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Meeting Dietary Food Groups Serving's Requirements of Food Guide Pyramid among Jordanian University Students

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Abstract

The current study was conducted in the Jordan University of Science and Technology (JUST), Northern of Jordan. The aim of this study is to determine the consumption from food groups compared with the food guide pyramid among University students living away from their homes and to examine how the economic status of the study sample and the influence it has on spent on food. The study targeted male students known to live away from their parents, where a convenient sample of 370 male students chosen randomly from different majors and academic years and with different socio-economic backgrounds. Participants were interviewed by trained nutritionists where the actual intakes number of servings from each food groups was recorded. The results of the study showed that 75.7% of the study subjects who lived away from home; they reside in Jordan, while 24.3% of the students' parents were living outside Jordan. In addition, most of outside students fit in the highest financial income per month category comprising three-quarters those in the "more than 201 dinar" category. Regarding the number of servings consumed from each group, 44% of the study sample consume less than the minimum recommended servings for the dairy group; most participants don't meet the recommendations for meat and meat substitutes group by a percentage of 38.9%; only 11.1% meet daily recommendations from vegetables group; 46% of students do not meet the minimum recommended number of servings of fruits group and most of the study sample (43.8%) meet recommended number of servings from grain group. It is recommended to meet daily recommendations of servings from the food groups (dairy, meat, grains, fruits and vegetables); specifically to increase fruits intake; for it's rich content of nutrients not available from any other sources. Further studies are suggested to evaluate the food intake with different dietary evaluation tools.
Key words: Food Groups, Serving, Food Guide Pyramid, Residency, University Students, Jordan.

1. Introduction

The transition of young people from school to university has many health implications. It is a time of increased responsibility for food choices and practices. A key concern is the food consumption patterns and associated nutritional risks specific to college students. The nutritional knowledge of university students and their diets (food consumption patterns) have received global attention (As reported by El-Ansari et al., 2012). In addition, changes in living arrangements that some college students encounter influence their lifestyle factors e.g. food choices. University students' diets feature some undesirable practices, especially for those living away from the family home (El-Ansari et al., 2012). Hamad, 2017 summarized the unhealthy dietary habits and lifestyle behaviors among University students which were reported by several studies (Bagordo et al., 2013; Racette et al., 2005; Huang et al., 2003; Steptoe et al., 2002; Anding et al., 2001; Soriano et al., 2000; Ortega et al., 1997). The mostly reported underlying factors affect food choices in this group of young adults include cost and financial resources (Papadaki et al., 2002; Pan et al., 1999), changes in living arrangements (Brevard and Ricketts, 1996), and increased availability of convenience and fast foods (Nicklas et al., 2001) which are mostly junks foods.

At practical level, students who live away from home were chosen for this study because of the problems and stresses they face in their daily life mentioned elsewhere (Hamad, 2017). Such problems are: (1) students lack the basic nutritional knowledge as well as the golden rules of food preparation, required to cover the individual's daily meals and the number of servings recommended from each food group; (2) the effect of socio-economic status is direct on the budgets allocated for food procurement and it further affects the type and amount of foods eaten at each meal; (3) various psychological and physical problems (Kim et al., 2015). However, far too little attention has been paid to the food consumption comparing to the basic requirements of food guide pyramid. Therefore, the aim of this study is to determine the consumption from food groups compared with the food guide pyramid among University students living away from their homes and to examine how the economic status of the study sample and the influence it has on spent on food.

2. Methodology

2.1 Study design and Study population

A cross-sectional study was conducted among male students known to live away from their parents, where a convenient sample of 370 students chosen from different majors and academic years and with different socio-economic backgrounds.

2.3 Data collection

A 24-hour diet recall was filled with the aid of well-trained interviewing nutritionists. The food guide pyramid was used to assess and compare the actual intake number of servings from each food group with their corresponding dietary recommendations. Data collection comprised of: (1) residency; (2) financial income per month and (3) types of food eaten at each meal and additional types of food consumed throughout a day.

2.4 Data analysis

SPSS version 19 was used to analyze the collected data. Descriptive statistics of frequencies and percentages were used to meet the study objectives.

3. Results and discussion

3.1 Residency status of the study sample

Table (1) presents the residency status of the enrolled subjects. It is shown in table (1) that 75.7% of the study subjects who lived away from home; they reside in Jordan, while 24.3% of the students' parents were living outside Jordan and their parents and families live in different countries mainly within the Arabian Gulf countries (GCC).

Table1: Residency status of the study sample

Research topic	Inside Jordan		Outside Jordan	
Original residence country of the family	Number	Percentage	Number	Percentage
	280	75.7%	90	24.3%

3.2 Economic status of the study sample

One of the most important factors that plays a significant role and have a direct association on the nutritional status of students who live alone is their economic status, which is reflected in Table (2) where 16.2% of the students in the sample fit in the category of a monthly income between 101 to 200 dinar, 21.6% have more than 201 dinar as their monthly income and the remaining 62.6% are in the less than 100 dinar monthly income category. Table (2) also shows that 50.8% of the students spend more than 51% of their budget on food items, 44% of students spend somewhere between 31% to 50% of their budget on food and only 5.1% have a spending rate of 30% on food items. Most of outside students fit in the highest financial income per month category comprising three-quarters those in the "more than 201 dinar" category. The reason goes back to that most of these student's families live within the GCC countries with the highest average incomes per capita. Therefore, a significant positive relationship between monthly income and amount of money spent on food is established and hence shown in positive nutritional status and dietary habits among participants. Indeed, international students face additional challenges to adjustment, including language differences, which hinder self-expression and cultural differences (e.g., food, humor, customs, religion)… etc. (Thurber & Walton, 2012).

