The Impact of Sociocultural Changes on Obesity among Arab Women: Kuwait as a Case

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ABSTRACT

This study aims to reveal the impact of sociocultural changes on obesity among Arab women (Kuwait as a case). A sample of 250 Kuwaiti women, ranging in age from 20 years to 76 years, was selected from all Kuwaiti governorates. The sample was selected from groups with different social, cultural, and economic status in the society. Social and health scales were used. Degree of religiosity, food habits, physical activity scales were used. Height, weight, triceps skinfold, subscapular skinfold, hip circumference, and waist circumference were also used. Whereas the World Health Organization indicates in the February 2018 statistics that 40% of women aged 18 years or older around the world are overweight or obese, the results of the current study show that the majority of the women in the sample are overweight or obese. The results also show that there are differences in obesity rates among age groups. The study found a statistically significant relationship between a women's normal weight and age, education level, socioeconomic status, dietary habits, physical activity, family structure, and family size. The results also indicate that women in Kuwait suffer from the highest rates of obesity and overweight in the world.

1. Introduction

Many of the sociocultural changes that occurred due to the economic boom at the end of the 1960s because the discovery of oil affected the social structure in Kuwait. Kuwaitis rapidly abandoned a traditional lifestyle and adopted a more Western one. Changes also occurred in the family structure, for example, in roles and relationships among family members. Women became more active in daily social life. In the traditional society, women were responsible for the household, which included cooking, washing, cleaning, and taking care of the children. Women spent most of their time inside the house, where many physical activities can be practiced.

Sociocultural changes have affected the body weight of Kuwaiti women. Therefore, the relationship between obesity and sociocultural factors needs to be understood. Some demographic variables, such as age, education, and socioeconomic status (SES), are related to obesity. Physical activities in daily life and at work have been changed and have affected body weight. Obesity may also be affected by other social variables, such as the number of children, the number of relatives living in the same household, the number of families living in the same household, and women's degree of religiosity. Moreover, changes in food habits, such as the number of times per week meals are eaten in restaurants, having a cook in the household, preferring salt in food; the number of snacks between meals daily, having a family-owned kitchen, and cigarette smoking habits are elements that are related to the modern lifestyle. This study examined how sociocultural changes affected the modern lifestyle and led to obesity among Kuwaiti women. It also examined the relationship between obesity and these sociocultural factors.

2. Sociocultural Change and Obesity

Many studies have focused on the relationship between modernization, sociocultural changes, and obesity in developed counties and countries adopting a Western lifestyle (Aboul-Enein et al., 2017; Arredondo et al., 2018; McLennan and Ulijaszek, 2015; Mazidi et al., 2018; Shetty and Schmidhuber, 2006). Based on a review of the literature, "overweight and obesity and its related co-morbidities are posing an increasingly critical public health problem both in the developed and developing world" (Shetty and Schmidhuber, 2006, p. 157). Obesity is one of the world's main health problems. It has "risen three-fold or more since 1980 in some areas of North America, the United Kingdom, Eastern Europe, the Middle East, the Pacific Islands, Australasia and China" (World Health Organization (WHO), 2003, p. 2). Between 1975 and 2016, obesity almost tripled, and the number of obese adults aged 18 years and older increased to 1.9 billion. According to 2018 statistics, 39% of the population were overweight and 13% were obese (WHO, 2018). It is well known that being obese means there is a higher amount of fat in the body compared with being overweight. Obesity is one of the most common causes of death in the modern world. For example, in a study conducted in the United States, it was found that approximately one in five deaths was related to obesity and overweight (Masters et al., 2013).

Many studies have focused on the relationship between obesity and chronic degenerative diseases in a variety of cultures, especially hypertension (Foulds et al., 2012; Rhee et al., 2018), diabetes (Igel et al., 2018; Madjid et al., 2014), and heart problems (Igel et al., 2018; Lavie et al., 2014), as one of the major health problems that lead to death.

One of the most vital elements that affect women's bodies in modern societies is changes in lifestyle. Food consumption is one of the major changes occurring in the modern world. Many changes in the quality and quantity of food have occurred, and this is a critical medical issue in the modern human population in these societies. According to the literature, modern food affects human health (Shridhar et al., 2015), and females have a significantly higher eating-disorder psychopathology than men (Lydecker and Grilo, 2018).

