

Obesity among Family Medicine Trainees in Makkah Al-Mukarramah City, Saudi Arabia (2013-2014)

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ABSTRACT

Background: It is recognized that the health of physicians directly impacts the health of the larger population, as numerous studies have established a link between the health behaviors of physicians and their interactions with patients.

Objectives: To assess obesity and its risk factors as well as to measure nutritional habits among family medicine trainees in Makkah Al-Mukarramah city in 2013-2014.

Subjects and Methods: A cross sectional study was carried out including all family Medicine trainees in Makkah, from R1 to R4, they are accounted for 61 doctors (27 male, 34 female). A self-administered questionnaire was utilized. It is divided into six parts: Demographic data, weight and height measurements, smoking habit, physical exercise using General Practice Physical Activity Questionnaire [GPPAQ] and nutrition assessment by Food Frequency Questionnaire. The researcher met all the respondents and measured their weight and height, and then every subject was asked to fulfill the self-administered questionnaire.

Results: Out of 61 family medicine trainees recruited for study, 60 responded by filling in the study questionnaire, giving a response rate of 98.4%. Their age ranged between 25 and 35 years with a mean of 28.17 years and standard deviation of 2.38 years. More than half of them (55%) were females. Most of them (71.7%) were married. All were Saudis. More than a quarter of family medicine trainees (26.7%) were obese and 21.7% were overweight whereas 48.3% were normal. Underweight was reported among two of them (3.3%). Obesity was more observed among male family medicine trainees than

females (44.4% versus 12.1%). This difference was statistically significant, $p=0.001$. Almost two thirds of physically inactive family medicine trainees (62.5%) were obese compared to 6.2% of those physically active, $p=0.033$. Family medicine trainees who reported intake of soft drinks with sugar showed higher significant rate of overweight and obesity compared to those who never intake soft drinks with sugar (24.5% versus 13.3% and 33.3% versus 6.7%, respectively, $p=0.034$).

Conclusions: Prevalence of overweight and obesity was high among family medicine trainees in Makkah region, KSA. Physical inactivity, male gender and frequent intake of soft drinks with sugar were found to be predictors of obesity among family medicine trainees in Makkah Al-Mukarramah city.


Keywords: Family Medicine, Trainees, Obesity, Prevalence.

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INTRODUCTION

It is recognized that the health of physicians directly impacts the health of the larger population, as numerous studies have established a link between the health behaviors of physicians and their interactions with patients.¹ In addition, workers may be more prone to poor health behaviors such as smoking, drug and alcohol abuse and less physical activity. Musculoskeletal disorders (MSDs) are a significant cause of morbidity in healthcare workers, and research on the effects of demanding work schedules on MSD risk is an area that needs further exploration,² and interfere with the quality of healthcare provision.³

Physicians are usually exposed to high levels of occupational stress resulting from heavy workloads and high levels of time

pressure, and those in certain employment positions or specialties are at higher risk of suffering from depression disorders than the general population.⁴

Against this background, enlightening activities have been actively pursued by national medical associations in various overseas countries, as part of an effort to promote physicians leading a favorable lifestyle in order to protect their own health.⁵

Obesity is becoming a worldwide problem affecting all levels of society and is being described as a global epidemic. WHO predicts that three billion people worldwide will be overweight or obese by 2015.⁶ Obesity greatly increases the risk of developing cardiovascular disease, Stroke, hypertension, and dyslipidemia

and leads to increased mortality.⁷ It is also associated with diabetes,⁸ some types of cancer,⁹ psoriasis,¹⁰ adverse fertility and pregnancy outcomes,¹¹ liver, gall bladder diseases and earlier mortality in old age,¹² osteoarthritis, sleep apnea and many other health conditions. Furthermore it is also a component of the metabolic syndrome for most definitions.¹³

In Saudi Arabia, obesity is becoming one of the most important public health problems.¹⁴

This study aimed to evaluate the magnitude of the problem of obesity and its dietary determinants among family medicine residents in Makkah AlMukarramah city 2013-2014

SUBJECTS AND METHODS

A cross sectional research design was adopted in the family medicine unites in Makkah AlMukarramah city. Because of small number of family medicine trainees in Makkah AlMukarramah, all of them were recruited in our sample. All family medicine trainees being affiliated to a Family medicine unites within Makkah Al-Mukarramah were included. The researcher used a questionnaire divided into six parts: demographic data (age, gender, marital status, nationality, and residency level), weight and height measurements (weight and height were measured by the researcher and filled in the questionnaire. Weight was measured by electronic valid machine in kg. It was measured as the subject wears the ordinary clothes. Extra clothes were removed before measurements. Height was measured by valid machine in meter. Foot wears were removed before measurement. Body mass index (BMI) assesses the body weight relative to height. It was calculated as weight in kilograms divided by height in meters squared, rounded to one decimal place. Obesity in adults is defined as BMI greater than or equal to 30 kg/m², while BMI from 25-29.9 kg/m² is considered overweight, BMI from 18.5- 24.9 is considered normal while BMI < 18.5 is considered underweight. Assessment of general health by asking questions about whether

