RESEARCH HUB – International Multidisciplinary Research Journal (RHIMRJ)
Research Paper
Available online at: www.rhimrj.com

Relationship of Breakfast Skipping and Nutritional Status among Senior Secondary School Adolescents of District Una, Himachal Pradesh (India)

[1]Indu Bala, *B.Sc.(Nurs) MPH*
[2]Dr. NL Gupta, *Associate Professor & Head*
[3]Dr. HS Chauhan, *Professor*
[4]Sindhu Bharti, *MPH*
[5]AnkitaThakur, *MPH*
[6]Bandana Thakur, *B.Sc. honrs Biotechnology*

Akal School of Public Health$ Hospital Administration Department of Psychology,
Eternal University, Sirmour, Himachal Pradesh (India)Eternal University, Sirmour, Himachal Pradesh (India)

Abstract: ***Breakfast consumption of adolescents is an important public health concern as it is associated with positive outcomes for diet quality, micronutrient intake, BMI status and lifestyle factors. In the modern era, breakfast skipping in adolescents has been gradually rising in many developing countries, including India. Adolescents are becoming more and more conscious about their physique and look, and are using various methods to lose weight and look attractive. Skipping breakfast or consuming an inadequate breakfast contributes to dietary inadequacies that are seldom compensated for at other meals; it has been considered to affect a number of parameters like nutritional status, concentration, memory, academic performance and cognitive development. Objectives: Purpose of the study was to assess the relationship between breakfast skipping and nutritional status among the adolescents.***

Methodology: A cross sectional study was carried out on 591 school adolescents from 27 schools of Una district, Himachal Pradesh, selected by multistage sampling, with the help of self administered structured questionnaire from January to march, 2016. Results: Out of 591 adolescent students, 66.3 % were breakfast skippers. Majority, 59.1% adolescents had normal nutritional status, followed by 32.7% underweight and 8.3% overweight/ obesity. Breakfast skippers were found significantly more overweight/obese as compared to non skippers. Conclusions: Prevalence of breakfast skipping was found high among the overweight and obese adolescents .Therefore, it is imperative to suggest that School Health programmes need to evolve appropriate strategies to promote awareness regarding healthy dietary patterns among school adolescents and their parents.

Keywords: Adolescents; Breakfast skipping; Nutritional status; Underweight; Overweight; Obese.

I. INTRODUCTION

Adolescence, a critical transition in human life that is characterized by tremendous pace in growth and change that is second only to that of infancy.1Adolescents are about 18% of total population with more than half from Asia.2 Because of change in life style habits many boys and girls in developing countries enter adolescence undernourished; making them more vulnerable to disease and early death and conversely overweight and obesity are increasing among young people in both low and high-income countries.[3]

Adolescence is a time of newly discovered independence and freedom of choice that become susceptible to external influences particularly from the media, school and peers often leading to confounded lifestyle changes, such as meal skipping, leaving home, changing schools or starting work.[4]

Dietary habits that affect food preferences, energy consumption and nutrient intakes are generally developed in early childhood, particularly during adolescence. Although, the home and school environments play a major role in determining a child's attitude to, and consumption of individual foods, teenagers increasingly get exposed to periodic food fads and slimming trends and consequently, tend to skip meals and develop irregular eating habits. One of the most frequently missed meal is breakfast. It has been well documented that breakfast plays an important role in providing needed energy and nutrients after an overnight fast and can aid in concentration and performance at school.[5]

Breakfast which literally means breaking-the-fast of the night, refers to the first meal taken in the morning and is usually consumed before the start of the day. It is unarguably considered the meal of utmost importance that is considered to play a crucial role in maintaining the physical health and intellectual capabilities of a person. Breakfast is the central component of one's daily nutritional requirement contributing significantly to the total daily energy and nutrient intake.[6]

  ISSN: 2349-7637 (Online)

Breakfast not only provides the energy and nutrients needed to start the day and kick-start the metabolism, it is crucial to refuel the body and the brain. Eating breakfast promotes healthy eating habits, helps to maintain a healthy body weight and has a positive effect on cognitive performance.