Notably, the quality and quantity of food has been related to SES (Andrea et al., 2017), and the higher the SES, the higher the body weight and more frequent the health problems. Occupation is an

element of SES. Most occupations in modern society are desk jobs, and the physical activity level is low. Women who worked in households in the traditional society burned many calories through physical activities such as washing, cleaning, cooking, and doing other housework. Today, women are involved in work that requires fewer activities and movement. New technology also affects physical activities. Notably, women burn almost 250 calories when washing the household clothing by hand in traditional societies. After washing machines were introduced, fewer calories were burned (Al-Mukallelati, 1991, p. 236). Advances in transportation also resulted in burning fewer calories. The decrease in physical activities in daily life have been well reported (WHO, 2004).

Social foods are one of the most critical factors for gaining weight in some societies (Stephen et al., 2017). All these factors are related, increase body weight, and lead to obesity and overweight in the modern world for both sexes. Because of a genetic reason, women may be affected more than men, and many studies have demonstrated that women are more obese compared with men in many societies.

3. Obesity Among Women and Sociocultural Change in Kuwait

After the economic boom, women's roles changed. Because of the equality between men and women in the laws, women go outside the household for education and work and have similar roles to men. Women being out of the house rarely happened in the traditional society. In the last decade, females constituted 43% of Kuwaiti workers in the public workforce (Jalabi, 2008). In addition, females account for more than 70% of students in the higher education institutions (Kuwait University, for example) (Al-Kandari, 2011). These social changes affect the health and life of Kuwaiti women.

Females consume more calories from different types of food with high calories and less fiber and perform fewer physical activities than males. Around 4,140,000, or almost 16.2%, of the approximately 670,000 Kuwaiti households, have housekeepers, servants, and a cook (Al-Ajmi, 2017). The housekeepers take care of the house and most of the duties. Women exchanged some of their traditional roles in the household when they gained equal rights in education and work.

A few studies have been conducted in Kuwait on obesity. Some of these studies focused on the medical perspective (e.g., Al-Sabah et al., 2016; Awad and Waheedi, 2012), as well as on sociocultural factors in different age groups (Al-Kandari, 2007; Karageorgi et al., 2013; Musaiger, 2014; Rey-López et al., 2018; Zaghloul et al., 2013).

A nutrition transition related to modernity and Westernization is one the most critical elements of obesity in Kuwait. A real nutrition transition has occurred among Kuwaitis, which has led to overweight and obesity among the general population (Zaghloul et al., 2013). Another critical factor observed in Kuwait is a reduction in the physical activities compared with the past (Al-Haifi et al., 2013; Al-Isa et al., 2011). After reviewing many studies conducted in Kuwait between 1997 and 2012, it was found that more women than men are obese in Kuwait (Karageorgi et al., 2013). Musaiger (2014, p. 207) examined the perceived barriers to weight maintenance and found some major barriers to healthy eating for young people: they "[d]o not have skills to plan, shop for, prepare or cook healthy foods" and "time to prepare or eat healthy food."

Few studies have been conducted on obesity among women in Kuwait, and most of those studies focused on young females. Awad and Waheedi (2012) studied the link between the media and obesity in female students. They observed that media had a great influence on obese females, especially watching TV. Al-Isa and Moussa (1999) conducted a study on factors associated with obesity among female students at Kuwait University. They found health and social factors associated with obesity; the social factor was the number of brothers and countries that female students preferred to visit. In a general population study conducted in the late 1980s, Al-Awadi and Amine (1989) found sociocultural variables related to obesity and overweight among females in Kuwait, for example, working and nonworking women, type of work, education level, number of children, and family income.

Studies related to sociocultural factors, health in general, and obesity have rarely been conducted in Kuwait. Moreover, few studies have been conducted on women's health in Kuwait, and most of these studies discussed these topics from a medical perspective. Some related women's health to only a few topics, for example, breastfeeding, contraception, fertility, and chronic diseases. Based on a review of the literature, no study has discussed the relationship between obesity and sociocultural factors in adult women. This type of research is required to fill the gap in the sociocultural and medical literature on Kuwaiti society. This study also shows how sociocultural change affects health status. Health cannot be studied from only a medical perspective since sociocultural factors are critical. In addition, obesity is a major determinant causing death in the human population and highly correlated with many major chronic diseases that lead to death. This study will focus on one of the major elements causing death and help social and health policymakers in the region.

