THE DIFFERENCE BETWEEN MEAL FREQUENCIES, AND SOME SPECIFIC FOOD FREQUENCIES WITH AND WITHOUT FAMILY AMONG SAUDI ADOLESCENT FEMALES

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Abstract:

Objective: To recognize the difference between meal frequencies, and some specific food frequencies with or without family among Saudi adolescent females in Riyadh city.

Methods: 520 Saudi females aged between 13-19 years (mean age = 13.74 ± 1.10), who were attending middle school in Riyadh city, Saudi Arabia, participated in this cross-sectional study, All participants completed a questionnaire regarding the frequency and location of meals and their food intake during the 2009-2010 academic school year.

Analysis: A variety of measures of central tendency and variability were used to describe these data, and the nature and strength of possible relationships was investigated using Spearman's rank correlation coefficient, analysis of variance, LSD, and t-test. All data were analyzed using SPSS.17 software

Results: The majority of participants gathered with their families to eat three major meals a day (breakfast, lunch, and dinner), participating in these meals 74.8%, 95.6%, and 92.9% respectively. Higher family meal frequency was a significant increase (p < 0.01) in average number of times per week that the participants consumed chicken, meat, fish, shrimp, eggs, rice, bread, beans, cheese, yogurt, milk and diary, fruit juice,

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fresh vegetables, cooked vegetables, fresh fruits, and pastry at home. On the other hand a significant decrease was observed ($p < 0.01$) in the average number of times per week consumption of sweets and chocolate, soda, drinks, snack, fast food, cornflakes, and energy drinks during meals taken by the adolescents when eating with their families, a Spearman correlation showed a positive significant correlation ($p < 0.01$) between family cohesion with food consumption patterns.

Conclusions: It is clear from these analyses that there is a significant decline in the consumption of healthy foods when adolescent females in Saudi Arabia eat outside the family setting. What can this be attributed to? Access to fast food? Lack of discipline or time? Not being aware of health implications? What public health policy or actions need to change to offset this pattern? Not being aware of health implications? Must highlighting the importance of family meal for their contribution in raising the quality of the food intake of adolescents

INTRODUCTION

The family plays an important role in establishing the dietary patterns of adolescents (Hanson et al., 2004), either directly in the provision of a physical and social environment for the children or indirectly through the management of behavior and habits through socialization and role models (Richie et al., 2005). The family meal can be an opportune time to teach healthy eating habits (Fulkerson et al., 2006), decrease adolescent disordered-eating behaviors (Neumark-Sztainer et al., 2004), increase self-esteem, improve teen perceptions of the family (Yong & Yu Lee Mei, 2008), improve diet quality (Videon &Manning, 2003), and set an appropriate frequency for eating breakfast, lunch, and dinner (Burgess-Champoux et al., 2009).

Cross-sectional research has found that adolescents who attend family meals were more likely to eat fruit and vegetables and less likely to eat fast food, soft drinks, and sweets (Gillman et al., 2000; Videon& Manning, 2003; Stockmyer, 2001; Neumark-Sztainer et al., 2003). Very little research has examined the associations between consumption with family and the quality of dietary intake among adolescents, whereas the family meal remains a mainstay of Saudi family life and symbols of family cohesiveness, as reported 76.9% of the Saudi family eat regular meals with the participation of all members of the family

(Al-Oboudi&Al-Amer, 2006). The prevalence of nutritional disorders in Saudi children and adolescents is 2.4 per 10000 for severe malnutrition and 0.9 per 10000 for morbid obesity (El-Mouzan et al., 2010). Economic development of Saudi Arabia during the last decades has changed the nutritional and lifestyle habits (Amin et al., 2008) As Saudi Arabia continues to experience variety of areas change, it will be worthwhile to monitor the status of the family meal.

The objectives of this study were to assess the difference between consuming food with and without family among Saudi adolescent females, and examine associations between family meal patterns and the consumption of specific foods among adolescent females.

METHODS

Sample and study design

A cross-sectional study was conducted. the research sample was selected from intermediate grade schools, during the second semester of 2009-2010.Six schools from each of the five areas of education management in the city of Riyadh (north, south, central, east, and west) were selected at random, for a total of thirty schools. The research sample was identified by the(Kregcie and Morgan, 1970) equation where

$$S=\frac{X^2NP(1-P)}{D^2(N-1)+X^2P(1-P)}$$

S = required sample size

N = the given population size

P = population proportion that for table construction has been assumed to be.50, as this magnitude yields the maximum possible sample size required

d = the accuracy as reflected by the amount of error that can be tolerated in the fluctuation of a sample proportion p about the population proportion P- the value for d being.05 in the calculations for entries in the table, a quantity equal to $\pm1.96\sigma_p$

X^2 = table value of chi square for one degree of freedom relative to the desired level of confidence, which was 3.841 for the.95 confidence level represented by entries in the table.

