

## Prevalence, Determinants and Consequences of Fast-Food Consumption among college students in Abha-Aseir

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### ABSTRACT

Excess consumption of fast foods may lead to raise a wide variety of health disorders. In recent years, diet pattern has been changed rapidly in the Kingdom of Saudi Arabia (KSA) because the fast food is replacing the traditional Arabic meals. The aim of the present study was to estimate the point prevalence, the determinants and the consequences of fast food intake among the students of college of applied medical sciences and college of nursing, khamis-mushait. Focus has been given on awareness about fast food consumption and its adverse effects on their health. A cross-sectional study conducted by self administered questionnaire which was used to collect the data. It was calculated that point prevalence of fast food intake is 89%. There were no significant results ( $p \leq 0.05$ ) between the socio-demographic variables and body mass index that had been taken into account during this study. Furthermore, there is significant relation ( $p \leq 0.05$ ) between the frequent consumption of fast food intake and BMI as we were in view that increasing frequency of fast food consumption excludes body mass index. There is sufficient evidence ( $p \leq 0.05$ ), despite having the awareness of health hazards of fast food consumption, students don't hesitate to consume the fast food. Results from this study highlight that an urgent need for college-based nutrition interventions must be organized that consider the trends of fast food consumption and targeted eating behaviors of students.

**KEYWORDS:** Fast foods, social influence, perception, BMI

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## **INTRODUCTION**

As we know "Eat healthy and live healthy" is one of the essential requirements for long life. Unfortunately, today's world has been adapted to a system of consumption of foods which has several adverse effects on health. Saudi Arabia is experiencing an epidemiological and demographic transition and considered as a country with advanced nutrition transition based on the WHO classification<sup>1</sup>. As the rest of the Gulf countries, it underwent deep and rapid changes in dietary pattern as a consequence of lifestyle related to the economic situation. Because of time constrains, convenience and life style, with more mothers employed outside the home, the growth of fast food industry, traditional foods are replaced by fast foods<sup>2</sup>. Fast food is a major enterprise in Saudi Arabia. The major chains like Mc-Donald's, Pizza Hut, Burger King, Hardees, Little Caesars, Subway, Dunkin Donuts to name a few. Most meal packages with fries and coke run around 15–20 SAR. Beside national brands Al-Baik, Kudu, Shawarma Joha so many multinational food chains like McDonalds, Pizza Hutt, are available.<sup>3- 6</sup>

Fast food simply means an empty calorie food. An empty calorie food is a high calorie or calorie rich food which lacks in micronutrients like vitamins, minerals, or amino acids, and fiber but has high energy (calories). A lot of the fast foods are rich in fats and poor in other nutrients. Common fast food includes chips, candy, gum, sweet desserts as well as alcoholic beverages<sup>2</sup>. Consumption of energy dense foods especially sweetened beverages such as fruit drinks, carbonated soft drinks and energy drinks may lead to type 2 diabetes and cardiovascular risk<sup>3</sup>. Trends including fast food consumption and skipping breakfast increased during the university years such dietary behaviors are associated with increased student's weight. The negative effects of consumption of excess salt containing fast foods on health include increase in blood pressure and decrease in calcium absorption. Foods with high salt content, therefore, are an important issue in the modern society<sup>7</sup>. Nutrient profiling, a method for categorizing foods according to nutritional quality, is both feasible and practical in promoting public health through better dietary choices. The development of nutrient profiling is a desired step in support of strategies to tackle obesity and other non-communicable diseases<sup>6</sup>.

The internal barriers to nutritional change include negative perceptions of healthy eating, the decreased taste, difficulty in changing familiar eating habits, eating for comfort, and the prioritization of mental health<sup>8, 10</sup>. High salt content foods can be addictive substances that stimulate the dopamine receptors in the brain, leading to increase in craving and hunger. It leads to increased appetite, calorie consumption, overeating, obesity and related illnesses<sup>9</sup>. A survey conducted among students about weight related attitudes, behavior and problems dealt by fat students lead them to eat

too many calories, lack of self-control and the students with weight controlling attitudes would enjoy physical activity and be highly coordinated<sup>11</sup>. Parents create environments for children that may promote the development of healthy eating behaviors' and weight, or may promote overweight and aspects of disordered eating<sup>12, 17</sup>. Young adults and their fast food eating are likely to continue and rise. The growing widespread use of fast food among young adults is of concern due to the high fat and energy intake, which may cause obesity and subsequently obesity-related chronic diseases.

