

Prevalence of Obesity and Its Association with Socio Demographic Factors in Obese Omani Women in the Age Group of 30-49 Years

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Received date: August 11, 2021; **Accepted date:** August 18, 2021; **Published date:** August 26, 2021

Citation: Monika Seth (2021) Prevalence of Obesity and Its Association with Socio Demographic Factors in Obese Omani Women in the Age Group of 30-49 Years. *J. Nutrition and Food Processing*, 4(6); DOI:10.31579/2637-8914/067

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Abstract

Background: Obesity is a severe public health issue that is escalating at an alarming rate around the world. Almost all the developed and developing nations are experiencing this health crisis at varying levels; cultural and socio-demographic factors contributing significantly. Like many other Gulf countries, Oman is also facing increasing trends in obesity and the associated morbidities which have erupted as the most challenging health concerns in Oman, especially in women. **Objective:** This research was done to see impact of socio demographic factors such as age, occupation, marriage, education, income on obesity in Omani women.

Method: A cross sectional study was done on 398 Omani women in the age group of 30 – 49 years with “BMI” (Body Mass Index) above 30. A questionnaire was used to collect socio demographic information of subjects through interview. The anthropometric measurements such as “BMI” and “WHR” (Waist Hip Ratio) were used to classify them as class I, II and III obese statistical models.

Results: Sample of 398 women included 38 % in 30-34 years, 22% in 35-40 years, 16% in 40-44 years and 23% in 45-49 years age. 21% having BMI above 40 were classified as class III, 32% were class II (BMI 35-40) and 47% of women were class I obese (BMI 30-35). 60 % of sample was from Muscat and 40% from Batina. 76% of subjects were married, 18 % single and 3 % separated. 57 % of participants were from joint families and 43 % nuclear. 36% graduates, 25% diploma, 25% till high school and 14% middle school. 43% of women were not working and 51% working. 47% of subjects had family income over Rial Omani 2000, 45% between Rial Omani 600-2000 and 8% had income below Rial Omani 600.

Conclusion: Results indicate high prevalence of obesity and its association with several socio demographic characteristics. There is an urgent need for launching awareness health program focusing on healthy lifestyle.

Key Words: BMI; obese; omani women; socio demographic factors; WHR; gulf food; obesity

Introduction

Evidence has clearly indicated that over the last few decades, overweight and obesity has risen globally at an alarming rate [1]. It is discouraging to note that the burden of obesity among adults increased to more than double during the period 1980 - 2014 and the prevalence is higher among women than men [1, 2]. It has been declared as global epidemic by World Health Organization because of the prominent incidence across the globe [2, 3]. Currently, almost all the developed as well as developing countries are witnessing this health crisis, but may be to fluctuating levels, not only

by country and area but also by the cultural and other socio demographic variables [3,4].

Overweight, particularly obesity, is the most important threat for many heart diseases such as high blood pressure, hypercholesterolemia and in addition diabetes mellitus, certain types of cancers like breast and endometrial cancers [5]. It has been reported that obesity is often considered a disease by itself [6] and a strong connection between obesity and psychological/mental issues has been documented.

Mounting burden of the “NCDs” (non communicable diseases) is a matter of grave health concern globally and it was projected by the WHO in 2005 that roughly 61% of the global deaths may be attributable to obesity and the associated morbidities and 49% of the disease burden across the world and if these rising trends persist, 70% of the global deaths and 57% of the disease burden worldwide may be attributable to obesity by 2030 [7].