Table 2: Economic status of the study sample

Research topic	Number	Percentage	Number	Percentage	Number	Percentage
	Less than 100 JDD		Between 101 to 200 JD		More than 201 dinar	
Financial income	230	62.2%	60	16.2%	80	21.6%
Money spent on food	Less than 30% of the income		Between 31% to 50%		More than 51%	
	19	5.1%	163	44.1%	188	50.8%
Dorm room type	Single		Shared			
	130	35.1%	240	64.9%		

3.3 Actual intake of food groups in comparison with food guide pyramid recommendations

Table (3) shows a comparison between the number of servings intake from each food group with that of the recommended number of servings, the following is an elaboration on the figures of each group indicated by the table:

1- Dairy products group (2-3 servings): 44% of the study sample consume less than the minimum recommended servings for the dairy group, 33% meet the recommendations while the remaining 23% consume an amount more than that of the recommended. It is evident that the majority fails to meet even the minimum number of serving required for a sound healthy diet.
2- Meat and meat substitutes group (2-3): Most participants don't meet the recommendations for this group by a percentage of 38.9%, 33% consume above the rate and 28.1% meet recommended number of servings.
3- Vegetables group (5-3 servings): A lack of knowledge about the recommendations for the food foods is reflected in the figures obtained where only 11.1% meet daily recommendations, 33% consume an amount below the desirable rate and 55.9% exceed recommendations.
4- Fruits group (2-4 servings): A lack of knowledge reflected in a lack of concern about this food group is shown in the significant number of participants that do not meet the minimum recommended number of servings 46%, while 16.2% exceed the desired rate and 37.8% meet daily recommendations.
5- Grains group (6-11 servings):Most of the study sample meet recommended number of servings for this group 43.8%, while remaining either exceed 24.3% or do not cover the desired number of servings 31.9%
6- Sugars and oils group: There is no recommended steady rate of consumption for this group but rather this group fits in the daily allowance of an individual depending on his nutritional status and in general should be consumed in modesty. The main sources of this group are the snacks consumed between meals like (Fruits and fruit juice, soft drinks, chips, sandwiches, nuts). As shown in Table (3) the average consumption rate from this group between individuals in this study sample ranges between (44-46g).

Table 3: Participants' consumption from food groups compared with the food guide pyramid

Food group	Number	Percentage	Number	Percentage	Number	Percentage
	Within rate*		Above rate		Below rate	
Dairy products (2-3)	122	33%	85	23%	163	44%
Meat and meat substitutes (2-3)	104	28.1%	122	33%	144	38.9%
Vegetables (5-3)	41	11.1%	207	55.9%	122	33%
Fruits (2-4)	140	37.8%	60	162%	170	46%
Grains (6-11)	162	43.8%	90	24.3%	118	31.9%
Sugars and oils	44-46g					

*Rate: Recommended daily number of servings from each food group.

Students who live away from home were chosen for this study because of the problems and stresses they face in their daily life mentioned elsewhere (Hamad, 2017). As well as the urge they have to know more about nutrition and the desire to acquaint themselves with related knowledge about food groups, required amount of servings from each and knowledge required to make healthy everyday choices. This urge is represented by questions that dietitians face regularly such as:

- What foods are rich in nutrients and provide a good source of energy?
- What is the most beneficial food item that I should eat?
- What foods should I avoid if I want to lose weight?
- What are my energy requirements?
- Does studying increase my energy requirements?
- What is the reason behind not gaining weight, although I eat a lot?
- What are the best timings of eating food?
- To what extent processed food affect the body?

This research was the first ever study conducted in this area; hence, further research is needed to explore more discussion of the results.

4. Conclusions

From the results , the following can be concluded; (1) more than half of the participants spend around 51% of their monthly income on food items; (2) the statistical analysis denotes that a great percentage of respondents do not meet minimum recommended servings of certain food groups like dairy, meat and meat substitutes and fruits. In regard to groups like vegetables and grains most participants cover them adequately according to the food pyramid; (3) lack of nutritional knowledge among the study sample as well it's evident that they are not acquainted with basic nutritional knowledge required to make nutritionally adequate meal choices and meet the food pyramid recommendations.

5. Recommendations

Based on the study findings, it is recommended to; (1) it is important to seek basic nutritional knowledge and implement such knowledge in daily life practices such as planning meals; (2) it is recommended to meet daily recommendations of servings from the food groups (dairy, meat, grains, fruits and vegetables); (3) it is recommended to increase fruits intake; for it's rich content of nutrients not available from any other sources; (4) it is recommended to provide individuals with a nutritional leaflet, as a part of interventional program among university students, that allows them to identify food groups correctly and the servings needs to meet daily requirements.

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