



The Prevalence of Overweight and Obesity among Health Care Providers in the Emirate of Ajman, UAE

Sajadhossein bazrafshani*, Hifsa Randhawa, Yasin Ghaedi, Shazia Khan, Shatha Al-Sharbatti

Community Medicine Department, Gulf Medical University, Ajman, UAE

ABSTRACT

Objectives: The aim of this study is to assess the prevalence of overweight and obesity among healthcare providers and to assess risk factors associated with obesity.

Materials and Methods: It was a cross-sectional study which included Health Care Providers from Thumbay Hospital and Clinic and Ajman Specialty Hospital. HCP were requested to fill a validated questionnaire covering various risk factors and psychosocial impacts related to obesity. Data was analyzed using SPSS 24 and association between obesity and factors found using Chi-square.

Results: The study included 369 respondents most of them were females (n=336, 91.3%), in the age group of 30-39 (n=239, 66%), ever married (n=337, 92.8%), under and normal weight (n=185, 52.7%). Most participants were nurses (n=326, 92.9%), worked at hospital (n=351, 95.4%), worked for 8 hours (n=354, 95.9%), worked for <10 years in medical sector (n=254, 76.7%) and workload was moderate (n=272, 74.7%). 52.7% of the HCP were under and normal weight where as 47.3% were overweight and obese. Overweight and obesity was found to be more common among; males compared to females (53.5% Vs.46.6%), age groups >39 (71.7%), ever married compared to never married (48.8% Vs. 26.1%), doctors compared to nurses (73.1% Vs. 45.5%), participants working at clinic compared to hospitals (62.5% Vs. 46.7%), shift duration >8 hours compared to 8 hours (80% Vs. 45.8%), using medication compared to not using medication (71.8% Vs. 44.3%), suffering from a medical condition compared to not suffering from a medical condition (65.9% Vs. 44.7%), duration of work <10 years compared to working for >=10 years (65.8% Vs. 67.6%), having family history compared to not having family history (68.8% Vs. 42.5%). Significant association was found between overweight and obesity and occupation, duration of work in medical sector, shift, age, marital status, medications, having medical condition related to obesity, having family history of obesity. Feeling worthless was associated significantly with obesity.

Conclusion: The prevalence of overweight and obesity is 47%. Significant association was found between overweight and obesity and occupation, duration of work in medical sector, shift, age, marital status, medications, having medical condition related to obesity, having family history of obesity. Feeling worthless was associated significantly with obesity.

ARTICLE HISTORY

Received April 14, 2020,

Accepted May11, 2020

Published September 25, 2020

KEYWORDS

Obesity, overweight, psychosocial impacts

* **Contact** Sajadhossein bazrafshani Gulf Medical University, Ajman, UAE sajadho3ein@yahoo.com

2020 The Authors. This is an open access article under the terms of the Creative Commons Attribution Non Commercial Share Alike 4.0 (<https://creativecommons.org/licenses/by-nc-sa/4.0/>)

INTRODUCTION

Overweight and obesity are abnormal and excessive fat accumulation, which increases the risk to health. Body mass index (BMI) is a crude population measure for obesity. [1]

A study was conducted that concluded that 2.8 million people died every year worldwide because of obese. It was also found that the mortality rate increased with increasing amount of overweight (measured by BMI). Worldwide prevalence of obesity has doubled from 1980 (females 8%, males 5%) to 2008 (females 14%, males 10%) Worldwide > 1.5 a billion adults > 20 years of age are obese. [2]

The prevalence was highest in the WHO Regions of America (26% for obesity whereas 62% for overweight) and lowest South-East Asia (14% overweight in both sexes, 3% for obesity). For Europe, Eastern Mediterranean and Americas >50% of women were overweight and half of overweight women were obese. [2]

The prevalence of high BMI increases with the countries income. The prevalence of obesity was found to be higher in high income and upper middle-income (24%) countries compared to that of lower middle-income countries (7%). Obesity in both sexes was similar in high-income countries. [2]

The risk factors of obesity are categorized into modifiable and non-modifiable factors. Non-modifiable factors are age, gender, and genetics. Genetics affect the location, fat distribution, amount of fat stored by body store and plays a role in efficiency of fat metabolism. Obesity runs in families and if any of the parents are obese, the risk of obesity increases. Obesity affects people of all ages but with aging, hormonal changes with sedentary lifestyle increase the risk of obesity, also muscle in the body decreases leading to decreased metabolism. [3]

