University, Jeddah, and KSA from May 2014 to Oct 2014. The study included 160 students from the second and third year of medical and paramedical students, between ages 19 and 22. They were invited to participate in the study after explaining the purpose of the study and the method of filling up the questionnaire. University students with a clinically diagnosed chronic illness, or on a prescribed medication, pregnant females, those outside the age bracket were excluded and those who declined to take part in the study. The study was approved by the local Ethical Review board of KAUH.

Study instrument

A pre-tested semi-structured questionnaire was self administered to the students with their consent and reviewed for completeness and accuracy upon their completion. The questionnaire was broadly divided into 3 categories of demographics, lifestyle habits and dietary practices.

Part 1 contained information on socio-demographic variables and self-assessed health status collected by means of 10 questions. They include information about age and gender, racial background, marital status, parent's level of education and employment status, type of residency and living arrangement (i.e., living with family or living in the students' dormitories), personal medical history, family history of any disease, medication use and use of dietary supplementation if any. Respondent's self-reported race and ethnicity are collapsed into six categories.

Part 2 consisted of 21 items and enquired about a range of health behaviors, such as smoking habits, exposure to sunlight, sedentary behavior, and physical activity level. Physical activity questionnaire was designed to collect information on type, frequency and duration of variety of light-, moderate- and vigorous-intensity physical activities during a typical week. The questionnaire covers many domains as transport, household, fitness and sports activities [15]. The questionnaire allows the calculation of total energy expenditure per week based on metabolic equivalent values of all types of physical activities reported by the participant. The Metabolic Energy Turnover (MET) minutes per week is achieved by multiplying the intensity of the different activities (in METs) by time spent on the activity (in minutes/week) [16]. The classifications adopted for activity levels were based on two cut-off points of 30 minutes and 60 minutes per day of at least a moderate level of physical activity [17]. This was then converted into 3 activity categories based on total METs minute per week as follows: highly active: > 1680 METs-min per week, moderately active: 840 to 1680 METs-min per week and low activity level: < 840 METs-min per week [18]. The questions on sedentary behaviors followed the physical activity questions, and were designed to asses typical time spent per day on sedentary activities, including TV viewing, video games, and computer and internet use. Bone health was investigated by enquiring about the frequency (times per week) and duration (in minutes) of sunlight exposure, area of skin exposed and dressing customs.

Part 3 contained 15 questions and provided details of their food consumption pattern, especially regarding eating breakfast, number of daily meals and snacks, dinning out and/or takeaway meals, skipping meals, frequent dieting as well as cooking method and the type of cooking fat. Students were also asked to describe their diet type by choosing one of nine choices provided: traditional Saudi diet (high in dates, milk, rice, whole wheat, brown bread, meat and vegetables), Western diet (i.e., high in saturated fats, red meats, junk food and low in fresh fruits and vegetables, whole grains, seafood, poultry), vegan diet (i.e., not consuming meat, fish, poultry, animal products or byproducts such as eggs, dairy products), any restrictive diet (e.g., gluten-free diet), dissociated diet (i.e., eating 1 type of food), balanced diet (55-60% carbohydrates: 10-15% protein: 25-35% fat), high protein diet (i.e., one which provides > 15% of energy as protein from dietary sources like: meat, eggs, cheese), high fat diet (i.e., one which provides more than 30% of energy as fat from dietary sources like: fried food, butter, cream), high carbohydrate diet (one which provides more than 55% of energy as carbohydrates from dietary sources like: rice, bread, pasta).

Statistical analysis

Data are expressed as mean ± standard deviation for numeric variables and as frequency or proportion for categoric variables. Kolmogorov-Smirnov test was used to assess if the data were distributed normally. Differences in means was assessed by student

t-test or χ^2 test for numeric and categoric variables respectively. Correlations between continuous variables were assessed with the use of Pearson correlation test or Spearman correlation rank test as appropriate. All the analyses were done using the Statistical Package for Social Sciences (SPSS) version 20.0. All reported P values were two-tailed and p values < 0.05 were considered statistically significant.

Results

A total of 160 students (46%) medical and (64%) paramedical students participated in the study. The mean age for female and male students was 20.4±0.09 years and 21.3±0.11 years respectively. The percentage of male and female participants was equal.

Socio-economic characteristics of the study sample are summarized in Table 1. No significant difference was found between male and female students (p>0.05). The study participants were mostly of Arabian tribes descents, single, living with their parents in owned living facilities. Over 80% of their parents were high school graduates or higher. One third of their fathers were retired or unemployed in comparison with two thirds of their mothers being housewives.

