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Assessing the nexus of fast food consumption and childhood obesity in Lahore Metropolitan City of Pakistan

Muhammad Umar Hayyat, Ayesha Munir, Laila Shahzad*, Muhammad Farhan, Gul Zareen Ghafoor

Sustainable Development Study Center, GC University, Lahore, Pakistan

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Abstract

Fast food consumption and childhood obesity is the related terms that cause many problems in students. The study was aimed to examine the fast food consumption among students of schools (Private and Public) of city Lahore. It was done to evaluate the knowledge of students about after-effects of consuming fast food and their attitude towards the obesity linked with it. Students were asked about their knowledge relating to fast food and diseases caused by fast food. Descriptive analysis was done to access the frequency, percentage, mean and standard deviation of data collected during survey and independent sample t-test was applied to compare the BMI of the respondent which is the dependent variable to different independent variables like gender, school and income etc. Result shows that students from private schools consume more fast food than others and the rate of obesity is high in boys than girls. Friends outgoing, enjoy taste, adds on television, parent's routine and their income, and short time are the major issues that increase the trend of fast food. Results were analyzed according to each student's BMI. There were only 1.3% students were under weight. 24. 2% students were normal, 24.6% students were overweight, 22.9% students were placed in obesity class 1, 20.4% students were present in obesity class 2 and 6.7% students were present in extreme obesity or obesity class 3. The study has concluded a strong relationship exists between consumption of fast food and resulting obesity.

* **Corresponding Author:** Laila Shahzad ✉ lailashahzad@gcu.edu.pk

Introduction

Obesity is global epidemic that are affect the school going students with the estimate of 10% of small aged children being overweight and a quarter of them being obese over the world. (Alviola *et al.*, 2013). Fast food (FF) has become a conspicuous feature of the food of adults and children in Pakistan and worldwide. Moreover, fast food is now become increasing trend among people that leads to decrease the traditional food that have historical background that represent the culture of Pakistan. With the increase in chain of fast food restaurant and supply of fast food, the rate of obesity increases (Aziz *et al.*, 2010). Fast food is associated with the obesity because fast food is usually high in sodium, sugar, cholesterol, fat, fructose corn syrup and high calories (Anderson, 2006). Obesity is the main concern for the policy maker and healthcare professionals because of its health factors that are associated with chronic diseases and adverse health outcomes including cancer and cardiovascular disease. Children that are obese are at the increased threat for cardiovascular disease and type 2 diabetes mellitus issue (Russell and Buhrau, 2015). In urban areas there is more concern for obesity (Manandhar *et al.*,2019).

There are many factors that are responsible for fast food consumption such as, parents are major influence on children's food availability, access to FF restaurants, fast food promotion on television and dimensions of marketing communications has statistically related to the problem of obesity that play major role in fast food consumption (Russell and Bu hrau, 2015). Body mass index (BMI) is widely used standard to estimate the obesity. For BMI Weight is taken in KG divided by square of height in meters. In our study, classification system based on body mass index (BMI) recommended by world health organization (WHO). Normally, BMI values are divided in to five categories: underweight, normal, overweigh, obesity, and extreme obesity (Kenny *et al.*, 2015). Some policy makers and few of them in the media have offered taxes and control on the fast food industry as a mean of limitation fast food consumption. Some nutrition suggests that these taxes on the fast food may reduce the obesity rate (Classenand Hokayem, 2005). According to a research when fast food served in quarter miles and more far from the school then the rate of obesity will not increase but when fast food restaurants open in ten mile distances from the children's school rate of obesity increases (Davis and Carpenter, 2009). Eating FF and snacks is gender-specific and prevalence of obesity exposed that the relation was substantial among boys but not girls. Boys consume more FF and have higher rate of BMI because parents are less likely to encourage sons to lose their weight. An organization concluded that when a student starts his day with the healthy breakfast and exercise, he will perform well in school and more active. Centers for Disease Control and Prevention (CDCP) inform that eating more FF, salt, and sugar meal can cause memory loss.

Fast food can save the time and money and it is easily available (Charreire, *et al.*, 2010). In U.S. Food and Drug Administration (FDA) is among the primary federal agencies responsible for developing public health regulations. Similarly, in Australia the laws surrounding the sale of fast food ensure that food for sale is safe and gives consumers necessary and precise information. According to Pakistan hotel and restaurant act 1976 the sale of fast food or beverages that are contaminated, served on utensils that are not hygienic or not prepared hygienically is violation of laws and rules. Currently Pakistan food import affairs are controlled by federal government while FFC and its hygienic safety is regulated by provincial governments. Later on in 2007 food safety standards. Now in Pakistan Punjab Food Authority is working that has been established under the "Punjab Food Authority Act 2011" to certify the accessibility of wholesome and safe food for anthropological consumption.