This study examined the effect of sociocultural change on the body weight of Kuwaiti adult women and the relationship between obesity (by using Body Mass Index [BMI] and body fat distribution as indicators) and sociocultural factors. The study aimed to answer the following questions: What is the degree of obesity and BMI grade for the sample of women investigated? Are there relationships between obesity in women (BMI and body fat) and demographic variables such as age, education, and socioeconomic status? What are the relationships between obesity in women and physical activities in daily life and at work? Are there significant relationships between obesity in women and social variables such as number of children, number of relatives living in the same household, number of families living in the same household, and women's degree of religiosity? Are there significant relationships between obesity in women and food habits such as the number of times per week meals are eaten in restaurants, having a cook in the household, preferring salt in food, the number of snacks between meals daily, having a family-owned kitchen, and cigarette smoking habits.

4. Method

A researcher conducted a descriptive research study using a survey method. This study used a quantitative research method to collect sociocultural, physical, and medical information for statistical analysis.

4.1. Sample

A sample of 250 Kuwaiti women were selected using a non-random opportunistic sample, and they agreed to volunteer to participate. This sample size is appropriate for a correlational study. The age range of these respondents was 20–76 years (mean = 42.90; SD = 10.88). All the respondents were married, divorced, or widowed. Single females were excluded from this study to ensure that this variable did not affect the results. The respondents were from subgroups of the Kuwaiti population, including all six governorates, and had various levels of education and SES. Many physical

measurements were taken from the respondents. The research assistants (RAs) were trained to interview the respondents and take their measurements. The RAs had experience in this from other studies conducted by the researcher. The respondents answered a questionnaire, which was the major tool of this study. Most respondents were interviewed and measured in their homes.

4.2. Variables

4.2.1. Sociocultural variables

Some demographic and social variables were included in the questionnaire. Respondents were asked about their age and governorate. Social status was obtained to ensure that all the respondents were married. Level of education was classified into eight categories, ranging from elementary school or below = (1) to Ph.D. holder = (8). SES was measured by three variables, education, income, and occupation, and was coded according to the Social Science Research Council. Social variables were included in the questionnaire. Respondents were asked about the number of their children, number of relatives living in the same household, and number of families living in the same household.

One self-rating scale of degree of religiosity was used: What is your level of religiosity in general? The respondents reported their religiosity on a 10-point scale by selecting a number from 1 (not religious) to 10 (very religious). This self-report scale has demonstrated temporal stability and concurrent and factorial validity in other samples (Abdel-Khalek, 2007) with a one-week test−retest correlation of 0.91.

Food habits were used in this study, and questions related to the food habits of the respondents were included in the questionnaire. The respondents were asked to determine how many times they ate snacks between meals and in a restaurant weekly. The degree of preference for salt in food was measured on a scale ranging from not at all = (1) to very high = (5). The respondents were asked yes/no questions: if they have a cook in their household, if their family has their own separate kitchen for cooking, and if they smoked.

Physical activity was one of the variables in this study. Four items for self-rating were used to examine respondents' physical activity. The respondents were asked to determine their level of physical activity in general and while working. They were also asked to describe their typical level of physical activity when working and when not working. This scale ranged from (5) to (1): very heavy (walking/running), heavy (very few sitting activities), moderate (some standing, walking), light (mostly sitting and lying down), and no activity. The third question related to how often they exercise (e.g., walking, playing soccer, and volleyball). The answers for this scale ranged from always = (5) to never = (1). For the last question, the respondents were asked to describe their typical level of physical activity in general. The answers were measured on a scale ranging from very high = (5) to very low = (1).

4.2.2. Physical variables

Six anthropometric measurements were taken: height, weight, triceps skinfold, subscapular skinfold, hip circumference, and waist circumference. All these procedures followed the *Anthropometric Standardization References Manual* (Lohman et al., 1988). The measurements are as follows:

- Height and weight: Height was measured by using a stadiometer tape. A respondent was measured while standing erect with their back against the wall by marking the point at the top of the head. To measure weight in kilograms, a portable digital scale was used. Respondents were asked to remove their shoes and heavy clothes. BMI was calculated from the height and weight measurements. Four categories were used, and BMI was obtained from the formula kg/m²: underweight (≤ 18.5), normal weight (18.6−24.9), overweight (25.0−29.9), and obese (three categories − (I) 30.0−34.9, (II) 35.0−39.9, and (III) ≥ 40.0) (WHO, 2000).

