



Original Article

Skipping Breakfast and its Associated Factors among Undergraduate Students

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ABSTRACT

Breakfast, which literally means breaking the overnight fast, is the day's first meal. **Objective:** To determine the factors associated with skipping breakfast among undergraduate students of Akhtar Saeed Medical and Dental College located at Canal Campus Lahore, Pakistan. **Methods:** A cross-sectional survey was conducted using a self-designed health assessment questionnaire in which demographic profile, anthropometric measurements, open-ended and close-ended questions were included which noted the major physiological and psychological aspects of skipping breakfast. The study was conducted on the total sample of 180 students both adult males and females of age ≥ 18 years of age which were selected in the Akhtar Saeed Medical and Dental College, Canal Campus Lahore, Pakistan. **Results:** Out of total sample 180, only 62 participants (34%) were consuming breakfast and 118 participants (66%) were not having breakfast in morning. The highest recorded reason for skipping of breakfast was 29 participants (16%) do not like to eat in morning also do not have enough time to consume breakfast in morning and 62 participants (34%) had no reason for not consuming breakfast. Skipping of breakfast was also associated with (91%) feeling hungry, not having energy, feeling headaches, grumpy, lethargic, trouble paying attention in class and tired whereas 17 participants (9%) had stomachache and dizziness. **Conclusions:** Participants agreed that breakfast is the important meal of every morning. They found consumption of breakfast consisting of more fruits and vegetables, dairy products and fibers are proved to make an individual healthy as it provides enough energy to stay focused and active throughout the day.

INTRODUCTION

Breakfast is the first meal of the day that breaks the fast after the longest period of sleep and is consumed within 2 to 3 hrs. of waking. It is comprised of food or beverage from at least one food group and may be consumed at any location [1]. A person who skips breakfast will not have enough energy to begin their day thus having adverse effects on health because it is the first meal that is consumed after dinner with a long gap [2]. Breakfast is considered a great source of nutrient and energy that must provide 20% or 25% of daily energy from carbohydrates, proteins and lipids to fulfill the body requirements [3]. Eating breakfast regularly has been constantly linked with a more favorable nutrient intake profile and improved diet

quality [4]. Moreover, a healthy breakfast consumer eliminates the food which is high in calories, saturated fat or sugar such as soft drinks, junk foods and unhealthy snacks [5]. A study conducted in Pakistan shows that 46% of the students eat their breakfast daily and 54% did not consume breakfast on daily basis [6]. The researchers conducted on children and adolescents have shown that breakfast has a positive influence enhancing intellectual performances. A fresh meta-analysis observed the literature on breakfast consumption versus breakfast skipping and also inspected the nutritional composition of disbursed breakfasts which proved that skipping breakfast leads to poor mental health [7]. At the University of Ghana

School of Medicine, some faculty members have observed that a significant number of medical students on rotation to the ophthalmology subspecialty become restless and disinterested long before the end of the session at half past twelve in the afternoon. Informal discussions with the students revealed that some of them have a constant habit of skipping breakfast. The reasons for skipping breakfast were not disclosed in this study. The study showed that among college students (pre-clinical first-year medical students) there was a very high prevalence of skipping breakfast [8]. Breakfast can inhibit the activity of the hypothalamic-pituitary-adrenal axis and consequently reduce the release of stress hormones such as cortisol, which contribute to the occurrence of primary headaches [9]. University students often skip breakfast, the connection between breakfast consumption and primary headache is of great importance. Therefore, the prevalence of primary headache among them is considered to be high [10]. The most frequently skipped meal is breakfast rather than lunch or dinner in the young adults of the Universities. The main reason behind skipping meals is lack of time. Other reasons include: lack of appetite, inability to cook and not being hungry. It is understandable that the irregular omission of breakfast greatly affects the energy intake over the next 24 hours and during the day, exercise performances were also compromised [11]. Breakfast pattern reduced evening intake of high-carbohydrate and high-fat foods, furthermore, eating a nutritious breakfast daily improves satiety, appetite and diet quality, and may help improve some aspects of sleep health in healthy young adults [12]. Many people believe that skipping of breakfast may contribute to weight control but skipping breakfast actually increases the prevalence of obesity and its complications [13]. However, regular consumption of breakfast decreases the risk of obesity efficiently [14]. There is a significant relationship between skipping breakfast and lack of physical activity with depression. Strong evidence proved that a regular breakfast boosts the person's self-esteem, mood and its capability to cope with stress, depression and insomnia [15]. Skipping breakfast leads to postprandial hyperglycemia after having lunch and dinner in association with impaired insulin response in patients with type 2 diabetes mellitus (T2DM). As a result, it can worsen glycemic load [16]. Study suggests that the effects of missing breakfast persist throughout the day and simply consuming a morning meal is probably a beneficial method to lessen postprandial hyperglycemia in patients with T2DM [17]. Coronary artery disease and hypertension are great risk factors caused by skipping breakfast on daily basis and its negative association is even greater than obesity [18]. A dietary weight loss and exercise

