

Factors associated with skipping breakfast among Day scholars and Boarding Adolescent and their effects on their academic performance

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ABSTRACT

Background: Skipping breakfast has been linked with poor diet quality, higher BMI and poor academic performance.

Aim: To find out the Factors associated with skipping breakfast among day scholars and boarding adolescent and their effects on their academic performance.

Methods: A total of 100 day scholars adolescent (70 breakfast eater and 30 breakfast skippers) and 50 living in hostel were included in the study. The questionnaire is based on body weight, consumption and type of breakfast, accommodation, attention in class and academic performance.

Results: Mean age of both groups of students was 18-19 years with mild increase BMI in breakfast skippers. 20% day scholars and 50% hostel living students skip breakfast. Negative emotional status was observed more in breakfast skipper compare to breakfast eater. Class assessment and academic performance shows the poor presentation of breakfast skipper and usage of pleasant but poor nutritious food. Among students of hostel living, the reason for skipping were distasteful food, not cooked well and inadequate amount. These students therefore preferred institute cafeteria where the pleasant looking food is with inadequate nutrient.

Conclusion: Factors associated with skipping breakfast especially in boarding students are usually distasteful and inadequate food with poor class assessment and academic performance and they may use inadequate food in teatime. While in day scholar the reason may of skipping breakfast be getting late or late night dinner.

Keywords: Skipping Breakfast, Day scholars and boarding students

INTRODUCTION

Skipping breakfast may have a negative impact on health. Nutritious breakfast in the period of adolescence is very important because it is a period of rapid growth¹. The prevalence of breakfast skipping was 45 to 49% in age of 18-25 years². The factors significantly associated with breakfast skipping were age, accommodation, poor quality of diet, smoking, sedentary life style etc³.

Due to healthy lifestyle habits breakfast eaters have healthy life style have standard body weight compared to breakfast skippers⁴. The unhealthy life style in breakfast skipper is usually due to skip breakfast by using fast food, flavored fruit juice, tea or cigarette³.

Adolescent are often the group which are neglected by the family. During the transitional period of adolescent to adulthood, establishment of a healthy routine may have a long lasting effect on their health. This age is taken as a dynamic period of growth and development as well as it is a time of intense physical, psychological, and cognitive development⁵.

Adolescent may represent a window of opportunity to prepare nutritionally for a healthy adult life. The foundation of good health and sound mind is laid during this period⁶. This group is therefore needs nutritious breakfast in routine. However in this age group most of the young adults not consume proper breakfast and may use inadequate nutrient⁷. Lack of proper nutrition contributes to

lower academic performance with low score, and eventually, these young adults are less successful and less productive and competitive student⁸.

Breakfast consumption habits may help young adults, to live a life without family i.e. living in hostel to adjust them living independently with good dietary habits acquire from home⁷. Studies indicate that number of adolescence living in hostel or someday scholars' have the routines of skipping breakfast, used snacks, fries and fast food with sedentary life style⁹. These young adults may have an increase risk of gaining body weight due to unhealthy eating habits and sedentary lifestyle¹⁰.

Skipping breakfast create a state of hunger and may decrease the attention and proper learning in institution as well as low recall memory. Though, a study stated that the exact reason for these effects is not completely understood¹¹. However, it is found that regular breakfast is precious to a student's educational performance and achievement as well as concentration level and cognitive ability¹². Students living in hostel may have a risk to develop nutrient insufficiency and may be at increase risk of developing disease like diabetes mellitus, heart disease and hypertension in long run^{11,13}.

The Graduate and Postgraduate institution may have a last chance for nutrition and health education of adolescents. Therefore, a study was conducted in a local college of Lahore city with the intention of find out the factors associated with skipping breakfast especially in hostel living adolescent and the effects of skipping breakfast on academic performance.

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MATERIAL AND METHODS

Cross-sectional study was carried for a period of one month. A total of 100 day scholars (70 breakfast eater and 30 breakfast skippers) and 50 living in hostel were included in the study. Subjects were taken from local College of Lahore city. Duration of study was one month (June to July 2018). Letter of consent was taken from each participant. Study was approved by ethical committee of institute.