- Skinfold thickness: Triceps and subscapular skinfolds were measured by using a Lange skinfold caliper. Respondents were asked to stand, and the triceps skinfold was measured in the middle of the posterior aspect of the arm. The subscapular skinfold was also sited at the inferior angle of the scapula, and a Lange skinfold caliper was used to measure this part of the body. Measurements were taken three times to obtain accuracy.

- Hip and waist circumference: Subjects were asked to stand normally and erect. The tape was placed at approximately the respondent's natural waist. In addition, the tape was placed approximately at the hip in a horizontal plane without compressing the skin. These measurements were repeated to obtain accuracy. Clothes, which were usually light since the measurements were taken in the summer, were also measured by the Lange skinfold caliper and subtracted from the value. Waist-to-hip ratios were calculated by dividing the waist measurement by the hip measurement.

4.3. Statistical analysis

Version 23 of SPSS was used for the data entry and analysis. Means, standard deviations, and proportions were used. In addition, a t test, Analysis of Variance, correlation coefficient, and multivariate regression model were used to examine the differences between some variables and BMI, as well as the associations between obesity, BMI, and the physical and sociocultural variables.

5. Results

Table (1) contains the data collected to answer the question related to the prevalence of obesity among the respondents, who are referred to as the sample and the respondents in this section. The mean values for BMI are presented according to the age of the respondents.

Table (1): Mean BMI and prevalence of obesity by age

Age (N)	≤ 30 years (86)	31−50 years (120)	≥ 51 years (44)	Total (250)
Mean (SD)	27.03 (4.96)	28.65 (4.88)	33.61 (5.79)	28.92 (5.52)
BMI	N (%)	N (%)	N (%)	N (%)
Underweight	2 (2.5)	0 (0)	2 (4.8)	4 (1.6)
Normal weight	34 (39.5)	37 (30.8)	1 (2.4)	72 (29.0)
Overweight	27 (31.4)	36 (30.0)	7 (15.9)	68 (27.4)
Obesity (grade I)	14 (16.3)	32 (26.7)	10 (23.8)	56 (22.6)
Obesity (grade II)	9 (10.5)	12 (10.0)	19 (45.2)	40 (16.1)
Obesity (grade III)	0 (0)	3 (2.5)	5 (11.9)	8 (3.2)
F Value 24.22***				

*** $P < 0.001$

Figure (1): Age by three categories and BMI, >30 to ≤ 30, 30-49 to 31−50, and 50< to > 51
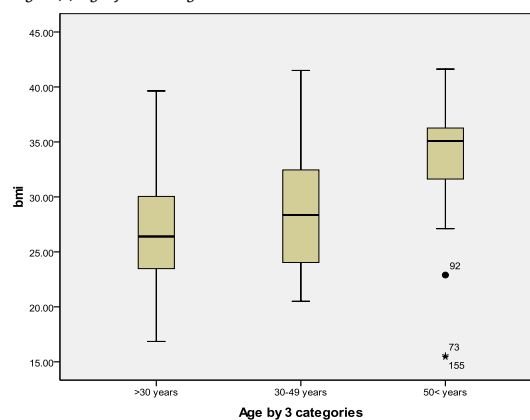
The majority of the sample was overweight or obese. Overweight women (BMI 25.0−29.9) and women with grades I (BMI 30.0−34.9), II (BMI 35.0−39.9), and III (BMI ≥ 40) of obesity constituted 69.3% of the sample. Most of the sample was overweight and had grade I obesity, with 27.4% and 22.6%, respectively. Grade II obesity was observed in 16.1% of the sample, and grade III obesity in 3.2%. For 29.0% of the sample, BMI was normal, and 1.6% of the sample was underweight.

The data showed significant differences among the three age categories. The significance level was P < 0.000, and a trend of increasing obesity with age was observed. The heaviest members of the sample were aged 51 years and older and had a mean BMI of 33.61 kg/m2 (SD = 5.79). Notably, 96.8% of women aged 51 years and older were overweight or obese. The mean of the sample aged

31–50 years was 28.65 (SD = 4.88), and 69.2% of this category was overweight or obese. For the youngest age group (aged 30 years and below), the mean was the lowest (M = 27.03; SD = 4.96). Almost half of the sample in this category (57.7%) was overweight or obese.