interventions effects on quality of life in overweight/obese postmenopausal women research described that those dietary habits which includes, choosing right frequency of carbohydrates, proteins, fats, vitamins and minerals in daily routine are fundamental factors that influence human life style and its quality of life [19]. The frequent occurrence of weight problems amongst adolescents and adults are associated with short-term and long-term morbidity and mortality which is causing serious public health problems. Skipping breakfast and eating more energy dense snacks might be related to obesity [20]. In addition, a high-protein breakfast reduces daily food intake and prevents long-term body fat gain [21]. University students tend to have an unhealthy life style and their breakfast habits usually consists of processed or packaged food such as snacks, beverages, desserts, junk food which has high content of saturated fat which also contributes to obesity [22]. A study showed that regular breakfast eaters have less abdominal obesity only if their breakfast comprises of cereals, yogurt, fruits, nuts or milk [23]. Breakfast plays an important role in maintaining well-being and health of an individual. It has been proven that eating food rich in fibers, vitamins and minerals improves the nutritional status of an individual throughout their lives and it also prevents chronic diseases [24]. A study conducted in female university students of middle east region highlighted that those educational programs which emphasize the importance of eating breakfast and reading food and nutrition labels should be promoted in order to educate the students regarding nutritious breakfast [25].

METHODS

This study was conducted from June 2021 to October 2021 on the undergraduate students from three colleges of Akhtar Saeed Group located at Canal Campus, Lahore. It is a cross-sectional study on randomly selected respondents among 337 students studying in three colleges of Akhtar Saeed Group located at Canal Campus. Considering 95% confidence interval with 5% margin of error and 54% prevalence [6], the sample size comes to be 180 respondents. Undergraduate students studying in three colleges of Akhtar Saeed Group Canal Campus, Lahore were included with respect to age and gender. Doctors, faculty members and students from other campuses of Akhtar Saeed College were excluded from this study. The questionnaire is designed to fulfill the objectives of the study. The Questionnaire was in English and was verbally explained by the researcher to the participants. Open and close ended questions were asked and noted down accordingly. The questionnaire was divided into following parts: Demographic Profile includes age, gender and level of education, anthropometric Measurements includes

weight, height and BMI, Open and Close-ended Questions includes questions related to the consumption and skipping of breakfast, food group and area selected to eat breakfast and a view on importance of breakfast was asked. All data collected were analyzed by latest version of SPSS software and statistical computer program. Data were presented in the form of bar charts and pie charts to present frequencies and percentages of variables. Qualitative variables were presented in the form of themes. The consumers were given their written consent form to participate in the study. In case of unwilling participants more consumers were randomly selected and contacted to achieve desired results. Google forms were also used and the link was sent only to the willing participants.

RESULTS

Table 1 shows the ratio of male and female that were assessed during the study. The percentages of both the genders are 50% with the frequency of 90. Anthropometric measurements were also included which helped in categorizing individuals into underweight, normal overweight or obese.

Table 1: Socio-demographic characteristics of the respondents

Category	Frequency (%) / Mean \pm SD
Gender	
Male	90(50)
Female	90(50)
Age	22 \pm 2.44
Anthropometric Measures	
Weight	164.43 \pm 10.47
Height	68.99 \pm 12.84
BMI	
Underweight (<18.50)	8(14)
Normal Range (15.5-24.99)	77(43)
Overweight (24.99-25.9)	11(6)
Obese (>25.99)	43(78)

Table 2 shows the list of questions that were included in questionnaire. The participants who skipped breakfast was 66% and their number of reasons for it. Among them students don't like to eat in morning and they skipped the breakfast for no reason ranked the top. The question about where and frequency of consuming of breakfast was asked and most students rarely eat their breakfast that in college timings too. 69% of students identified breakfast as non-appetite regulator (69%) while choosing bread & cereal group as the selected food group to start their day with (82%).