the family medicine trainee has diabetes mellitus, hypertension, hypercholesterolemia and ischemic heart disease was done. Smoking habit (duration and frequency) was assessed. Physical exercise using General Practice Physical Activity Questionnaire [GPPAQ],¹⁵ developed by the London School of Hygiene and Tropical Medicine as a validated short measure of physical activity was utilized. The GPPAQ is a validated screening tool that is used to assess adult (16 – 74 years) physical activity levels. It provides simple, 4-level Physical Activity Index (PAI) categorizing subjects to one of the following categories: Inactive (sedentary job and no physical exercise or cycling), moderately inactive (sedentary job and some but < 1 hour physical exercise and/or cycling per week or standing job and no physical exercise or cycling), moderately active (sedentary job and 1-2.9 hours physical exercise and/or cycling per week or standing job and some but < 1 hour physical exercise and / or cycling per week or physical job and no physical exercise or cycling and active (sedentary job and ≥ 3 hours physical exercise and / or cycling per week or standing job and 1-2.9 hours physical exercise and / or cycling per week or physical job and some but < 1 hour physical exercise and / or cycling per week or heavy manual job. Body mass index (BMI) was calculated and classified according to WHO criteria into: Underweight (BMI <15.8 kg/m²), normal (BMI 18.5–24.9 kg/ m²), overweight (BMI 25–29.9 kg/m²) and obesity (BMI ≥ 30 kg/m²). Nutrition assessment by Food Frequency Questionnaire¹⁶ which is a valid simple tool measure the frequency of essential common meals.^{17,18} The researcher met all the respondents and measured their weight and height, then, every subject was asked to fulfill the self-administered questionnaire.

The statistical Package for Social Sciences (SPSS) software version 17.0 was used for data entry and analysis. Descriptive statistics (e.g. number, percentage, mean, range, standard deviation) and analytic statistics using chi-square test (χ²) were applied. P-values ≤0.05 was considered as statistically significant.

Table 1: Personal characteristics of family medicine trainees, Makkah 2014

Personal characteristics		Frequency	Percentage
Age (years)	<30	46	76.7
	≥30	14	23.3
Range		25-35	
Mean±SD		28.17±2.38	
Gender	Male	27	45.0
	Female	33	55.0
Marital status	Single	17	28.3
	Married	43	71.7
Residency level	1 st	17	28.3
	2 nd	17	28.3
	3 rd	12	20.0
	4 th	14	23.4

RESULTS

Out of 61 family medicine trainees recruited for study, 60 responded by filling in the study questionnaire, giving a response rate of 98.4%. Their personal characteristics are presented in table1. Their age ranged between 25 and 35 years with a mean of 28.17 years and standard deviation of 2.38 years. More than half of them (55%) were females. Most of them (71.7%) were married.

All were Saudis. Residency levels 1 and 2 together represent 56.6% of them (28.3% for each level) while residency levels 3 and 4 represent 20% and 23.4% of them, respectively.

As illustrated from figure 1, more than a quarter of family medicine trainees (26.7%) were obese and 21.7% were overweight whereas 48.3% were normal. Underweight was reported among two of them (3.3%). Hypercholesterolemia was reported among

8.3% of the family medicine trainees whereas diabetes mellitus and hypertension were reported among 3.3% of them (for each disease). Ischemic heart diseases were not reported among any of the respondents.

As illustrated in table 2, current smoking (with its all forms) was reported by 18.3% of the respondent physicians. Regarding cigarette smoking, its prevalence was 15%; the duration of cigarette smoking was more than 5 years among 44.4% of them while the frequency was 10 cigarettes or less per day among most of them (77.8%). Shesha and Moassel smoking were reported by

11.7% for each. Duration of shesha smoking was more than 5 years among more than half of those smoked shesha (57.1%) and the frequency was once/day among 71.4% of them whereas duration of Moassel smoking was more than 5 years among 42.9% of those smoked Moassel and the frequency was \leq once/day among 85.7% of them.

From figure 2, it is evident that physical inactivity and moderate inactivity were reported among 56.7% and 25% of family medicine trainees, respectively whereas physical activity was reported among only 6.7% of them.