A total sample size of 520 adolescent girls was selected, with 17 adolescent girls from each school

through systematic random sampling from the school lists.

Data was collected through personal interviews using questionnaires, conducted by a test of validity and reliability.

MEASURES

The questionnaire consisted of 4 parts. The first concerned socio-demographic characteristics, such as age, the number of people in the household, Mother's employment status, Living situation. The second discussed meals, specifically the frequency of breakfast, lunch, and dinner meal consumption during the week. Possible responses included were never, one time, 2–3 times, 4–5 times, 6–7 times. The questionnaire discussed family meals: frequency of family breakfast, family lunch, and family dinner consumption during the week. The response categories were never, one time, 2–3 times, 4–5 times, 6–7 times. Food intake was assessed with a24-item food frequency questionnaire (FFQ) with family, and food frequency questionnaire without family.

Statistical methods

Statistical analysis was performed using SPSS.17(2007).Descriptive statistics such as frequencies, means, standard deviations (SD), and percentage were used to describe all variables, analysis of variance and the least significant difference (LSD) between mean the major meals, whereas the T-test was used to examine the differences between mean of frequency consumption with and without family. Statistical significance was achieved when the p value was less than 0.05.

RESULTS

Characteristics of the sample:

Descriptive statistics of the sample are presented in table (1)

The age of the adolescents in the sample ranged from11to 18 years, with an average age of 13.73±1.10.

The table reflects the household size and number of siblings in the majority of adolescent girls, where the proportion of medium and large families was 70.9% and 15.8% respectively. Most of the participants (94%) lived with their parents.

Table (2) shows the distribution of participants by frequency

Table(1) Socio-demographic and Characteristics of the sample(n=520)

Socio-demographic factors	N=520	%
Age in year		
11-12 year	52	10.0%
13 year	197	37.9%
14 year	137	26.3%
15 year	107	20.6%
16 year	22	4.2%
17-18 year	5	1.0%
Living situation		
With my parents	498	94.0%
With father	19	3.7%
With mother	9	1.7%
Other	3	0.6%
number of people in the household		
3-5	69	13.3%
6-9	369	70.9%
> 10	82	15.8%
Mother's employment status Not employed	376	72.3%
employed	144	27.7%

Table (2) Frequency of major meal during week   (n=520)

Frequency of major meals	6-7day/week		4-5 day/week		3-2day/week		Only ones		Never		mean± standard deviation
	n	%	n	%	n	%	n	%	n	%	
breakfast	188	36.2%	105	20.0%	97	18.7%	35	6.7%	95	18.3%	2.49±1.49
lunch	318	61.2%	119	22.9%	53	10.2%	20	3.8%	10	1.9%	3.38±0.59
dinner	207	39.8%	151	29%	106	20.4%	27	5.2%	29	5.6%	2.92±1.14

of major meal consumption for breakfast, lunch, and dinner at 81.8%, 98.1%, and 94.4% respectively. Some the participants, 18.3%, 1.9%, and 5.6% did not take breakfast, lunch, or dinner meals respectively.

The average mean frequencywas2.49±1.49, 3.38±0.59, and 2.92±1.14 for breakfast, lunch, and dinner meals respectively.

Table (3) Analysis of variance and LSD between major meals

meals	Break fast	lunch	dinner	F value
Breakfast	-	0.883**	-	
lunch	-	-	0.452**	68.80**
dinner	0.431**	-	-	

**p<0.01

Analysis of variance and LSD showed significant differences at p‹ 0.01 between lunch with breakfast and dinner, also significant observations at 0.01 between dinner with breakfast. See table (3) for details.

Table (4) shows that most participants reported frequent family meals for breakfast, lunch, and dinner at 74.8%, 95.6%, and 92.9% respectively. Three in four (75.2%) of the participants took family lunch 4–7 days in a week, whereas (20.4%) of them took family lunch for 1–3 days in a week, and only 4.4% of the study sample did not attend a family lunch.

About third of the participants (36.5%) took family breakfast for 4–7 days in week, and more than a third of participants (38.3%) ate family breakfast 1–3 days in a week, whereas a quarter of them (25.2%) never ate family breakfast.