Table 2: Main questions regarding skipping of breakfast

Variables	N (%)
Participants Having Breakfast	
Yes	62(34)
No	118(66)

Reasons for Not Having Breakfast	
Not Hungry	5(3)
Don't have food to eat for breakfast	12(7)
Don't like to eat in morning	30(17)
Trying to lose weight	18(10)
My family doesn't eat breakfast	3(2)
My friends don't eat breakfast	6(3)
Not had enough time	15(8)
Don't like to eat in morning/don't have enough time	29(16)
No reason	62(34)
Where Do You Usually Eat Breakfast	
At Home	54(30)
In Car	59(33)
At College	67(37)
How Often Do You Eat Breakfast	
Rarely 2-3	105(58)
Times a week	22(12)
Once a wee	30(17)
Everyday	23(13)
Does Breakfast Help to Regulate Appetite	
Yes	56(31)
No	124(69)
Food Groups Usually Chosen for Breakfast	
Bread and Cereals	12(7)
Milk and Milk Products	9(5)
Bread & Cereals, Milk & Milk or Meat & Meat Products	148(82)
Bread and cereals, Meat and Meat Products	11(6)
Usually Have to Like for Breakfast	
Paratha, Egg and Tea	61(34)
Bread, Egg and Tea	79(44)
Biscuit and Tea	34(19)
French Toast	6(3)
Eating Breakfast Helps You in	
Helps to pay attention, helps to feel powerful, helps to be in better mood, helps to improve memory and helps to be healthy	91(51)
Helps to lose weight	4(2)
Wakes me up, helps to try new foods	85(47)
Breakfast Is Important Meal Every Morning	
Yes	180(100)
No	0(0)
Reason That Breakfast is Important	
Feels Active	46(26)
Makes us attentive and focused	92(51)
Good mood by the end of the day	42(23)

Table 3 shows the outcomes for not consuming breakfast in the morning regularly. 91% of the participants have trouble paying attention in class, feel tired, grumpy, hungry and lethargic while 9% have stomach and dizziness.

Table 3: Skipping breakfast and its associated factors

Variables	Frequency (%)
Hungry, don't have energy, Have Headaches, feel grumpy, Lethargic, Trouble paying attention in Class, Tired	163(91)
Have stomachache, Dizziness	17(9)

DISCUSSION

A cross-sectional study was conducted among 100 undergraduate students of University of Lahore, Pakistan. It was concluded that 46% of the students eat their breakfast daily and 54% did not take breakfast on daily basis [6]. This current study indicates that out of total sample 180, only 62 participants (34%) were consuming breakfast and 118 participants (66%) were not having breakfast in morning. Scientific studies have proved that consumption of healthy breakfast is associated with greater intake of nutrients and it also maintains the better quality of the whole diet. A nutritious breakfast is also linked with healthy body weight and strong cardiovascular system, both in adults and children. Studies have shown that breakfast plays a huge role in improving mental and cognitive function of all age groups [26]. However, our study showed that 180 participants (100%) out of total 180 sample agreed that breakfast is important meal of daily morning and 46 participants (26%) feel active, 92 participants (51%) feel attentive and focused and 42 participants (23%) feel to be in good mood throughout the day due to having breakfast. A cross sectional study was conducted on the adolescents of Aligarh, India to explore the relationship of breakfast skipping and effects of breakfast on obesity. It was concluded that there was a very high frequency of breakfast skipping among these students and the rate of obesity/overweight has a significant relation with the intake of breakfast. Furthermore, the BMI of breakfast skipper was found out to be high than the breakfast consumers [27]. Our findings shows that there were 14 participants (8%) falling in underweight category, 77 participants (43%) were found to be within normal ranges, 11 participants (6%) were overweight and 78 participants (43%) were falling in obese criteria. A cross sectional study was conducted on 60,800 Japanese adults of age 20-75 years to explore the association between breakfast skipping related to late night dinner eating (LNDE) followed by metabolic syndrome and proteinuria. A total of 14,068 (23.1%) adults skipped breakfast of whom half (52.8%) skipped their breakfast alone without LNDE. It was concluded that skipping breakfast followed by LNDE is associated with metabolic syndrome and proteinuria. In contrast, LNDE alone which is more common than skipping breakfast (19.3%) is highly linked with obesity or obesity related conditions [28]. Our study concluded that 5 participants (3%) were not usually hungry, 12 participants (7%) do not have food to eat for breakfast, 30 participants (17%) do not usually like to eat breakfast in morning, 18 participants (10%) were trying to lose weight, 3 participants (2%) said that their families do not eat breakfast in morning, 6 participants (3%) said their friends do not eat breakfast, 15 participants (8%) not had

