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Research Article

Prevalence of Obesity among Family Medicine Residents and its Determinants, Jeddah City, Saudi Arabia 2019

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Abstract

Obesity is an epidemic disease and family medicine doctors are at an increased risk of obesity due to the sedentary nature of their work. The present study was carried out to evaluate obesity and to identify the determinants and risk factors associated with obesity among family medicine residents in Jeddah, Saudi Arabia. A cross-sectional study with 160 participants was conducted from November 2019 to February 2020. A self-administered questionnaire was distributed to family medicine residents during their academic years in order to collect the information regarding their biographic details, height, weight, physical activity level, and changes in weight and dietary habits during the training period. The present study observed that the prevalence of overweight among residents was 25.8% and the prevalence of obesity was 13.8%. The risk of obesity was higher among male residents. Among all of the participants 41.6% reported that they gained weight during the residency period and 28.5% reported that they lost weight. There was a statistically significant association between BMI and moderate physical activity. The findings of this study suggest that residents doctors may be at an increased risk of obesity during postgraduate training which may be influenced by their dietary habits and physical activity levels.

Keywords: *Obesity; Overweight; Physician; Healthcare; Jeddah*

Abbreviations

BMI: Body Mass Index, IPAQ: International Physical Activity Questionnaire, SPSS: Statistical Package for Social Science, PGY; Postgraduate Year, JPFCM: Joint Program of Family and Community Medicine, NGH: National Guard Hospital, KAUH: King Abdulaziz University Hospital

Introduction

Obesity and overweight are defined as abnormal or excessive fat accumulation that presents a health risk. A crude population measure of obesity is the body mass index (BMI), a person's weight (in kilograms) divided by the square of his or her height (in meters). A person with a BMI of 30 or more is generally considered obese. A person with a BMI equal to or more than 25 is considered overweight. Obesity and overweight are major risk factors for many chronic diseases and certain cancers. It is becoming a significant health problem in urban countries [1,2].

In Saudi Arabia, the obesity rate was reported to be 35.4% in 2020 [3]. Saudi Arabia was ranked fourteenth in obesity worldwide. According to the World Atlas study in 2013, around 24.1% of men and 33.5% of women in Saudi Arabia were obese. Among 33.4% of men and 33.5% of women were overweight [4].

In the literature, Alzahrani., *et al*. 2016 cross-sectional study conducted in Aseer region of Saudi Arabia to identify prevalence of obesity among Saudi board residents shows that 36% were overweight and 23% were obese. Obesity was more reported among male than female residents (31.9% vs. 7.1%). On the other hand, intake of pizza, potato chips, and sweets was associated with higher rates of overweight and obesity [5].

Based on the above evidence, we can postulate that resident doctors are at an increased risk of obesity and poor lifestyle habits during postgraduate training. This is related to poor dietary habits, decreased physical activity, and work related stress. Focusing on their health and dietary habits is essential as they represent a role model for patients and provides them with more credibility when promoting healthy practices. We conducted this study as the data is limited in order to measure the prevalence and identify the risk factors associated with obesity among family medicine residents in Jeddah city.

Materials and Methods

A descriptive cross-sectional study was conducted from November 2019 to February 2020, among family medicine residents during their academic years in various locations at the Joint Program of Family and Community Medicine (JPFCM), National Guard Hospital Family Medicine Training Program (NGH), and King Abdulaziz University Hospital Family Medicine Training Program (KAUH). The selection criterion included all family medicine residents in Jeddah city (PGY-1, PGY-2, PGY-3, and PGY-4). We excluded residents who were absent during the time of data collection or declined to participate. A total of 236 participants were selected using convenience sampling, only 160 participants responded to all parts of the questionnaire and were included in the final analysis.

A validated self-administered questionnaire was used to collect data regarding each participant's program sponsor, residency level, gender, weight, height, dietary habits, and physical activity types and duration. The International Physical Activity Questionnaire (IPAQ) was included as a validated scale. The participants were informed that the study aimed to evaluate obesity during their training period and that their data would be confidential and verbal consent was obtained.

A pilot study was conducted on 10% of the sample size prior to finalizing the data collection tools. We deemed the questionnaire length acceptable as the residents spent two to three minutes responding to the questions.