Intake of a diet high in calories contributes to weight gain and due to sedentary lifestyle, their calorie intake increases compared to usage through routine daily activities and exercise. A person with medical problems (e.g. arthritis) leads to sedentary lifestyle contributing to weight gain. Some medications (antidepressants, diabetes medications, anti-seizure medications, steroids, antipsychotic medications, beta-blockers) usher weight gain if a person is unable to compensate through their diet or physical activity. [3]

Economic and social factors are also associated with obesity. Avoiding obesity is difficult if there are no safe areas to exercise or there is a lack of enough money to buy healthier food. The type of company a person also influences their weight as friends who smoke, consume alcohol or eat fast food eventually have an effect on the person itself leading to bad life

choices. Lack of sleep causes hormonal changes increasing the appetite, leading to craving of high calorie food, which eventually leads to weight gain.

[3]

Congenital leptin deficiency results in obesity starting from very first months of life. Patients don't suffer from obesity at birth, but they're always hungry and gain weight rapidly. If it's not diagnosed or remains untreated hunger continues and initially it will result in chronic excessive eating finally leading to obesity.

[4]

Obesity causes various chronic diseases leading to death and is linked with psychological disorders and behavioral problems. Obesity can cause polycystic ovary disorder and hormonal imbalance which will affect fertility. Moreover, it's estimated that every year conditions related to obesity cost >\$150 billion and are the cause of approximately 300,000 premature deaths in the America. High blood pressure (BP) occurs increasing the workload on the heart and putting artery walls under more pressure increasing the blood pressure. However, extra weight raises heart rate and causes of Type II Diabetes as it causes resistance to insulin, elevating the blood sugar. Moderate obesity dramatically increases the risk of becoming diabetic. Atherosclerosis and coronary artery disease are also prevalent in obese patients. Obesity causes heart attack and also affects the knees & hips because of the amount of stress that that extra weight puts on the joints. [5]

There is high risk for developing many cancers like breast, gallbladder, uterus, and colon in women whereas in men risk of prostate and colon cancer was high. The National Cholesterol Education Program discovered that approximately 33.3% of obese people exhibited Metabolic Syndrome (complex of abdominal obesity, high BP, high blood cholesterol, insulin resistance with or without glucose intolerance and certain elevated clotting factors). In certain cultures where being overly thin is a symbol of physical attractiveness, there obese people usually suffer disadvantages. The obese are considered sluggish and weak-willed. Obesity leads to few or no romantic relationship at all. Some individuals' disapproval regarding obese people might progress to bias, torment, and discrimination. [5]

Following a healthy eating plan, making healthy food choices, and focusing on portion size can prevent obesity. It is important to be careful about the portion sizes in restaurants, as the portions that are served are enough for more than two people. Cutting back on portion size helps in balancing energy IN and energy OUT. In addition, limiting the use of technology increases the time for physical. [6]

Reducing calorie intake is crucial to weight loss. Physicians should review a person's dietary habits to decide their normal calorie consumption and where they should cut back. The doctor can determine the amount of calorie intake a person should consume every day to lose some weight. [7]

An obese person should make their diet healthier and should limit salt and sugar intake and consume low-fat dairy products. They can replace up to two meals with low-calorie shakes and their third meal with something low in fat and calories. [7]

It is essential for an obese person to increase their physical activity (PA) as a part of obesity treatment. A person can boost their activity level by many ways. They can try to get 2.5 hour per week of moderate PA to prevent any future weight gain. However, they can exercise >5 hours per week to accomplish extra weight loss. As in shedding additional weight, extra movement helps in burning calories. Parking farther from the store entrance, gardening, and wearing a pedometer to track steps can add up to big benefits. [7]

This problem should be considered as it is rising amongst healthcare providers. A study conducted in Scotland concluded that there were 69.1% of obese Scottish nurses. Prevalence higher in nurses compared to other healthcare professionals (51.3%), those in other occupations (68.9%) and unqualified care staff (68.5%). It was concluded that the Odds Ratio for obesity was lower for other occupations (Odds Ratio 0.78) and other healthcare professionals (Odds Ratio 0.45) compared to nurses. [8]