As for family dinner consumption, whereas most of the

Table (4) Frequency of family meal during week (n=520)

Frequency of Family meals	6-7day/week		4-5 day/week		3-2day/week		Only ones/week		Never		mean± standard deviation
	n	%	n	%	n	%	N	%	n	%	
breakfast	104	20.0%	86	16.5%	130	25.0%	69	13.3%	131	25.2%	1.93±1.45
lunch	290	55.8%	101	19.4%	88	16.9%	18	3.5%	23	4.4%	3.91±1.11
dinner	199	38.3%	134	25.8%	111	21.3%	39	7.5%	37	7.1	281±1.23

participants (64.1%) ate family dinner 4–7 days in a week, 20.3% had dinner 2–3 days in week, the participant, who ate family dinner once a week and how never ate were 7.5%, 7.1% respectively.

Analysis of variance and LSD showed significant differences at p‹ 0.01 between lunch with breakfast and dinner, also significant observes at p ‹ 0.01 between dinner with breakfast. See table (5).

T-test results showed that there were significant at p ‹ 0.01 average mean frequencies in the consumption of chicken and meat, fish and shrimp, eggs, rice, bread, beans, yogurt, milk and dairy, fruit juice, tea, coffee, fresh vegetables, cooked vegetables, fresh fruits, and pastry at home, with a family meal than without a family meal, the cheese a significant at p ‹ 0.05.

A significant decrease at p ‹ 0.01 was found in average mean frequencies in the consumption of sweets and chocolate, soft drinks, snacks, fast food, corn-flakes, and energy drinks when comparing meals with family than without family. For as nuts, and pies away from home, there was decrease in consumption with increased numbers of family meals, but it was not significant. See Table (6).

Relationship between *single meals* with frequencies of *family meal*

Results showed (7) a positive significant correlation between three meals (breakfast, lunch, dinner) with family meals at p ‹ 0.01.

DISCUSSON

This is the first study concerned with exploring the difference between the food frequency with family and without family and we explored the influence of family meals on meal behaviors of Saudi adolescent females.

Approximately 74.4%, 95.6%, and 92.2% of participants

Table (5) Analysis of variance and LSD between family meal

meals	Break fast	lunch	dinner	F value
Breakfast	-	1.258**	-	
lunch	-	-	0.381**	134.14**
dinner	0.877**	-	-	

**p<0.01

Table (6) Comparison between mean frequency specific by food consumption with and without family /week

Foods	mean frequencies eating with family	mean frequencies eating without family	The difference between the means	t-Test, p value
Meat & chicken	3.7269	2.0308	1.69615	25.310**
Fish & shrimp	1.9654	1.1865	0.77885	19.432**
Eggs	2.4615	1.9712	0.49038	7.217**
Rice	4.0269	1.9827	2.4423	27.384**
Bread	3.7115	2.9192	0.79231	9.159**
Legumes	2.3731	1.5077	0.86538	16.542**
Cheese	2.8885	2.6827	0.20577	2.540*
Yogurt	2.2038	1.7731	0.4377	6.908**
Dairy & milk	3.0192	2.1923	0.82692	10.102**
Nuts	2.3000	2.3635	-0.06346	-0.940
Sweet& chocolate	2.3058	3.7037	-1.39808	-16.487**
Fruit juices	3.1462	2.6769	0.46923	6.076**
Soda drink[1]	2.1558	3.1154	-0.95962	-11.590**
Tea	2.7481	1.9558	0.79231	10.228**
Coffee	2.5211	1.6211	0.90000	12.712**
Fresh vegetable [2]	3.2654	1.8596	1.40577	20.778**
Cooked vegetables	1.8904	1.3404	0.55000	11.508**
Fruit fresh	3.4981	2.1577	1.34038	19.442**
Pastry away from home [3]	2.5115	2.5750	-0.06346	-.0800
pastry at home	2.7250	1.8038	0.92115	15.463**
Snacks[4]	2.1404	3.3423	-1.20192	-14.119**
Fast food	2.3038	2.9173	-0.61346	-7.395**
Corn flaks	1.7173	2.3077	-.59038	-8.336**
Energy drink	1.1962	1.8462	-0.65000	-11.342**

[1] soda drink: diet soda, non diet soda.
[2] fresh vegetable: carrot, cucumber, lettuce, corn, potato, tomato, include salad various.
[3] pastry away from home: pie, donuts, sweet rolls, pizza, Croissant, cake.
4 snacks: potato chips, corn chips, ice cream, milkshake, jello, cookies, candy.
*$p<0.05$, **$p<0.01$

reported eating the breakfast, lunch, dinner with family respectively, and lunch was the most frequent meal with family. This finding is not similar to the findings of (Woodruff, 2007) in Canada. He found that adolescents consumed breakfast, lunch, and dinner with their family 52%, 7%, and 86% of the time respectively. This difference could be explained by the fact that lunch is the major meal for Saudi families 85.3% (Al-Oboudi & Al-Amer, 2006). This is due to the end of work and school at noon (in the Arabian Gulf), which encourages people to eat