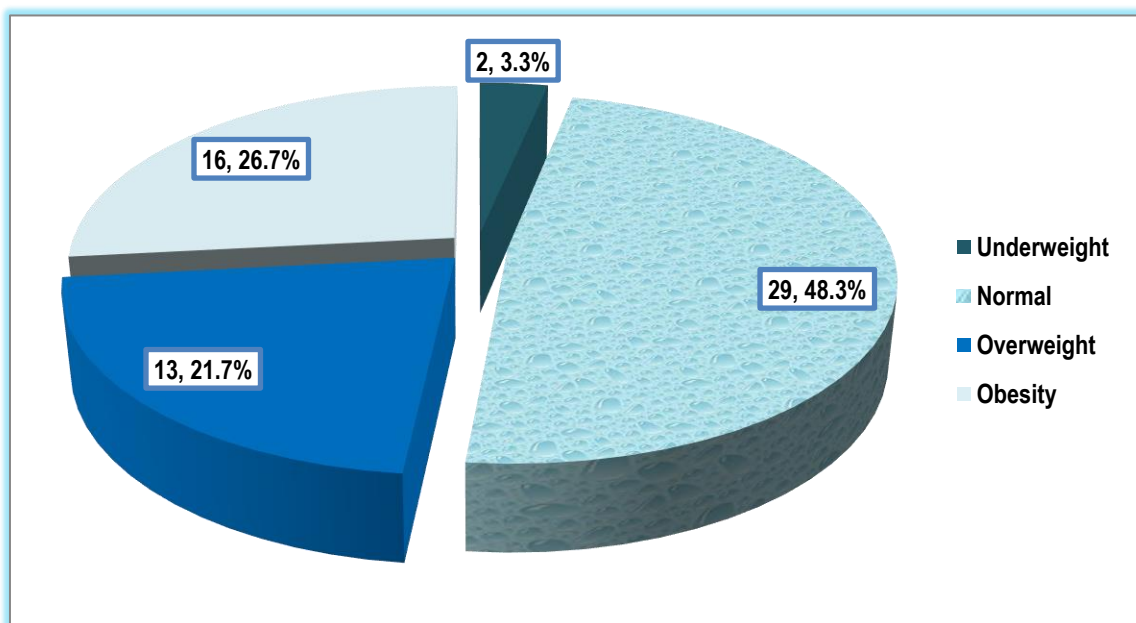


Figure 1: Body mass index of family medicine trainees, Makkah.

Table 2: Current smoking history of family medicine trainees Makkah city

Smoking history		Frequency	Percentage
Smoking (all forms)	Yes	11	18.3
	No	49	81.7
Cigarette smoking	Yes	9	15.0
	No	51	85.0
Duration (years)	\leq 5	5	55.6
	>5	4	44.4
Frequency (per day)	\leq 10	7	77.8
	>10	2	22.2
Shesha smoking	Yes	7	11.7
	No	53	8.3
Duration (years)	\leq 5	3	42.9
	>5	4	57.1
Frequency (per day)	One	5	71.4
	More than one	2	28.6
Moassel smoking	Yes	7	11.7
	No	53	8.3
Duration (years)	\leq 5	4	57.1
	>5	3	42.9
Frequency (per day)	\leq 1	6	85.7
	>1	1	14.3

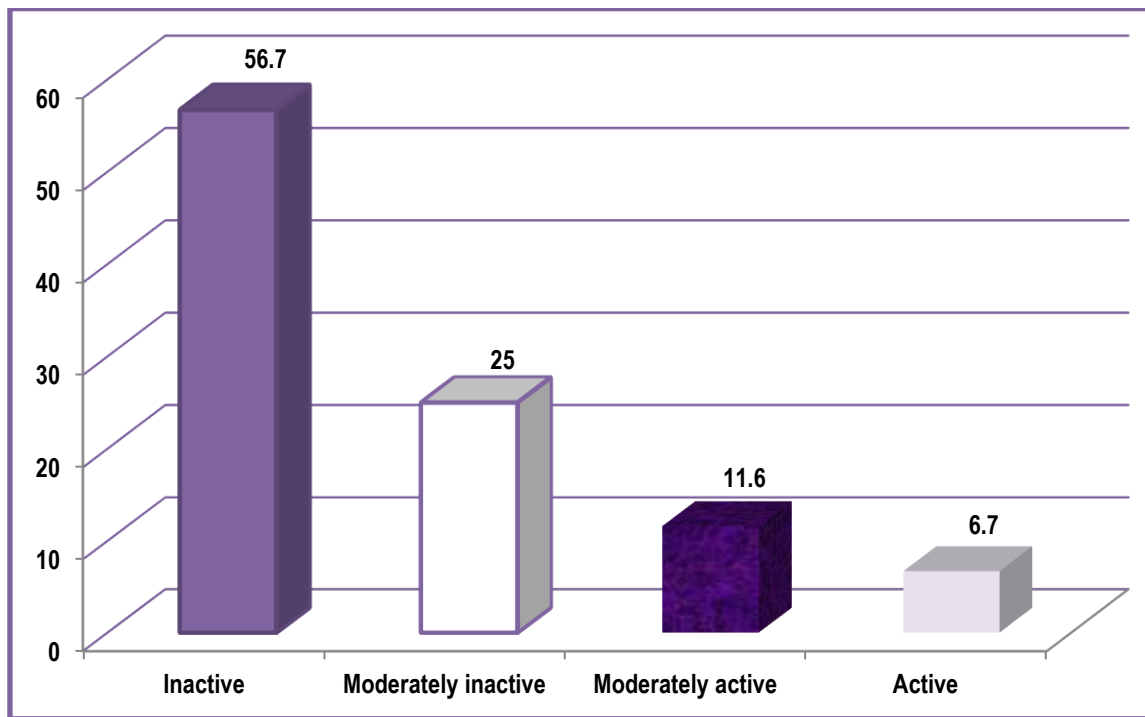


Figure 2: Physical activity of family medicine trainees, Makkah.