The collected data was entered and analyzed using Statistical Package of Social Science (SPSS - Version 27). Descriptive and analytic statistics were calculated through measures of frequency, percentage, central tendency, dispersion, and the chi square test, with a significant P-value to be less than 0.05.

Results and Discussion

Table 1 shows the demographic characteristics of the research participants. The total number of participants was 160. Two-thirds (67%) of the participants were females. Almost 75% of the research participants were affiliated with the joint program of family medicine in Jeddah. Regarding residency level, the highest percentage of the participants (30%) was in postgraduate year one (R1). Fifty-seven participants (41.6%) reported gaining weight during the residency period. In contrast, 39 (28.5%) said they lost weight. Most of the participants (86.7%) reported that they eat two to three meals per day.

Demographic Characteristics	Frequency	Percent
Sex	**160**	
Males	52	33.1
Females	105	66.9
Missing	3	
Affiliation	**160**	

JPFCM	114	74.5
NGH	22	14.4
KAUH	17	11.1
Missing	7	
Residency Level	**160**	
R1	48	30.0
R2	37	23.1
R3	41	25.6
R4	33	21.3
Weight changes	**160**	
No change	41	29.9
Weight gain	57	41.6
Weight loss	39	28.5
Missing	23	14.4
Number of Meals Per Day	**160**	
One	7	4.4
Two	71	44.7
Three	67	42.1
Four	11	6.9
Five	3	1.9
Missing	1	0.6

Table 1: *Frequency distribution of the main demographic characteristics of the research participants.*

There was a statistically significant association between BMI and sex, and between BMI and weight changes. In contrast, there was no statistically significant association between BMI, affiliation, residency levels, and the number of daily meals as shown in table 2.

	Normal 18.5 - 24.9	**Overweight 25 - 29.9**	**Obese BMI > 30**	**Total (%)**	**Chi Square**	**P Value**
Sex				**156**	12.3, df 2	P = 0.002
Males	26	12	14	52 (33)		
Females	70	27	7	104 (67)		
Affiliation				**153**	3.5, df 4	P = 0.48
NGH	10	7	5	22 (14.4)		
JPFCM	72	28	14	114 (74.5)		
KAUH	12	3	2	17 (11.1)		
Residency Level				**160**	2.9, df 6	P = 0.83
R1	29	11	8	48 (30)		
R2	22	8	7	37 (23.1)		
R3	25	12	4	41 (25.6)		
R4	20	10	3	33 (21.3)		

Weight Change				**136**	9.7, df 4	P = 0.046
Gain	30	19	8	57 (41.9)		
Loss	21	10	8	39 (28.7)		
No change	31	8	1	40 (29.4)		
Number of Meals Per Day				**159**	13.0, df 8	P = 0.059
One	6	1	0	7 (4.4)		
Two	38	17	15	70 (44.3)		
Three	43	19	5	67 (42.4)		
Four	8	2	1	11 (7.0)		
Five	0	2	1	3 (1.9)		

Table 2: *The main demographic characteristics of research participants and their association with BMI.*

The BMI of more than one-half of the research participants was normal as shown in figure 1. The prevalence of overweight among all residents was 25.8% (95% CI 19.0 - 32.6%), and the prevalence of obesity was 13.8 (95% CI 8.5 - 18.2%). The risk of obesity was higher among male residents (RR 3.8; 95% CI 1.7–8.8). In contrast, there was no statistically significant difference in male and female residents regarding overweight (RR 1.13; 95% CI 0.6 - 2.0).