MATERIALS AND METHODS

Study Design: Cross sectional study

Study Population

- Health care providers in Thumbay hospitals and clinics in Ajman
- Inclusion criteria - age >18 both genders accept to give inform consent
- Exclusion criteria - refuse to give inform, consent age less than 18 years, Healthcare provider who are not available at the site at time of data collection

Sample Size Calculation [9,10]

To determine sample size, the following equation has been used

$$N = Z^2 \frac{Pq}{L^2}$$

L²

N: sample size

P: Prevalence of the event in the population. Prevalence of overweight and obesity

among nurses in another study done in the UK was used to calculate sample size in the current study.

P=69%=0.69, (the prevalence of overweight and obesity among nurses In Scotland) [8]

$$q = 1 - P = 1 - 0.69 = 0.31$$

Z: significance level (95%CI, Z=1.96). $Z^2 = 1.96^2 = 3.841$

$L^2 = 0.05^2$ (margin of error)

Calculation:

$$3.841 \times 0.31 \times 0.69 / (0.05)^2 = 328.7 = \text{Approximately } 329$$

We add to this 10% anticipated refusal rate=32.9= Approximately 33

Estimated minimal sample size will be= 362

Study Settings: Thumbay Hospital, Thumbay Clinic and Ajman Specialty Hospital

Duration of Study: 9 months (April 2017 to December 2017)

Study Instrument & Validation Procedure

Self-administered validated questionnaire was used as tool, research team developed the draft of questionnaire, three experts validated the questionnaire. Questionnaire was pilot tested on 3 eligible participants, to check for clarity of questions and feasibility aspects of study. Recommended dietary intake value was taken from American Heart Association.

Ethical Issues

The data collection started after getting official approval by GMU ethics committee, inform consent was obtained from participants before including them in research. Participants were informed about objectives of the study and regarding their right to refuse participating in research. Confidentiality of information was respected. Data was accessed only by research team, ethics committee and the statistician. The sites were asked to provide special place for participants during data collection to insure privacy.

METHODOLOGY

After approval from GMU ethics committee official approval was obtained from the sites. Arrangement was done with secretary at each site for best time for data collection. On identified date, research team approached all eligible participants inviting them to participate in study, explaining the objectives of study. Those who accepted participating in study were asked to fill inform consent and questionnaire was delivered to them to be filled. Research team was available during data collection to clarify doubts.

Feasibility of the Proposed Research

Thus, the study is feasible because we can have the required number of participants also questionnaire is not long which we hope it'll increase the acceptability of the eligible participants in study, the study doesn't include investigation, no payment and more over our target population being health care provider will cooperate with students.

Details of Data Storage

Data is stored in community medicine department for minimum 3 years as per GMU policy.

DATA ANALYSIS

Data was entered on excel sheet. Exported into SPSS. The SPSS version 23 software was used to analyze data presented in table, figures and texts, chi-square test was used to assist association between variables $p > 0.5$ was used as criteria of significance.

RESULTS

Our study included a sample of 369 respondents out of 420 health care providers (doctors and nurses), response rate 87.8%

Table 1. Distribution of participants by socio-demographic factors

	Group	Frequency	Percentage (%)
Age	20-29	74	20.4
	30-39	239	66.0
	>39	49	13.5
Gender	Male	32	8.7
	Female	336	91.3
Marital Status	Never Married	26	7.2
	Ever Married	337	92.8
BMI	Under/normal weight	185	52.7
	Overweight/obese	166	47.3

Most of the participants were females (91.3%) whereas only 8.7% were male. They were also asked about their marital status and it was found that 7.2% were single and about 92.8 were married or divorced. 52.7% of health care providers are underweight and normal weight whereas 47.3% are Overweight and obese.

Table 2. Distribution of participants characteristics based on occupation

	Group	Frequency	Percentage
Occupation	Doctor	27	7.6
	Nurse	326	92.9
Location	Hospital	351	95.4
	Clinic	17	4.6
Duration	<10	254	76.7
	11-20	69	20.8
	21-30	8	2.4
Workload	Low	2	0.5
	Moderate	272	74.7
	High	90	24.7
Shift	8	354	95.9
	>8	15	4.1

Table 2 shows the characteristics of the occupation. Most (92.9%) of the participants were nurses, whereas only 7.6% were doctors. 95.4% of the participants were from the hospital and only 4.6% were from the clinic.