Table 3: Nutritional habits of Family Medicine in Makkah

Nutritional elements	Never N (%)	1-3/ Month N (%)	1-3/ Week N (%)	4-6/ Week N (%)	≥ 4/day N (%)
Full fat milk	10 (16.7)	26 (43.3)	12 (20.0)	10 (16.7)	2 (3.3)
Low fat milk (1.5% fat)	30 (50.0)	13 (21.7)	12 (20.0)	4 (6.7)	1 (1.7)
Semi-skim. milk (0.7% fat)	44 (73.3)	10 (16.7)	2 (3.3)	4 (6.7)	0 (0.0)
Skimmed milk	46 (76.7)	5 (8.3)	7 (11.7)	1 (1.7)	1 (1.7)
Orange juice	3 (5.0)	34 (56.7)	14 (23.3)	6 (10.0)	3 (5.0)
Fruit drink with sugar	6 (10.0)	25 (41.7)	20 (33.3)	5 (8.3)	4 (6.7)
Fruit drink without sugar	24 (40.0)	22 (36.7)	8 (13.3)	5 (8.3)	1 (1.7)
Soft drinks with sugar	15 (25.0)	21 (35.0)	11 (18.3)	10 (16.7)	3 (5.0)
Soft drinks without sugar	39 (65.0)	13 (21.7)	3 (5.0)	4 (6.7)	1 (1.7)
Boiled potatoes	15 (25.0)	28 (46.7)	14 (23.3)	2 (3.3)	1 (1.7)
Potato chips	6 (10.0)	29 (48.3)	14 (23.3)	9 (15.0)	2 (3.3)
Vegetables (fresh)	2 (3.3)	14 (23.3)	13 (21.7)	21 (35.0)	10 (16.7)
Fruit (fresh)	1 (1.7)	18 (30.0)	14 (23.3)	17 (28.3)	10 (16.7)
Whole meal bread	3 (5.0)	3 (5.0)	23 (38.3)	22 (36.7)	9 (15.0)
Fish	0 (0.0)	39 (65.0)	11 (18.3)	9 (15.0)	1 (1.7)
Pizza	0 (0.0)	48 (80.0)	8 (13.3)	3 (5.0)	1 (1.7)
Sweets	2 (3.3)	15 (25.0)	20 (33.3)	17 (28.3)	6 (10.0)
Chocolate	2 (3.3)	13 (21.7)	17 (28.3)	21 (35.0)	7 (11.7)
Savoury snacks	4 (6.7)	21 (35.0)	13 (21.7)	18 (30.0)	4 (6.7)

Table 3 presents some of the important nutritional habits of family medicine trainees in Makkah region.

- Exactly half of them (50%) reported never taken low fat milk whereas 73.3% and 76.7% of them reported never taken semi-skimmed and skimmed milk, respectively.
- Orange juice was taken in a frequency of 1-3/ month among 56.7% of them.

- Fruit drink without sugar was never taken by 40% of them whereas fruit drink with sugar was taken in a frequency of 1-3/month by 41.7% of them.
- Similarly, soft drink without sugar was never taken by almost two-thirds of them (65%) whereas soft drink with sugar was taken in a frequency of 4-6/week by 16.7% of them.
- Boiled potatoes were taken in a frequency of 4-6/week by 3.3%

of the family medicine trainees compared to 15% of potato chips. In addition, boiled potatoes were taken in a frequency of more than 4 times per day among 1.7% of them whereas a potato chip was taken in that frequency by 3.3% of the respondents.

- Fresh vegetables and fruits were never taken by 3.3% and 1.7% of the family medicine trainees, respectively while they were taken in a high frequency (≥ 4 times/day) by 16.7% of them.

- Whole meal bread was taken in a frequency of 4-6 times/ week by almost a third of them (36.7%).

- Fish was taken in a low frequency (1-3 times per month) by almost two-thirds of them (65%).

- Pizza was taken in a frequency of 1-3/month by majority of family medicine trainees (80%).

- Sweets and chocolates were taken in a frequency of 1-3/week by almost a third of the participants (33.3% and 28.3%, respectively).

- Savoury snacks were taken in a frequency of 1-3/week by almost a fifth of them (21.7%) whereas they were taken in a moderate frequency (4-6 times/week) by 30% of them.

As shown in table 4, obesity was more observed among male family medicine trainees than females (44.4% versus 12.1%).

Similarly, overweight was more reported among male than female

family medicine trainees (29.6% versus 15.2%). This difference between males and females regarding their BMI was statistically significant, $p=0.001$. Physicians' age, marital status and residency level were not significantly associated with their BMI.

Almost two thirds of physically inactive family medicine trainees (62.5%) were obese compared to 6.2% of those physically active.

Obesity was reported among 12.5% and 18.8% of those who are moderately inactive and moderately active, respectively. This association between level of physical activity and BMI among family medicine trainees was statistically significant, $p=0.033$.

(Table 5) Histories of chronic diseases and smoking among family medicine trainees were not significantly associated with their BMI.

From table 6, it is illustrated that family medicine trainees who reported intake of soft drinks with sugar showed higher significant rate of overweight and obesity compared to those who never intake soft drinks with sugar (24.5% versus 13.3% and 33.3% versus 6.7%, respectively, $p=0.034$). Other studied liquid foods were not significantly associated with BMI among family medicine trainees. It is evident that none of the studied hard food staffs was significantly associated with the family medicine trainees' body mass index.