The study was carried out to assess the pattern of fast food consumption among school students and resulting obesity. It also aimed to know the variance among private school students and government school students.

Materials and methods

A population-based cross-sectional study was conducted among the different public and private school aged five to twelve years in 2018 of Lahore city. Lahore, a metropolis with multi ethnic population, is the capital city of Pakistan and is the most populous city of Punjab province. Its population is about nine million that has 2.5 million primary school children, and 81% population is urban. The survey was done in 5 months. These schools are including, Government Fatima Girls High School fane road Lahore, Government girls high school, Government Boys High School Mazang Lahore, Government Islamia school, Saint Peter's High School Waris road Lahore, Cathedral School. Randomly the thirty students were selected from different classes of 6^{th}, 7^{th}, 8^{th} from each school and the total numbers of students selected for conducting the study were 240. Agreement of parents was used by the principal of the school prior to gathering the information of the survey. The instruments used for the study was "weigh balance, height measuring tape. A self-designed questionnaire was developed to interview the children to find out the information on their diet pattern. The children involved this survey were healthy with no history of long-lasting infection or immunization. The designed questionnaires were used to interview the children of the schools. For this purpose, we measured their height in meters with the help of measuring tape and also weigh their weight in Kg with the help of weigh balance. Body weight was measured in minimum clothing to the nearest 0.1 kg using a weight scale the weight and height was measured individually from each student. Further, the questionnaire distributed to each student and provides them the necessary and required information regarding the filling of questionnaire.

The body mass index (BMI) of each student was calculated according to the world health organization (WHO). After collecting all the data, attained data from the questionnaire was entered into SPSS (Statistical Package for Social Sciences) for the analysis of the data. For analysis of that data, the different statistical measures are used. And the data was analyzed through frequency, percentage, mean and standard deviation. The independent samples t-test or simply independent t-test on the SPSS was performed to compare the means between two unrelated groups on the same continuous, dependent variable.

Results

Our study included a sample of 240 students from different schools. Male and female ratio was kept equal to give a representative population. The personal information of the students is given in the Table 1.

Table 1. Socio-demographic characteristics of study population.

Variable	Description	Frequency	Percentage	Mean	*S.D*
Gender	Male	120	50	1.5	0.5
	Female	120	50		
Age	9	0	0	4.933	1.34
	10	4	1.7		
	11	27	11.3		
	12	68	28.3		
	13	66	27.5		
	14	41	17.1		
	15	25	10.4		
	16	9	3.8		
Class	6	80	33.3	2.00	0.81
	7	80	33.3		
	8	80	33.3		
School	Govt.	120	50	1.5	0.51
	Private	120	50		
Parent's qualification	Matric	45	18.8	2.99	1.43
	Fsc/Fa	44	18.3		

	B.Sc./Ba	66	27.5		
	Msc/MA	55	22.9		
	MPhil	18	7.5		
	PhD	7	2.9		
	None	5	2.1		
Parent's income	20000-30000	84	35	2.05	0.99
	30000-40000	87	36.3		
	40000-50000	43	17.9		
	< 50000	26	10.8		

Table 2. BMI calculation of study population.

Variable	Description	Frequency	Percentage	Mean	*S.D*
Height of students	1.00-1.50	87	36.3	1.65	0.50
	1.51-2.00	150	62.5		
	2.01-2.50	3	1.2		
Weight of students	21-40	82	34.2	1.77	0.66
	41-60	133	55.5		
	61-80	23	9.5		
	81-100	1	0.4		
	101-120	1	0.4		
BMI	0 to 18.5	3	1.3	3.57	1.27
	18.5-24.9	58	24.2		
	25 to 29.9	59	24.6		
	30 to 34.9	55	22.9		
	35 to 39.9	49	20.4		
	>40	16	6.7		

Further BMI of respondents was measured. According to WHO standards there were only 1.3% students were under weight. 24. 2% students were normal, 24.6% students were overweight, 22.9% students were placed in obesity class 1, 20.4% students were present in obesity class 2 and 6.7% students were present in extreme obesity or obesity class 3 (Table 2).

Table 3. Factors associated with obesity in study population.