Like other Gulf countries, the social advancement in Oman has brought cultural changes, shift in eating patterns, decline in communicable diseases and rising trends of overweight and obesity related comorbidities like hypertension, diabetes mellitus, high cholesterol etc. to name a few [8]. Many studies have reported a concerning rise in sedentary lifestyle and highly noticeable Western influence on the traditional Gulf food choices which synergize well with adoption of Westernized diets, physical inactivity and increased risk of developing non-communicable obesity related diseases [9]. Oman faces a massive disease burden related to overweight and obesity and numerous studies have recorded the distribution of risk factors associated to “NCDs” and increasing rates of lifestyle related diseases which have erupted as the most challenging health issues in Oman especially in women [10, 11]. Despite these alarming trends, women are less likely to be aware of benefits of healthy eating and involvement in any type of physical activity is not very common. The most widely identified obstacles to women in choosing a healthier and active lifestyle may be the dictated familial roles (such as babysitting, cooking, household chores etc.), lack of motivation and awareness about being healthy, lack of self-efficacy, lack of family and community support, acceptance of larger body sizes due to ignorance [12].

The rapid socioeconomic growth of Oman combined with the demographic developments over the past four decades are a good health indicators but unfortunately such accomplishments can however be swamped by the drastic and concerning rise in chronic diseases like cardiovascular heart diseases, diabetes and other obesity associated disorders to name a few. Where the milestones in the nation’s wellbeing are achieved, there has to be a deliberate attempt from the Oman government and integrated strategies with more focus on efficient, cost efficient primary obesity prevention services on transforming attitudes and behaviors among the Omani population [13].

Determining the prevalence of obesity and identifying the obesity correlates is of utmost significance especially in developing public health awareness and intervention programs. The main objective of this research was to understand the association between socio demographic variables and obesity in obese adult Omani women.

Materials and Methods

The present cross-sectional study included obese women aged 30-49 years visiting Al Raffah hospital. The subjects were enrolled between August 2019 and December 2019. The study was conducted after explaining the purpose of the study and obtaining informed consent from