There are numerous definitions for fast foods presented in the literature. Yet, there has been ambiguity in the definition of fast foods in the existing literature. The New Oxford American Dictionary defined it as “food that can be prepared quickly and easily and is sold in restaurants and snack bars as a quick meal or to be taken out” (Oxford University Press, 2010). Fast food consumption is positively associated with total energy intake and obesity, and negatively with the intake of vegetables, fruits, and milk in adolescents. The majority of Arab researchers have focused on examination of fast food consumption patterns, particularly the frequency of fast foods intake<sup>1, 17, 2</sup>, rather than focusing on consumer perception towards the definition of fast foods. Morse and Driskell examined the trends of fast food consumption among college students. Their results clarified that most young adults have reported eating meals at fast food restaurants 1–3 times weekly in a 10-year longitudinal study. There have been several studies focused on fast food use, related dietary behaviors, and nutrition knowledge level<sup>12, 13, 16</sup>. Therefore, the current study was carried out to investigate the point prevalence of undergraduate students of applied medical sciences of the Aseir region of the Kingdom of Saudi Arabia and factors influencing the body weight status in the perceptions of consumption of fast food.

## **MATERIALS AND METHODS:**

A cross sectional survey was conducted by using self-administered questionnaire which includes four sections namely socio-demographic, fast food patterns, knowledge regarding fast food and awareness of the male students about the fast food consumption at the College of Applied Medical Science and college of nursing of Khamis-Mushait campus-King Khalid University; Asier region. There was no standardized questionnaire as what we found from the literature review; therefore a new one was approved by five specialists (two from public health, one from social science, one from food nutrition and one from biostatistics). Different factors that might be related to dietary habits have been investigated in the questionnaire and the Likert scale has been used to make easy for the participants to response. All the questions which have been considered were adequately reliable with Cronbachs Alpha of 0.76. The responses were collected and counted manually based on the options specified for each question framed. 197 students were selected randomly for the study.

Questionnaires were distributed to the students during the first week in the month of February, second semester of the academic year 2017-18 by taking permission from their respected teachers during class free hours. Data were collected, tabulated and analyzed in terms of objectives of the study. Body mass index ( $\text{Kg}/\text{m}^2$ ) a universal accepted scale has been chosen under categories as underweight =  $< 18.5$ , Normal weight =  $18.5 - 24.9$ , over weight =  $25-29.9$  and obesity =BMI of 30 or greater. BMI is measured as weight in kilograms divided by height in meters squared, rounded to decimal place.

The researchers obtained permission from departmental research board. The investigators introduced themselves to the subjects. The investigators explained the purpose of the study to the participants. The consent was considered from the subject participation.

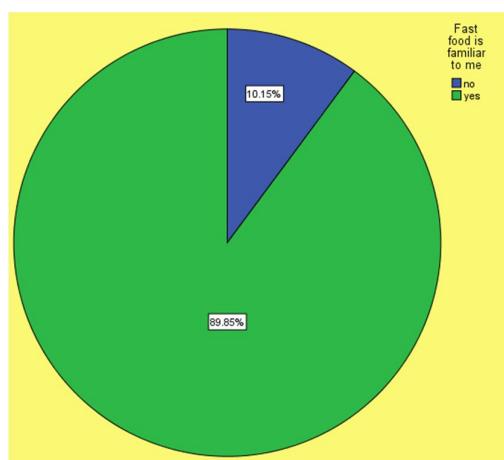
The Statistical Package for Social Sciences (SPSS Inc., Chicago, IL, USA) version 20 was used for data analysis. Categorical variables were expressed as numbers and percentages, and analyzed using a chi-square test. Continuous variables were expressed as means and standard deviations; all reported p values were made on the basis of two-tailed tests. Differences were considered statistically significant at  $p \leq 0.05$ . As our data is qualitative in nature chi-square test have been used to assess the effectiveness by using instates.