Table 4: Association between Body mass index and personal characteristics of family medicine trainees in Makkah

Personal characteristics		Body mass index			χ^2 (p-value)
		Normal/ underweight N=31 N (%)	Overweight N=13 N (%)	Obese N=16 N (%)	
Age (years)	<30 (n=46)	26 (56.6)	10 (21.7)	10 (21.7)	2.70 (0.260)
	≥ 30 (n=14)	5 (35.7)	3 (21.4)	6 (42.9)	
Gender	Male (n=27)	7 (25.9)	8 (29.6)	12 (44.4)	13.55 (0.001)
	Female (n=33)	24 (72.7)	5 (15.2)	4 (12.1)	
Marital status	Single (n=17)	12 (70.6)	3 (17.6)	2 (11.8)	3.80 (0.150)
	Married (n=43)	19 (44.2)	10 (23.3)	14 (32.6)	
Residence level	First (n=17)	9 (52.9)	4 (23.5)	4 (23.5)	7.81 (0.253)
	Second (n=17)	10 (58.8)	2 (11.8)	5 (29.4)	
	Third (n=12)	4 (33.3)	2 (16.7)	6 (50.0)	
	Fourth (n=14)	8 (57.1)	5 (35.7)	1 (7.1)	

Table 5: Association between physical activity and body mass index among family medicine trainees in Makkah

Physical activity	Body mass index		
	Normal/ underweight N=31 N (%)	Overweight N=13 N (%)	Obese N=16 N (%)
Inactive (n=34)	13 (41.9)	11 (84.6)	10 (62.5)
Moderately inactive (n=15)	13 (41.9)	0 (0.0)	2 (12.5)
Moderately active (n=7)	2 (6.5)	2 (15.4)	3 (18.8)
Active (n=4)	3 (9.7)	0 (0.0)	1 (6.2)

$\chi^2=13.74$, $p=0.033$; Two underweight cases were added to normal subjects

Table 6: Association between intake of liquid/hard foods and body mass index among family medicine trainees in Makkah

		Body mass index			χ^2 (p-value)
		Normal N (%)	Overweight N (%)	Obese N (%)	
Fruit drink without sugar	Never (n=24)	11 (45.8)	6 (25.0)	7 (29.2)	0.56 (0.755)
	Yes (n=36)	20 (55.6)	7 (19.4)	9 (25.0)	
Soft drinks with sugar	Never (n=15)	12 (80.0)	2 (13.3)	1 (6.7)	6.75 (0.034)
	Yes (n=45)	19 (42.2)	11 (24.5)	15 (33.3)	
Soft drinks without sugar	Never (n=39)	24 (61.5)	7 (17.9)	8 (20.6)	4.40 (0.111)
	Yes (n=21)	7 (33.3)	6 (28.6)	8 (38.1)	
Full fat milk	Never (n=10)	4 (40.0)	2 (20.0)	4 (40.0)	1.13 (0.568)
	Yes (n=50)	27 (54.0)	11 (22.0)	12 (24.0)	
Low fat milk (1.5% fat)	Never (n=30)	19 (63.3)	5 (16.7)	6 (20.0)	3.27 (0.195)
	Yes (n=30)	12 (40.0)	8 (26.7)	10 (33.3)	
Semi-skim. milk (0.7% fat)	Never (n=44)	22 (50.0)	8 (18.2)	14 (31.8)	2.66 (0.265)
	Yes (n=16)	9 (56.3)	5 (31.3)	2 (12.5)	
Skimmed milk	Never (n=46)	25 (54.3)	10 (21.7)	11 (23.9)	0.84 (0.659)
	Yes (n=14)	6 (42.9)	3 (21.4)	5 (35.7)	
Orange juice	Never (n=3)	3 (100)	0 (0.0)	0 (0.0)	2.95 (0.228)
	Yes (n=57)	28 (49.1)	13 (22.8)	16 (28.1)	
Fruit drink with sugar	Never (n=6)	2 (33.3)	1 (16.7)	3 (50.0)	1.87 (0.392)
	Yes (n=54)	29 (53.7)	12 (22.2)	13 (24.1)	
Boiled potatoes	Never (n=15)	8 (53.3)	5 (33.3)	2 (13.3)	2.60 (0.272)
	Yes (n=45)	23 (51.1)	8 (17.8)	14 (31.1)	
Potato chips	Never (n=6)	4 (66.7)	1 (16.7)	1 (16.7)	0.62 (0.734)
	Yes (n=54)	27 (50.0)	12 (22.2)	15 (27.8)	
Vegetables (fresh)	Never (n=2)	2 (100)	0 (0.0)	0 (0.0)	1.94 (0.380)
	Yes (n=58)	29 (50.0)	13 (22.4)	16 (27.6)	
Fruit (fresh)	Never (n=1)	1 (100)	0 (0.0)	0 (0.0)	0.95 (0.621)
	Yes (n=59)	30 (50.8)	13 (22.0)	16 (27.1)	
Whole meal bread	Never (n=3)	2 (66.7)	1 (33.3)	0 (0.0)	1.18 (0.555)
	Yes (n=57)	29 (50.9)	12 (21.1)	16 (28.1)	
Fish	Never (n=0)	0 (0.0)	0 (0.0)	0 (0.0)	NA
	Yes (n=60)	31 (51.7)	13 (21.7)	16 (26.7)	
Pizza	Never (n=0)	0 (0.0)	0 (0.0)	0 (0.0)	NA
	Yes (n=60)	31 (51.7)	13 (21.7)	16 (26.7)	
Sweets	Never (n=2)	1 (50.0)	1 (50.0)	0 (0.0)	1.32 (0.517)
	Yes (n=58)	30 (51.7)	12 (20.7)	16 (27.6)	
Chocolate	Never (n=2)	1 (50.0)	0 (0.0)	1 (50.0)	0.87 (0.647)
	Yes (n=58)	30 (51.7)	13 (22.4)	15 (25.9)	
Savoury snacks	Never (n=4)	3 (75.0)	1 (25.0)	0 (0.0)	1.62 (0.446)
	Yes (n=56)	28 (50.0)	12 (21.4)	16 (28.6)	