Table 11. Cross-tabulation of socio-demographics with obesity

Variable	Group	Obesity				P
		Yes		No		
		Number	%	Number	%	
Gender	Male	16	53.5	14	46.7	0.477
	Female	149	46.6	171	53.4	
Age	20-29	25	36.2	44	63.8	0.001
	30-39	107	46.3	124	53.7	
	>39	33	71.7	13	28.3	
Marital Status	Never Married	6	26.1	17	73.9	0.038
	Ever Married	156	48.4	166	51.6	

- **Gender:** the chi square is not significant as the p value obtained between males and females in regard with obesity prevalence is 0.477. However, males are obese compared to females
- **Age:** Chi Square value shows significance (0.001) between the age groups. The results show that >39 age group has higher risk of obesity compared to the other age groups (20-29 and 30-39)
- **Marital status:** Chi-square value is significant (0.038) and it clearly demonstrates the prevalence being higher in married participants (48.4%)

Table 12. cross-tabulation of work with obesity

Variable	Group	Obesity				P
		Yes		No		
		Number	%	Number	%	
Occupation	Doctor	19	73.1	7	26.9	0.021
	Nurse	143	45.5	170	54.5	
Work Location	Hospital	156	46.7	178	53.3	0.297
	Clinic	10	62.5	7	37.5	
Duration	<10 years	96	65.8	147	86	<0.0001
	>=10 years	50	67.6	24	32.4	
Shift	8 hours	154	45.8	182	54.2	0.010
	>8 hours	12	80	3	20	

- **Occupation:** Chi-square value shows significance (0.021) between the occupation (doctor and nurse). Shows higher prevalence amongst doctors (73.1%) when compared to nurses
- **Work Location:** Chi-square shows no significance between work location (hospital, clinic) as the p value is 0.297. However, the prevalence of obesity is higher in participants working at the clinic (62.5%)
- **Duration:** Chi-Square value is significant (<0.0001) between the three categories of duration that the participants have been working in medical field. However, prevalence is higher in participants who have been working for >=10 years (67.6%)
- **Shift:** Chi-square value is significant between the two categories of shifts (8 hours and >8 hours) as the p value is 0.010. Participants working for >8 hours were mostly the ones who were obese (80%).