The questionnaire is based on socio-demographic features, consumption and type of breakfast and accommodation. However, this paper will only explain the socio-demographic characteristics and factors associated with breakfast skipping (such as usage of fast food and nutritional supplements, accommodation and academic and class performance of the students).

Breakfast is defined as the first meal of the day, eaten before starting of daily activities upto 10:00 am¹¹. Skipping of breakfast is defined as breakfast consumption for 3 days/ week.

Breakfast consumption in routine, details of food taken, and the quantity uses was noted. Food and drinks were classified into the food groups (vegetables, meat, fruit, dairy, alternatives). Fast food: This may include fries, samosa, burgers, sand witches and pizzas. Nutritional supplements: This may include food rich in protein, carbohydrate, vitamin and minerals with some oil. A positive reply was given a score of 1 and the fruits and vegetables usage score 0 - 4. Academic performance was based on simple grade system.

BMI or Body mass index was calculated in Kg/m². Weight criteria is stated as underweight or lean, healthy or normal weight and obese or overweight defined¹⁴. Sleep duration for the previous night was calculated from the time to go to bed until the last time they woke up.

Descriptive statistics, Chi-square test and ANOVA were used to analyze the data with level of significance set at 0.05 using SPSS 20

RESULTS

Table 1 showed the relationship between the BMI, emotional status, class assessment and academic performance of the breakfast eater/breakfast skipper students and their nutritional status. Mean age of both groups of students 19.7 and 18.9 years respectively. Mean BMI of both group of students was 23.5 and 24.4 Kg/m² with no significant difference. 80% day scholars and 50% hostel living students consume breakfast regularly, while 20% day scholars and 50% hostel living students skip breakfast. Negative emotional status was observed more in breakfast skipper compare to breakfast eater with a significant difference (P<0.001). Class assessment was expressed in percentages. It is based on sharing in curriculum activities, problem solving ability, cognitive capacity, concentration in class, feel laziness in class and level of irritation in class. Study observed that curriculum activities, problem solving ability, cognitive capacity, concentration in class are with good percentages in class among breakfast eater, whereas feel laziness in class and level of irritation are with good percentages in class among breakfast skippers. It is noted that high percentage of

breakfast skipper waiting for tea time in institution, rushed to cafeteria in tea time and take inadequate food mostly like samosa, fries, flavored juice etc. Academic performance of breakfast eater gained significantly (P<0.001) high score compare to breakfast skippers.

Table 1: ANOVA table showing the relationship between the BMI, emotional status, class assessment and academic performance of the breakfast eater/breakfast skipper students and their nutritional status. No of cases in parenthesis. Variables are expressed as mean±SD and percentages

Effective variables	Students taking breakfast frequently (70)	Students skipping breakfast (30)
Age (years)	19.7±1.3	18.9±1.1
BMI (Kg/m ²)	23.5±4.5	24.5±5.2
Day scholars	80%	20%
Hostel living	50%	50%
Emotional status (-ve)	10.08±5.5	22.0±4.84**
Class Assessment (%age)		
Class attendance :	75%	72%
Sharing in curriculum activities:	50%	40%
	49%	45%
Problem Solving Ability:	75%	45%
Cognitive capacity:	30%	60%
Feel laziness during class:	80%	45%
Concentration in class:	20%	80%
Level of Irritation (i.e. class should be off now)		
Waiting for tea time (%age)	20%	88%
Academic performance (Score)	81.67±10.54	57.2±15.24**

**P< 0.001= Highly significant difference

Table 2: Relationship between breakfast skipper student residing at hostel and their nutritional status

Description	Statements of students (50)
Reason for not taking breakfast	
Food is not delicious	80% agreed
Quantity is small	40% agreed
Not cooked well	35% agreed
Other reasons for Skipping breakfast	
Due to getting late:	60% agreed
Late night dinner:	50% agreed
Food is finished:	20% agreed
Taking food in teatime in institute	
Tea/ Flavored juice + Samosa	24% taken
Tea/ Flavored juice + Fries	16% taken
Flavored juice or tea +fast food	20% taken
Others	50% taken
Knowledge of skipping breakfast make ill or lazy:	
Yes	80% agreed
No	20% agreed
Hours of sleep	5-6 hours (70%) 6-7 hours (30%)

Relationship between breakfast skipper student residing at hostel and their nutritional status is tabulated as table 2. Among students of hostel living, the reason for not taking food was multiple. About 80% students stated that food is not delicious, 40% stated quantity is small and 35% stated that food is not well cooked. Other reasons for skipping food may be getting late (60% students), late night dinner (50% students), food is finished (20% students).