To present the descriptive data, Table (2) shows some physical characteristics.

Table (2): Mean differences, standard deviation, and t value for some physical characteristics

Variables	Mean	SD	Minimum	Maximum	95% Confidence interval for mean
Height	158.58	6.83	144.00	181.00	157.73–159.43
Weight	72.55	14.43	47.00	105.00	70.75–74.34
Triceps skinfold thickness	29.34	11.12	17.00	70.00	27.96–30.73
Subscapular skinfold thickness	33.25	11.39	13.00	55.00	31.83–34.67
Waist	89.51	17.30	37.00	137.00	87.35–91.66
Hip	106.27	13.59	73.00	140.00	104.58–107-96
Weight-to-height ratio	0.850	0.093	0.39	1.14	0.84–.086
BMI	28.92	5.52	16.43	41.62	28.23–29.61

Using a 95% confidence interval for mean, the data showed that the sample's height was 157.73–59.43 cm (M = 158.58; SD = 6.83); weight was 157.73–159.43 kg (M = 72.55; SD = 14.43); triceps skinfold thickness was 27.96–30.73 (M = 29.34; SD = 11.12); subscapular skinfold thickness was 31.83–34.67 (M = 33.25; SD = 11.39); waist was 87.35–91.66 cm (M = 89.51; SD = 17.30); hip was 104.58–107-96 cm (M = 106.27; SD = 13.59); waist-to-height ratio was 0.84–0.86 (M=.85; SD=.093), and BMI was 28.23–29.61 cm/kg2 (M = 28.92; SD = 5.52).

The differences between have a cook at home or have no cook, and smoker or nonsmoker in the physical measurements (weight, triceps and subscapular skinfold thickness, waist, hip, waist-to-hip ratio, and BMI) were examined. The results are presented in Table (3).

Table (3): Mean, standard deviation and t value for physical measurements in have a cook (n = 116) or not (n = 134) in the family household and smoking (n =30) or not (n =220)

Variable	Have a cook at home			Smoking		
	No Cook M(SD)	Have Cook M(SD)	t-value	Smoker M(SD)	Nonsmoker M(SD)	t-value
Weight	70.05(12.83)	75.43(15.64)	-2.99**	72.38(14.47)	76.60(13.30)	-.906
Triceps skin thickness	26.85(11.33)	32.22(10.18)	-3.92***	29.34(11.13)	29.00(11.36)	-.016
Subscapular skin thickness	29.99(10.66)	37.03(11.08)	5.12***	33.17(11.45)	35.30(10.13)	-.580
Waist	86.29(16.43)	93.22(17.61)	-3.22**	89.32(17.89)	94.00(6.67)	-1.95*
Hip	103.57()	109.39()	-3.45**	106.22()	107.50()	-.292
Weight-to-height ratio	.820 (.087)	.848 (.099)	-1.62*	.837 (.094)	.877 (.050)	-2.36*
BMI	28.19 (5.23)	29.75 (5.76)	-2.24*	28.74 (5.38)	33.33 (7.17)	-2.61*

* P <0.05; **P <0.01

The data showed significant differences between the respondents who had a cook at home or had no cook in all the physical measurements. The respondents with a cook at home had higher weight (M = 75.43; SD = 15.64), triceps (M = 32.22; SD = 10.18) and subscapular (M = 37.03; SD = 11.08) skinfold thickness, waist (M = 93.22; SD = 17.61), hip (M = 109.39; SD = 12.98), waist-to-height ratio (M = 0.848; SD = 0.099), and BMI (M = 29.75; SD = 5.76) compared with women who had no cook (M = 70.05, SD = 12.83; M = 26.85, SD = 11.33; M = 29.99, SD = 10.66; M = 86.29, SD = 16.43; M = 103.57, SD = 13.57; M = 0.820, SD = 0.087; M = 28.19, SD = 5.23, respectively). The significance level was P < 0.001 for weight and triceps and subscapular skinfold thickness; P < 0.01 for waist and hip; and P < 0.05 for waist-to-height ratio and BMI. For smoking, significant differences were found in waist, waist-to-height ratio, and BMI. Smoking respondents had a higher mean in waist (M = 94.00; SD = 6.67), waist-to-height ratio (M = 0.877; SD = 0.050), and BMI (M = 33.33; SD = 7.17) compared with nonsmoking respondents (M = 89.32, SD = 17.89; M = 0.837, SD = 0.094; M = 28.74, SD = 5.38, respectively). The significance level was P < 0.05 for all these variables.