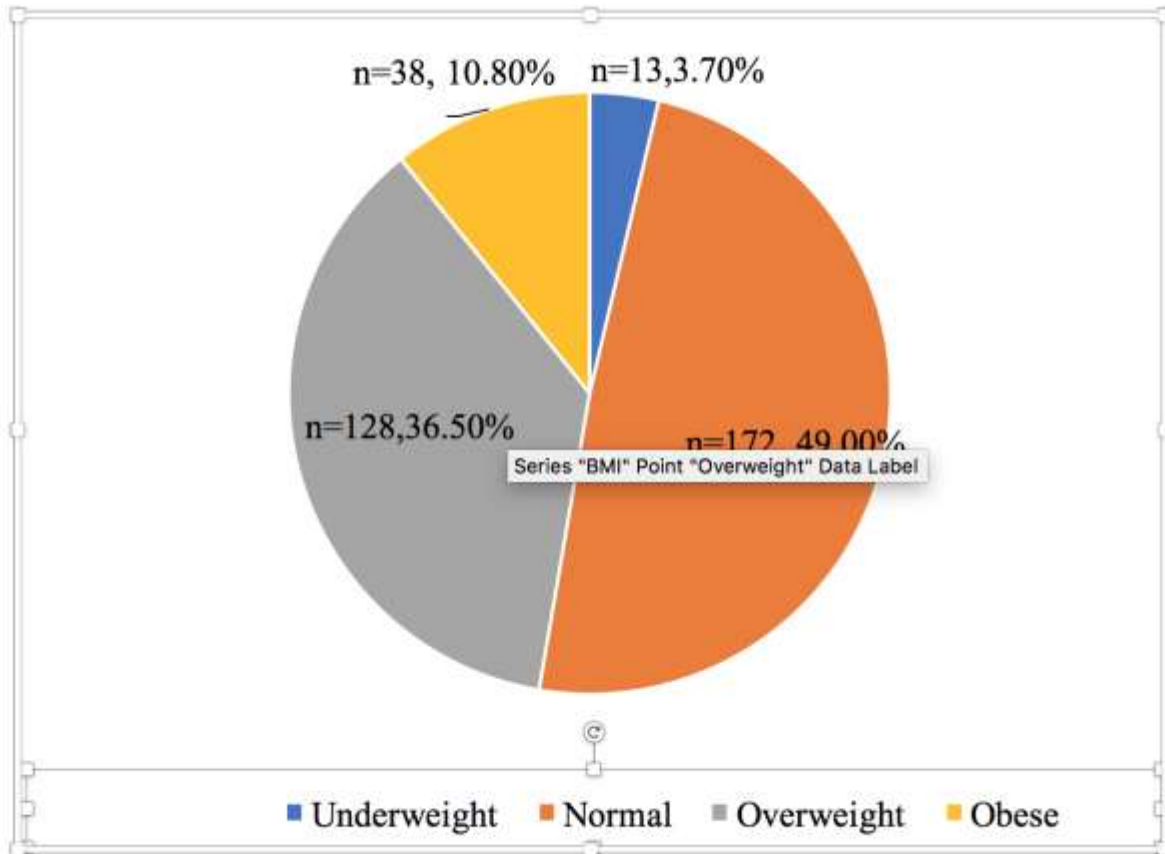


Figure 1. Distribution of participants by Body Mass Index

Figure 1 shows the distribution of BMI in the participants where normal weight is leading with 49.0%. However, it was found that 36.5% of the participants were overweight where as 10.8% were obese and 3.7% of the participants were under weight. It can be seen that 166 participants (47.3% were overweight or obese

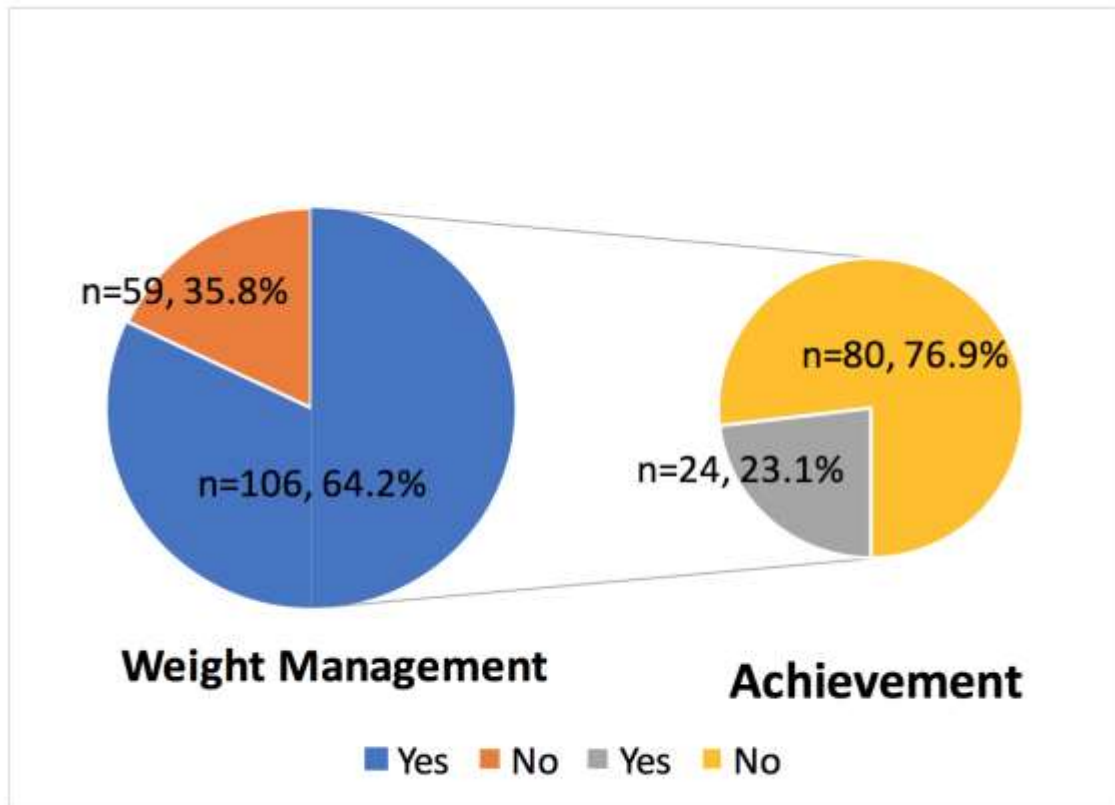


Figure 4. Distribution of participants by weight management and achieving the goal

