DIETARY HABITS AND KNOWLEDGE OF NUTRITIONAL REQUIREMENTS OF STUDENTS OF A PRIVATE MEDICAL COLLEGE

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ABSTRACT

Objective: To determine medical and dental students' eating habits and knowledge of nutritional requirements for health.

Study Design: A cross-sectional analytical study.

Place and Duration of Study: Conducted at CMH Lahore Medical College & Institute of Dentistry (CMH LMC & IOD), from Jun to Nov 2019.

Methodology: A total of 142 students of first year of MBBS and BDS of CMH Lahore Medical College & Institute of Dentistry fulfilling the inclusion criteria were given a self-administered survey questionnaire consisting of demographic details, dietary habits and dietary knowledge. Data was analyzed through SPSS 21.

Results: Majority of participants (75, 52.8%) were females and aged less than 22 years (78.2%). Most of them (73, 51.4%) were hostelite and 82 (57.7%) had normal body mass index (BMI). Most participants exhibited good knowledge of nutrition. 89 (62.7%) consumed fast food once or twice a week and 31 (21.8%) took fast food daily. There was no significant difference among the genders or among hostelites and day scholars with respect to most of the identified dietary habits. However, male students drank more soda, but ate more fresh fruits than the female students. Also, hostelites were found to be more prone to eat unhealthy foods when stressed as compared to the day scholars.

Conclusion: Most of the students had adequate dietary knowledge. High rates of fast food consumption imply the need for increased awareness of links between health and nutrition in these students.

Keywords: Diet, Dietary habits, Eating behavior, Medical students, Morning meal.

INTRODUCTION

Currently, 64 percent of Pakistan's population is younger than 30, while 29 percent who are between 15 and 291 are the most vulnerable age group to inadequate dietary intake and abnormal dietary habits[2,3]. Achieving a balanced diet is getting more difficult due to nutrition transition-shift in diet, physical activity, health and nutrition can be traced to higher income, changes in the nature of work and leisure, demographic transformation and socioeconomic development. This nutrition transition has led to a number of physiological and psychological disorders i.e. tooth decay, high blood pressure, type 2 diabetes, obesity etc. Moreover, little to no physical activity has increased the incidence of obesity in the students[4]. Also, in case of hostelites who spend most of their time at campuses, limited healthy food options are provided by the institution facilities. There is a general perception amongst the common masses that the medical students have a greater knowledge about the correct dietary habits and healthy lifestyle (effects of processed, high calorie fast foods and exercise) as compared to nonmedical students[5,6,7]. However, studies show contrary evidence exhibiting poor dietary habits in medical students[8,9]. Therefore, we conducted a study to determine the dietary habits, association of gender and accommodation with dietary habits, and to assess the knowledge of nutritional requirements in the undergraduate students of a health institute.

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Received: 20 Feb 2020; revised received: 09 Jun 2020; accepted: 30 Jun 2020

METHODOLOGY

This cross-sectional analytical study was carried out in CMH Lahore Medical College & Institute of Dentistry (CMH LMC & IOD) from 1st June to 30th November, 2019. The study was

started after approval from the Ethics Review Committee (Ref No 01/ERC/CMH LMC) of the institution. Students of first year MBBS and first year BDS of CMH LMC & IOD were included in the study close to the end of their sessions, while those with a clinically diagnosed chronic illness or on any prescribed medication, as reported by the students on proforma, were excluded from the survey as both could lead to special dietary requirements. A minimum sample size of 133 was calculated for finite population of 224 students through Epitools sample size survey software (for prevalence, single proportion study) with confidence interval 95% and margin of error 5%[10]. However, sample size of 142 was finalized for the study. Non-probability consecutive sampling technique was used due to limited time period of study. The self-administered survey questionnaire was developed after a detailed review of the literature. Peer reviewing was done to obtain face validity. The survey questionnaire consisted of three parts; first part pertaining to the demographics including age, gender, BMI, and place of accommodation, second part containing 12 Likert type statements related to students' dietary habits including daily breakfast and water intake, and various food preferences, and third part containing 8 Likert type statements pertaining to the students' knowledge of nutritional requirements. Names of students were not included in the questionnaires for the sake of confidentiality. WHO BMI cut-offs for Asian population were used (BMI <18.5 kg/m^2 categorized as underweight, 18.5-22.9 as normal, 23-27.4 as pre-obese, 27.5-34.9 as obese Class I, 35-39.9 as obese Class II and ≥40 as obese Class-III). The students were approached for the survey after classes and in break time during the classes. The purpose of the study was explained to the participants. Verbal informed consent was obtained from every participant. Completed survey forms were collected from the participants by the researchers on the same day.

Data was entered into SPSS version 21. Frequencies and percentages were calculated for descriptive variables. Student t-test was used to compare eating habits across demographic variables of gender and accommodation.

