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Original research

Fast food consumption and increased body mass index as risk factors for weight gain and obesity in Saudi Arabia

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ABSTRACT

The aim of this study to demonstrate the relationship between fast food consumption and obesity/weight gain among Saudi women in Jeddah, Saudi Arabia. Structured questionnaire was developed and distributed among 253 participants in King Abdulaziz University aged between 18 and 25 years old. The frequency and characteristics of fast food consumption were examined. The present results indicated that more than 50% of participants consumed fast food at least once a week. A large proportion of the sample (56%) never read the nutritional information at the fast food restaurant. However, 79% of participants would choose healthier fast food items when offered. Fast food consumption was not associated with the living status (with family/hostel). A percentage of 59 of participants were obese/overweight but this was not in a relationship with frequent consumption of fast food. Initiate a strong program for health promotion on the nutritional intake should be applied among university students.

1. Introduction

Obesity is a chronic, heterogeneous and multifactorial disease; it is characterized as disorder of body weight regulatory systems which is resulted from excess body fat accumulation (Albaik et al., 2016). This increasing of body weight is attributed to an increase in calorie intake combined with lack of adequate physical activity (Shukla et al., 2014). People are considered as overweight when their body mass index (BMI) between 25 and 29.9 kg/m^2 and obese when BMI exceeds 30 kg/m^2 (Shukla et al., 2014; Fildes et al., 2015).

Globally, World Health Organization (WHO) was published on its official website that the worldwide prevalence of overweight was estimated 1.9 billion (39%) and obesity was over 600 million (13%) for adults aged 18 years and older in 2014 while 41 million children under the age of 5 and 155–200 million school-aged children were overweight or obese in 2014. WHO predicts about 2.7 billion adults will be overweight and obese by 2025.

Pathophysiology of obesity is involved in appetite and body weight regulation through hormonal signals, adipocytokines, gut peptide, and metabolic syndrome (Albaik et al., 2016). Obesity is associated with several diseases (Finer, 2011) such as type2 diabetes, heart disease (Custodio Afonso Rocha et al., 2012), obstructive sleep apnea, osteoarthritis, and certain types of cancer (Shukla et al., 2014).

There are few factors that may have contributed to the obesity epidemic globally such as eating behaviours and disordered eating (Abdullah et al., 2015). Fast-food is one of the most important determinant factor of obesity rates (Currie et al., 2010; Alviola et al., 2014) since fast-food consumption has strong positive associations with weight gain and insulin resistance, suggesting that fast-food increases the risk of obesity, type2 diabetes (Pereira et al., 2005; Abdullah et al., 2015), hypertension and dyslipidemia (Kearney, 2010). Furthermore, modernization and sedentary lifestyle is amplified the hazards of fast-foods for gaining unhealthy and excessive weight (Abdullah et al., 2015).

Fast-food, an idiomatic expression, is called for foods which are prepared and served very quickly (Sumaedi and Yarmen, 2015) and eaten outside the home (Afolabi et al., 2013). In other words; it can be defined as food dispensed quickly at an inexpensive restaurant generally offering not nutritious inexpensive items; this food can be eaten on premises, taken out or sometimes delivered (Seo et al., 2011). Fast-foods make the households more reliant on the food industry, food vendors and markets in both developing and developed countries (Afolabi et al., 2013). Typical fast-foods include hamburgers, French fries, pizza, fried chicken, and doughnuts (Seo et al., 2011). It is important to mention, there is another fast-foods type such as Mediterranean fast-foods which include shawarma, kebab, falafel, hummus, baba ghanoush and tahini (Baker, 2013) since these fast-foods are prepared and served quickly.

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Fast-food represents a great change in nutrition transition through the composition and structure of traditional diets to westernized diets (Kearney, 2010). Nutrition transition involves increasing consumption of fat (particularly saturated fat), sugar, sodium, cholesterol and animal products as well as decreasing in consumption of unrefined cereal and fiber (Afolabi et al., 2013; Askari Majabadi et al., 2016). The high consumption of fast-foods is due to their lower price making them affordable to all walks of life (Cotti and Tefft, 2013; Abdullah et al., 2015) or probably because these foods are fast and convenient (Seo et al., 2011).