Figure 4 demonstrates that 64.2% of the participants tried to manage their weight out of which only 23.1% were successful, whereas 76.9% didn't succeed. However, only 35.8% didn't try to manage their weight.

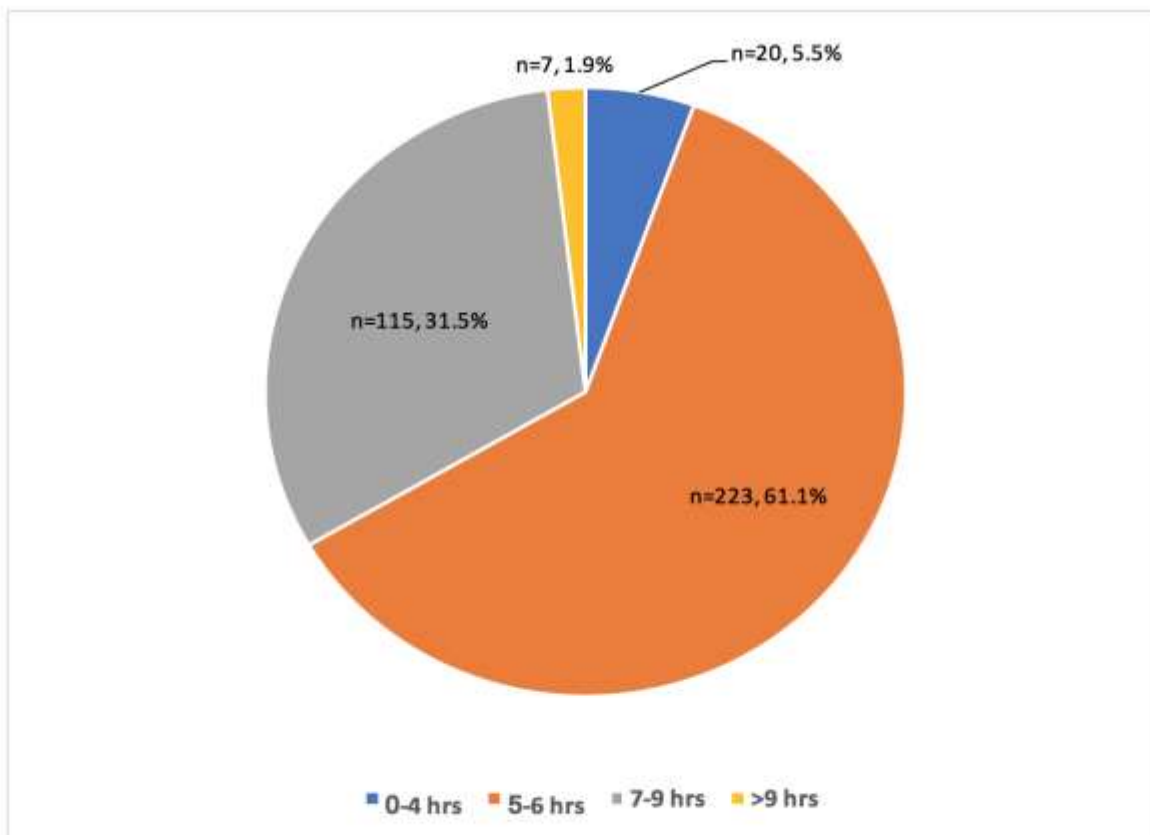


Figure 10. Distribution of participants by Sleep Duration

Figure 10. shows the percentage of participants that sleep for specific hours. Most participants (61.1%) sleep for 5-6 hours, whereas only 1.9% sleep for >9 hours

