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Fast Food Consumption and Anthropometric Risk Factors among College Girl Students

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ABSTRACT

Few data are available linking fast food intake and anthropometric risk factors in developing countries. This study was conducted to determine the association between anthropometric risk factors and the fast food consumption of college girl students. This cross-sectional study was done among 96 college going girls selected from 2 different colleges in CCS HAU, Hisar. Fast food consumption information was collected using a food frequency questionnaire. It was found that average fast food consumption is 13.73 meals/week and 11.35 meals/week by Home Science college students and Agriculture college students respectively. Baked products, namkeen, chips, sweets and ice cream are the most popular fast foods consumed among college students. Around 81 per cent of the students were of normal weight, 12.5 per cent were under weight and 6.25 per cent were overweight. There was no significant association between fast food consumption and anthropometric risk factors found in this study.

Keywords: Fast food, Anthropometric risk factors, Physical activity, College students

INTRODUCTION

Nutrition transition is an important factor which can affect dietary intakes, particularly in developing countries (Kapoor & Anand, 2002). The rate of processed foods consumption (e.g. fast foods) is going to be increased due to nutrition transition (Popkin et al., 2005). Fast foods are rich sources of saturated fatty acids and Trans fatty acids (Asgary et al., 2011). Fast food consumption can lead to hyperinsulinemia and development of insulin resistance. High energy density, high glycemic index, and fatty acid composition of fast foods may increase the prevalence of obesity and cardiovascular risk factors (Isganaitis & Lustig, 2005).

For the past few years, obesity has been one of the major concerns of health policy makers in the U.S. It has also been one of the principal source of increased health care costs.

In fact, the increasing trend in children's and adoloscent's obesity (Ogden et al., 2012).

In long run, an extra day of weekly fast food restaurant visits increase BMI by 4.45% when ignoring peer effect and by 5.11%, when they are taken into account (fortin & yazbeck., 2015). University girl's perception regarding the unhealthfulness of fast food does not necessarily affect their frequency of fast food consumption (Ismail, 2016).

Several dietary factors inherent to fast food maycause excessive weight gain such as massive portionsize, high energy density, palatability (appealing toprimordial taste preferences for fats, sugar, and salt),high content of saturated and trans fat, high glycemicload, and low content of fiber (Ebbeling et al., 2002). 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 (James et al., 2008).

Sometimes food additives are added to junk food to increase the shelf life, taste and also to preserve it from microbial contamination. 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 (Barre et al., 2011). A report given by National Restaurant Association of India (NRAI) 2010 about the fast food industry in India is estimated at between Rs 6,750 and Rs 8,000 crore while the total value of junk food consumed in India in 2003 was about Rs 41,000 crore based on the National Sample Survey (NSS) data for the category beverages, refreshments and processed foods.

It is highly necessary to avoid junk foods in an excess amounts so having a healthy and equally balanced nutrient containing diet will cut down the risk of obesity disorders and have increased physical health (Von, 2004).

Thus, the objective of this study was toexamine the consumption pattern of fast-food among college students and second to determine second to determine whether fast food consumption has any effect onanthropometric risk factor and central adiposity in a sample of CCS HAU Students.

MATERIALS AND METHODS

In this study, ninety six collage going female students were selected fromtwo different collages in CCSHAU (ChaudharyCharan Singh Haryana Agriculture University). Students were randomly selected.The students undergoing any specific diet/ chronic disease/medication/special physiological status were not selected for present study. Dietary and anthropometric assesment of each respondent was done. For assessing dietary assessmentfast food intake was evaluated by self-administered food frequency questionnaire (FFQ) which included 15 fast food items. Where as for anthropometric assessment, height was measured to the nearest 1 cm by meter.Body weight was measured to the nearest 0.1 kg. Calculation of body mass index was performed as body weight in kilogram divided by height square in meters and waist: hip was calculated by dividing waist circumference by hip circumference in cm. A questionare was developed to collect information related to socio-economic parameters of respondentsi.e age, father's occupation, parental education and family income etc. The information related to their daily activities and its duration was also gathered to calculate consumption of physical activity level. Minitab software (version 15) was used to compute the statistical analysis. Simple correlation was used to assess the association between fast food intake, PAL value, and anthropometric measurements.