RESULTS

The study included 142 students of first year MBBS and BDS with a response rate of 100%. Greater number of participants were of MBBS (82, 57.8%). Majority of participants was females (75, 52.8%) and aged >22 years (111, 78.2%). Mean age of participants was 20.16 ± 1.8 years, mean age of male students was 20.58 ± 1.892 years and mean age of female students was19.79 ± 1.638 years. Most of them were hostelites 73 (51.4%). Mean BMI of participants was 21.5 ± 2.5; 82 (57.7%) had a normal BMI, 15 (10.5%) were underweight, 41 (28.8%) were pre obese and 4 (2.8%) were class-I obese (table-I).

Majority of students (103, 91.5%) regularly took breakfast while 12 (8.5%) took breakfast once or twice a week. More than half (107, 75.4%) kept themselves well hydrated by taking 2 liters of water daily while 34 (23.9%) took >2 liters of water daily. Fast food was consumed by 89 (62.7%) once or twice a week and 31 (21.8%) took fast food daily. Majority (138, 97.1%) took food according to taste preference and convenience, while 114 (80.3%) reported intake of salads and 139 (97.9%) of fresh fruits. Only 11 (7.7%) drank

Table-I: Demographic characteristics of participants (n=142).

Characteristic	number	Percent (%)
Academic field		
BDS	60	42.2
MBBS	82	57.8
Gender		
Male	67	47.2
Female	75	52.8
Age		
18-21	111	78.2
>22	31	21.8
Accommodation		
Day scholar	69	48.6
Hostelite	73	51.4
Body Mass Index		
Underweight (<18.5)	15	10.5
Normal (18.5-22.9)	82	57.7
Pre-obese (23-27.4)	41	28.8
Obese class I (27.5-34.9)	4	2.8

soda more than once daily. Unhealthy food was taken by 96 (67.6%) when stressed while 118 (83.1%) took unhealthy food when happy. Vending machines were used often for choosing food

Table-II: Association between gender and dietary habits of participants (n=142).

Characteristic	Gender		n (%)	Mean ± SD	*p*-value
Daily breakfast (per week)	Male	Once or twice	4 (6)	1.94 ± 0.239	0.319
		Thrice or more	63 (94)		
	Female	Once or twice	8 (10.7)	1.89 ± 0.311	
		Thrice or more	67 (89.3)		
Water intake (liters/day)	Male	<2	46 (68.7)	1.31 ± 0.467	0.136
		≥2	21 (31.3)		
	Female	<2	61 (81.3)	1.20 ± 0.435	
		≥2	14 (18.7)		
Frequency of having fast food (per week)	Male	Once or twice	44 (65.7)	2.40 ± 0.698	0.808
		Thrice or more	23 (34.3)		
	Female	Once or twice	51 (68)	2.37 ± 0.749	
		Thrice or more	24 (32)		
Consumption of soda* (per week)	Male	Once or twice	40 (59.7)	2.40 ± 0.780	0.005**
		Thrice or more	27 (40.3)		
	Female	Once or twice	60 (80)	2.03 ± 0.805	
		Thrice or more	15 (20)		
Consumption of fruits* (per week)	Male	Once or twice	27 (40.3)	2.72 ± 0.755	0.052**
		Thrice or more	40 (59.7)		
	Female	Once or twice	45 (60)	2.48 ± 0.685	
		Thrice or more	30 (40)		
Consumption of salads (per week)	Male	Once or twice	42 (62.7)	2.33 ± 0.860	0.154
		Thrice or more	25 (37.3)		
	Female	Once or twice	54 (72)	2.12 ± 0.869	
		Thrice or more	21 (28)		
Food consumed according to convenience (per week)	Male	Once or twice	28 (41.8)	2.70 ± 0.759	0.067
		Thrice or more	39 (58.2)		
	Female	Once or twice	27 (36)	2.96 ± 0.892	
		Thrice or more	48 (64)		
Food consumed according to taste preference (per week)	Male	Once or twice	15 (22.4)	3.16 ± 0.846	0.727
		Thrice or more	52 (77.6)		
	Female	Once or twice	15 (20)	3.21 ± 0.827	
		Thrice or more	60 (80)		
Food items purchased from vending machine (per week)	Male	Once or twice	49 (73.1)	1.72 ± 0.815	0.140
		Thrice or more	18 (26.9)		
	Female	Once or twice	62 (82.7)	1.82 ± 0.886	
		Thrice or more	13 (17.4)		
Food choice through smart phone (per week)	Male	Once or twice	47 (70.1)	2.03 ± 0.969	0.406
		Thrice or more	20 (29.9)		
	Female	Once or twice	59 (78.6)	1.91 ± 0.791	
		Thrice or more	16 (21.4)		
Eat unhealthy foods when stressed*	Male	Often	46 (68.6)	2.01 ± 0.961	0.050**
		Rarely	21 (31.4)		
	Female	Often	42 (56)	2.36 ± 1.098	
		Rarely	33 (44)		
Eat unhealthy foods when happy	Male	Often	45 (67.2)	2.22 ± 0.935	0.143
		Rarely	22 (32.8)		
	Female	Often	45 (60)	2.45 ± 0.920	
		Rarely	30 (40)		

**Student t-test, **Significant*

by 79 (55.6%) students while smart phones were used for food choice by 93 (65.5%) students.