Table 14. Cross-tabulation of Lifestyle with Obesity

Variable	Group	Obesity				P
		Yes		No		
		Number	%	Number	%	
Medications	Yes	28	71.8	11	28.2	0.001
	No	137	44.3	172	55.7	
Conditions	Yes	29	65.9	15	34.1	0.009
	No	136	44.7	168	55.3	

- **Medications:** Chi-Square value shows significance as the p value is 0.001. Participants who were on medication showed higher prevalence of obesity (71.8%) compared to the ones who were (44.3%)
- **Conditions:** Chi-Square value shows significance (0.009) between the participants who suffered from a medical condition. However, 65.9% participants who had medical condition were found to obese compared to the ones who didn't.

Table 15. Association between socio-demographic factors and central obesity

		Waist Circumference				P Value
		Central Obesity		No Central Obesity		
		Frequency	%	Frequency	%	
Age	20-29	18	36.7	31	63.3	0.442
	30-39	62	40.5	91	59.5	
	>39	13	52	12	48	
Gender	Male	2	9.5	19	90.5	0.002
	Female	94	44.3	118	55.7	

Table 16. Association between family and childhood obesity and obesity

		Obesity				P Value
		Yes		No		
		Frequency	%	Frequency	%	
Family History	Yes	44	68.8	20	31.3	<0.0001
	No	121	42.5	164	57.5	
Childhood Obesity	Yes	11	61.1	7	38.9	0.251
	No	153	47.2	171	52.8	

- **Age:** Chi Square value is not significant (0.442) between central obesity and age. However, central obesity is highest in in the age group >39 (52%) whereas lowest in the age group 20-29 (36.7%).
- **Gender:** Chi Square value is significant (0.002) between gender and central obesity. Central obesity higher in females (44.3%) whereas only 2% in males.
- **Family History:** Chi- Square value is significant (<0.0001) between obesity and family history. 68.8% of the participants who had family history had obesity.
- **Childhood Obesity:** Chi-Square value is not significant (0.251) between childhood obesity and obesity. Obesity was higher in participants who were obese as child (61.6%).

DISCUSSION

The prevalence of overweight and obesity among healthcare providers was found to be 47.3%, whereas 52.7% were under and normal weight. Prevalence found in study conducted in Nigeria found 72% of HCP were overweight and obese. It might be due to different dietary habits, cultures and way of living. [11]

Gender is an unmodifiable factor. We saw prevalence of obesity was higher among males than females. Study conducted in Nigeria among healthcare providers showed percentage of obese female (82.5%) while percentage of obese male (19.5%). It is against our result. We think it's more prevalent

among males because in our population men rely on women to do house chores and their personal chores, so they have less activity in the day and less calorie burn in a day. [11]

Age is another unmodifiable factor that increases chance to becoming obese. In this study, we observed that as participants aged, prevalence of obesity increased. It was highest among the age group of +39. Study in Nigeria showed Number of participants above age of 40 were 115 in which were obese (41.7%) while the participants 40years of age or less were 185 in which were obese (18.4%). It supports our study and its due to decreased activity, metabolism and decreased skeletal muscle mass. [11] Diet is a modifiable factor and it showed obesity isn't prevalent among vegetarians and is more prevalent among non-vegetarians. Study conducted in Sweden showed prevalence of overweight or obesity was 40% among omnivores, 29% among both semi vegetarians and vegans, and 25% among lactovegetarians. It supports our study. Reason might be due to high-carbohydrate diet which plays a role in the anti-obesity diet plan. [12]

It was found doctors were at a higher risk of developing obesity (73.1%) compared to nurses (45.5%). Another study found obesity to be prevalent in nurses (88.2%) in comparison to doctors (11.7%). Causes can be the sedentary lifestyle that doctors live due to lack of time or it less movement in hospitals or clinics compared to nurses who are more

active. The reasons are backed up by findings regarding work location, duration and shift. [11] Results demonstrated a pattern where HPCs working in clinic are at higher risk (62.5%) compared to those working in hospital (46.7%) due to the workload. Hospitals are busier and require quick work. However, when looked upon at work shift, HPCs working for >8 hours have 80% risk of obesity. May be due to stress level, as results show being stressed increases risk of obesity compared to participants who aren't stressed, being 29.1% and 28.5%, respectively. [11]

Obesity was more prevalent in ever married (married, divorced, widowed) participants compared to never marrieds, being 48.4% and 26.1%, respectively. Another study conducted, revealed obesity was more prevalent in married HCP (89%). Both studies show high prevalence in ever married participants, reason might be due to differences in culture, dietary habits and priorities. [11]

CONCLUSION

- The prevalence of overweight and obesity is 47%
- Significant association was found between overweight and obesity and occupation, duration in medical sector, shift, age, marital status, medications, medical conditions and feeling worthless.

