

# Dietary habits and lifestyle among adolescents in Damascus, Syria

Abdulrahman O. Musaiger<sup>1</sup>, Faiza Kalam<sup>2</sup>

<sup>1</sup> Nutrition and Health Studies Unit, Deanship of Scientific Research, University of Bahrain, and Arab Centre for Nutrition, Bahrain

<sup>2</sup> Dietetic Clinic, Damascus, Syria

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## Abstract

**Introduction.** Dietary and lifestyle behaviours among adolescents are risk factors for several chronic diseases in adulthood.

**Objective.** To examine the differences in dietary habits and lifestyle between male and female adolescents in Syria.

**Materials and method.** A cross-sectional multi-stage stratified sampling study was carried out on adolescents, 15–18-years-old, in Damascus, Syria. The total sample selected was 365 (178 males and 187 females). Data were collected with a pretested questionnaire.

**Results.** There were significant differences between males and females in the frequency of intake of vegetables, milk and dairy products, red meat, sugary beverages and fast foods. Females were more likely to skip breakfast than males (52.4% vs. 43%), but the difference was not statistically significant. Males were significantly more likely to consume larger portions of fast foods and soft drinks. Significant differences were found between genders in eating while watching television, hours using Internet, practicing physical activity and emotional eating.

**Conclusion.** A significant variation between male and female Syrian adolescents in their food habits and lifestyle was observed. Interventions should consider the gender differences to promote a healthy lifestyle for schoolchildren in Syria.

## Keywords

adolescents, dietary habits, lifestyle, physical activity, Syria

## INTRODUCTION

There is compelling evidence that dietary habits and lifestyle during adolescence are risk factors for several nutrition-related non-communicable diseases in adulthood [1]. Limited data from Syria show that obesity, cardiovascular disease, diabetes and some types of cancer have become the main causes of morbidity and mortality [2, 3]. The World Health Organization [4] reported that the estimated mortality of cancers among Syrian adults was 65.7 and 47.2 per 100,000 for males and females, respectively, whereas for cardiovascular and diabetes diseases it was 471.7 and 326.2 per 100,000, respectively. Understanding the dietary patterns and lifestyle behaviours of both children and adults is an essential step in constructing an effective intervention programme to prevent diet-related diseases.

Data on dietary habits and lifestyle among the Syrian population are very limited. A study among 6–12-year-old schoolchildren in Damascus reported an inadequate intake of fruit, vegetables, milk and dairy products, and meat [5]. Another study on factors associated with obesity among 15–18-year-old schoolchildren in Damascus [6] showed that carbohydrate and saturated fatty acid intakes were significantly higher among obese than non-obese children, and the contribution of bread, meat and sugar to daily intake was significantly higher among boys than girls. Both studies, however, did not compare the dietary habits or lifestyle of males and females, and they covered only a few lifestyle habits. Bashour [7] attempted to explore the dietary habits of adolescents in Damascus, and found that the intake of fruit

and green leafy vegetables was inadequate. Nevertheless, this study focused on frequency intake of certain foods for combined genders, but not the differences between genders. The current study, therefore, aimed to discover the differences in dietary habits and lifestyles between male and female secondary school students in Damascus, Syria. It is worth mentioning that the data of this study are very exceptional as they were collected one month before the present conflict spread to Damascus.

## MATERIALS AND METHOD

This is a cross-sectional multi-stage stratified sampling study. The target subjects were secondary school students. Damascus was first divided into two geographical areas, then two secondary schools (one male and one female) were selected at random from each area. The classes were then selected for each educational level (10–12 levels) by a simple random method. The total sample collected was 365 (178 males, and 187 females). Their ages ranged from 15–18. The study was approved by the Department of School Health, Ministry of Education in Syria. The data were collected in February 2012.

A previously pretested validated questionnaire was used to collect the data [8]. The questionnaire consisted of three sections:

- 1) food frequency intake;
- 2) dietary habits;
- 3) lifestyle habits.

The food frequency intake section included information on the number of times per week vegetables, fruit, milk and dairy products, red meat, chicken, fish, sweets, nuts, soft

Address for correspondence: Abdulrahman Musaiger, Head of Nutrition and Health Studies Unit, University of Bahrain, Bahrain  
e-mail: amusaiger@gmail.com

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drinks and fast foods were consumed. The dietary habits section contained questions on meal and snack intake and preferred sizes of fast foods. The lifestyle section included questions on the hours spent watching television, using the Internet, sleeping, physical activity and the effect of stress on eating. The objective of the study and information in the questionnaire were explained to the students by qualified nutritionists, who also supervised the collection of the data.