There was no significant difference among the genders with respect to eating breakfast,

Table-III: Association between accommodation and dietary habits of participants (n=142).

Characteristic	Residence	Scale	n (%)	Mean ± SD	*p*-value
Daily breakfast (per week)	Day scholar	Once or twice	5 (7.2)	1.93 ± 0.261	0.619
		Thrice or more	64 (92.8)		
	Hostelite	Once or twice	7 (9.6)	1.90 ± 0.296	
		Thrice or more	66 (90.4)		
Water intake (liters/day)	Day scholar	<2	53 (76.8)	1.23 ± 0.425	0.581
		≥2	16 (23.2)		
	Hostelite	<2	54 (74)	1.27 ± 0.479	
		≥2	19 (26)		
Frequency of having fast food (per week)	Day scholar	Once or twice	43 (62.3)	2.48 ± 0.720	0.146
		Thrice or more	26 (37.7)		
	Hostelite	Once or twice	52 (71.2)	2.30 ± 0.720	
		Thrice or more	21 (28.8)		
Consumption of soda (per week)	Day scholar	Once or twice	49 (71)	2.20 ± 0.833	0.985
		Thrice or more	20 (29)		
	Hostelite	Once or twice	51 (69.9)	2.21 ± 0.799	
		Thrice or more	22 (30.1)		
Consumption of fruits * (per week)	Day scholar	Once or twice	29 (42)	2.71 ± 0.730	0.058**
		Thrice or more	40 (58)		
	Hostelite	Once or twice	43 (59)	2.48 ± 0.709	
		Thrice or more	30 (41)		
Consumption of salads (per week)	Day scholar	Once or twice	43 (62.3)	2.32 ± 0.866	0.181
		Thrice or more	26 (37.7)		
	Hostelite	Once or twice	53 (76.8)	2.12 ± 0.865	
		Thrice or more	20 (23.2)		
Food consumed according to convenience (per week)	Day scholar	Once or twice	29 (42)	2.83 ± 0.874	0.870
		Thrice or more	40 (58)		
	Hostelite	Once or twice	26 (35.6)	2.85 ± 0.811	
		Thrice or more	47 (64.4)		
Food consumed according to taste preference (per week)	Day scholar	Once or twice	15 (21.8)	3.20 ± 0.850	0.860
		Thrice or more	56 (81.2)		
	Hostelite	Once or twice	15 (20.5)	3.18 ± 0.822	
		Thrice or more	58 (79.5)		
Food items purchased from vending machine(per week)	Day scholar	Once or twice	53 (76.8)	1.86 ± 0.912	0.685
		Thrice or more	16 (23.2)		
	Hostelite	Once or twice	58 (84)	1.79 ± 0.865	
		Thrice or more	15 (16)		
Food choice through smart phone (per week)	Day scholar	Once or twice	50 (72.5)	2.55 ± 0.758	0.909
		Thrice or more	19 (27.5)		
	Hostelite	Once or twice	56 (76.7)	2.53 ± 0.944	
		Thrice or more	17 (23.3)		
Eat unhealthy foods when stressed*	Day scholar	Often	36 (52.2)	2.42 ± 1.090	0.013**
		Rarely	33 (47.8)		
	Hostelite	Often	52 (71.2)	1.99 ± 0.965	
		Rarely	21 (28.8)		
Eat unhealthy foods when happy	Day scholar	Often	45 (65.2)	2.43 ± 0.947	0.266
		Rarely	24 (34.8)		
	Hostelite	Often	45 (61.6)	2.26 ± 0.913	
		Rarely	28 (38.4)		

**Student t-test, **Significant*

keeping hydrated with water and using vending machines and smart phones to find the right type of food to eat. Both male and female students had the same pattern of eating fast food and vegetable salads. Male students drank more soda than the female students. But at the same time, they ate more fresh fruits. Female students ate more according to their taste preference. Although they considered fresh vegetable salads to be healthier than the meat products, they ate them less than the male students. Male students were also more prone to eat unhealthy foods when stressed as compared to the female students (table-II).

Table-IV: Knowledge of participants for nutritional requirements (n=142).