Variable	Description	Frequency	Percentage	Mean	*S.D*
Nutritional information	Not at all	46	19.2	2.25	0.93
	Sometime	122	50.8		
	Most of the time	37	15.4		
	Always	35	14.6		
	Total	240	100.0		
Obesity	Yes	177	73.8	1.26	0.44
	No	63	26.2		
	Total	240	100.0		
Emotional factors	Strongly agree	72	30.0	2.07	0.98
	agree	109	45.4		
	neutral	32	13.3		
	disagree	23	9.6		
	strongly disagree	4	1.7		
	Total	240	100.0		
Restaurant visit	Yes	221	92.1	1.07	0.27
	No	19	7.9		

Respondents were asked about factors those are linking their food habits to obesity, following Reponses were found (Table 3). Respondents were asked about the pattern of fast food consumptions; type of fast food, time and frequency of consumption, and reason of choosing a food was inquired. The results are shown in Table-4.

Table 4. Fast food consumption pattern.

Variable	Description	Frequency	Percentage	Mean	*S.D*
Food Kind	Burger	51	21.3	2.60	1.38
	pizza	85	35.4		
	Fried Chicken	52	21.7		
	Fries	24	10.0		
	Sandwich	17	7.1		
	Shawarma	9	3.8		
	Others	2	.8		
	Total	240	100.0		
No. of time consumed fast food	0	9	3.8	2.25	1.61
	1-2	175	72.9		
	3-4	43	17.9		
	Daily	13	5.4		
When you mostly eat fast food	Breakfast	29	12.1		
	Lunch	110	45.8	2.32	0.71
	Dinner	95	39.6		
	Other	6	2.5		
Reason of choosing fast food	Adds on TV	26	10.8	2.65	1.23
	Enjoy taste	129	53.8		
	Limited time	21	8.8		
	Variety	31	12.9		
	Eat with friends	33	13.8		
	Total	240	100.0		

An overall analysis indicated that 87.5% students were preferring packets in eating (Fig.1), 44.2% students were not aware from the ingredients and nutritional information of fast food (Fig.2), 36.7% students said the frequently use of fast food cause obesity (Fig.3).

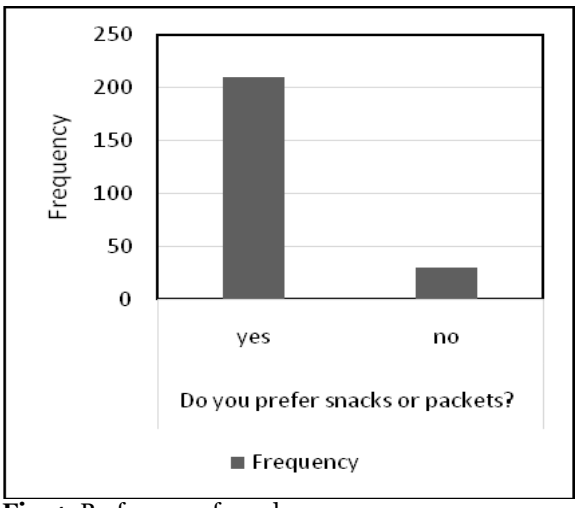

Fig. 1. Preference of snacks.

When asked about the influence of price on choosing the food 22.9% students strongly agreed (Fig.4).

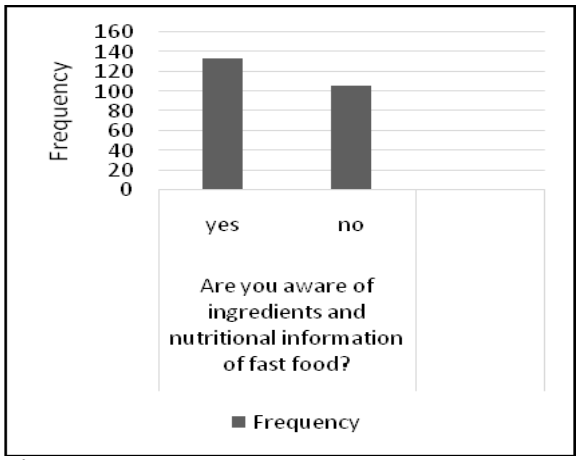

Fig. 2. Information of fast food.

Several types of disease are caused by fast food with different ratios (Fig.5).

Discussion

The study observed that higher consumption of fast food and beverages among children, specially relates with increased viewing of television ads; similar

results were shown by Andreyeva *et al.,* 2011.

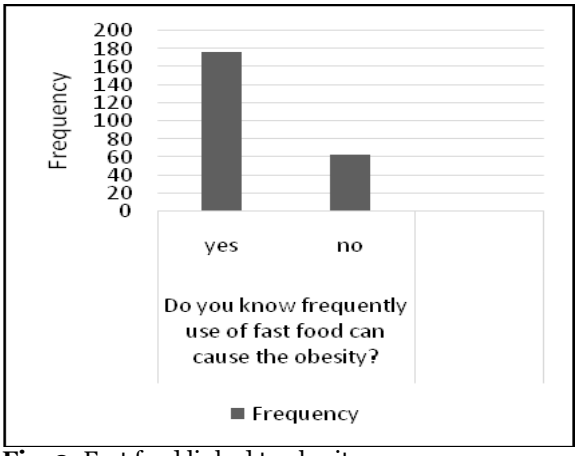

Fig. 3. Fast food linked to obesity.