The data in the questionnaire were entered in an Excel file, and sent to Bahrain for analysis with the Epi-info statistical package [9]. Chi square test was used to examine the significant association between genders and dietary and lifestyle habits.

## RESULTS

The frequency of food intake per week for Syrian adolescents by gender is presented in Table 1. In general, about half the adolescents consumed vegetables, fruits, and red meat more than three times per week. Fish was rarely consumed, with

**Table 1.** Frequency of food intakes per week for Syrian adolescents by gender

Food	Male		Female		P-value	Total	
	No.	%	No.	%		No.	%
<i>Vegetables</i>							
<4	106	59.6	90	48.1	0.0289	196	53.7
4+	72	40.4	97	51.9		169	46.3
<i>Fruits</i>							
<4	71	39.9	80	42.8	0.5753	151	41.4
4+	107	60.1	107	57.2		214	58.6
<i>Milk / dairy products</i>							
<4	44	24.7	78	41.7	0.0005	243	33.4
4+	134	75.3	109	58.3		122	66.6
<i>Red meat</i>							
<4	76	42.7	101	54.0	0.0308	177	48.5
4+	102	57.3	86	46.0		188	51.5
<i>Fish</i>							
<4	164	92.1	178	95.2	0.2309	342	93.7
4+	14	7.9	9	4.8		23	6.3
<i>Chicken</i>							
<4	113	63.5	123	65.8	0.6475	236	64.7
4+	65	36.5	64	34.2		129	35.3
<i>Nuts</i>							
<4	120	67.4	140	74.9	0.1165	260	71.2
4+	58	32.6	47	25.1		105	28.8
<i>Sweets</i>							
<4	114	64.0	122	65.2	0.8115	236	64.7
4+	64	36.0	65	34.8		129	35.3
<i>Canned sugary beverages</i>							
<4	125	70.2	159	85.0	0.0006	284	77.8
4+	53	29.8	28	15.0		81	22.2
<i>Fast foods</i>							
<4	144	80.9	169	90.4	0.0097	313	85.8
4+	34	19.1	18	9.6		52	14.2

only 6% consuming it more than three times a week. Males were significantly more likely to consume milk and dairy products (75% vs. 58%), red meat (57% vs. 46%), fast foods (19% vs. 10%) and soft drinks (29.8% vs. 15%) than females. Only the intake of vegetables was found to be significantly higher among females (51.9%) than males (40%) ( $P < 0.0289$ ).

The differences between male and female Syrian adolescents in meal and snacking habits are given in Table 2. About half the adolescents did not eat breakfast (47.9%), although skipping breakfast was more apparent among females (57.4%) than males (43.3%) The difference, however, was not statistically significant. Females (62.6%) were more likely to bring food to school from home than males (49.4%) ( $P < 0.0116$ ), whereas males were more likely to eat while going home than females (75.3% vs. 56.7%) ( $P < 0.0001$ ). Supper was significantly more frequently consumed by males than females ( $P < 0.0000$ ).

**Table 2.** Meals and snack intake of adolescents in Syria by gender

	Male		Female		P-value	Total	
	No.	%	No.	%		No.	%
<i>Breakfast intake</i>							
Intake	101	56.7	89	47.6	0.0807	190	57.1
No intake	77	43.3	98	52.4		175	47.9
<i>Bringing food from home</i>							
Yes	88	49.4	117	62.6	0.0116	205	56.2
No	90	50.6	70	37.4		160	43.8
<i>Eating while going home</i>							
Yes	134	75.3	106	56.7	0.0001	240	65.8
No	44	24.7	81	43.3		125	34.2
<i>Eating lunch</i>							
Always	169	94.9	179	95.7	0.7247	348	95.3
Frequently	9	5.1	8	4.3		17	4.7
<i>Eating supper</i>							
Always	142	79.8	113	60.4	0.0000	255	69.9
Frequently	36	20.2	74	39.6		110	30.1
<i>Eating between breakfast and lunch</i>							
Yes	131	73.6	140	74.9	0.7817	271	74.2
No	47	26.4	47	25.1		94	28.8
<i>Eating between lunch and supper</i>							
Yes	119	66.9	127	67.9	0.5848	246	67.4
No	59	33.1	60	32.1		119	32.3

The preferred sizes of fast foods among adolescents are shown in Table 3. Males were more likely to consume bigger sizes of burgers ( $P < 0.000$ ), French fries ( $P < 0.0000$ ) and soft drinks ( $P < 0.0138$ ) than females.