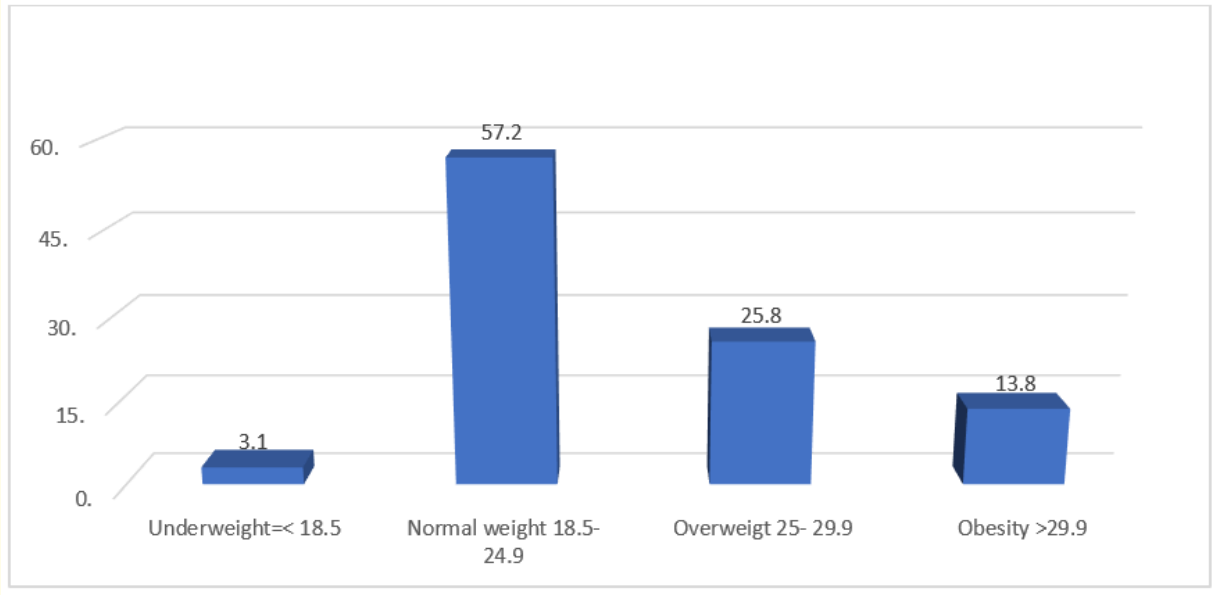

Figure 1: *Prevalence of obesity among family residents.*

Figure 2 shows the percentage of weight changes in research participants. Almost 42% of the participants reported that they had gained weight during the residency period.

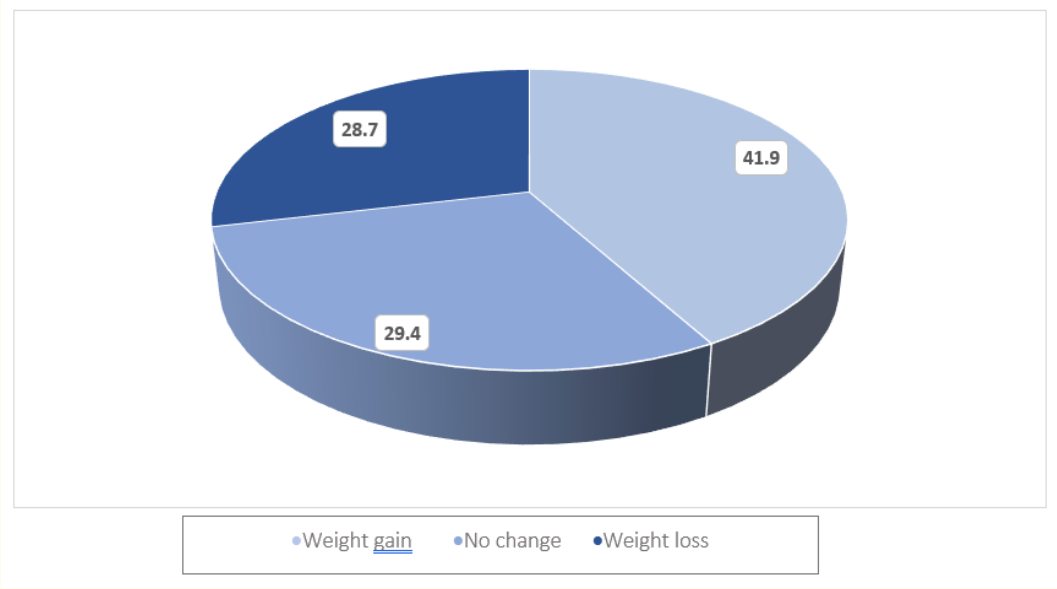

Figure 2: *Percentage of weight changes in family residents.*

Regarding the dietary habits 13 questions reliability and validity, cronbach's alpha was computed to measure these questions' internal consistency. Cronbach's alpha was 0.60, which is below 0.7. This low value may be due to the small number of questions. However, this value would not be improved by deleting any of the 13 questions. Factor analysis (principal components analysis) using varimax rotation was used to evaluate the construct validity and for identifying underlying components. Factor analysis recommends extracting three components.