Two underweight cases were added to normal subjects.

DISCUSSION

More than a quarter of the family medicine trainees in Makkah region, KSA were obese and more than a fifth of them were overweight. These rates are even worse than those reported among general Saudi adult population by El-Hazmi and Warsy¹⁹ who reported that the prevalence of overweight in the total population was 27.23% and 25.2% among males and females, respectively, while the prevalence of obesity was 13.05% and 20.26% among males and females respectively. In a study conducted in Pakistan among the post graduate trainees, the

prevalence of obesity was approximately 28.2% while that of overweight was 31.6%.²⁰ In Iran, the prevalence of overweight/obesity among men and women general physicians were 54.5% and 13.3% respectively.²¹

In our study, male family medicine trainees reported higher significant rate of obesity compared to females, which is contrary to other studies which found the female gender at greater risk for obesity.²²⁻²⁴ The lower rate of obesity among female residents in the current study is expected since females are more cautious about their weight status than males, due to society perceptions

which encourage females to be slender. This assumption was supported by the fact that only 25.9% of males were normal as compared to 72.7% of females in this studied sample. Obviously, pictures of movie stars and models in fashion magazines and mass media have a strong impact on women's body shape and image perception, particularly in a relatively young age as in our population.²⁵ In accordance with our finding, other studies reported higher rates of obesity among males than females,²⁶ even in Gulf countries.²⁷

In terms of eating habits, we did not find an association of obesity with snacks between meals although 28.6% of those reported having snacks were obese compared to none of those reported never intake of snacks. This could be attributed to relatively small sample size of our population especially those reported never intake of snacks (4 physicians). Anyhow, this finding is not consistent with results from other studies which have shown association of savoury snacks with obesity.^{28,29} The usual snacks include biscuits, chips, or soft drinks which are rich in calories and lead to obesity. Trainee physicians usually do not follow healthy eating habits, because they spent a long time out of their home also a considerable proportion of them were singles. The typical diet is high in fat and low in fruits and vegetables.³⁰ They often select fast food due to its palatability, availability and convenience. A previous survey by the American Dietetic Association indicated that obesity, or being severely overweight, is a fast-food related issue.³¹ The Healthy people 2010 objectives include a focus on nutrition and obesity prevention.³²

In this study, data analyses of family medicine trainees' eating habits revealed that the unhealthy eating habit of them was noticed in some figures, although not significant except for soft drinks with sugar, again most probably due to relatively small sample size. The majority of physicians do eat fresh vegetables and fruits four times or more daily. Majority of them (80%) of them eat pizza in a frequency of 1-3/month. Almost a third of them eat sweets and chocolates in a frequency of 1-3/week. In addition, intake of soft drinks with sugar was significantly associated with higher rates of overweight and obesity among them. Daily intake of snacks was reported by 30% of them. Frequent snacking and eating potatoes chips can adversely affect physicians' health status, given the abundance of energy dense and high fat ingredients they contain.

Evidence suggests that the level of physical activity of physicians can be correlated directly with physician counseling patterns about this behavior.³³ In the present study, more than half of our participated family medicine trainees were physically inactive and further quarter were moderately inactive. This rate is higher than the National United States survey (Behavioral Risk Factor Surveillance System), which showed that 26% of adults reported no moderate or vigorous activity in a usual week.³⁴ In another similar study conducted among American physicians,³⁵ more than 35% of their sample reported not exercising at all or getting only occasional exercise. In a representative cross-sectional web-based American survey included attending physicians, resident and fellow physicians and medical students, conducted in June 2009-January 2010 throughout the USA (N=1949) using the short form of the International Physical Activity Questionnaire, attending physicians (84.8%) and medical students (84%) were more likely than resident (73.2%) and fellow physicians (67.9%) to meet physical activity guidelines.³³ As expected, the level of physical

inactivity was significantly associated with obesity among our study sample.