Table 2 presents lifestyle behaviors including smoking status, physical activity level and leisure related activities. Overall, 89% of the study population were nonsmokers and 66% were of low physical activity level (<840 METs min/week). Regarding exercise practices, Figure 1 depicts physical activity levels of the study participants in METs minutes /week distributed by gender along the three types of light-, moderate- and vigorous- intensity exercises and their total. The only statistical difference was recorded for the light intensity exercises being higher among females than males (p<0.05). Almost 90% of the study population use the stairs daily either 1-2 times, 3-4 times, or ≥ 5 times. Additionally, 48% confirm that they always move as a part of their daily routine while 45% are only sometimes moving on a daily basis.

Leisure time was determined by estimating the time of daily use of computers and TV viewing, recumbency period and sleeping habits. Almost 54% of the females spent over 6hr in daily use of computers of watching TV compared with 51% of males spending only 1-3hr (p<0.01).

Table 3 describes food consumption pattern of the study participants by asking about the number of daily meals and snacks, frequency of eating breakfast, dinning out or takeaway meals, skipping meals and the reasons for skipping meals, cooking method, type of cooking fat and the need for frequent dieting. While 49% of females dine out 1-2 times per week, males were dinning out or consuming takeaway meals more frequently as follows: 23% on a daily basis, 28% 3-5 times weekly and 30% 1-2times per week (p<0.05). Regarding cooking methods, boiling or steaming was more widespread in females than in males (44% and 24% respectively) versus 13% of males favoring grilling compared to 5% of females (p<0.01). Sixty percent of all students used vegetable oil as the main cooking fat type.

Figure 2 illustrates different proportions of the types of diet consumed by the study population. Nine choice were provided for the study participant and one third described their diet as traditional diet, one third consumed a high carbohydrates diet, 15% confessed to have a balanced diet, 9% consumed high fat diet, 6% had western diet,

Table 2: Lifestyle behaviors of the study population (N=160).

	All (N=160)	Females (n=80)	Males (n=80)	p
Smoking habits				
Nonsmoker	142 (89)	76 (95)	66 (83)	<0.05
Ex-smoker	2 (1)	0 (0)	2 (3)	
Current smoker	9 (6)	2 (3)	7 (9)	
Physical Activity Index				
Low activity (<840 METs-min/week)	106 (66)	54 (68)	52 (65)	NS
Moderately active (840-1680 METs-min/week)	31 (19)	14 (18)	17 (21)	
Highly active (>1680 METs-min/week)	23 (14)	12 (15)	11 (14)	
Daily TV viewing + Computer usage				
<1hr	4 (3)	2 (3)	2 (3)	<0.01
1-3hr	61 (83)	20 (25)	41 (51)	
3-6hr	33 (21)	15 (19)	18 (23)	
>6hr	62 (39)	43 (54)	19 (24)	
Recumbency period				
<3hr	15 (9)	7 (9)	8 (10)	NS
3-6hr	80 (50)	37 (46)	43 (54)	
7-10hr	31 (19)	17 (21)	14 (18)	
>10hr	34 (21)	19 (24)	15 (19)	
Sleeping habits				
3-6hr	53 (33)	29 (36)	24 (30)	NS
7-10hr	96 (60)	47 (59)	49 (61)	
>10hr	11 (7)	4 (5)	7 (9)	
Do you go to bed the same time every night?				
Never	9 (6)	6 (8)	3 (4)	NS
Seldom	11 (7)	5 (6)	6 (8)	
Sometimes	125 (78)	59 (74)	66 (83)	
Always	15 (9)	10 (13)	5 (6)	
Daily use of stairs				
None	10 (6)	6 (8)	4 (5)	NS
1-2 times	42 (26)	22 (28)	20 (25)	
3-4 times	50 (31)	24 (30)	26 (33)	
≥5 times	58 (36)	28 (35)	30 (38)	
Does your day routine involve physical activity?				
Never	1 (1)	1 (1)	0 (0)	NS
Seldom	10 (6)	3 (4)	7 (9)	
Sometimes	72 (45)	35 (44)	37 (46)	
Always	77 (48)	41 (51)	36 (45)	

Categorical data as number and percentage. Categorical data were compared by χ2 test. MET: Metabolic Energy Turnover; NS: non-significant.

4% consumed a high protein diet, 2% were vegans, 2% had restrictive diets and 2% admitted to have dissociated diet.