RESULTS AND DISCUSSION

Socio-personal characteristics of respondents are shown in Table 1. Majority of the students were of less than 23 years age. Service was the main occupation of the fathers of the

respondents. Family income of majority of the respondents were >300, 000 – 600, 000 Rupees/ annum. It was indicating to note that majority of the respondents in Home Science College were from urban area whereas majority of the respondents in Agriculture College were from rural area as agriculture profession is the main work in rural area.

Table 1: Socio-personal Characteristics of the Respondents

Variable	Home Science (N=48)		Agriculture (N=48)		Total (N=96)	
	Frequency	Percentage	Frequency	Percentage	Frequency	Percentage
Age						
<23	32	66.67	27	56.25	59	61.46
>23-26	11	22.92	12	25.00	23	23.96
>26-29	3	6.25	6	12.50	9	9.38
>29	2	4.17	3	6.25	5	5.21
Father's Occupation						
Business	12	25.00	9	18.75	21	21.88
Caste Occupation	0	0.00	0	0.00	0	0.00
Cultivation	6	12.50	14	29.17	20	20.83
Labour	1	2.08	0	0.00	1	1.04
Service	29	60.42	25	52.08	54	56.25
Family Income Rs. / annum						
<300,000	13	27.08	14	29.17	27	28.13
>300,000-600,000	25	52.08	24	50.00	49	51.04
>600,000	10	20.83	10	20.83	20	20.83
Region						
Rural	18	37.50	25	52.08	43	44.79
Urban	30	62.50	23	47.92	53	55.21

Table 2 shows education level of the parents of the respondents. Majority of the father's of the respondents were graduate and above in both the colleges. Mother's education level showed great variation and varied from illiterate to post graduate. Even as per census 2011 the literacy rate of Haryana is 81.55 percent male are literate and femaleliteracy 51.96 percentage. Average illiteracy rate in Haryana for rural area was 71.42 percent. Literacy rate is higher in Gurgaon and lowest in Mewat.

Table 2: Parental Education Level

Variable	Home Science (N=48)		Agriculture (N=48)		Total (N=96)	
	Frequency	Percentage	Frequency	Percentage	Frequency	Percentage
Father's Education						
Illiterate	0	0.00	1	2.08	1	1.04
Primary	1	2.08	1	2.08	2	2.08
Middle	1	2.08	1	2.08	2	2.08
Matric	3	6.25	11	22.92	14	14.58
Intermediate	7	14.58	5	10.42	12	12.50
Graduate	20	41.67	18	37.50	38	39.58
Postgraduate	16	33.33	11	22.92	27	28.13
Mother's Education						
Illiterate	2	4.17	7	14.58	9	9.38
Primary	4	8.33	2	4.17	6	6.25
Middle	7	14.58	2	4.17	9	9.38
Matric	10	20.83	16	33.33	26	27.08
Intermediate	6	12.50	8	16.67	14	14.58
Graduate	16	33.33	7	14.58	23	23.96
Postgraduate	3	6.25	6	12.50	9	9.38

Table 3: Fast Food consumption Pattern

Variable	Home Science (N=48)		Agriculture (N=48)		Total (N=96)	
	Frequency	Percentage	Frequency	Percentage	Frequency	Percentage
Preferred Meal						
Breakfast	0	0.00	1	2.08	1	1.04
Lunch	12	25.00	18	37.50	30	31.25
Dinner	3	6.25	2	4.17	5	5.21
Snack	33	68.75	27	56.25	60	62.50
Preferred Item						
Fried food	12	25.00	11	22.92	23	23.96
Snacks	22	45.83	15	31.25	37	38.54
Soft drinks	7	14.58	8	16.67	15	15.63
Candies/sweets	4	8.33	5	10.42	9	9.38
MIS	4	8.33	9	18.75	13	13.54
Reasons for eating*						
Advertisement	0	0.00	2	4.17	2	2.08
Enjoy the taste	30	62.50	23	47.92	53	55.21
Lack of cooking skill	1	2.08	3	6.25	4	4.17
Limited time	1	2.08	6	12.50	7	7.29
Cost / Price	0	0.00	1	2.08	1	1.04
Variety of menu	10	20.83	6	12.50	16	16.67
Eat with friend / family	32	66.67	30	62.50	62	64.58
To celebrate special occasion	33	68.75	33	68.75	66	68.75
Feel lonely	3	6.25	3	6.25	6	6.25

* Multiple Responses

Fast food consumption pattern and awareness related to fast food consumption are demonstrated in Table 3 and Table 4 respectively. Majority of the respondents preferred to have fast food as snack preferably in mid meal time. Most of the respondents include that they eat fast food to celebrate special occasion, eat with friend / family and to enjoy the taste.