To examine the relationship between BMI and cultural characteristics, Table (4) shows this association.

Table (4): Correlation coefficient between BMI and cultural characteristics

Variables	r	Variables	r
Demographic variables:		**Social variables:**	
Age	0.432**	No. of children	0.200**
Level of education	−0.346**	No. of relatives live in same house.	0.253**
SES	−0.268**	No. of families live in same house.	0.131**
		Brothers-in-law in same house	0.184**
Physical activity:		Degree of religiosity	0.260**
Level of physical activity when working.	−0.247**		
Level of physical activity when not working.	−0.276**	**Dietary habits:**	
Frequency of exercise	−0.183**	No. of snacks between meals daily	0.056

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General daily activities	−0.167**	No. of times eat in restaurant weekly	0.126*
		Degree of preferring salt in food	0.121*

* P <0.05; ** P <0.01

Table (4) shows a positive correlation between BMI and age (r = 0.432; P < 0.01) and a negative correlation between BMI and level of education (r = −0.346; P < 0.01) and SES (r = −0.268; P < 0.01). For physical activity, the table shows a negative significant correlation between BMI and level of physical activity when working (r = −0.247; P < 0.01), level of physical activity when not working (r = −0.276; P < 0.01), frequency of exercise (r = −0.183; P < 0.01), and general daily activities (r = −0.167; P < 0.01). Furthermore, a positive significant correlation was observed between BMI and some social variables, namely number of children (r = 0.200 ; P < 0.01), number of relatives living in the same household (r = 0.253; P < 0.01), number of families living in the same household (r = 0.131; P < 0.01), brothers-in-law living in the same household (r = 0.184; P < 0.01), and degree of religiosity (r = 0.260; P < 0.01).

For food habits, the data showed a significant positive correlation between BMI and the number of times a respondent ate in a restaurant weekly (r = 0.126; P < 0.05) and the degree of preferring salt in food (r = 121; P < 0.05) and no correlation with number of snacks eaten between meals daily. In general, the greater the BMI was, the lower the level of education, SES, level of physical activity when working, level of physical activity when not working, frequency of exercise, and general daily activities. In addition, the greater the BMI was, the greater the number of children, number of relatives living in the same household, number of families living in the same household, number of brothers-in-law living in the same household, degree of religiosity, number of times eating in a restaurant weekly, and degree of preferring salt in food.

To determine the effect of sociocultural variables on BMI, a multivariate regression model was used. Table (5) illustrates this effect.

Table (5): Regression coefficient of BMI on some cultural variables

Variables	Beta	t value
Level of education	−0.168	−3.93***
Age	0.175	3.87***
SES	−0.130	−2.78**
Number of families living in the same household.	0.112	2.31*
Number of times eating in a restaurant weekly	0.080	0.75*
Having a family cook	0.109	2.42**
Degree of preferring salt in food	0.159	3.58***
Adjusted R square	0.141	F = 4.84
Multiple R	0.140	

* P <0.05; **P <0.01; *** P <0.001

The data showed that level of education (beta = −0.168; P > 0.001), age (beta = 0.175; P > 0.001), SES (beta = −0.130; P > 0.01), number of families living in the same household (beta = 0.112; P > 0.05), number of times eating in a restaurant weekly (beta = 0.080; P > 0.05), having a family cook (beta = 0.109; P > 0.01), and degree of preferring salt in food (beta = 0.159; P > 0.001) exerted an effect on BMI. The other variables examined in this study did not show an effect.

6. Conclusion

The results indicate that in Kuwait, the female population has the highest percentage of obesity and overweight in the world. All the direct anthropometric indicators used in this study, namely BMI, waist and hip circumference, and triceps and subscapular skinfold thickness, confirm this result. The results showed that 69.3% of the respondents were overweight or obese. According to WHO (2018), 40% of women aged 18 years or older worldwide are overweight or obese; therefore, the Kuwaiti women in this study demonstrated high percentages of overweight and obesity.