Physical activity level (in METs minutes /week) of light intensity exercises was negatively associated with eating breakfast (r =- 0.175, p<0.05). Moderate intensity exercises (in METs minutes /week) show inverse association with skipping meals (r= -0.177, p<0.05). Vigorous intensity exercises has positive association with frequent dieting (r=0.165, p<0.05). Finally, the total of physical activity levels calculated from light-, moderate- and vigorous- intensity exercises was inversely correlated with dinning out (r= -0.163, p<0.05).

Discussion

College life is an important stage for young youth, as at this time their behaviours are conducive to change but they are also exposed to stress and lack of time, not to mention that unhealthy habits learnt during this period generally persist in the adult life [19].

The Saudi dietary habits have been deteriorating over the last three decades and have started to resemble a more Western' eating pattern, characterized by increased consumption of animal products and reduced intake of cereals, fruits, legumes and vegetables [20].

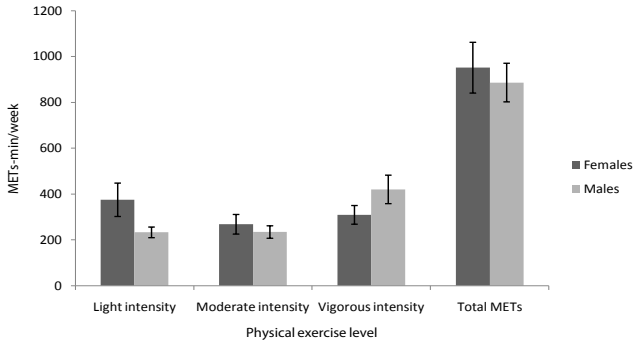

Figure 1: Mean and standard errors of the total, light, moderate and vigorous intensity physical activity in metabolic equivalents-hours per week (METs-hours/week) among study participants (N=160) in relation to gender. The only significant difference was in the light intensity exercise activity (p<0.05).

Half of the study population was having 3 meals daily and over one third was snacking 1-2 times per day. Indeed over 50% of all students were eating breakfast every day, yet 50% admitted skipping meals (Table 3). Young youth who ate three or more meals a day were significantly less likely to skip breakfast and less likely to report poor consumption of healthy foods, compared with those who ate fewer than three meals. In a Japanese study, almost half of the dental students missed one of the three main meals [21].

Irregular breakfast affects cognitive functions, alters learning ability and can cause increased level of fatigue, loss of concentration and headache (Wesnes et al., 2003). Skipping of breakfast has been associated with lower nutritional status and increased the body weight and risk of cardiovascular disease [22]. In addition, less adequate breakfast habits may contribute to the development of obesity [23]. The importance of eating at fixed times during the day should be highlighted in health education programs. It was reported that obese in general were less likely to eat at selected times. On the other hand, risk of obesity is lower in children having breakfast on a regular base [24].

When the study participants were enquired about reasons for skipping meals, 43% admitted that they do not have enough time. In a survey about habits and perceived barriers to following a healthy lifestyle in a college population, the biggest burden to exercise and bad eating habits was "lack of time" [25]. Other reasons for dietary choices include social settings, cultural criteria, psychological and physiological traits, preferences, beliefs and expectations [26].

Our data show that weight fluctuation over the last year was obvious in the study sample since 32% admitted to gaining weight and 38% said they have lost weight, nevertheless frequent dieting is not a habit in 42% of the students. Of those who frequently diet, low calorie diet was followed by 30% of the students (Table 3). Previous research has indicated that owing to their generally higher levels of dissatisfaction with their body weight, females may use restrictive eating practices, possibly including meal skipping, as a strategy for weight control more frequently than males [27].

Recumbency period was between 3-6hr for half of the study population while 60% of all students sleep between 7-10hr daily. Over two thirds of the study sample goes to bed the same time every night (Table 3). This result represents a typical young adult habit consisting

Table 3: Food consumption pattern of the study population (N=160).

