American Journal of Ethnomedicine, 2014, Vol. 1, No. 1, 030-035
Available online at http://www.ajethno.com

A Study of the Prevalence of Overweight and Obesity in Adolescents and Early Adults Aged 19 to 24 Years and its Relationship to Lifestyle and Dietary Attributes

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ABSTRACT

Background: In recent decades, diets have changed rapidly in the Kingdom of Saudi Arabia (KSA) because the Western diet is replacing the traditional Arabic diet. This has resulted in an alarming increase in the number of overweight and obese children and adolescents in KSA. It is well documented that lifestyle and faulty eating habits are strongly associated with the development of obesity.
Aim of the study: This research studied the prevalence of overweight and obesity among selected adolescents and early adults and the relationship of BMI to physical activity, snacking and meal skipping pattern.
Materials and methods: In 2012, a cross-sectional study was conducted among 1000 female adolescents and early adults (19-24 years old) who were selected by random sampling from four randomly sampled colleges from the University of Hail KSA. The BMI was assessed using height and weight measurements. Dietary habits were evaluated by a pre validated questionnaire which included food frequency, snacking and meal skipping pattern questions.
Results: The results of the study revealed that a majority of the subjects belonged to the normal weight category (50 %), followed by overweight (28 %), underweight (12 %) and obese (10 %) category. Incidence of overweight or obesity was not related to physical activity, number of snacks and meal skipping habits of the subjects. A significantly higher percentage of underweight or normal weight subjects involved in snacking when compared to obese subjects.
Practical implications: In summary, increased weight status of Saudi adolescents and early adults was not significantly related to physical activity, frequency of snacking and meal skipping patterns. This indicates the importance of rapid promotion of including judicious food choices in the main diets and snacks of Saudi Arabian adolescents.

Keywords- Adolescents, Snacking, Food frequency.

INTRODUCTION

Saudi Arabia is one of the richest nations in the world with the highest per capita income[1]. This lead to high purchasing power, availability of generous and varied food supplies, with varied meal patterns[2]. Such dietary pattern associated with an affluent lifestyle has been blamed for the increasing prevalence of health problems associated with overweight and obesity[3]. Unhealthy eating habits are major reasons for obesity and cardiac diseases that cause morbidity and mortality[4]. In a cross-sectional survey conducted among girls aged 13 to 18 in Jeddah, 24% were overweight or obese and 14% were underweight[5].

Food affluence and high income combined with a lack of nutritional awareness has led to a state of higher intake of macronutrients and lower intake of micronutrients in the population[6]. Several variables are involved in the etiology of obesity including genetic, lack of physical activity, and consumption of high fat, energy dense foods that are readily accessible, inexpensive, heavily advertised, and palatable[7].

Adolescence is a timely period to shape and consolidate healthy eating and lifestyle behaviors, thus preventing nutrition related chronic diseases in adulthood[8]. Unhealthy eating habits such as a low intake of fruits, vegetables, fiber and dairy foods, a high intake of fast foods and fizzy drinks, snacking outside home and erratic eating behaviors, such as skipping meals, especially breakfast were reported in some Saudi studies[9,11]. The primary approach for achieving weight loss is therapeutic lifestyle changes, which includes a reduction in energy intake and an increase in physical activity[12].

In conclusion, irregular and infrequent meals together with a low vegetable and fruit intake have been found to be the most common unhealthy eating habits of the adolescent population in universities. lifestyle and dietary modification is important, especially in young age groups to improve healthy habits earlier in life[13].

Objectives

This study was conducted to study the prevalence of overweight and obesity among the selected adolescents and early adults and to assess the relationship between BMI and physical activity, snacking and meal skipping habits of the female adolescents and early adults aged 19 to 24 years attending University of Hail, Saudi Arabia.

Methodology

To conduct this study, 1000 female adolescents and early aged 19-24 years (subjects who were 18 years, 11 months and 29 days and those who completed 25 years were excluded from the study; subjects who completed 19 years and those who completed 24 years, 11 months and 29 days were included) were randomly selected from four (from a total of 6) randomly sampled colleges (Colleges of Medicine, Applied Medical sciences, College of Nursing and College of Information technology) of the University of Hail.

Information relating to socio-economic status, age, height, weight, physical activity (at least 30 minutes of brisk walking in addition to normal day to day activities), snacking (eating fast food in between meals) and meal skipping pattern (skipping either breakfast, lunch or dinner) and food frequency questionnaire were collected. BMI was assessed using the formula weight in kg divided by height squared in meters.

All the data thus collected were entered into the SPSS 17 software to analyze the relationship between BMI and attributes such as physical activity, snacking, and skipped meals using Chi square test.

RESULTS AND DISCUSSION

Socioeconomic characteristics of the subjects

The socioeconomic characteristics of the selected subjects such as family income and education of the parents are presented in Table 1

A majority of the subjects selected belonged to the age group of 21 to 24 years (60 %), followed by forty percent of the subjects in the age group of 19 to 20 years. Fifty two percent of the subjects belonged to families with an average monthly income greater than 8000 Saudi riyals. A majority of the parents (Fathers – 76.8 % and Mothers – 83.2 %) of the selected subjects were educated only up to school level.