Table(7) correlation coefficients between three meals (breakfast, lunch, dinner) with family meals

Major meals	Family meals
Breakfast	0.442**
Lunch	0.380**
Dinner	0.401**

**p<0.01

lunch at home (Musiger, 2004). The breakfast meal was the most frequently skipped meal (only 36.2% eating breakfast 6-7days/week) even though it replenishes the body and improves cognitive function related to memory (Ming et al.2006; Ahmad et al., 2009).

Previous longitudinal studies indicated the strength of the relationship between family meal frequency and major meal consumption (Larson et al., 2007; Burgess-Champoux et al., 2009). Other studies about breakfast (Woodruff& Hanning, 2009; Utter et al., 2008; Yuasa et al., 2008) have also found positive associations between family meal frequency and breakfast consumption. Similar associations were observed in our study between family meal frequency and increased major meal consumption for the adolescent female. Family eating was associated with greater consumption of healthy food and quality of dietary intake (Neumark-Sztainer et al., 2003; Gillman et al., 2000; Burgess-Champoux et al., 2009). Our analysis revealed a

significant association between consumption of specific foods and eating with/without family among Saudi adolescent females. We found a significant increase in the consumption of fruit, fresh vegetables, dairy products, grain and bread products, meat and fish, and legumes with more family meals, but a decrease in consumption for decreased family meals (p <0.01).

Concerning consumption of sweets, fast food, soda, and snacks, there was lower consumption with increased family meals(p <0.01), versus higher consumption with decreased family meals (p <0.01), which indicates the family meals are a significant positive influence (p <0.01) on the quality of food eaten. These results are similar to the findings of (Gillman et al., 2000), where they found higher consumption of fruits and vegetables and several beneficial nutrients, and they also observed lower consumption of soft drinks, fried foods, saturated and trans fat. Another study also observed that frequency of family meals was positively associated with the intake of fruits, vegetables, grains, and

calcium-rich foods, and decreased consumption of soft drinks and snacks(Neumark-Sztainer et al., 2003).

We observed no significant positive influence of family meals on improving dietary patterns for the participant about healthy choices, Where we found increased intake of unhealthy foods without family, likely due to the participant does not preserve to eat family meal.

This study is not without limitations. First, we relied on food frequency questionnaires, known to underestimate intakes of nutrients, and we were unable determine whether Saudi adolescents are eating these quality of foods during the family meal or away from the family meal time, so we cannot be sure that the family meals encouraged improved dietary intake. The second issue is that our study involved only female adolescents, so we cannot generalize it to male adolescents. The strength of our study is that it provides preliminary findings about consumption of food with family and family meal patterns among Saudi adolescent females. There is, to our knowledge, very little research data regarding family meal and food consumption among Saudi adolescents.

Implications

The family meal is an important part of Saudi adolescent lifestyle. As adolescents are tomorrow's adults, our findings are important for researchers, clinical practitioners, nutrition experts, and schools. When planning Saudi adolescent health promotions, we must educate families on how to choose good quality food and how to prepare healthier family meals.

Further study is needed to assess and explore whether Saudi adolescents, when eating with family, truly have more healthful nutrients intake and analysis of the nutritional value of foods served or provided in the family meal.

BIOGRAPHY

Dr. Latifah Mohammed Al-Oboudi: is an associate professor at Princess Nora Bent Abdulrahman University - Nutrition and Food Science Department. She was the vice dean for finance and administration of Home Economics College for two years. Earlier she was the head department for two

years. She is a foundering member of the Consumer Protection Association. She was former head of the Summer Enrichment Gifted Program. She is member of some specialized scientific and charity associations Her Research Interests include dietary measurement, food use patterns, nutritional status, nutrition promotion programs, nutritional assessment, clinical and public health practice guidelines, nutrition issues for children disease, and Food and nutrition of indigenous populations.

Dalal Abdullah AL-Khudhayri: has been awarded the Master degree with Distinction in (applied nutrition) from Princess Nora Bint Abdulrahman University, and is currently employed as a Lecturer in alkharj University(KSA), she is the Home Economics Head Department. Furthermore, she has many social Contributions in the University. Her research areas include Food Habits, food security and sustainable development.

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