

# Relationship of Breakfast Taking Practices and Weight among Female Students of Medical Colleges of Lahore

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## ABSTRACT

**Aims:** To evaluate the association between breakfast taking practices and weight among female students of medical colleges of Lahore.

**Methods:** This study was a randomized cross sectional survey. A sample of 800 female students, aged 19-24 years were included in this study. A structured questionnaire was used to get information on breakfast taking practices; type of food consumed in breakfast. Height and weight of students were taken to calculate Body Mass Index.

**Results** The percentage and frequencies of breakfast taking practices and Body Mass Index showed that 370(46%) students consumed breakfast regularly, 220(27.5%) students consumed breakfast irregularly, and 210(26.3%) students skipped or omitted breakfast. Out of 800 students, 439(54.9%) were of normal weight according to Body Mass Index, 185(23.1%) were under weight and 176(22%) were overweight. Association between breakfast taking practices and body Mass Index was found significant with p value of 0.04. Maximum numbers of normal weight students were taking breakfast regularly. The students with irregular breakfast practices showed highest percentage (25.9%) of overweight/obesity while a percentage (22.4%) of overweight/obesity was observed in students skipping breakfast. Association between breakfasts taking practices and weight gain over last two years was checked and was found significant with a p value 0.000. Those skipping breakfast were having maximum percentage (52.4%) of those who gained weight over the last two years.

**Conclusion:** Skipping breakfast does have association with gain in weight. Though weight gain is not necessarily obesity but this gain in weight may become obesity in future.

**Keywords:** Obesity, breakfast practices, Body mass index

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## INTRODUCTION

Obesity, occurring as an imbalance between energy intake and expenditure, is a problem of great concern of this modern era. It is a state of malnutrition which is becoming a global problem pressing public health issue today<sup>1</sup>. Several studies have documented the increase in the prevalence of childhood obesity in recent decade<sup>2,3,4</sup>. In nationally representative samples of US adolescent, breakfast consumption declined from 1965 to 1991<sup>5</sup>. A concern since eating breakfast is associated with high overall diet quality<sup>6,7</sup>. Cross sectional studies have consistently reported positive association between measures of adiposity in children and skipping breakfast<sup>8,9</sup>. Breakfast is the most important yet the most neglected meal of the day. It is the first meal of the day, which breaks the fast of the night. It is the fuel that keeps the brain, mind and body running throughout the day. Researchers found that eating breakfast may play a more significant role in weight maintenance than total kilocalories intake. On the

other hand breakfast skippers tend to gain, rather than to lose weight, because they are more inclined to overcompensate for the loss of kilojoules (KJs) at breakfast by eating more fat rich, high energy foods later in the day, especially at lunch or dinner<sup>10</sup>.

Obesity in childhood and adolescence is increasing in developing countries around the world including Pakistan. According to a WHO report, there are more than one billion overweight adults, at least 300 million of them obese<sup>11</sup>.

Pakistan which already has poor health and economic indicators cannot afford the emerging costly epidemic of obesity. It is seen that the incidence of obesity has increased in recent years perhaps due in part to a belief that skipping breakfast can help reduce total energy intake and control weight. Irregular meal frequency disturbs energy metabolism and creates a degree of insulin resistance and higher lipid profile<sup>12</sup>.

The prevalence of people not consuming breakfast every day has increased, over the last decades among all populations. It has been suggested that the consumption of breakfast is an important factor in preventing weight gain<sup>13</sup>.

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## MATERIALS AND METHODS

This was a cross sectional survey. The target population for this research was female students of Medical colleges of Lahore. The age range was 17-25 years and sample size was 800 students. Before approaching the target population, the medical colleges were divided into two strata, the private and public medical colleges. Sample of 400 students was taken from a public medical college and other sample of 400 students was taken from a private medical college. The sampling technique was stratified sampling followed by simple random technique.

Before collection of data, permission was taken from the administration of respective colleges. Data was collected from the students in the lecture halls, on a structured questionnaire and the questionnaire was explained to the students beforehand. The heights and weights of students were personally taken and recorded on the questionnaire. Male students were excluded from the study.

The data collected was analyzed in Statistical package for social sciences (SPSS) software computer program Correlation was calculated using chi-square test and significance was set at a p value less than 0.05.