enough time, 29 participants (16%) do not like to eat in morning also do not have enough time to consume breakfast in morning and 62 participants (34%) had no reason for not consuming breakfast. do not eat breakfast in morning, 6 participants said their friends do not eat breakfast, 15 participants not had enough time, 29 participants do not like to eat in morning also do not have enough time to consume breakfast in morning and 62 participants had no reason for not consuming breakfast. A cross-sectional study was conducted among 235 civil servants in the Tamale metropolis to assess skipping of breakfast and its association to adiposity. The study concluded that 30% of the participants skipped breakfast due to lack of time, 32.1% for no appetite whereas 29.5% for not feeling hungry at all. Breakfast skippers were pointedly more likely to be gain weight and fall into overweight and obese categories as compared to breakfast eaters. Skipping of breakfast was related with obesity [29]. Our study shows that having breakfast helped 56 number of participants (31%) to regulate their appetite whereas 124 participants (69%) responded that breakfast didn't help them to regulate their appetite. A cross-sectional study by Pereira et al., conducted to evaluate the prevalence of breakfast consumption and also determine the nutrients and foods consumed during the morning time. A total of 7276 Brazilian adolescents of aged 10-19 participated. It was concluded that the prevalence of breakfast consumption among these adolescents is 93%, which is high and the regular breakfast eaters had very high intake of vitamin D, C and B12 [30]. This study depicts that 12 participants (7%) were having bread and cereals, 9 participants (5%) preferred milk and milk products, 148 participants (82%) preferred mixture of food groups that is bread and cereals, milk and milk products, meat and meat products and 11 participants (6%) usually chose bread and cereals and meat and meat products in morning. A study was conducted school going children and adolescents across the state of Utah to examine parent perceptions of school breakfast and identify relationships between those who consume breakfast at school and those who do not. A total of 448 parents filled the survey. It was concluded that children who perceive benefits from school breakfast programs were more likely to eat breakfast at school [31]. This study finding depicts that 54 participants (30%) in the study preferred to have their breakfast at home, 59 participants (33%) in car whereas 67 participants (37%) usually have their breakfast at their college. A cross sectional study was conducted in Egypt to assess prevalence of obesity and overweight. A total of 398 students were assessed. It was concluded that 28.9% of the students were overweight, 11.8 % were obese, while (55.8%) were of normal weight (49.6% of males compared

to 59.1% of females), and 3.5% were underweight. Eating habits of the students showed that the majority (80%) was taking meals irregularly. Almost half of students (45.7%) reported eating two meals per day (44.4% of females as compared to 48.2% males). About 57.6% of female students reported eating breakfast daily or three to four times per week compared to 55.3% male students [32]. However, our study illustrates that 105 participants (58%) rarely consume breakfast; 22 participants (12%) consume breakfast 2-3 times a week, 30 participants (17%) usually had their breakfast once a week and 23 participants (13%) had their breakfast every day. A cross sectional study was conducted among 300 female students in Menoufiya University, Egypt. The study was conducted by Eittah to explore the effect of breakfast skipping on menstrual cycle. The study concluded that there was an increase in the percentage of menstrual regularity in the group who have breakfast (89.1%) than the other group who have skipped their breakfast (83.9%). The study also suggests that skipping breakfast is significantly linked with irregular menstrual cycle and increase the incidence of premenstrual pain and cramps, oligomenorrhea, dysmenorrhea and anorexia. However, there has been no impact at the other objects of premenstrual syndromes [33]. This study concluded that having breakfast helped 91 participants (51%) with paying attention, feeling powerful and energetic, improves mood and memory and stays healthy, whereas having breakfast helped 4 participants (2%) with their weight loss and 85 participants (47%) experienced it helps with their active routine and in trying new foods. A cross sectional study was conducted to explore the association between breakfast consumption pattern and primary headaches in the University students of Iran. 83,677 students were assessed among which 54.7 % were females. It was concluded that there is an inverse relationship between primary headaches and breakfast consumption in female students as well as in those students with BMI < 25 kg/m² [34]. Another cross-sectional study was conducted among 350 University students aged 19-25 years in Malaysia. The students received structured questionnaire of Breakfast information and Habitual physical exercise questionnaire. The study suggested that in order to improve mental health of the students a balanced meal should be taken at proper time, especially a healthy breakfast and participate regularly in exercise to increase mental health [15]. Our study findings indicate that 163 participants (91%) feel hungry, do not have energy, feel headaches, grumpy, lethargic, trouble paying attention in class and tired when they do not have breakfast whereas 17 participants (9%) had stomachache and dizziness when not having breakfast.

CONCLUSIONS

Participants agreed that breakfast is the important meal of every morning. They found consumption of breakfast consisting of more fruits and vegetables, dairy products and fibers are proved to make an individual healthy as it provides enough energy to stay focused and active, throughout the day whereas Majority of participants showed they feel grumpy, lethargic, energy less, trouble paying attention, having headaches, stomachaches and dizziness due to breakfast skipping.

Authors Contribution

Conceptualization: FHR

Methodology: MM, AFR

Formal analysis: AN, AFR, AN

Writing-review and editing: AN, MM, AN

All authors have read and agreed to the published version of the manuscript.

Conflicts of Interest

The authors declare no conflict of interest.

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