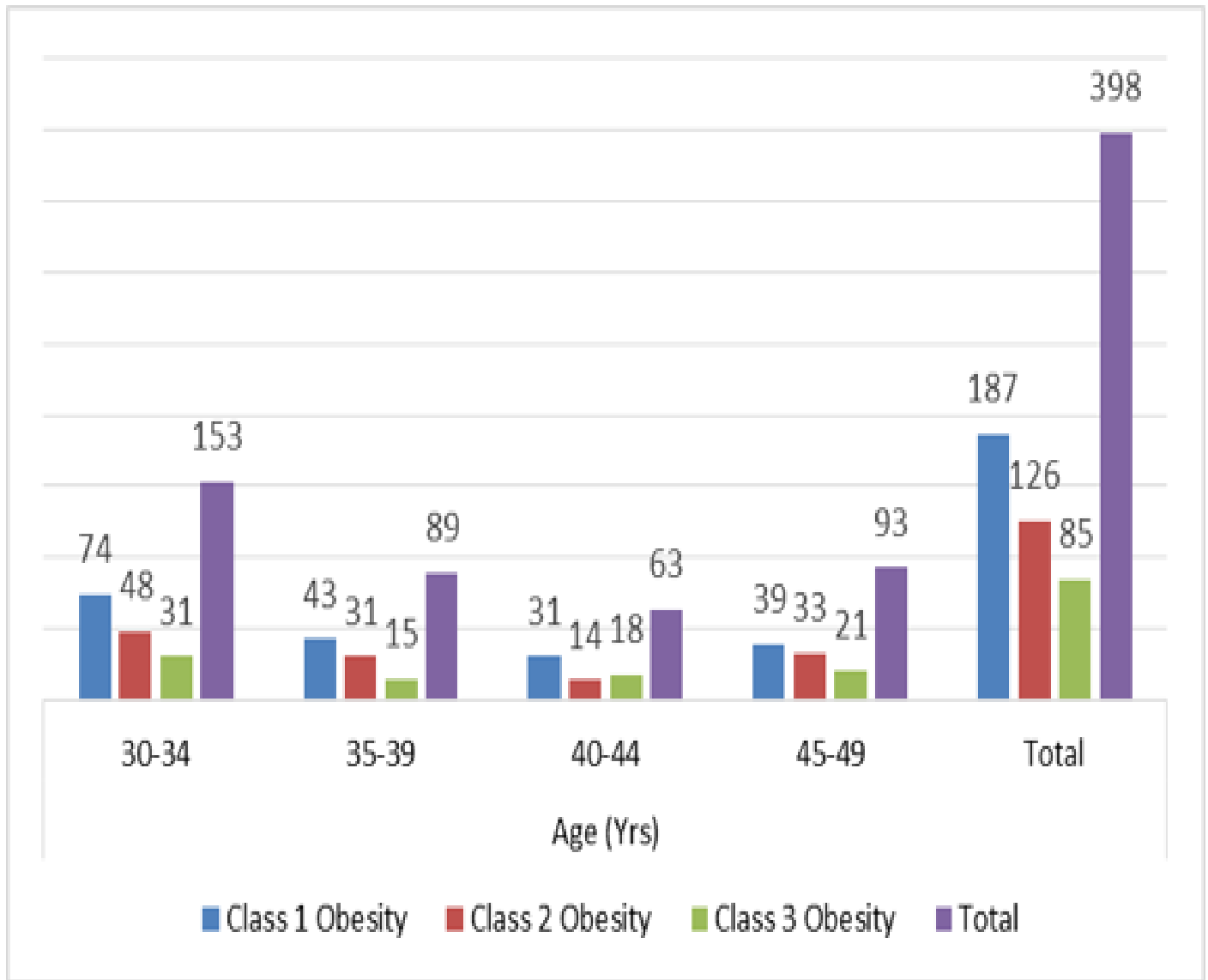
each participant. Pregnant women and those with any eating disorder were not included in the study. A total of 398 subjects with “BMI” above 30 aged 30-49 years were included and Cochran’s formula was used to arrive at the sample size. Each subject was administered a bilingual questionnaire to obtain the socio-demographic information like age, occupation, income levels, type of family, marital and education status. “BMI” was calculated using the formula $BMI = \text{Weight (kg)} / \text{height (m}^2\text{)}$ and was used as an indicator of obesity. The weight was measured using commercial scale like Pigasoo digital scale (GIMA, Italy) with an accuracy of $\pm 100\text{g}$. Standing height of the participant was also measured using the Pigasoo digital scale. The participant was asked to stand on the horizontal platform without shoes, hold the arms loosely at the sides with the palms facing the thighs. The horizontal bar was lowered until it touched the crown of the participant’s head. The height was recorded to the nearest centimeters and if the reading fell between two values, the lower reading was always recorded. BMI was calculated and the cutoffs provided by the World Health Organization for defining obese (BMI above 30), obesity class I (30-34.99), obesity class II (35-39.99), obesity class III (more than 40) were adopted [14]. Waist and hip circumference was measured using a flexible and inelastic tape measure and noted in cm. This ratio is calculated by dividing the waist circumference (cm) by the hip circumference (cm). The WHR above 0.85 in women is considered to be obese and risk of diseases rises steeply when the WHR rises above 0.8 [14].

Using IBM Statistics SPSS 25.0 (IBM Corp. 2017), collected facts were analyzed. Continuous variables with mean, median and standard deviation were provided for illustrative purposes. With frequency and percentage, categorical variables were presented. To compare the categorical variables, a Chi square test was used. The probability value was considered statistically significant at < 0.05

Results

A total of 398 obese Omani women with BMI above 30, non-pregnant and free from any eating disorders were included in the study.

The study sample was very well distributed in different age groups with 38 % (n= 153) of the subjects were between 30-34 years, 22% (n= 89) between 35-40 years, 16% (n= 63) were in the age bracket 40-44 years while 23% (n= 93) of the subjects were in 45-49 years age group. The anthropometric measurements revealed a worrisome picture with 21% (n= 85) of the participants having BMI above 40 and were classified as class III obese, 32% (n= 126) were obese class II (BMI 35-40) and 47% (n= 187) of the women were having class I obesity (BMI 30-35). It also stated that obesity increased with age and women above 40 years were found to have slightly higher BMI than their younger counterparts. The obesity class distribution within each age bracket is shown in Graph 1. The average WHR was also higher in the age brackets of 40 to 44 and 45 to 49 yrs.