Characteristic		n (%)	Mean ± SD
Fast food contains unhealthy additives.	Agree Disagree	122 (85.9) 20 (14.1)	3.16 ± 0.769
Eating fast food is unhealthy.	Agree Disagree	122 (85.9) 20 (14.1)	3.11 ± 0.722
Drinking soda is unhealthy.	Agree Disagree	128 (90.1) 14 (9.8)	3.21 ± 0.672
Processed food is unhealthy.	Agree Disagree	103 (72.5) 39 (27.4)	2.94 ± 0.779
Fresh salads are healthier than meat products.	Agree Disagree	115 (81) 27 (19)	3.09 ± 0.833
Excess calories in food are harmful.	Agree Disagree	106 (74.7) 36 (25.3)	2.84 ± 0.778
Smart phones help in finding the right food.	Agree Disagree	75 (52.8) 67 (47.2)	2.54 ± 0.856
Exercise is more important than the type of food.	Agree Disagree	91 (64.1) 51 (35.9)	2.79 ± 0.815

The hostelites were more prone to eat high calorie junk foods when stressed as compared to the day scholars. Day scholars consumed more fresh fruit as compared to their hostelite counter parts. There was no difference in terms of water consumption, eating breakfast, fast food, vegetable salads, drinking soda and using vending machines and smart phones to get the right type of food needed (table-III).

Most participants exhibited good nutritional knowledge. Fast foods were believed by 122 (85.9%) to contain unhealthy additives making it a bad choice to eat, and 128 (90.1%) agreed that drinking soda is unhealthy. Fresh salads were considered healthier by 115 (81%) than meat products while 106 (74.7%) knew that excess calories were harmful for health. Smart phones were used by 75 (52.8%) for finding the right type of food. Exercise was considered more important by 91 (64.1%) than the type of food in maintaining health (table-IV).

DISCUSSION:

This study was undertaken to evaluate the dietary habits and knowledge of nutritional requirements in the undergraduate students of a private medical college. Diet and nutrition are important aspects of health and well-being. Medical students are expected to have adequate knowledge and follow balanced dietary regimen as compared to other university undergraduates. However, a local study in Karachi has shown that they may not be able to apply this knowledge for improving their dietary habits[11]. Majority of our students (57.7%) had a normal self-reported BMI. Our results were similar with studies carried out in China and Malaysia[12,13]. A study in the United States revealed that 35% of the college students were found to be overweight or obese[14]. Only 2.8% of the students were found to be obese in our study which is comparable with a study carried out on female students in Japan where no students were found to be obese and 5.8% were overweight[15].

Our study showed that majority of students took breakfast daily, and kept themselves well hydrated with intake of 2 litres of water per day. Similar results were obtained in a study carried out on Chinese university students[12]. However, Japanese subjects were found to have less regular eating habits[16]. Regular intake of breakfast is associated with high nutritional status, reduced obesity and a lower risk of cardiovascular diseases[17,18]. Starting university or college education especially in hostels may prove to be stressful for the students, thus altering their eating habits[19]. This may be the reason for the hostelites to be

more prone to unhealthy eating habits found in the study and this result is comparable to previous studies showing alteration of eating habits during stress[19,20].

The present study revealed high awareness of the students about healthy lifestyle practices (exercise) and harmful effects of fast food and soda. This awareness seems to have been put to practice, as evidenced by high intake of fresh fruits and salads by the students. This is in contrast with a study carried out in South India where 40% increase in junk food and 50% decrease in fresh fruit intake was observed as compared to the previous year, mainly due to the unavailability of food and experimentation[21]. A local study carried out in a private medical university in Karachi also reported increased intake of fast food snacks in between meals contributing to obesity[9], as do the studies carried out in the USA where majority of students experienced weight gain due to dietary changes during the shift from school to college life[22,23]. Majority of students were found to select food according to their taste and convenience and similar results were obtained in a study carried out on Lebanese university students[24].

RECOMMENDATIONS AND LIMITATIONS OF THE STUDY

The study endeavored to determine the dietary habits and knowledge of the college students. However, only first year MBBS and BDS students were included. Also, self reported physical parameters were used in the study. As students gave information based on memory, recall bias cannot be ruled out. Studies on a larger scale including all students of BDS and MBBS and also students from other public and private sector medical colleges, with measurement records of height and weight for BMI calculation, are needed which would result in a broader scope of the research and more robust results.

CONCLUSION

The study revealed that majority of the participants had good dietary knowledge. However, high fast food intake suggests the need for promotion of medical student health through increased awareness. Medical students need to have strategic college-based plans and counseling for their nutrition which will be reflected on better community health and wellbeing.

CONFLICT OF INTEREST

This study has no conflict of interest to be declared by any author.

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