## **RESULTS:**

197 male students of applied medical sciences of different departments participated in the study. We started our analysis first to know the point prevalence among the students and it has been calculated that 89% of students are consuming fast food (Figure 1). Information is gathered in this study about the students' anthropological characteristics, attitude and awareness about ill effects of fast food consumption. Table 1a and 1b represents the social and anthropology characters of the participants which show that 9.1% of the students were obese followed by 27.4% are overweight and 9.6 % participants are under weight (Table 1a). The results revealed that a good ratio with respect to normal weight indicates the students follow unhealthy food habits. The mean age of the participants were  $21.96 \pm .971$  from 20 to 23 years of age group (Table 1b). The height and weight has been recorded which varies from 147 to 190 cm's and 40 to 125 kgs. The BMI has been calculated as per standard norms which range 13 to 38  $\text{Kg}/\text{m}^2$ . It has been reported that 40.1% usually consume burgers, 10.7% usually like fried foods, 16.2% like pizza and 33% consume sandwiches in fast food restaurant or university/college canteen.

Among all the participants 37.1% usually order soft drink (Pepsi, Dew etc), 2.5% take black tea, 20.8% take soda, and 29.4% take water with fast food or snack. 7.6% usually take any beverage and 2.5% take energy drinks. Our results showed that there are no significant relationships between the

social influences and body mass index (Table 2) while there is a belief among population that the working mothers are the major reason for their children's fast food consumption. We don't find any relation among the rural and urban students in respect to their fast food consumption. Also there is no relation of fast food consumption with the number of family members. Results suggested that there is no sufficient evidence of those claims which state that mother's education plays role for the healthy habits of children. Regarding the preferences every human has its own habit of taking meals as per his/her convenience. We don't find any significance regarding the influence of food prices but there is significance ( $p \leq 0.05$ ) among the fast food choices, taste (burger, sandwich, pizza, French fries, and fried items) and body mass index that students usually consume as meals (Table 3). Students have a belief that the fast food restaurants provide them hygienic and safe atmosphere. The fast food portions are large enough to feel full. This might be the reason of variations of their body weight. There is significance ( $p \leq 0.05$ ) between the motivational factors which encourages the students to take fast food. Table 4 represents the behavioural control towards the fast food consumption in relation with body mass index where it has been reported that increasing the times of consumption of fast food in a week is directly correlated with body mass. There is significant ( $p \leq 0.05$ ) relation between the consuming fast food frequency and body mass index. Even students are consuming fast food instead of their routine meals. Due to the routine consumption of fast food the students are getting addicted. Another factor for frequent consumption of fast food is its easy accessibility. There is direct relationship between the awareness and fast food consumption (Table 5). Despite having the knowledge and awareness of fast food hazards students are consuming fast food as their routine meals. There is sufficient evidence ( $p \leq 0.05$ ) that the habit has been developed in such a manner that the fast food has taken place of traditional food which is the reason of many more alarming diseases caused by overweight and obesity.



**Figure 1: Fast food consumption among the students**

**Table 1a: Social and anthropology characteristics of 197 under graduate participants**

<b>Department</b>	<b>Frequency</b>	<b>Percent</b>
Anesthesia technology	39	19.9
Dental technology	35	17.8
Emergency medical services	36	18.3
Nursing	34	17.3
Public health	53	26.9
<b>BMI - Group</b>		
Under weight	19	9.6
Normal weight	106	53.8
Over weight	54	27.4
Obese	18	9.1
<b>Income (SR)</b>		
5000-10,000	80	40.6
5000.	69	35.0
more than 10,000	48	24.4

**Table 1b : Physical assessment of the participants**

Variables	N	Minimum	Maximum	Mean	Std. Deviation
Age	19	20	23	21.96	.971
Height in cms	197	147	190	171.26	6.229
Weight in Kgs	197	40	125	70.04	12.152
BMI in Kg/m2	197	13	38	23.91	4.077