Seventy seven per cent of the students check nutritional information sometimes while 21 per cent of the students always check if it is available in packing. Only 2 per cent of respondent were not aware of after effect. All the respondents were aware that fast food may lead to obesity.

Table 4: Awareness Related to Fast Food Consumption

Variable	Home Science (N=48)		Agriculture (N=48)		Total (N=96)	
	Frequency	Percentage	Frequency	Percentage	Frequency	Percentage
Check nutritional information						
Never	1	2.08	0	0.00	1	1.04
Sometimes	33	68.75	41	85.42	74	77.08
Always	14	29.17	7	14.58	21	21.88
Awareness about after effects						
No	0	0.00	2	4.17	2	2.08
Somewhat	21	43.75	24	50.00	45	46.88
Absolutely	27	56.25	22	45.83	49	51.04
Awareness about obesity	48	100.00	48	100.00	96	100.00

According to a study conducted by Gopal, 2012 almost 85% of students opinion about the junk food is unhealthy and 18% were taking junk food as an alternative to breakfast, 68% of individuals liked junk foods for their taste as it was one of the predominant factor for their choice.

Average fast food consumption of Home Science college students and Agriculture college students were 13.73 meals/week and 11.35 meals/week respectively. Baked products, namkeen, chips, sweets and ice cream were the most popular fast foods consumed by the respondents. Surprisingly 51.04 percent respondent were well aware of after effect of fast food consumption and 46.88 percent was somewhat aware even then the consumption level of fast food among student was high. Kumar et al., (2013) study showed the direct ambiguity in the knowledge, awareness and prudent consumption behavior amongst the university hostlers.

Table 5: Anthropometric Measurement of Subjects

Variable	Reference	Home Science (N=48)	Agriculture (N=48)	Total (N=96)
Weight (kg)	55	54.03±6.56	54.69±7.72	54.36±7.17
Height (m)	1.61	1.61±0.06	1.59±0.06	1.60±0.06
BMI (kg/m^2)	18.5 – 25.0	20.82±2.03	21.50±2.68	21.16±2.4
Waist circumference (cm)	<80	76.38±6.48	75.34±6.24	75.85±6.38
Hip circumference (cm)		87.68±5.15	88.78±7.23	88.22±6.30
Waist : Hip	<0.85	0.87±0.05	0.85±0.06	0.86±0.06

Mean± SD

Table 5 presents anthropometric measurements of the subjects. Mean weight and height of the females are close to the reference female weight and height in India. Average BMI of the respondents were in the normal range and average waist circumference wasbelow 80cm.

Sekhon and Minhas et al. (2014) studied that among 13-19 years girls mean weight, height and BMI increased from 41.50, 149.40 and and 18.58 and with increase in age the weight, height and BMI also increase.

Table 6: Prevalence of Overweight

	Reference (BMI)	Home Science (N=48)		Agriculture (N=48)		Total (N=96)	
		Frequency	Percentage	Frequency	Percentage	Frequency	Percentage
Under Weight	<18.5	7	14.58	5	10.42	12	12.5
Normal Weight	>18.5-25	40	83.33	38	79.17	78	81.25
Over weight	>25-30	1	2.083	5	10.42	6	6.25
Obesity	>30	0	0	0	0	0	0