Type of food taking in teatime in institute was Tea/ Flavored juice + Samosa (taking by 24% student), Tea/ Flavored juice + Fries (taking by 16% students), Flavored juice or tea +fast food (taking by 20% student), others may include Biryani, salad with mayonnaise, omelets etc.(taking by 50% student). 80% students have knowledge that skipping breakfast makes them ill. In 70% students, hours of sleep were 5-6 hour and in 30% it was 6-7 hours. These sleep hours are less during monthly test and final examination.

DISCUSSION

Authorization of the hostel is important to help to manage student with the changes and promote awareness of health particularly nutrition and reproductive health, because the adolescent are in a period of growth and development when optimum nutritional and health care is essential. Various studies found that the nutritional and educational status of adolescent living in hostel is of sub-optimal level¹⁶.

Mean BMI of students was 23.5 and 24.4 Kg/m² with no significant difference. It is reported that consumption of breakfast is a major causative factor for maintaining of body weight. Breakfast helps to maintain energy intake 24 hours, however due to high feeling of hunger, adolescents who skip breakfast have a tendency to eat more food at their next meal, which is usually inadequate nutrient¹⁴. They also tend to use large quantities of sugar. A breakfast with low glycaemic index (with carbohydrates and fibers i.e. cereals, rusk, bread, and biscuits etc has the greatest effect over energy intake for the rest of the day. It is found that multiple form of carbohydrates cause the secretion and function of hormones like glucagon-like peptide-1 and colecistocinina; these hormones help to maintain glycemia and postprandial satiety¹⁷. Additionally lipids and protein present in milk helps to maintain the secretion of hormone ghrelin and this may control appetite, and increase the feelings of satiety¹⁸.

Our study found that less number of day scholars and large number of hostel living students skip breakfast. A study found that due to not taking breakfast, student may feel long term and short term hunger which may effect on their memory and therefore these student have less ability to solve the problem, low level of concentration in class and feel irritant¹⁹. Majority of the students living in hostel have no habits of taking fruit, fish and milk which high nutritious value. This may effect on their attentiveness in class and education performance². It is suggested that adolescent have a high brain glucose metabolism and decreased postprandial glycaemic response is useful to student's cognitive presentation specific to morning i.e. the time of taking breakfast²⁰.

According to our study, academic performance of breakfast eater gained significantly high score compare to breakfast skippers. A study reported a high association between breakfast habits and education performance of the study. Study found that students who skip breakfast feel laziness and inactive during study they can't concentrate on the study and may have a low cognitive level. That becomes the cause of obtained low grades in education².

According to our study negative emotional status was observed more in breakfast skipper compared to breakfast

eater. A study demonstrated that breakfast skipping and risk of anxiety were related with inadequate low caloric food²¹. Good behavior during class is also an important issue for student²².

Relationship between breakfast skipper student residing at hostel and their nutritional status was also studied. Among students of hostel living, the reasons for not taking food were multiple. Most of the student stated food is not delicious while some stated it is not well cooked. Other reasons for skipping food may be getting late, late night dinner, food is finished. Breakfast skippers usually preferred cafeteria food like, samosa, fries and fast foods. These foods are considered as inadequate nutrient and only help to gain weight and the reason of poor health and academic performance. 80% students have knowledge that skipping breakfast makes them ill. Our study is inline with a number of studies who also demonstrated that reason of skipping breakfast is getting late, not hungry or food is not delirious²³. Another study reported that breakfast skippers had high consumption of food with inadequate nutrients like snack foods. The type of foods used at breakfast may also influence on quality of diet²⁴. (Utter 2007). A study found that breakfast skippers also have a habit of skipping dinner or lunch and used snack and fast food in routine¹⁴. Additionally it is reported that consumptions of fruits and vegetables inadequate in adolescent²⁵.