The differences between male and female Syrian adolescents in lifestyle habits are presented in Table 4. There were no significant differences between genders in daily hours of watching television and daily hours of sleeping. The differences were statistically significant between males and females in all other lifestyle habits, however. Eating during emotional states (boredom, depression and worry) was found to be more common among females than males. Of the females, 78.6% ate while watching television, compared with 65.2% of males ( $P < 0.000$ ). Tendencies towards using the Internet and undertaking exercise were higher among males than females.

**Table 3.** Preferred sizes of fast foods among adolescents in Syria

Size of fast foods consumed	Male		Female		P-value	Total	
	No.	%	No.	%		No.	%
<i>Preferred size of burger (beef or chicken)</i>							
Regular	123	69.1	178	95.2	0.0000	301	82.5
Double	55	30.9	9	4.8		64	17.5
<i>Preferred size of French fries</i>							
Regular	130	73.0	167	89.3	0.0000	297	81.4
Large	48	27.0	20	10.7		68	18.6
<i>Preferred size of soft drinks</i>							
Regular	154	86.5	176	94.1	0.0138	330	90.4
Large	24	13.5	11	5.9		35	9.6

**Table 4.** Differences between male and female Syrian adolescents in lifestyle habits

Lifestyle	Male		Female		P-value	Total	
	No.	%	No.	%		No.	%
<i>Hours of watching TV/day</i>							
<3	60	33.7	56	29.9	0.4410	116	31.8
3+	118	66.3	131	70.1		249	68.2
<i>Eating while watching TV</i>							
Yes	116	65.2	147	78.6	0.0043	263	72.1
No	62	34.8	40	21.4		102	27.9
<i>Hours of using internet/day</i>							
Not using	62	34.8	106	56.7	0.0002	168	46.0
<3	56	31.5	38	20.3		94	25.8
3+	60	33.7	43	23.0		103	28.2
<i>Practicing physical activity</i>							
Yes	157	88.2	120	64.2	0.0000	277	75.9
No	21	11.8	67	35.8		88	24.1
<i>Hours of sleeping/day</i>							
<7	33	18.5	49	26.2	0.0719	82	22.5
7+	145	81.5	138	73.8		283	77.5
<i>Eating late at night</i>							
Yes	100	56.2	86	46.0	0.0519	186	51.0
No	78	43.8	101	54.0		179	49.0
<i>Eating when feeling boring</i>							
Yes	81	45.5	124	66.3	0.0000	205	56.2
No	97	54.5	63	33.7		160	43.8
<i>Eating when depressed</i>							
Yes	34	19.1	71	38.0	0.0000	105	28.8
No	144	80.9	116	62.0		260	71.2
<i>Eating when worried</i>							
Yes	34	19.1	56	29.9	0.0164	90	24.7
No	144	80.9	131	70.1		275	75.3

## DISCUSSION

The current study indicates that there is a significant variation in dietary habits and lifestyles between male and female adolescents in Syria, and both genders have many unhealthy food and lifestyle behaviours. Significant differences between males and females were observed for frequency intake of vegetables, milk and dairy products, red meat, and soft drinks. Although both genders have unhealthy lifestyles, females had more unsatisfactory lifestyles than males.

The food frequency intake patterns of Syrian adolescents are consistent with those reported in previous studies in Damascus [5, 6, 7], as well as in some Arab countries [10, 11, 12]. The low intake of fruit and vegetables is of particular concern, as an adequate intake of these foods is protective against certain chronic diseases, including obesity, cardiovascular disease, and some types of cancer [13]. A recent study on obesity in Arab adolescents showed that about 20% of schoolchildren aged 15–18 in Damascus were overweight and 6% were obese [14]. High consumption of fast foods is a considerable risk factor for obesity [15]. The current study showed that only 14% of adolescents consumed fast foods more than four times a week. This is almost half the proportion reported in Bahrain [10] and Saudi Arabia [11]. In spite of that, a relatively high percentage of Syrian male adolescents preferred the bigger sizes of burger and French fries, which means a higher intake of energy.