The researchers decided to extract only two components, as it is more workable, the healthy habits component and the unhealthy habits component. Component one includes questions on healthy dietary habits, namely, drinking eight glasses of water, choosing low-fat milk, eating vegetables, eating fruit, eating dairy products, having breakfast, and eating meat, chicken, or fish. Component two includes questions on unhealthy dietary habits, namely, drinking soda/soft drinks, eating a late-night snack, eating fast food, eating dinner, and eating sweets and desserts. A question about eating lunch did not fit in either of the two components as summarized in table 3.

Dietary habits statement	Always N (%)	Most of the time N (%)	Sometimes N (%)	Never N (%)
Healthy habits component				
1. Drink 8 glasses of water	31 (19.9)	44 (28.2)	52 (33.3)	29 (18.6)
2. Choose low fat milk	48 (30.0)	22 (13.8)	46 (28.8)	44 (27.5)
3. Eat vegetables	40 (25)	54 (33.8)	62 (38.8)	4 (2.5)
4. Eat fruit	29 (18.1)	39 (24.4)	80 (50)	12 (7.5)
5. Eat dairy products	51 (32.1)	50 (31.4)	49 (30.8)	9 (5.7)
6. Eat breakfast	47 (29.6)	28 (17.6)	64 (40.3)	20 (12.6)
7. Eat meat, chicken, fish	77 (48.7)	62 (39.2)	19 (12.0)	0
Total	323 (29)	299 (27)	372 (33)	117 (11)

Unhealthy habits component				
1. Drink soda/soft drink	29 (18.6)	37 (23.7)	55 (35.3)	35 (22.4)
2. Eat late-night snack	21 (13.2)	38 (23.9)	67 (42.1)	33 (20.8)
3. Eat fast food	22 (14.0)	45 (28.7)	83 (52.9)	7 (4.5)
4. Eat dinner	27 (17.1)	49 (31.0)	73 (46.2)	9 (5.7)
5. Eat sweets and desserts	34 (21.7)	53 (33.8)	65 (41.4)	5 (3.2)
Total	133	222	343	89
The habit did not fit in any component				
1. Eat lunch	68 (42.8)	57 (35.8)	32 (20.1)	2 (1.3)

Table 3: *Pattern of dietary habits of research participants as healthy habit and unhealthy habit components.*

The four-point likert scale was considered as an interval scale. The mean from 0 to 0.84 means never, the mean from 0.85 to 1.54 means sometimes, the mean from 1.55 to 2.24 means most of the time, and the mean from 2.25 to 3 means always. Hence, 8 (5%) of the participants reported that they never achieve the seven healthy habits, compared to 26 (16.3%) who said that they never attain the five unhealthy habits. On the other hand, 36 (22.5%) of the participants reported that they always accomplish the seven healthy habits in contrast to 15 (9.4%) who said that they always reach the five unhealthy habits as shown in figure 3.