A study noted that the day scholars have more knowledge about the nutritious value of food using in meals compared to boarding students. The reason may be these are living with family and get more knowledge about the food as their consumption of food is also more than hostel living student²⁶. However a study reported that good knowledge of dietary guidelines seem to be directly linked with healthful eating¹².

Lack of sleep is also a reason of skipping breakfast. We found that In 70% students, hours of sleep were 5-6 hour and in 30% it was 6-7 hours. These sleep hours are less during monthly test and final examination. According to a study deprivation of sleep may lead to change in the level of gherlin and leptin which may promote weight gain and increased hunger²⁷. Another study found deprivation of sleep also a cause of reduced sedentary life style²⁸.

Limitations of study: Although it is encouraging that small number of adolescent skip breakfast, however, this may limit the estimation of prevalence of this group. The sample size should be more due to less number of skippers.

CONCLUSION

The findings of our study that skipping breakfast may be associated with mild increase body weight. In addition, academic performance during class and in examination breakfast skipper is not good compared to student who consumes breakfast regularly. Factors associated with skipping food especially in boarding students are usually distasteful food and inadequate food. While in day scholar the reason may be getting late from institute or late night dinner. It is therefore a need to educate caterers of the hostel on the importance of healthy menu including vegetables and fruits. The menu and methods of cooking meals should also be improved to make these palatable.