**Table 2: Association between the social influence and BMI**

Variables		Under weight	Normal weight	Over weight	Obese	$\chi^2$ ; p-value
Area	rural	9	52	31	10	1.251;.741
	urban	10	54	23	8	
Living with	alone	4	44	21	6	15.742; 0.072
	both	15	48	23	11	
	father only	0	6	8	1	
	mother only	0	8	2	0	
Family members you have	2-4	3	11	8	2	5.178; 0.818
	4-6	8	39	17	6	
	6-8	1	28	13	5	
	more than 8	7	28	16	5	
Your mothers education	Middle/secondary	6	21	12	4	2.008; 0.919
	Illiterate/primary	3	26	12	3	
	University	10	59	30	11	
working mother	no	10	58	20	6	6.227; 0.101
	yes	9	48	34	12	

**Table 3: Preference for fast food consumption in relation with BMI**

<b>Variables</b>		<b>Under weight</b>	<b>Normal weight</b>	<b>Over weight</b>	<b>Obese</b>	$\chi^2$ p-value
Fast food prices influence the chosen fast food	agree	3	20	11	7	14.117; 0.118
	disagree	8	18	10	2	
	neutral	3	39	14	6	
	strongly agree	5	29	19	3	
What do you usually eat/order at fast food restaurant	burger	7	41	25	6	17.332; 0.044
	fried	4	9	8	0	
	pizza	1	24	6	1	
	sandwich	7	32	15	11	
Consuming fast food as	meal	7	49	29	5	4.337 ; 0.227
	snack	12	57	25	13	
Place you take fast food	near of the home	13	54	32	8	3.248; 0.355
	near of the university	6	52	22	10	
Fast food is familiar to me	no	2	11	5	2	0.074; 0.995
	yes	17	95	49	16	
Fast food is delicious	no	8	33	11	6	3.883 ; 0.274
	yes	11	73	43	12	
Fast food is clean and safe	no	9	76	25	13	12.449; 0.006
	yes	10	30	29	5	
	yes	15	69	46	16	
Motivation to comply	I follow beliefs of friends	9	44	21	12	14.604; 0.024
	I follow beliefs of teachers	9	26	19	5	
	I follow my family's beliefs	1	36	14	1	

**Table 4 : Behaviour control towards fast food consumption and BMI**

Variables		bmi_group				$\chi^2$ ; p-value
		Under weight	Normal Weight	Over weight	Obese	
Number of times in a week you consume fast food	0.	0	9	0	2	27.803 ; 0.001
	1-2	6	59	18	6	
	3-4	9	20	18	2	
	more than 5	4	18	18	8	
When do you typically eat at fast food restaurant	Breakfast	3	14	11	3	3.121 ; 0.793
	Dinner	10	66	34	11	
	Lunch	6	26	9	4	
How does nutritional information influence your choice regarding	Always	8	24	14	6	9.89; 0.359
	not at all	0	5	3	0	
	Rarely	2	43	20	6	
	Sometimes	9	34	17	6	
Taking fast food depends on the emotion. Emotion factors such as happy, sad, angry and stress.	Agree	6	36	18	11	10.41 ; 0.318
	Disagree	2	15	13	2	
	Neutral	4	27	9	3	
	strongly agree	7	28	14	2	
I can eat fast food even if fewer fast food stores are near	No	12	55	23	9	22.76; 0.007
	Yes	7	51	31	9	
I can eat fast food even while I am on diet	No	7	65	34	15	8.54; 0.036
	Yes	12	41	20	3	
I can eat fast food even if I have to wait for a long time	No	5	31	12	9	5.13 ; 0.162
	Yes	14	75	42	9	
I can eat fast food even if fewer advertisement of fast food is on TV, internet and etc.	No	9	35	17	8	2.45; 0.483
	Yes	10	71	37	10	