Fast-food is popular among children and are people in their teens and twenties (Seo et al., 2011). Seo et al. reported that fast-foods were consumed once or twice monthly by about 40% of each elementary and high school students while Arulogun and Owolabi reported that over 80% of university undergraduates consumed fast-foods at least once a week (Arulogun and Owolabi, 2011).

To reduce the unhealthy effect of fast-foods; the nutritional information or labelling should be provided for food products and in restaurant menus to inform consumers about the nutritional properties including calories, protein, carbohydrate, fat, sugar, and others (Abdullah et al., 2015). Moreover, there is a need for nutrition education which is required a good understanding of factors affecting fast-food use (Seo et al., 2011). The factors focused on fast-food use include the related dietary behaviors and nutrition knowledge level (Seo et al., 2011) as well as this factors are associated with poor dietary intake and some of cardiovascular disease (Bahadoran et al., 2012). This study was carried out to investigate the relationship between fast food consumption and obesity/weight gain among Saudi women in Jeddah, Saudi Arabia.

2. Materials and methods

This cross sectional survey was carried out from May and Jun 2016, involving 253 female students from King Abdulaziz University (KAU). The Participants were selected using convenience sampling aged between 18 and 25 years old and usually ate fast food. The questionnaire was adopted from Abdullah et al. (2015) with some modification to determine the frequent fast-food consumption associated with body weight increase. The questionnaire was written in two languages, Arabic and English to avoid ambiguity and misunderstanding. The questionnaire contained two sections. Section A is a demographic questions about the participant's background such as age, marital statuses, living status. Anthropometric measurements were also taken which included participants' weight and height. Section B included dietary information about behavior of fast food consumption. The sample size was 180 respondents calculated based on the following formula:

$$SS = \frac{(Z^2) \times p \times (1-p)}{C^2}$$

SS = Sample size
Z = Z-value
P = Percentage of population.
C = Confidence interval

Body Mass index (BMI) < 18.5 kg/m^2 was considered underweight, 18.5–24.9 kg/m^2 were considered normal weight, 25.0–29.9 kg/m^2 was overweight and BMI > 30.0 kg/m^2 was obese (Abdullah et al., 2015).

2.1. Statistical analysis

Data was analyzed using descriptive statistic and chi-square. The correlation between the variables and BMI was determined by Pearson correlation analysis. Logistic Regression model was performed to evaluate the relationship between frequency of fast food consumption and BMI category of obesity/overweight. Statistical analyses was done using the SPSSV20 statistical software.

3. Results

A total of 253 students have joined this study from King Abdulaziz University with an average age of 21–23 years old (62%, Table 1). Approximately half of participants with frequency 140 (55.3%) were living with a family and 113 (45%) were living in a student hostel. In term of marital status about 89% (224) were single and only 12% were married. BMI classification of the participants showed the majority of 153 (64%) were normal weight, 39 (16%) were overweight, 27 (11%) were underweight and only 8% were obese. Over 90% (232) of participants were have no diseases (Table 1).

The present study investigated the characteristics for frequent fast food consumers (Table 2).117 (55%) of the participants have reported that the mean reason for choosing fast food was easy to access (55%) whereas 36% found because of taste of the food. Usually, participants had fast foods for dinner 53% (116) or lunch 38%. Participants reported that fast foods were often eat at least once a week (53%) with average amount of money spent between 21 and 30 SR (41%). Take-out fast foods were usually enjoyed at home 113 (58%) with their family (47%) and meal package was regularly ordered (65%) over individual items (35%; Table 2). Participants 127 (52%) acknowledged that the nutrition labeling on

Table 1
Socioeconomic information and anthropometric measurements (n = 253).

		Frequency	Percent	Valid Percent	Cumulative Percent
Age range	18-20 year	62	24.5	24.6	24.6
	21-23 year	157	62.1	62.3	86.9
	24-25 year	33	13.0	13.1	100.0
Marital status	Single	224	88.5	88.5	88.5
	Married	29	11.5	11.5	100.0
Living status	with family	140	55.3	55.3	55.3
	Hostel	113	44.7	44.7	100.0
BMI classification	underweight	27	10.7	11.3	11.3
	normal weight	153	60.5	64.0	75.3
	overweight	39	15.4	16.3	91.6
	obese	20	7.9	8.4	100.0
Have Diseases	Yes	21	8.3	8.4	8.4
	No	232	90.9	91.6	100.0