Graph 1. Age Wise Obesity Classification

The socio demographic variables associated to class of obesity are captured in Table 1. As indicated in Table 1 the study sample was very well distributed between the two main regions which are Muscat (60%) and Batinah (40%). The obesity classification indicated that class II and class III obesity was more prevalent in Batinah region at 57% versus 50%

contribution in Muscat explaining the correlation between awareness, education and dietary habits and obesity (Batinah being the interiors / semi urban had fewer options of gymnasiums and health centers for females and in addition the women lack basic awareness and importance of healthy weight and healthy habits).

Obesity Class		Class 1	Class 2	Class 3	Total
Sample distribution (nos.)		187	126	85	398
% Contrb		47%	32%	21%	100%
Education Level					
	Upto Middle School	20	18	18	56
	% Contribution	11%	14%	21%	14%
	High School	47	33	19	99
	% Contribution	25%	26%	22%	25%
	Diploma	46	34	21	101
	% Contribution	25%	27%	25%	25%
	Bachelor & higher	74	41	27	142
	% Contribution	40%	33%	32%	36%
Marital Status					
	Married	139	97	66	302
	% Contribution	74%	77%	78%	76%
	Single	35	20	17	72
	% Contribution	19%	16%	20%	18%
	Separated	7	5	1	13
	% Contribution	4%	4%	1%	3%
	Refused to answer	6	4	1	11
	% Contribution	3%	3%	1%	3%
Occupation					
	Not working	79	48	43	170
	% Contribution	42%	38%	51%	43%
	Student	9	3	3	15
	% Contribution	5%	2%	4%	4%
	Self	4	4	1	9
	% Contribution	2%	3%	1%	2%
	Government employee	22	21	9	52
	% Contribution	12%	17%	11%	13%
	Private sector employee	73	50	29	152
	% Contribution	39%	40%	34%	38%
Family					
	Joint	108	65	55	228
	% Contribution	58%	52%	65%	57%
	Nuclear	79	61	30	170
	% Contribution	42%	48%	35%	43%
Income					
	Less than 600	13	13	6	32
	% Contribution	7%	10%	7%	8%
	601-2000	96	52	31	179
	% Contribution	51%	41%	36%	45%
	2000+	78	60	48	186
	% Contribution	42%	48%	56%	47%
Region					
	Muscat	118	74	45	237
	% Contribution	63%	59%	53%	60%
	Batinah	69	52	40	161
	% Contribution	37%	41%	47%	40%

Table 1. Socio Demographic factors in relation to Obesity type

Results from the marital status details indicated that 76% (n=302) of the subjects were married, 18 % (n=72) were single, 3 % (n= 13) were separated while 3 % (n=11) of the participants did not reveal their marital status. Out of those women who were single, 85% belonged to the age bracket of 30-34 years.

57 % (n= 228) of the participants were residing in joint families and 43 % (n=170) had nuclear families. The age wise classification clearly showed the preference of joint families by older subjects as compared to the younger generations with 63% (40-44 years) and 69% (45-49 years) had joint families while 37% (40-44 years) and 31% (45-49 years) had nuclear families. In the age bracket of 30-34 years, joint families were at 55% while in the age bracket of 35 – 39 years it was 45%. The anthropometric measurements revealed that class III obesity had a higher contribution of joint families at 65% as compared to 35% of the nuclear families.

Educational attainment was clearly visible among the younger age brackets and more graduates and diploma holders were in the age groups 30-34 (29% diploma & 35 % graduates) and 35-39 years (28% diploma & 43% graduates) while middle and high school contributed to 40% in 40-44 years and 53% in 45-49 years age group. The obesity classification based on BMI of the subjects revealed that in class III obesity 43% of the subjects went only till middle or high school and 57% were diploma / graduate, in class II obesity 40% were up to high school and 60% were in diploma / graduate category, in class I obesity 36% were up to high school and 64% were in diploma / graduate category. This indicates that contribution of higher education increased with decrease in type of obesity thus highlighting the significance of association between education and obesity.