**Table 5: Association between the fast food consumption and awareness of the students**

Variables		Frequency (Percent)	Cramer' s V	$\chi^2$ ; p-value
Awareness of ingredients and nutrition value of consuming fast food	Always	55 (27.9)	0.119	2.780; 0.249
	Never	73 (37.1)		
	Sometimes	69 (35.0)		
Awareness of disease caused by consumption fast food	Absolutely	128 (65.0)	0.248	12.134 ; 0.002
	No	69 (35.0)		
Awareness of direct relationship between fast food consumption and obesity	yes	142 (72.1)	0.240	11.384; 0.001
	no	55 (27.9)		
Diseases caused by taking fast food frequently	Strongly agree	89 (45.1)	0.222	10.987 ; 0.000
	Agree	33 (16.75)		
	Can't say	64 (32.48)		
	Disagree	11 (5.5)		
	Strongly disagree	0 (0)		
ingredients affecting the human body	Ammonium sulphate, Ammonium chloride	14 (7.1)	0.167	6.618 ; 0.037
	Calcium carbonate, Calcium propionate, Trans fats	35 (17.8)		
	Trans fats	148 (75.1)		

## **DISCUSSION:**

The main focus of this study was to know the point prevalence of fast food consumption of the undergraduate applied medical students and it was calculated that point prevalence of fast food intake is 89% which is slightly higher than the study done by the Department of public health, Prince Norah Bint Abdulrahman University, Riyadh in 2015; published in the American Journal of food and nutrition. This finding supports some of studies which have been carried out in Saudi Arabia on the basis of prevalence in general which have been reported high in college students and three studies have reported from medical and nursing students<sup>1, 2, 15, 19</sup>. This study is not in view of the other studies which claimed that South western region of the Saudi Arabia has lower prevalence of fast food consumption than other big cities of Saudi Arabia<sup>17</sup>. The present study showed no relation between the social influences and fast food consumption. The results are not significant which were considered, that social influences are the main factors of consumption of fast food. In our study there is no relation between the working mother and fast food intake p value is greater than our chosen significance level ( $p \leq 0.05$ ), we conclude that there is not enough evidence that working mother influence fast food intake to their children. Several studies have shown that a child's eating behavior is strongly influenced by the family environment<sup>18</sup>. The family eating environment includes parent's own eating behavior and child feeding practice. Parents shape the development of children's eating behavior, but also their own eating style<sup>5, 6</sup>. Likewise, the children of parents who consume large amount of fast food may also do the same<sup>8</sup>. Research on intergenerational influence demonstrates how information, beliefs and resources are transmitted from one generation to the next and implies a particular mechanism by which parent's attitudes and beliefs related to fast food affects the children fast food consumption<sup>15</sup>. The present data demonstrates that there is no significance between the consumption of fast food and body mass index however evidences support that there is a significant increase of body mass index ( $p \leq 0.05$ ) due to frequent consumption of fast food, choices between the fast food and of a belief that fast food restaurants provide safe and clean atmosphere<sup>1, 2, 20</sup>. The applied medical students are studying nutrition in their respective Bachelor programs and have enough knowledge of the hazards of consuming frequent fast foods. Besides, having such awareness regarding the ill effects of consuming fast food, the students do not hesitate to consume fast food. The results are significant ( $p \leq 0.05$ ) between the knowledge of awareness and fast food consumption. We are not in support of views that applied medical students reduce the frequency of fast food consumption during their program as in number of studies it has been reported<sup>12, 20</sup>.

## **CONCLUSION:**

The focus of our finding includes the views of students on fast foods, individual preferences, consumption rates and familiarity regarding the consumption of fast food and its awareness. From our study, we have identified certain factors responsible for increased eating habits as majority of the sample population agreed to the fact of getting addicted to fast foods. Majority of medical students have unhealthy dietary habits and have poor physical activity regardless of their course specialty. A comprehensive action should involve in universities, hospitals, health promoters and every stakeholders that might be helpful to stop the frequent fast food consumption. Students need to have strategic intensive university and college-based plans and counseling for the students routine meals. The courses should include physical activity, awareness programs which will be reflected on better community health and wellbeing. Schools, colleges and universities should be fast food free zones. As we know that healthy youth-healthy nation.

## **DECLARATION:**

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

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