According to Table 6 around 81 per cent of the students were of normal weight, 12.5 per cent were under weight and 6.25 per cent were overweight. Intrustingly there was no obese student. This may also be due to the fact that university have extra curriculum activities for student and some of them are compulsory to keep them physically fit.
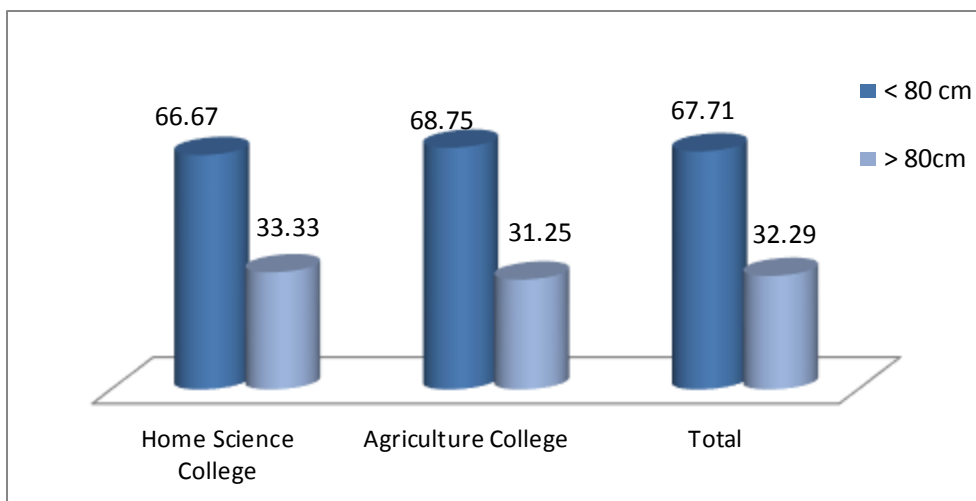
Fig. 1: Prevalence of Abdominal Obesity (Waist Circumference)

Although waist circumference of the students were less than the reference level about 32.29 per cent indicating that the students were of abdominal obesity as they had high waist circumference (Figure 1). According to Figure 2, 53 per cent of the students were abdominally obese.
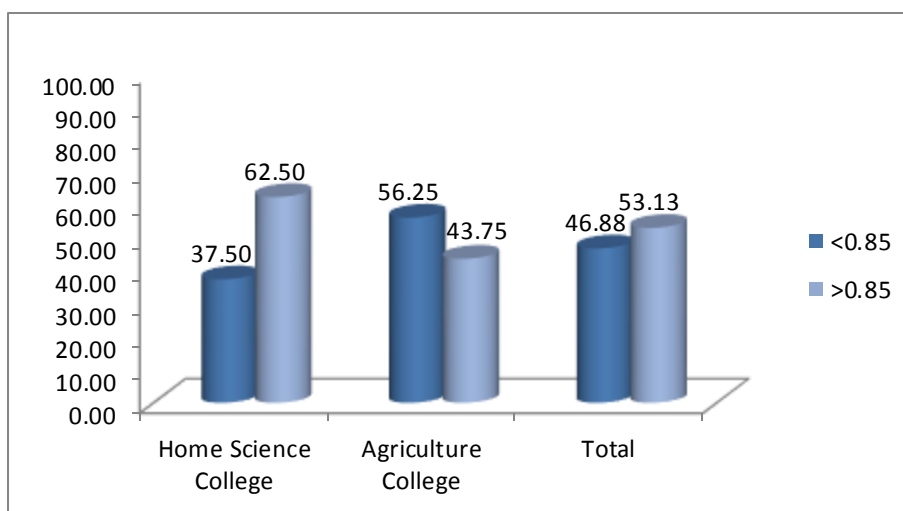
Fig. 2: Prevalence of Abdominal Obesity (Waist: Hip)
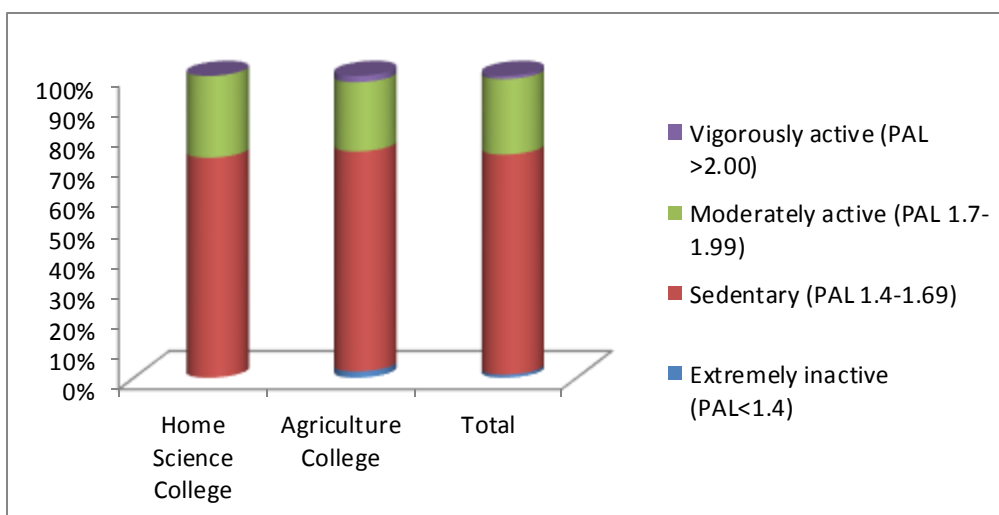
Fig. 3: Physical activity level of the subjects