Body Mass Index (BMI) category of the subjects

The BMI category of the selected subjects is presented in Table 2.

It is evident from Table 2 that a majority of the selected subjects were of normal weight (50 %). Twenty eight percent of the subjects were overweight, followed by 12 % who were underweight and 10% who were obese. In a cross-sectional survey conducted among girls aged 13 to 18 in Jeddah, 24% were overweight or obese and 14% were underweight[5]. This finding is comparable to the findings of the present study.

Physical activity of the subjects

The physical activity of the subjects is presented in Table 3. The criteria for non obese category include subjects who have underweight and normal weight BMI. The criteria for obese category include subjects who have both overweight and obese BMI.

Out of the total number of subjects who involved in physical activity (60 %), a non significantly higher percentage (63.3 %) belonged to the non obese group, followed by 36.7 % in the obese group. Though physical activity is not significantly related to overweight and obesity in this study, the role of physical activity in maintaining normal weight BMI cannot be ruled out.

The mean BMI of the group which did not involve in physical activity (24.4) was not significantly higher than that of the physically active group (23.8).

Snacking habits of the subjects

The snacking habits of the subjects in the obese and non obese group are presented in Table 5.

Out of the total number of subjects who snacked (72 %), a significantly higher percentage (55.6 %) belonged to the non obese group, followed by 44.4 % in the obese group. Also a significantly higher percentage of the subjects who did not snack (78.6 %) belonged to the non obese group. Here it can be discussed that though it appears that snacking habit is not related to obesity, factors such as type (fast food high in fat and salt) of snacks maybe related to obesity.

The mean BMI of the group which snacked one to two times (24.6) did not differ significantly from that of the group which snacked for three or more times (22.7). The BMI of both groups were in the normal weight category.

Meal skipping pattern of the subjects

The relationship between BMI and meals skipped by the selected subjects is presented in Table 7.

No significant difference existed between the BMI of the group which skipped breakfast (22.9) and the BMI of the group which skipped either lunch or dinner (24.7). The BMI of both groups were within the normal weight category.

DISCUSSION

From the above tables it is evident that 38% of the subjects were either

overweight or obese. Also the subjects who involved in physical activity did not significantly differ in BMI from those who were not physically active. Snacking habits showed that a significantly higher percent of the subjects who snacked fell in the underweight or normal weight BMI category. Also the mean BMI was normal and not significantly different in subjects who snacked both in the one to two times group and in the three or more times group. The BMI of the breakfast skipping group was normal and did not differ significantly from those of the lunch and dinner skipping group. Hence it can be concluded that factors apart from physical activity, frequency of snacking and meal skipping had a key role to play in the incidence of overweight and obesity among the selected adolescent and early adult subjects. The nutrient composition of the snacks consumed was not studied and this may be related to the incidence of overweight or obesity.

CONCLUSION

Individual behavior change of adolescents is difficult to achieve without addressing the context in which people make decisions[5]. So initial, significant steps are needed by parents, schools, dieticians and other health professionals and policy makers to make healthful food choices especially in snacks which are available, identifiable, and affordable for Saudi adolescent girls to fight the problem of overweight and obesity. In the long run, unhealthful snacking will not only result in overweight or obesity, but also increase the intake of saturated fat and sodium which will lead to incidence of non communicable diseases such as diabetes and cardiovascular disorders.

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Table 1. Socioeconomic characteristics of the selected subjects

Characteristics		Sample	
		Number	%
Sample Size		100	100.0
Age (years)	19-20	40	40.0
	21-24	60	60.0
Income (Saudi riyals)	≤8000	48	48.0
	>8000	52	52.0
Education of the Father	Up to school	77	76.8
	University	23	23.2
Education of the Mother	Up to school	83	83.2
	University	17	16.8

Table 2. BMI Category of the selected subjects

BMI	N	Percent
Underweight	12	12.0
Normal Weight	50	50.0
Overweight	28	28.0
Obese	10	10.0

Table 3. Physical activity of the selected subjects

	Physical Activity		Total
	Yes	No	
Non-Obese %	63.3	60	62
Obese %	36.7	40	38
Total %	60.0	40.0	100.0

Table 4. Relationship between bmi and physical activity

Variables	BMI		T-Test
	Mean	SD	
Physical Activity			0.563 NS
Yes	23.8328	4.18220	
No	24.3612	5.16679	

NS – Not significant

Table 5. Snacking habits of the selected subjects

	Snacking		Total
	Yes	No	
Non- Obese %	55.6	78.6	62.0
Obese %	44.4	21.4	38.0
Total %	72	28	100.0

$X^2 = 4.100$; p=0.43 – Statistically significant

Table 6. Relationship between BMI and snacking frequency

Variables	BMI		T-Test
	Mean	SD	
Snacking			1.802 NS
1-2 times	24.5745	4.64828	
3 or more times	22.7247	4.26040	

Table 7. Relationship between BMI and meals skipped

Variables	BMI		T-Test
	Mean	SD	
Skipped Meals			1.883 NS
Breakfast	22.9171	4.52437	
Lunch/Dinner	24.7390	4.47486	

NS – Not significant