Bleich et al in USA³⁶ reported that physicians with normal BMI were more frequently reported discussing weight loss at lower levels of BMI compared to overweight/obese physicians. In addition, physicians with normal BMI had greater confidence in their ability to provide diet and exercise counseling to their obese patients, and perceived their weight loss advice as trustworthy. However, overweight/obese physicians had greater confidence in prescribing weight loss medications and were more likely to report success in helping patients lose weight. They concluded that recording an obesity diagnosis or discussing weight loss with obese patients was higher when the physicians' perception of the patients' body weight met or exceeded their own personal body weight.

Among strengths of the current study is its unique nature in our society as well as the relatively high response rate (98.4%). A response rate of less than 50% reported among different studies conducted among physicians.^{35,37-39} This high response rate can probably be ascribed to the researcher himself in personal contact with the physicians as well as to the explanation of the purpose of the study, scientific importance and value of the study to them. According to Rosnow and Rosenthal (1999),⁴⁰ these techniques (e.g. personal contact, using reminders and explaining the scientific importance and value of the study, ensuring the participants confidentiality) are linked to increase participation in surveys.

The current study has some limitations. First, it is based on self-report, where responses regarding socially undesirable behaviors may be understated. Second, our sample closely reflects the distribution of family trainees in Makkah region; however, our sample limits the generalizability of the study to all trainees and in different regions of the kingdom. Finally, these data are cross-sectional and limit our ability to make causal inference among health-related lifestyle, preventive behaviors, and health-risking behaviors.

In conclusion, prevalence of overweight and obesity was high among family medicine trainees in Makkah city, KSA. Physical inactivity, male gender and frequent intake of soft drinks with sugar were found to be predictors of obesity among family medicine trainees in Makkah city. We recommended making more efforts in the area to increase awareness among physicians of the importance of physical activity and decrease the body weight.

REFERENCES

1. Frank E, Segura C, Shen H, Oberg E. Predictors of Canadian physicians' prevention counseling practices. *Can J Pub Health* 2010; 101:390-395.
2. Van der Hulst M. Long work hours and health. *Scand J Work Environ Health* 2003; 29: 171-88.
3. Fahrenkopf AM, Sectish TC, Barger LK, Sharek PJ, Lewin D, Chiang VW, Edwards S, Wiedermann BL, Landrigan CP. Rates of medication errors among depressed and burnt out residents: prospective cohort study. *BMJ* 2008; 336: 488-91.
4. Alpert JS. Physician depression. *Am J Med* 2008; 121: 643.
5. Canadian Medical Association. Centre for Physician Health and Well-being. http://www.cma.ca/index.php/ci_id/25541/la_id/1.htm.
6. World Health Organization. Global prevalence and secular trends in obesity. In: *Obesity preventing and managing the global epidemic, Report of a WHO Consultation on Obesity*, Geneva, 1998; pp 17-40.