As indicate very clearly in fig. 3 that majority of the respondents were sedentary followed by moderately active.

Table 7: Correlations between Anthropometric Risk Factors and Fast Food Intake

Variable	Fast food intake					
	Home Science		Agriculture		Total	
	R	p	r	P	r	P
BMI (kg/m^2)	0.01	0.947	0.036	0.807	0.009	0.933
Waist circumference (cm)	0.061	0.682	-0.083	0.576	-0.01	0.962
Waist : Hip	0.168	0.252	0.08	0.588	0.136	0.187

p<0.05 considered statistically significant

The results of the present study showed no significant association between fast food consumption and BMI, waist circumference and waist: hip ratio. Similar findings were indicated by Barnes et al., 2015 that six-month change in fast-food intake was small, and not significantly associated with overall diet quality or BMI. Finding of Pereira et al. (2005) present study indicate that there is another study indicated a positive association between fast food intake and BMI in both cross-sectional and longitudinal analysis among young adults.

Table 8: Correlations between Anthropometric Risk Factors and Physical Activity Level

Variable	Home Science		Agriculture		Total	
	r	p	r	p	r	p
BMI (kg/m^2)	0.225	0.124	-0.239	0.102	-0.06	0.567
Waist circumference (cm)	0.048	0.748	-0.183	0.214	-0.08	0.461
Waist : Hip	0.134	0.365	0.149	0.314	0.139	0.176

p<0.05 considered statistically significant

There was no significant association between physical activity level and anthropometric risk factors found in this study because probable hypothesis is that more fast food consumption is associated with more energy intake from non-fast-food and fast food sources (Schroder et al., 2007). Such findings may explain the mechanism of the relationship between increased energy intake from non-fast-food sources and fast food consumption. The results of the present study revealed that association between fast food intake and obesity was not totally mediated by energy intake. Fat content of fast foods might also have a role in this association.

Thus it suggested that we should choose healthier fast foods with lower energy, fat content, and energy density rather than traditional fast foods. Low-energy dense diets like high fiber diets could reduce weight and waist circumference as also indicated by Brindal et al., 2008 (Esmaillzadeh & Azadbakht, 2011). However, highenergy dense diets could increase the prevalence of obesityand abdominal adiposity (Azadbakht et al., 2011).

These results were affected by some limitations. We used a FFQ consist of 15 fast food items for dietary assessment. The validity and reliability of this FFQ was not assessed. Small sample size isanother limitation.

CONCLUSION

Data is collected from H.Sc and Agriculture college. In home science college father's occupation percentage is higher comparatively agriculture college and living percentage in urban area is also higher in home science student. In parental education father education is higher in agriculture college while mother education is higher in home science college. Snacks are highly consumed fast food. Fast

food consumption is high on occasions and when they are eating with family and friend. Weight, BMI and hip circumference is higher in agriculture student while height, waist and waist hip ratio is higher in home science college. In home science college 83.33 percent while in agriculture 79.17 percent are normal weighted and obesity is absent in both college. In this study 81 per cent of the students were of normal weight, 12.5 per cent were under weight and 6.25 per cent were overweigh but there was no significant association between fast food consumption and anthropometric risk factors among students. Home science pattern of food frequency consumption was low as compared to agriculture college student. This may be due to the fact that in home science should be more aware about dietry pattern and nutrition education.

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