RECOMMENDATION

- holding seminar to enlighten healthcare providers about obesity
- introducing buffet/cafeteria at the work place offering healthy and appealing food choices
- implementing certain time allowed in the doctor schedule to reside from the sedentary lifestyle from behind the desk
- We recommend measurement to reduce stress in health care facilities
- Hosting running events for the medical staff on certain occasions

Acknowledgment

We would like to thank

- God Almighty, for providing us with support for our research
- Department of Community Medicine, Gulf Medical University
- Prof. Shatha Al Sharbatti, Head of Department, Dept. of Community Medicine, supervisor of this research effort as well as Dr. Anusha Sreejith and Dr. Jayadevan, co-supervisor of this research effort.

- Health Care Providers of Thumbay Hospital, Thumbay Clinic and Ajman Specialty Hospital for participating and diligently filling out the questionnaire with full concentration and commitment
- Our families and friends for providing us with support during this research effort.

REFERENCES

1. Obesity [Internet]. World Health Organization. [cited 14 February 2017]. Available from: <http://www.who.int/topics/obesity/en/>
2. Global Health Observatory (GHO) data [Internet]. World Health Organization. [cited 14 February 2017]. Available From: http://www.who.int/gho/ncd/risk_factors/obesity_text/en/
3. Gibbon G. What causes Overweight and Obesity? – NHLBI, NIH [Internet]. National Heart, Lung and Blood Institute. 2012 [cited 14 February 2017]. Available From: <https://www.nhlbi.nih.gov/health/health-topics/topics/obe/causes>
4. Blüher S, Shah S, Mantzoros CS. Leptin deficiency: clinical implications and opportunities for therapeutic interventions. *J Investig Med*. 2009 Oct;57(7):784-8. doi: 10.231/JIM.0b013e3181b9163d. Review.
5. Effects of Obesity [Internet]. Stanford healthcare. [cited 14 February 2017]. Available from: <https://stanfordhealthcare.org/medical-conditions/healthy-living/obesity.html>
6. Gibbons G. How can Overweight and Obesity be prevented? – NHLBI, NIH [Internet]. National Heart, Lung and Blood Institute. 2012 [cited 14 February 2017]. Available from: <https://www.nhlbi.nih.gov/health/health-topics/topics/obe/prevention>
7. Obesity [Internet]. Mayo Clinic. [cited 14 February 2017]. Available From: <http://www.mayoclinic.org/diseases-conditions/obesity/basics/treatment/con-20014834>
8. Kyle R, Neall R, Atherton I. Prevalence of overweight and obesity among nurses in Scotland: A cross-sectional study using the Scottish Health Survey [Internet]. Science Direct. 2016 [cited 14 February 2017]. Available From: <http://www.sciencedirect.com/science/article/pii/S0020748915003326>
9. Effects of Obesity [Internet]. Stanford healthcare. [cited 14 February 2017]. Available from: <https://stanfordhealthcare.org/medical-conditions/healthy-living/obesity.html>

10. Global Health Observatory (GHO) data [Internet]. World Health Organization. [cited 14 February 2017]. Available From: http://www.who.int/gho/ncd/risk_factors/obesity_text/en/
11. Sandra Omozehio Iwuala O. Obesity among health service providers in Nigeria: danger to long term health worker retention? [Internet]. PubMed Central (PMC). 2017 [cited 12 December 2017]. Available from: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4643157/>
12. Newby P, Tucker K, Wolk A. Risk of overweight and obesity among semi-vegetarian, lactovegetarian, and vegan women [Internet]. *Ajcn.nutrition.org*. 2017 [cited 17 December 2017]. Available from: <http://ajcn.nutrition.org/content/81/6/1267.full>