REFERENCES

1. Ekanah KS, AgofureOtovw, EdetaRose. Nutritional Status of Day and Boarding Female Adolescent Secondary School Students in Warri South Local Government Area of Delta State. *J of Food and Nut Sci* 2017; 5(3): 131-139
2. Arshad N and Ahmed U. Impact of Breakfast Habits on Education Performance of University Students (A Study Conducted on University of Sargodha, Pakistan). *Int J of Acad Res in ProgEduc and Develop* 2014; 3(1):255-270
3. Fayet-Moore F, Kim J, Sritharan N, Petocz P. Impact of breakfast skipping and breakfast choice on the nutrient intake and body mass index of Australian children. *Nutrients*. 2016;8(8). pii: E48.
4. Horikawa C, Kodama S, Yachi Y, Heianza Y, Hirasawa R, Ibe Y, et al. Skipping breakfast and prevalence of overweight and obesity in Asian and Pacific regions: A meta-analysis. *Prev Med*. 2011;53(4-5):260-7
5. Shahid A, Siddiqui, FR, Bhatti, MA, Ahmed M, Khan MW. Assessment of Nutritional Status of Adolescent College Girls at Rawalpindi. *Annals*. 2009; 15 (1): 11 – 16.
6. Kumar N, Shekhar C, Kumar P, Kundu AS. Kuppusway's socio-economic status scale-updating for 2007. *Indian J of Pediatrics*. 2007; 74: 1131-1132.
7. Williams P. Breakfast and the diets of Australian adults: an analysis of data from the 1995 National Nutrition Survey. *Int J Food Sci Nutr* 2005; 56(1): 65-79.
8. Janiszewski, S. The science of starvation: How long can human survive without Food or Water. The Public Library of Science, University of Minnesota Press. 2007
9. Osako M, Takayama T & Kira S. Dietary habits, attitudes toward weight control, and subjective symptoms of fatigue in young women in Japan. *Nippon KoshuEiseiZasshi* 2005;52(5): 387-398.
10. Niemeier HM, Raynor HA, Lloyd-Richardson EE, Rogers ML & Wing RR. Fast food consumption and breakfast skipping: predictors of weight gain from adolescence to adulthood in a nationally representative sample. *J Adolescent Health* 2006;39(6): 842-849.
11. Keski-Rahkonen A, Kaprio J, Rissanen A, Virkkunen M & Rose RJ. Breakfast skipping and health-compromising behaviors in adolescents and adults. *Eur J Clin Nutr* 2003;57(7): 842-853.
12. Giovannini M, Verduci E, Scaglioni S, Salvatici E, Bonza M, Riva E & Agostoni C. Breakfast: a good habit, not a repetitive custom. *J Int Med Res* 2008; 36: 613-624.
13. Boschloo A., Ouwehand C., Dekker S., Lee N., De Groot R., Krabbendam L., et al. The relation between breakfast skipping and school performance in adolescents. *Mind Brain Educ*. 2012; 6: 81–88
14. Opeyemi Bolajoko GA, Ogundahunsi OF, Odugbemi BA, Olanike Alakuro. Nutrient Adequacy of Foods Eaten by Students Attending Boarding and Day Secondary Schools in Owo. *Current Research in Nutrition and Food Science*. 2014;2(2): 84-87.
15. Cole TJ, Flegal KM, Nicholls D, Jackson AA. Body mass index cut offs to define thinness in children and adolescents: International survey. *BMJ*. 2007; 335(7612): 194.
16. Wasnik V, Rao BS, Rao D. A Study of the Health Status of Early adolescent Girls residing in Social Welfare Hostels in Vizianagaram district of Andhra Pradesh State, India. *Int J of Collaborative Res on Internal Med & Pub Health*. 2012; 4(1):72-83.
17. Tolfery K and Zakrzewski JK. Breakfast, glycaemic index and health in young people. *J of Sport and Health Sci* 2012 ; 1(3): 149-159
18. Wyatt HR, Grunwald GK, Mosca CL, Klem ML, Wing RR & Hill JO. Long-term weight loss and breakfast in subjects in the National Weight Control Registry. *Obes Res* 2002;10(2): 78-82.
19. Yin X, Li Y, Xu G, An W, Zhang W. Ghrelin fluctuation, what determines its production? *Acta Biochimica et Biophysica Sinica*, 2009; 41(3): 148-197
20. Mhurchu CN, Gorton D, Turley M, et al Effects of a free school breakfast programme on children's attendance, academic achievement and short-term hunger: results from a stepped-wedge, cluster randomised controlled trial. *Journal of Epidemiology & Community Health* 2013;67:257-264.
21. Hall L, Tejada-Tayabas LM², Monárrez-Espino J¹. Breakfast Skipping, Anxiety, Exercise, and Soda Consumption are Associated with Diet Quality in Mexican College Students. *Ecol Food Nutr*. 2017 May-Jun;56(3):218-237.
22. Adolphus K, Lawton CL, Dye L. The effects of breakfast on behavior and academic performance in children and adolescents. *Front Hum Neurosci*. 2013; 7: 425.
23. Mullan B, Wong C, Kothe E, O'Moore K, Pickles K, Sainsbury K. An examination of the demographic predictors of adolescent breakfast consumption, content, and context. *BMC Public Health*. 2014; 14:264.
24. Utter J, Scragg R, Mhurchu CN, Schaaf D. At-home breakfast consumption among New Zealand children: Associations with body mass index and related nutrition behaviors. *J Am Diet Assoc*. 2007; 107(4): 570–6.
25. Tsedeke W, Wakjira A, Dagnie M, Firew Y, Fedasa A, Fufa D, Tadesse, Eyasu E. Nutritional Status of Adolescent Girls Living in Southwest of Ethiopia, *Food Science and Quality Management*. 2014; 34: 58 – 64.
26. Philippou E, Constantinou M. The Influence of Glycemic Index on Cognitive Functioning: A Systematic Review of the Evidence. *Advances in Nutrition*. 2014;5(2):119-130.
27. Spiegel K, Tasali E, Penev P, Van Cauter E. Brief communication: Sleep curtailment in healthy young men is associated with decreased leptin levels, elevated ghrelin levels, and increased hunger and appetite. *Ann Intern Med*. 2004;141(11):846–50.
28. Schmid SM, Hallschmid M, Jauch-Chara K, et al. Short-term sleep loss decreases physical activity under free-living conditions but does not increase food intake under time-deprived laboratory conditions in healthy men. *Am J Clin Nutr*. 2009;90(6):1476–82