Moreover, people that are living near to FF outlets, close to living community or near to school are 30% more FF consumers than others; the study of Oexle*et al.,* 2015 gave same findings. Eating packets and snacks is now a common gender specific movement and our study shows that this activity is more common among boys than girls; Mushtaq *et al.*, 2011had similar findings. When we talk about health, obesity causes many problems in children such as hypertension, type 2 diabetes, cardiac diseases and respiratory problem (Alviola *et al.*, 2013).

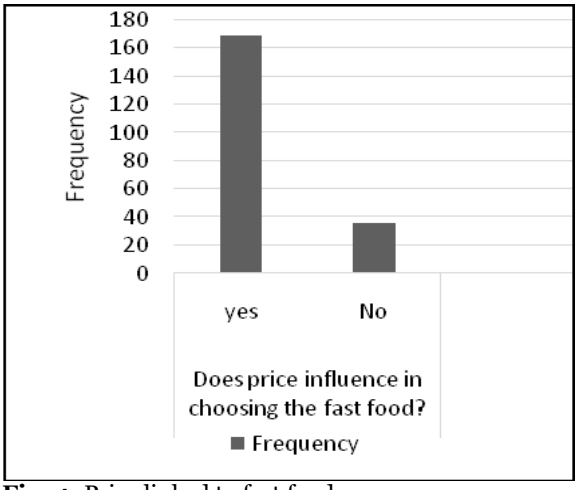

Fig. 4. Price linked to fast food.

According to our study, fast food consumption was higher in friends' company than family (Renna *et al.,* 2008). The consumption of fast food increases when the prices found to be lower (Lisa and Yanjun, 2009). Some policy makers are involved to prohibiting the fast food consumption. And they proposed taxes and limits the fast food industry that grow rapidly. Similar study was done by Fiese*et al.,* 2012. Fast food that we take are mostly less healthy for our diet, moreover it contains high intake of fat, energy, sodium and saturated fat and less intake of vegetables milk, vitamins and healthy diet that leads to health disorder and causes obesity (Chi*et al.*, 2015).

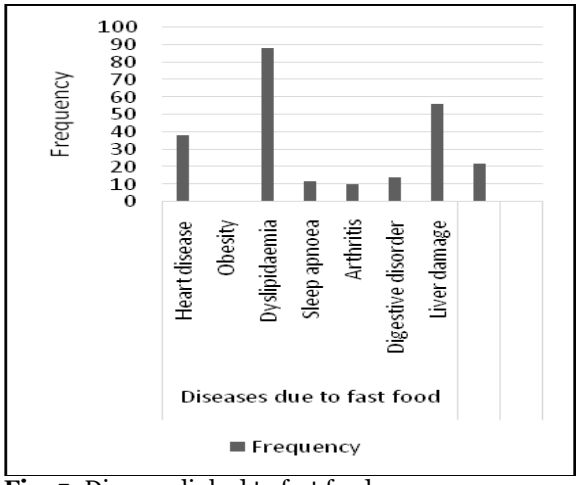

Fig. 5. Diseases linked to fast food.

Conclusion

Majority of the students reported as fast food consumers. Most of the students like the home food and also like the more spice in food. Majority of the students eat fast food during the lunch time. Most of the students prefer pizza in fast food and visit McDonald's for other choices. The students agreed that the brand affect the fast food. They also agreed that price play important role regarding the choice of fast food. Most of the students eat fast food more than one time in a week. The mostly students order the cold drinks when they eat the fast food. They think that sometime the nutritional information influence regarding the fast food choice. The majority were aware that continuously use of fast food cause the obesity. With the obesity, heart-related and digestive problems were also common. The mostly students like snacks and packet food and they mostly visit the fast food corner with the family and friends. The obesity status was higher in the private schools as compared to the public school students. The male students are more obese than female students and in lower classes the obesity level is higher. There is a need for proper law enforcement in both public and private schools to control the increasing level of obesity.

Recommendations

It is recommended from the current study to control obesity in young age as it leads to severe health disorders in late ages.

School management should consider ban on unhygienic food available in their canteens such studies should be conducted on wide audience to get a clear picture for national policy development and health status improvement.

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