Overall, a good percentage of 43 % (n=170) sample were not working and within the age bracket of 45-49 years 70% were not working , indicating the increase in family responsibilities with increasing age. Furthermore, private jobs at 38% were found to be more popular among the working category of women due to lesser opportunities in the government sector which was only at 13%. A high proportion of 51% (n=43) in class III obesity were not working as compared to 42% (n=79) in class I obesity highlighting adoption of more sedentary lifestyle causes obesity. Additionally , class II and class III obesity contribution seemed to be high at 57% in government employees versus 52% in private sector employees, showing the correlation of more sitting time (in government jobs) and obesity.

A positive and significant association between obesity and total family income; the severity of obesity increased with increased family income. When asked about the total family monthly income, 53 % (n=211) of the subjects reported to have monthly family income less than Rial Omani 2000. The monthly family income seemed to have increased with age as indicated by the data with a very high percentage (54%) of subjects in the age brackets of 40-44 years and 45-49 years having more than Rial Omani 2000 as their family income. It is interesting to note that the percentage contribution of sample with Rial Omani 2000 plus salary increases with class of obesity (class I had 42% contribution while class III obesity had 56% contribution) reflecting a clear association between improved socioeconomic status and luxurious lifestyle and obesity in the subjects.

Discussions

In the current research, the association between obesity and socio-economic factors within a sample from the Omani obese women population aged 30-49 years was studied.

Anthropometric measurements suggested a clear and concerning picture of high prevalence of obesity among the participants with 53% of the women in class II and III (BMI) obesity versus 47% in class I indicating high obesity rates in Omani women. The WHR (another indicator to measure obesity especially central obesity) parameters also revealed 70%

of the subjects had WHR above 0.85, were abdominally obese and more prone to obesity associated disorders. These findings are very well supported by a study done in Saudi Arabia reporting a dominance of obesity and abdominal obesity in females than their male counterparts [15].

Age was strongly linked to obesity among the subjects, as reported by numerous studies in the past and this significant connection between age and obesity as well as central obesity can be attributed to post menopause to a great extent. Similar patterns were also observed in a few studies done on women in Turkey [16], Iran [17] and Oman [18] reporting lesser obesity rates for women under 30 years and peak obesity between 30-60 years of age. Weight gain with age was recorded amongst majority of the people belonging to the Eastern Mediterranean Region and many other developing countries [19].

The study sample was collected from two main regions and the data revealed that 60% of the subjects belonged to Muscat 40% were from Batinah region. The obesity classification indicated that class II and class III obesity was more prevalent in Batinah region at 57% versus 50% contribution in Muscat explaining the correlation between awareness, education and dietary habits and obesity. Batinah being the interiors / semi urban had fewer options of gymnasiums and health centers for females and in addition the women lack basic awareness and importance of healthy weight and healthy habits. These findings are very well documented by the results of a survey done on Omani women which revealed that women residing in the semi urban regions indulge in overeating and larger portions of calorie dense, foods rich in saturated fats as compared to those who were living the Capital region. In addition to this, a fat and flabby body is still considered to be a symbol of “good health and well-being” [20].

A majority of the participants at 76% were married and those who were still single were mainly between 30-34 years and were either studying or started their professional career. The explanation of why such high rates of obesity among the subjects could be due to high fertility rates and high illiteracy rates (especially among women above 35 years) leading to unawareness and ignorance regarding a healthy body and weight. These results are also comparable to some previous studies done on Pakistani women were married women were more confined to home, with fewer opportunities for stepping out for any physical activity making them more prone to weight gain over a period of time [21, 22]. Observational studies indicate that both men and women entering marriage are more likely to become obese; marriage is considered an event recognized in diverse ethnic background. In addition to this, marriage was also correlated with a reduction in physical activity, along with increased social responsibilities encouraging increased food consumption and adoption of many unhealthy lifestyle habits [23]. Studies conducted in various Middle East and North African countries such Syria, Iran, and Morocco [24] have documented the positive marriage-obesity relationship. Data from a national survey done in Greece also revealed that married adults had higher tendency for obesity than those who are single, widowed or divorced [25].