Kuwait is among the top ten most obese countries worldwide (ALNohair, 2014, p. 80); therefore, obesity is a major determinant of many chronic diseases in Kuwait, such as hypertension, diabetes, cardiovascular diseases, and cancer, especially for the elderly population. Most of the respondents who were obese in this study were in the older age groups, and a very high percentage of these respondents were aged 51 years and older. This result may be related to many factors, and one of the most critical is hormones. Notably, according to Lovejoy (1998), women gain on average 2 to 5 pounds during the menopausal transition, and some are at greater risk of weight gain that others.

Although age was a critical factor for obesity among women aged 51 years and older, many other variables related to the modern world and lifestyle affected the prevalence of obesity. Sociocultural change was vital regarding daily life activities and behaviors. "Modernization and globalization imply different processes, causes, and consequences for changes in health systems and expenditures" (Noy and McManus, 2015, p. 322). Many modern factors are related to obesity. Food quantity and quality and physical activity are two of the most critical factors.

Kuwait is considered a rich country; therefore, food in any quantity is available everywhere and easily accessed. Social media was one of the most critical tools that affected the easy accessibility of restaurants in Kuwait. This phenomenon must be studied in depth. In addition, there are many modern and fast-food restaurants in Kuwait. KUNA (2016) reported that 615,000 people ate at 5,000 restaurants in Kuwait, 10% of the population visited a restaurant daily, and approximately $2.2 billion was spent in Kuwait's restaurant sector in 2014. Notably, the Kuwaiti population is approximately 4,140,000.

Musaiger (2014) found that 95% of consumers ate fast food in Kuwait, which is harmful to health. These statistics highlight two causes of obesity in women: the consumption of food in restaurants with a high percentage of carbohydrates, sodium, and fats; and women are not doing the cooking, a main traditional task. Women have also lost the opportunity to perform daily physical activities in the household because of spending more time outside the household to participate in education and work. In the traditional society, women spent most of their time performing household chores, such as cooking three times a day, cleaning, and washing. Women burned a large number of calories in the traditional society. Because of modernization, the situation is different, and many changes have occurred. In 2011, "woman's employment comprised 54.24% of the overall workforce in the public sector" (Alzuabi, 2016, p. 691). Furthermore, a few years earlier, Kuwaiti women constituted the highest percentage in the workforce in the Middle East (Jalabi, 2008). Women spend most of their time at work, and most Kuwaitis work in offices. As confirmed by the Central Statistical Bureau (2015) in the *Annual Statistical Abstract*, most workers are in the administrative field, which requires no physical activities. Notably, Kuwaiti females constitute the majority of students in higher education institutions, universities, and colleges (Al-Kandari, 2010).

The level of physical activity has become very low in modern Kuwait. Work, education, and a high percentage of the presence of servants in households are considered some of the main factors. These factors reduced the amount of housework women perform. Al-Ajmi (2017) reported that almost 670,000 servants reduced women's physical activities at home. Most of the work that required physical activity (e.g., scrubbing the dirty floors, toilets, and dishes) is performed by servants. The weather is also a major factor that adds to sedentary behaviors. Kuwait is hot for most of the year, which prevents people from engaging in activities outside the house. Moreover, women have not been able to participate in sports because of the traditional culture that dominates Kuwait's society. Furthermore, the low level of physical activity in general daily life is a major problem in Kuwait, even in the youngest population (Hashem et al., 2018).

Other social aspects, for example, religiosity, may be responsible for the prevalence of obesity. The data in this study showed that religiosity was associated with BMI. In general, however, this association is less clear (Reeves et al., 2012), and data from Kuwait as a Muslim country may be different. Religious people are involved in social organization groups with many activities that include plenty of food, and this was discussed in a local study (Al-Kandari, 2003). In addition, the more religious a person is, the more eager they are to not leave any food when eating meals, which could affect their body weight. Furthermore, women who are more religious wear looser clothing compared with less religious women; thus, the extra fabric may allow them to be unconcerned about their body shape.

This study has limitations. Although the respondents were carefully selected and provided with an indicator of this health issue among women, generalization of the results to the entire Kuwaiti population should be made with caution. The data are a good indicator of obesity among women in Kuwait and show how some variables are related to the factors studied. Nonetheless, additional studies are required. Conducting ethnographic studies is vital to examine women's health behaviors. In addition, unmarried women must be studied since this study focused on only married women.

Acknowledgments

Biography

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