	All (N=160)	Females (n=80)	Males (n=80)	p
No. of daily meals				
1	4 (3)	4 (5)	0 (0)	
2	59 (37)	30 (38)	29 (36)	NS
3	87 (54)	40 (50)	47 (59)	
>3	10 (6)	6 (8)	4 (5)	
No. of daily snacks				
1	63 (39)	28 (35)	35 (44)	
2	61 (38)	33 (41)	28 (35)	NS
3	30 (19)	15 (19)	15 (19)	
>3	6 (4)	4 (5)	2 (3)	
Eating breakfast				
Daily	91 (57)	46 (58)	45 (56)	
3-5 times/week	51 (32)	24 (30)	27 (34)	NS
1-2 times/week	12 (8)	4 (5)	8 (10)	
Rarely	6 (4)	6 (8)	0 (0)	
Dining out/ takeaway meals				
Daily	35 (22)	7 (4)	18 (23)	
3-5 times/week	45 (28)	36 (22)	22 (28)	<0.05
1-2 times/week	47 (29)	82 (49)	24 (30)	
Rarely	33 (21)	41 (25)	16 (20)	
Skipping of meals				
Daily	72 (45)	29 (36)	43 (54)	
3-5 times/week	33 (21)	17 (21)	16 (20)	NS
1-2 times/week	24 (15)	12 (15)	12 (15)	
Rarely	31 (19)	22 (28)	9 (11)	
Reasons for skipping meals				
Lack of time	16 (10)	4 (5)	12 (15)	
Lack of accessibility	37 (23)	12 (15)	25 (32)	<0.05
Weight control	67 (42)	39 (49)	28 (35)	
Not in my habits	40 (25)	25 (31)	15 (18)	
Weight fluctuation during last year				
None	49 (31)	23 (29)	26 (33)	NS
Gained weight	51 (32)	26 (33)	25 (31)	
Lost weight	60 (38)	31 (39)	29 (36)	
Frequent dieting				
Never	67 (42)	32 (40)	35 (44)	
Seldom	21 (13)	15 (19)	6 (8)	NS
Sometimes	56 (35)	25 (31)	31 (39)	
Always	16 (10)	8 (10)	8 (10)	
How do you usually diet?				
low calorie diet	48 (30)	32 (40)	16 (20)	
low fat diet	65 (41)	31 (39)	34 (43)	NS
low carb diet	17 (11)	8 (10)	9 (11)	
more than 1 type	30 (19)	9 (11)	21 (26)	
Cooking method				
boiling/ steaming	54 (34)	35 (44)	19 (24)	
frying	5 (3)	4 (5)	1 (1)	
sautéing	5 (3)	5 (6)	0 (0)	<0.01
backing	6 (4)	4 (5)	2 (3)	
grilling	14 (9)	4 (5)	10 (13)	
more than 1 method	76 (48)	28 (35)	48 (60)	
Type of cooking fat				
Ghee	12 (8)	4 (5)	8 (10)	
Butter	11 (7)	6 (7)	5 (6)	NS
Margarine	6 (4)	2 (3)	4 (5)	
vegetable oils	96 (60)	59 (74)	37 (46)	
more than 1 type	35 (22)	9 (11)	26 (33)	

Categorical data as number and percentage. Categorical data were compared by $\chi 2$ test. NS: non-significant.

in spending many hours in sedentary activities (watching television, using the computer, smart devices, etc). Watching television has been linked with an unhealthy diet, high cholesterol levels and overweight and obesity [28]. This may be influenced by unhealthy nutrition messages in commercials (Lank et al.,1992), eating snack foods and decreased physical activity (Robinson et al.,1993). Although [14] have reported a much lower level of leisure time physical activity among the included adult Saudis (6.1% in men and 1.9% in women) this