7. National Heart, Lung, and Blood Institute in cooperation with The National Institutes of Diabetes and Digestive and Kidney Diseases (1998). *Clinical Guidelines on the Identification, Evaluation, and Treatment of Overweight and Obesity in Adults: The Evidence Report*. Bethesda, MD: National Institutes of Health.
8. Wang Y, Rimm EB, Stampfer MJ, Willett WC, Hu FB. Comparison of abdominal adiposity and overall obesity in predicting risk of type 2 diabetes among men. *Am J Clin Nutr* 2005; 81(3):555-63.
9. Folsom AR, Kushi LH, Anderson KE, Mink PJ, Olson JE, Hong CP, Sellers TA, Lazovich D, Prineas RJ. Associations of general and abdominal obesity with multiple health outcomes in older women: the Iowa Women's Health Study. *Arch Intern Med* 2000; 160(14):2117-28.
10. Setty AR, Curhan G, Choi HK. Obesity, waist circumference, weight change, and the risk of psoriasis in women: Nurses' Health Study II. *Arch Intern Med* 2007; 167(15):1670-1675.
11. Wendland EM, Duncan BB, Mengue SS, Nucci LB, Schmidt MI. Waist circumference in the prediction of obesity-related adverse pregnancy outcomes. *Cad Saude Publica* 2007; 23(2):391-398.
12. Price GM, Uauy R, Breeze E, Bulpitt CJ, Fletcher AE. Weight, shape, and mortality risk in older persons: elevated waist-hip ratio, not high body mass index, is associated with a greater risk of death. *Am J Clin Nutr* 2006; 84(2):449-460.
13. Grundy SM, Cleeman JI, Daniels SR, Donato KA, Eckel RH, Franklin BA, Gordon DJ, Krauss RM, Savage PJ, Smith SC Jr, Spertus JA, Costa F. Diagnosis and management of the metabolic syndrome: an American Heart Association/National Heart, Lung, and Blood Institute Scientific Statement. *Circulation* 2005; 112(17):2735-52.
14. Madani KA, Al-Amoudi NS, Kumosani TA. The state of nutrition in Saudi Arabia. *Nutrition and Health*. 2000; 14:17-31.
15. National Health Institute (NHS). The general practice physical activity questionnaire (GPPAQ), 2006.
16. Haftenberger M, Heuer T, Heidemann C, Kube F, Krems C, Mensink G. Relative validation of a food frequency questionnaire for national health and nutrition monitoring. Haftenberger et al. *Nutrition Journal* 2010; 9:36
17. Therese LI, Nina CV, Lene FA. Evaluation of a short food frequency questionnaire used among Norwegian children. *Food and Nutrition Research*; 2012; 56: p1. Available at: <http://www.Foodandnutritionresearch.net/index.php/fnr/article/view/6399/19272-AF0003>
18. Willett WC. Food-frequency methods. In: Willett W, ed. *Nutritional epidemiology*. Oxford: Oxford University Press: 1998; p. 74–100.
19. El-Hazmi MA, Warsy AS. Prevalence of obesity in the Saudi population. *Ann Saudi Med* 1997; 17:302-6.
20. Mahmood S, Najjad MK, Ali N, Yousuf N, Hamid Y. Predictors of obesity among post graduate trainee doctors working in a tertiary care hospital of public sector in Karachi, Pakistan. *J Pak Med Assoc*. 2010 Sep; 60(9):758-61.
21. Maddah M. Obesity and dyslipidemia among young general physicians in Iran. *Int J Cardiol*. 2007 May 16; 118(1):111-2.
22. Jafar T, Chaturvedi N, Pappas G. Prevalence of overweight and obesity and their association with hypertension and diabetes mellitus in Indo-Asian population. *CMAJ* 2006; 175: 1071-7.
23. Fouad M, Rastam S, Ward K, Mazlak W. Prevalence of obesity and its associated factors in Aleppo, Syria. *Prev Control* 2006; 2:85-94.
24. Al-Isa AN. Obesity among Kuwait University students: an explorative study. *The Journal of the Royal Society for the Promotion of Health* 1999; 119(4):223-227.
25. Field AE, Cheung L, Wolf AM, Herzog DB, Gortmaker SL, Colditz GA. Exposure to the mass media and weight concerns among girls. *Pediatrics* 1999; 103(3):E36.
26. Yahia N, Achkar A, Abdallah A, Rizk S. Eating habits and obesity among Lebanese university students. *Nutrition Journal* 2008, 7:32
27. Musaiger AO, Lloyd OL, Al-Neyadi SM, Bener AB: Lifestyle factors associated with obesity among male university students in the United Arab Emirates. *Nutrition & Food Science* 2003, 33(4):145-147.
28. Sebastian RS, Enns CW, Goldman JD. Snacking Patterns of U.S. Adults: What We Eat in America, NHANES 2007-2008. Food Surveys Research Group Dietary Data Brief No. 4, June, 2011. Available at: http://www.ars.usda.gov/SP2UserFiles/Place/12355000/pdf/DBrief/4_adult_snacking_0708.pdf
29. Greenwood JJJ, Stanford JB. Preventing or improving obesity by addressing specific eating patterns. *Am Board Fam Med* 2008 March-April 21(2):135-140
30. Galore SR et al. Brief Communication: Dietary habits of first-year medical students as determined by computer software analysis of three-day food records. *J Am Coll Nutr* 1993, 12:517-520.
31. The Academy of Nutrition and Dietetics; *Nutrition and You*; 2002: Trends; http://www.eatright.org/ada/files/trends02_findings.pdf
32. *Healthy People 2010*. Conference ed. Washington, DC: US Government Printing Office; 2000.
33. Stanford FC, Durkin MW, Blair SN, Powell CK, Poston MB, Stallworth JR. Determining levels of physical activity in attending physicians, resident and fellow physicians and medical students in the USA. *Br J Sports Med*. 2012 Apr; 46(5):360-4.
34. Macera CA, Ham SA et al. Prevalence of physical activity in the United States: Behavioral Risk Factor Surveillance System, 2001. *Prev Chronic Dis*. 2005 Apr; 2(2):A17.
35. Bazargan M, Makar M, Bazargan-Hejazi S, Ani C, Wolf KE. Preventive, lifestyle, and personal health behaviors among physicians. *Academic Psychiatry* 2009 July-Aug; 33(4.):289-295.
36. Bleich SN, Bennett WL, Gudzone KA, Cooper LA. Impact of Physician BMI on Obesity Care and Beliefs. *Obesity (Silver Spring)*. 2012 May; 20(5): 999–1005.
37. Livaudais JC, Kaplan CP, Haas JS, Pérez-Stable EJ, Stewart S, Jarlais GD. Lifestyle behavior counseling for women patients among a sample of California physicians. *J Womens Health (Larchmt)*. 2005 Jul-Aug; 14(6):485-95.
38. Frank E, Bhat Schelbert K, Elon L. Exercise counseling and personal exercise habits of US women physicians. *J Am Med Womens Assoc*. 2003 Summer; 58(3):178-84.
39. Hull SK, DiLalla LF, Dorsey JK. Prevalence of health-related behaviors among physicians and medical trainees. *Acad Psychiatry* 2008; 32:31–38.
40. Rosnow R, Rosenthal R. *Psychology; Social sciences; Research; Methodology In: Beginning behavioral research: A conceptual primer*. Published by: Prentice Hall (Upper Saddle River, NJ), 3rd edition, 1999; 475-81.

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