Higher education was a popular trend among the subjects as indicated by the results and this finding was very well supported by the fact that the number of Omani women taking higher education is also rising in Oman [26]. Obesity was found to be inversely related to educational attainment which could be due to better awareness and understanding about choosing a healthier lifestyle and dietary options and is very much in line with studies previously. Among less educated subjects, the higher levels of obesity and central obesity are similar to the findings of other studies; higher education can contribute to a healthier diet , more active lifestyle and better awareness about their body and physique especially in Omani women [27]. These results are further supported by studies done in developed countries where negative associations have been found

between education and obesity in women [28]. Education seems to influence the obesity epidemic significantly, especially in the Gulf countries where evidence indicate direct link between obesity and illiteracy. According to studies, 51 percent of Syrians with a low level of education are fat, compared to 28 percent of those with a university education. Jordanians with fewer than 12 years of education are roughly 1.6 times as likely as those with more than 12 years of education [29].

It was indicated in the results that government employees (sitting job) were more obese than those working in the private sector, showing the correlation of more sitting time in government jobs and obesity. Similar findings were reported in a study done on Omani women to study the sedentary behavior and it was revealed that the women who are working may be spending most of their hours sitting due to their job requirement. Interestingly few findings in Australia and United Kingdom have reported similar results in terms of sitting time at work place [30]. In addition, both studies showed that sitting at work contributed to 50% of the overall regular sitting time and TV watching during the non-working hours was the biggest contributor to sedentary behaviors. Furthermore, both studies found that sitting at work contributed to 50% of the total daily sitting time and that watching television was the major contributor to non-working day activities. In the present study, married adult women seemed to spend more time sitting while watching television. A number of studies have highlighted the significance of socio-economic factors and lifestyle choices thus obesity [31] and total family income was very strongly and positively linked to obesity in both men and women. In a study done on Iranian population sample, Najafi et al. discovered a reduced prevalence of obesity among the poor and a link between income and obesity was also observed [32]. At the same time, higher revenues will give more access to a variety of food and lifestyle options along with a parallel decline in the physical activity with increased family income. Women of the highest socioeconomic status were found to be more inclined to adopt Western lifestyle, more restaurant and fast foods and more sedentary time spent during the day i.e. watching TV, computers etc. [33].

Over the past three decades, Oman has witnessed rapid socio-economic developments resulting in nutrition transition from conventional to more westernized lifestyles, decline in physical activity, increased fatty and calorie dense foods giving birth to more and lazier and unhealthier people [34, 35]. In Oman, social and cultural barriers demanding separate requirements of men and women especially in regions other than the Muscat capital leading to fewer exercise or training choices (male trainers or coaches) available to women and making it less favorable for women in the Sultanate [36]. Moreover, in certain areas of Oman, current cultural expectations make it less appropriate for women to be seen walking and exercising alone without a close family member. Further, majority of women are still confined to home as housewives with a full time help and do not step up out much due to hot weather along with high intake of calorie dense foods; these are presumed to be the risk factors for Arab Women.

Limitations

The study had the usual limitation of single investigator study and was limited to obese Omani women visiting Al Raffha hospital.

Conclusion

The current study provides a better understanding of the correlation between socio demographic variables and obesity in the Omani women population. High socio economic status and a wealthier lifestyle are considered the leading concomitant risk factors of overweight and obesity in any population across the world. There is a need to create awareness among the general public on adopting a healthy lifestyle and also see the

possibility of preventive obesity programs to reduce the prevalence especially in the targeted societies.

Acknowledgement

The authors acknowledge the contribution of staff at Al Raffah Hospital in assisting while interviewing the subjects for the research

Funding Sources

There are no funding sources for this research work.

Conflict of Interests

The authors declare no conflict of interest.

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