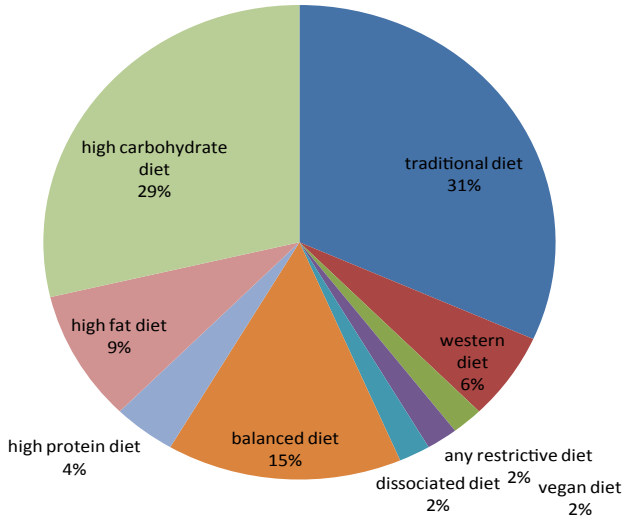

Figure 2: Type of diet description by the study population (N=160). Nine choices were selected: traditional Saudi diet (high in dates, milk, rice, whole wheat, brown bread, meat and vegetables), Western diet (i.e., high in saturated fats, red meats, junk food and low in fresh fruits and vegetables, whole grains, seafood, poultry), vegan diet (i.e., not consuming meat, fish, poultry, animal products or byproducts such as eggs, dairy products), any restrictive diet (e.g., gluten-free diet), dissociated diet (i.e., eating 1 type of food), balanced diet (55-60% carbohydrates: 10-15% protein: 25-35% fat), high protein diet (i.e., one which provides > 15% of energy as protein from dietary sources like: meat, eggs, cheese), high fat diet (i.e., one which provides more than 30% of energy as fat from dietary sources like: fried food, butter, cream), high carbohydrate diet (one which provides more than 55% of energy as carbohydrates from dietary sources like: rice, bread, pasta).

discrepancy may reflect using different methodology and inclusion criteria for their sample (age range of 30-70 years) contrary to this study in which we have included a highly active age group (18 -24 years).

Medical students faces many stresses such as pressure to succeed, competition with peers, academic overload, adjusting to new living situation, meeting new people and sometimes financial burden [29]. Many unhealthy behaviors had been identified to be associated with increased stress such as infrequent exercise, alcohol drinking, smoking, sleep disorders and eating poorly [30]. Indeed previous research has reported that stress is associated with both an imbalanced dietary pattern [31]. Unhealthy eating habits and sedentary lifestyles are bound to be closely related to various socioeconomic indicators such as the parents' education levels, financial resources and professional situations [32,33].

Typical daily diet was described by the study participants to be a traditional diet in 31%, a balanced diet in 15% and 29% confessed to have a high carbohydrates diet (Figure 2). The traditional diet which mainly consisted of dates, milk, rice, whole wheat, brown bread, meat and vegetables has changed to a more diversified diet. Dietary lifestyle in Arab countries has undergone "a nutrition transition" where fruits, vegetables, whole grains and fiber rich foods have been replaced by fatty, sugary and salty foods (Musaiger, 2002).

Participation in health-enhancing physical activity is a key determinant of energy expenditure in youths [34]. Regular physical activity seems to offer metabolic fitness and protection against a wide variety of chronic disease-related risk factors during childhood and adolescence [35]. Moreover, the combination of adequate physical activity together with healthy dietary habits has also been shown to help prevent obesity and other nutrition-related alterations common in young youth, such as poor bone mineralization [36,37]. On the basis of new scientific evidence, the American Heart Association have recently adapted their recommendations to combine the duration, frequency and intensity of activity and now recommend that "all healthy adults aged 18 to 65 years need moderate-intensity aerobic physical activity for a minimum of 30 minutes on 5 days each week or vigorous intensity aerobic activity for a minimum of 20 minutes on 3 days each week." [38].

In comparing our results with the findings of some of the American colleges, it was found that only 40% were participating in some kind of regular physical activity; 30% or more of the students were not participating in any exercise at all on a weekly basis [39,40,41]. This suggests that more than half of college students do not meet the minimum goal of 150 minutes of moderate physical activity each week or approximately 30 minutes of exercise at least five days per week, as proposed by the Centers for Disease Control and the American College of Sports Medicine [42].

In another cross sectional survey in UAE, a large percentage of medical students were found to be either underweight or obese and most believed that their activity levels were insufficient, stress levels too high and their diet unhealthy [34]. Studies also report lack of appropriate physical activity and prevalence of unhealthy habits like smoking among a large proportion of medical students (Sakamaki et al., 2005).

A cross sectional study design is inherently based on self-reporting therefore, reporting bias may have occurred. Inherent limitations of self-reported data due to (e.g., faulty memories, perceptions of social desirability, etc). Nevertheless, this questionnaire provides a more exhaustive tool for the assessment of dietary behaviour than traditional dietary questionnaires such as dietary histories and dietary records that measure only dietary intake. Despite these limitations, the results are valuable in providing insights about eating behavior and physical activity levels among medical and paramedical students in KAU.

Conclusion

Colleges and universities are potentially important settings for the promotion of regular exercise and weight maintenance strategies by creating an environment that encourages physical activity and a healthy lifestyle. Strategies need to be adopted to improve young youths' nutritional status, such as improving their dietary knowledge, improving their dietary intake, promoting healthy eating habits and establishing a healthy lifestyle via an increase of physical activity.

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Authors' contributions: Data collection and entry: AF, AA, BJ, SA, LF, AK, AF. Overall concept and design, Statistical analysis, data interpretation and manuscript writing and drafting: EA.

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