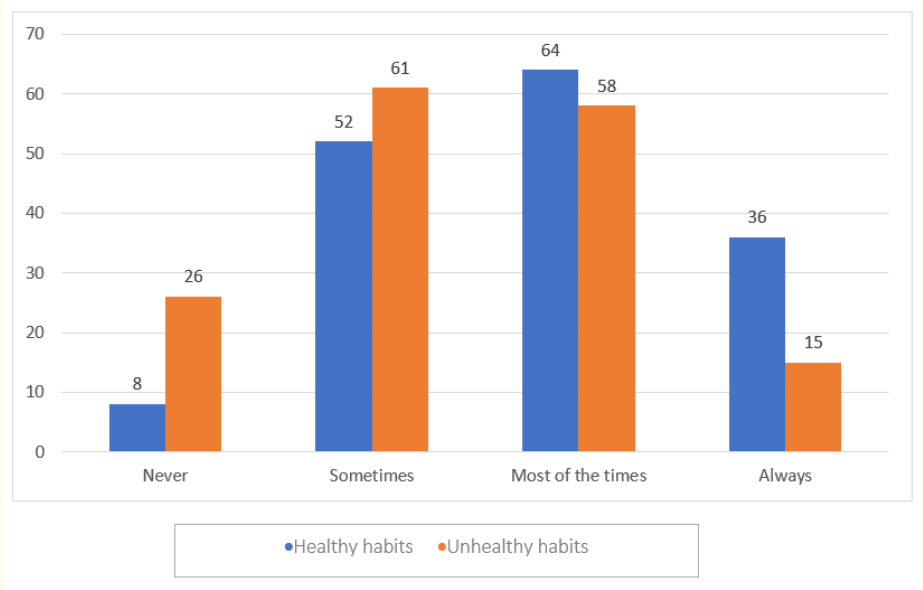

Figure 3: *Patterns of dietary habits of the family medicine residents.*

There was no statistically significant association between BMI and dietary habits of family medicine residents. Regarding the association between BMI and type of physical activities, there was a statistically significant association between BMI and moderate physical activity (chi-square 7.28; df 2; p-value 0.026). In contrast, there was no statistically significant association between BMI and vigorous activit, weekly physical activity, walking, and sedentary time as shown in table 4.

Activity type	Normal 18.5 - 24.9	Overweight 25 - 29.9	Obese BMI > 30	Total
Vigorous Activity				**Not Significant**
Perform	46 (54.8%)	26 (31%)	12 (14.3%)	84
Do not Perform	50 (66.7%)	15 (20%)	10 (13.3%)	75
Total	96 (60.4%)	41 (26.8%)	22 (13.8%)	159
Moderate Activity				**Significant**
Perform	35 (49.3%)	25 (35.2%)	11 (15.5%)	71
Do not perform	61 (63.3%)	16 (18.2%)	11 (12.5%)	89
Total	96 (60.4%)	41 (25.8%)	22 (13.8%)	159
Walking activity				**Not Significant**
Perform	79 (58.5%)	36 (26.7%)	20 (14.8%)	135
Do not perform	17 (70.8%)	5 (20.8%)	2 (8.3%)	24
Total	96 (60.4%)	41 (25.8%)	22 (13.8%)	159
Weekly activity				**Not Significant**
High	27 (54.0%)	17 (34.0%)	6 (12.0%)	50
Moderate	45 (62.5%)	14 (19.4%)	13 (18.1%)	72
Low	24 (64.9%)	10 (27.0%)	3 (8.1%)	37
Total	96 (60.4%)	41 (25.8%)	22 (13.8%)	159
Sedentary Time				**Not Significant**
Low	12 (60.0%)	7 (35.0%)	1 (5.0%)	20
Medium/High	35 (64.8%)	10 (18.5%)	9 (16.7%)	54
High	42 (53.8%)	24 (30.8%)	12 (15.4%)	78
Total	89 (58.6%)	41 (27.0%)	22 (14.5%)	152

Table 4: *The physical activity levels of research participants and their association with BMI.*

Discussion

This study's findings suggest that resident doctors may be at an increased risk of obesity during postgraduate training. This risk may be influenced by their dietary habits and physical activity levels. The purpose of our study was to estimate the prevalence of overweight and obesity among family medicine residents in Jeddah city and it was found to be 39% and 21%, respectively. Our findings are similar in comparison to Alzahrani., *et al*. 2016, which reported that obesity and overweight were among 36% and 23% of the residents. The significant predictors were found to be male gender and poor dietary habits [5].

There was no statistically significant association between BMI and affiliation, residency levels, and the number of daily meals. There was a statistically significant association between BMI and sex and weight changes. Surprisingly, there was a noticeable trend noted among female residents that 27% are overweight. The demographics of the study participants might explain this result, since two-thirds 67% were females.

It is important to consider some limitations of the study since the sample size is not large enough to be taken as a representative of family medicine residents. Further work is needed to follow the residents through their postgraduate training years to track weight changes.

Conclusion

Obesity may be the most significant health problem our world faces today, and family medicine residents in Jeddah city are at an increased risk due to weight changes, physical activity levels, and dietary habits during residency training. Increasing the level of awareness should be undertaken to improve their health and prevent comorbidities.

Conflict of Interest

The authors declare that they have no conflict of interest.

Bibliography

1. WHO. Obesity and Overweight (2015).
2. Wang Y., *et al*. "Health and economic burden of the projected obesity trends in the USA and the UK". *The Lancet* 378.9793 (2011): 815-825.
3. World Atlas. The Most Obese Countries In The World (2013).
4. World Obesity Data (2020).
5. Alzahrani A., *et al*. "Prevalence of Obesity Among Saudi Board Residents in Aseer Region, Saudi Arabia". *Saudi Journal of Obesity* 4.1 (2016): 13-19.

Volume 6 Issue 6 June 2021