Although females in this study were more likely to skip breakfast than males, the difference was not statistically significant. The phenomenon whereby girls skip breakfast more than boys has been reported in several Arab [11, 12] and Western [16, 17] countries. It has been suggested that girls are more concerned about body image and dieting, and therefore they skip breakfast in the belief that this will reduce their calorie intake [18]. A systematic review showed that eating breakfast is associated with a reduced risk of overweight and obesity and reduction in BMI in children and adolescents [19]. Some studies in the Western world found that as snacking rises the total energy intake also rises [20]. This study indicates that 74% and 67% of adolescents ate between breakfast and lunch, and between lunch and supper, respectively. In the United Arab Emirates, Bin Zaal et al. [12] found that snacking between breakfast and lunch among adolescents (12–17-year-olds) was a protective factor for obesity in females but not in males; snacking between lunch and supper was a protective factor for obesity among males only. This depended mainly on the quantity and quality of foods consumed in snacking times, however.

Historically, Syria, like many Arab countries, was an agricultural country which produced most of the food consumed, and the majority of the population worked in agriculture. However, during the past four decades, Syria experienced a rapid change in lifestyles, due to the nutrition and epidemiologic transition. As a result, many people shifted from agricultural work to office work. Also, the ownership of cars, television and computers has increased steeply. These changes in lifestyle have led to a reduction in the physical activity of people, including adolescents, especially in urban areas like Damascus city, and consequently increased sedentary behaviour [21]. Madanat et al [22] reported that Westernization, which is the result of nutrition transition, has had a great influence on the increase risk of unhealthy lifestyle in Arab countries.

The current study suggests that males are more prone to undertaking physical activity than females. Women in most Arab countries, including Syria, face more socio-cultural barriers in undertaking physical activity than men. This is due to the fact that males have more freedom and places to practice exercise and other recreational activity than females. Furthermore, due to socio-cultural and religious norms, most Syrian girls and women cannot practice exercise outdoors in sports clothes [23].

The rates of watching television and eating while watching television in this study were higher among females than males. This, again, may be related to the cultural factor, that more restrictions on adolescent girls to be outside homes compared to boys. Therefore, girls have more time to watch television at home, and consequently eat while watching television. This may also explain the high proportion of adolescent males who sleep more than seven hours a day, as boys spend more time outside homes and returned home tired, which leads them to sleep earlier than girls. However, without proper investigation, it is difficult to interpret such differences between males and females.

There is a positive association between the number of hours spent watching television and obesity among children [24]. Increased television viewing, playing video games and protracted use of the Internet are contributory factors to increased sedentary behaviour during leisure time, which leads to a decrease in physical activity [25]. The current study shows that the majority of adolescents watched television for more than three hours a day. This is inconsistent with the finding reported by Al-Hazzaa et al. [11] in Saudi Arabia among adolescents aged 14–19. The proportion of adolescents, regardless of gender, who practiced physical activity in this study was higher than that reported in Arab Gulf countries among similar age groups [10–12]. This is probably because many Syrian students have to walk to school. Such a situation does not exist in Arab Gulf countries, where income is high and the students usually go to schools in cars.

The findings of the current study show that psychological conditions have an influence on dietary habits, especially among females. This is similar to the finding reported by Bin Zaal et al. [12] in United Arab Emirates, where they found that schoolgirls were more likely to eat than boys when bored. Studies in Western countries suggest that girls and women were more affected by emotion and this was reflected in their eating habits. In Lebanon, Katsounari and Zeeni [26] found that Lebanese female students were more likely to engage in emotional and eating behaviours which have been linked to eating disorder psychopathology than their counterparts from Cyprus. In Belgium, Michaels et al. [27] showed that stress among children aged between 5–12 years old was associated with emotional eating and unhealthy dietary habits, and this may contribute to obesity in these children. It is strongly believed that the current conflict in Syria may increase the stress in schoolchildren and may have a great impact on their dietary habits and lifestyles.

## CONCLUSIONS

The current study provides an update and more inclusive data on dietary and lifestyle behaviours among adolescents in Syria. Furthermore, these data could be used as base-line information for the comparison of food habits and lifestyles, before and after the conflict. This will reflect the effect size of the conflict on dietary and lifestyle habits of adolescents in this country.

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