## RESULTS

Independent variables were breakfast taking practices (including regular breakfast intake, irregular breakfast intake and skip/omit breakfast). Dependent variables were BMI categories (underweight, normal weight and overweight/obesity). The quantitative data including age, height, weight, body mass index and consumption of glasses of beverages and water was expressed as mean±standard deviations. The qualitative data including food consumed in breakfast and cafeteria, history of weight gain over last two years, along with BMI categories and breakfast taking practices were divided into different groups by using frequencies and percentages.

It was observed that 254(31.8%) students were in the age group of 17 to 19 years. 438(54.8%) students were in the age group of 20 to 22 years, while 13.5% students were in the age group of 23 to 25 years (Table 1).

The frequency and percentage of students having different breakfast practices show that out of 800, 220 students (27.5%) consumed breakfast irregularly. 210(26.3%) students skipped breakfast and 370(46%) were regular breakfast consumers (Table 2).

It was observed that 185(23.1%) were under weight. 439(54.9%) were normal and 176 (22%) were overweight /obese (Table 3).

This association was found to be significant with Pearson chi square value of 9.633 and P value is 0.047. It was noticed that the maximum numbers of students 219(59.2%) of normal weight were taking breakfast regularly. Comparatively the students taking breakfast irregularly has maximum percentage 27.7% of underweight BMI group. This group of irregular breakfast taker also showed highest percentage of 25.9% over weight /obese students. While students skipping breakfast were in second position 22.4% of overweight/obesity compared to those taking breakfast regularly having 19% over weight students.

Association between breakfasts taking practices and weight gain over last two years was checked and was found significant with a chi square value of 42.763 and p value 0.000. It was found that those skipping breakfast were having maximum percentage 52.4% of those who gained weight over the last two years. Highest percentage 43.5%of unchanged weight was recorded in group taking breakfast regularly. In students taking breakfast at irregular intervals, the percentage of those who gained weight over last two years was noticeable 30.5%. (Table 5)

Underweight students were maximum 31.9%in age group 17 to 19. While it was noted that the group with highest percentage 61% of normal BMI were of age group 23 to 25. However the most over weight and obese 26.3% were found in age group 20 to 22 years, significant with Pearson chi square value 29.242 and p value is 0.000. This shows significant association with a chi square value=17.98 and p value=0.001.It was noticed that students with normal weight were having more consumption of water than over weight and obese children.

Table 1: Percentage and frequencies of different age groups (n=800)

Age groups	Frequency	%
17 – 19	254	31.8
20 – 22	438	54.8
23 – 25	108	13.5

Table 2: Percentage and frequencies of breakfast taking practices (n=800)

Breakfast taking practices	Frequency	%
Regular	370	46.3
Irregular	220	27.5
Skip / omit	210	26.3

Table 3: Percentage & frequencies of body mass index categories

Body mass index categories	Frequency	%
Underweight	185	23.1
Normal weight	439	54.9
Over weight / obese	176	22.1

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Table 4: The association between the breakfast practices and body mass index categories

Body mass index categories	Regular breakfast intake	Irregular breakfast intakes	Breakfast omitters	skipper/
Under weight	79(21.4%)	61(27.7%)	45(21.4%)	
Normal weight	219(59.2%)	102(46.4%)	118(56.2%)	
Over weight / obese	72(19.5%)	57(25.9%)	47(22.4%)	

Pearson Chi<sup>2</sup> Value is 9.63

p value is 0.04 which is significant

Table 5: Association of breakfast taking practices and history of weight gain over last two years

Breakfast practices	Weight change over last two years				Total
	Steady	Increased	Decreased	Never checked	
Regular	161(43.5%)	106(28.6%)	60(16.2%)	43(11.6%)	370(100%)
Irregular	75(34.1%)	67(30.5%)	48(21.8%)	30(13.6%)	220(100%)
Skip	54(25.7%)	110(52.4%)	28(13.3%)	18(8.6%)	210(100%)
Total	290(36.3%)	283(35.5%)	136(17%)	91(11.4%)	800(100%)

Pearson Chi<sup>2</sup> Value is 42.76

P value is 0.00 which is highly significant

Table 6: The association between age groups and BMI categories

Age in years	Under weight	Normal weight	Over weight
17-19	81(31.9%)	140(55%)	33(13%)
20-22	90(20.5%)	233(53.2%)	115(26.3%)
23-25	14(13%)	66(61.1%)	28(25.90%)

Pearson Chi<sup>2</sup> Value is 29.24

P Value is 0.00 which is highly significant

Table 7: Association of glasses of water consumed with body mass index.

BMI category	Glasses of water consumed			Total
	1-5	6-10	>10	
Under weight	126(68.1%)	53(28.6%)	6(3.2%)	185(100%)
Normal	233(53.1%)	165(37.6%)	41(9.3%)	439(100%)
Over weight/ obese	112(63.3%)	48(27.3%)	16(9.1%)	176(100%)
Total	471(58.9%)	266(33.3%)	63(7.9%)	800 (100%)

Pearson Chi<sup>2</sup> Value is 17.98

p value is 0.001 which is highly significant

## DISCUSSION

The mean age of sample (800 female students) was 20 years, mean height is 1.6 meters, mean weight is 54kgs and mean body mass index is 21. The data shows that out of 800 students, 370 are taking breakfast regularly, 220 were irregular breakfast takers and 210 students were skipping breakfast. The body mass index categories showed that 185 students were under weight, 439 normal weight and 176 were overweight and obese.

Data regarding history of weight gain showed that the weight of 290 students remained the same over the last two years. While 283 students had weight gain history, 136 students had weight loss history and 4 students gave history of weight gain and loss.

When association was checked between the breakfast taking practices and body mass index it was found to be significant with a p value =0.04 .It was seen that maximum number of students 219or 59.2% of normal weight were taking breakfast regularly. While irregular breakfast consumers had highest percentage. 27.7% of underweight and also highest percentage 25.9% of overweight students.

The students skipping breakfast were in second position 22.4%of overweight students.

The association between age groups and body mass index was found to be significant with chi square =29.24 and P value =0.000. Underweight students were maximum 31.9%in age group 17 to 19. While it was noted that the group with highest percentage 61% of normal BMI were of age group 23 to 25. However the most over weight and obese 26.3% were found in age group 20 to 22 years.

Association between breakfasts taking practices and weight gain over last two years was checked and was found significant with a chi square value of 42.763 and p value 0.000. It was found that those skipping breakfast were having maximum percentage 52.4% of those who gained weight over the last two years. Highest percentage 43.5% of unchanged weight was recorded in group taking breakfast regularly. In students taking breakfast at irregular intervals the percentage of those who gained weight over last two years was noticeable 30.5%.

Data when analyzed to find out association between water consumption and body mass index was significant with a chi square value=17.98 and p value=0.001. It was noticed that students with normal

weight were having more consumption of water than over weight and obese children.

It was observed that omitting breakfast has become more common, possibly due to the belief that it aids in weight loss by reducing the total energy intake. It was also observed that the group skipping breakfast thought that breakfast gives extra calories and will make them less attentive in their studies. Breakfast as the name suggests it breaks the fast of night, provides energy to the body to function properly throughout the day and prevents snacking on high caloric food later on. In fact the breakfast skippers are taking large amount of energy in the form of cafeteria foods; they are less attentive, less alert and are more irritable as compared to the group who eat breakfast regularly<sup>14</sup>.

This study also shows that medical students are under constant stress of studies. In hostels breakfast is not well nourished and tasty and in addition to this the pressure of being late from college makes them skip breakfast.

A group of workers<sup>15</sup> surveyed on the effects of skipping breakfast and weight change in adolescents. They found that there is positive association between skipping breakfast and weight gain. Overweight students who never ate breakfast may lose body fat but normal weight children who never ate breakfast gained weight as compared to their peers who ate breakfast regularly. The breakfast frequency was also positively correlated with the self reported quality of school work. On the other hand Suhail and Zaibu Nisa<sup>16</sup> did two multiple regression analyses and found that due to greater exposure to western culture and dissatisfaction with body shape were strong predictors of faulty eating attitudes. Their results also observed a high prevalence of disturbed eating attitudes in an Asian country which may affect their body weight as well as mental health. Number of studies survey on skipping breakfast is common in children as well as in age of adolescence. They provide evidence that skipping breakfast is not an effective way to manage weight<sup>10</sup>.

A group of workers<sup>12</sup> reported that breakfast consumption by adults appears to have declined in recent decades. They found that omitting breakfast impairs fasting lipids and postprandial insulin sensitivity and could lead to weight gain, if the observed higher energy intake was sustained. According to a study<sup>7</sup> the incidence of obesity has increased in recent years, perhaps due in part to a belief that skipping breakfast can help to reduce total energy intake and control weight.

From our data it was concluded that the skipping breakfast does have an association with gain in weight. Though weight gain is not necessarily obesity but this gain in weight may become obesity in

future. The age group of female students was between 17 to 25 years of age. In this group most of the students were not obese. Reason may be that this age group is conscious about their physique and appearance and their metabolism is high (Nickas et al, 1998).

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