In a meta-analysis, the results of 47 Western studies examined the association of breakfast consumption with nutritional adequacy (nine studies), body weight (16 studies), and academic performance (22 studies) in children and adolescents. It concluded that breakfast eaters generally consumed more daily calories yet were less likely to be overweight, although not all studies associated breakfast skipping with overweight. Evidence suggests that breakfast consumption may improve cognitive function related to memory, test grades, and school attendance. Breakfast as part of a healthful diet and lifestyle can positively impact children's health and well-being.[7]

The cross sectional study conducted in 2014 to assess effect of breakfast skipping on nutritional status and school performance of 10-16 years old children in Udupi, Karnataka found 23.50% prevalence of breakfast skipping among school going children of age 10-16 years old in selected areas of Udupi district. More number of breakfast skippers was found to be overweight.[8]

Another study conducted in District Kurukshetra, India in 2013 on overweight adolescent girls found more than two-third adolescent girls skipped at least one meal a day and the most frequently missed meal was breakfast. The most common effect of skipping meal among adolescent girls was consumption of junk food.[9]

In the light of scarcity of research studies on effect of breakfast skipping on adolescents in Himachal Pradesh, the present study was planned to find out the relationship of breakfast skipping and nutritional status among senior secondary school adolescents of District Una, HP.

II. MATERIALS AND METHODS

This study was undertaken to explore parameters of breakfast skipping in terms of nutritional status in an area about which no descriptive survey is available.

Design and Setting

A Descriptive Cross Sectional survey was carried out on government senior secondary school students of Una District, HP.

Sampling Technique

Out of the total 111 government senior secondary schools in four tehsils of district Una, 27(every 4th) schools were selected; from each of the schools 22/23 adolescent students were selected from grade IX and X using systemic sampling technique. The sample size of 596 was calculated by using the standard formula for finite population.

Data Collection Tools, Technique and Analysis

The structured questionnaire was prepared to collect information on socio-demographical variables, breakfast skipping and components of nutritional status. The questions regarding nutritional status were framed based on pertinent literature in simple language for clarity and ease of understanding. The questionnaire was then circulated among seven experts for elimination of ambiguous questions and ascertaining reliability and validity. The pilot study was done on 20, 10 each from IX and X grades from one senior secondary school that was not included in the main study, to ascertain feasibility of the study.

After obtaining permission from the Deputy Director, Higher Education of District Una, a list of all government sr. secondary schools were made. On the basis of selection criteria, schools and students were identified. Permission of the concerned authority of each school was taken and the students were administered the validated questionnaire after briefing them about the purpose of the study and getting their written consent. Out of 596 students, 5 students gave incomplete data, they were excluded and final sample constituted of 591 students.

Pre-tested weighing machine (Prestige) and non stretchable measuring tape were also used for the measurement of weight and height respectively. Weight and height of the students were taken in standing position after removal of shoes and bulky body wears. Weight was measured to nearest 0.5 kg after calibration to zero and height to nearest 0.1 cm. WHO Anthroplus software v.1.0.4 was used for calculating BMI for age in percentiles. The data was entered and analyzed in SPSS version 20. Descriptive and inferential analyses were done by using frequency distribution, Chi square, Correlation and Odds ratio.

Ethical Considerations

Approval was taken from Department of Public Health and Hospital Administration, Akal College of Health and Allied Sciences and Deputy Director of Higher Education Una. Approval was also taken from administration of respective schools. Confidentiality of the subjects was maintained.Written informed consent was obtained from the students. Withdrawal from the study at any time was acceptable.

ISSN: 2349-7637 (Online)

III. RESULTS AND DISCUSSION

Herein, data are presented in tabulation form for descriptive and inferential statistical analysis of pattern of breakfast skipping and nutritional status.

Table -I Socio Demographic Characteristics of School Adolescents

S.N	Variables	N=591	% age
1.	**Age**		
	13-15	499	84.4
	16-18	92	15.6
	M=14.54+1.012		
2	**Gender**		
	Male	305	51.6
	Female	286	48.4
3	**Grade**		
	IX	333	56.3
	X	258	43.7
4	**Religion**		
	Hindu	537	90.9
	Muslim	28	4.7
	Sikh	26	4.4
5	**Residence**		
	Rural	566	95.8
	Urban	25	4.2
6	**Birth order**		
	First	200	33.8
	Middle	186	31.5
	Last	205	34.7
7	**Father's Education**		
	Illiterate	24	4.1
	Literate	71	12.1
	Primary	115	19.5
	Secondary	246	41.8
	Higher Secondary	79	13.4
	Graduation & above	54	9.2

S.N	Variables	N=591	% age
8	**Father's Occupation**		
	No job	32	5.4
	Private job	291	49.4
	Agriculture	169	28.7
	Govt. job	97	16.5
9	**Mother's Education**		
	Illiterate	46	7.8
	Literate	80	13.6
	Primary	150	25.5
	Secondary	214	36.3
	Higher secondary	63	10.7
	Graduation & above	36	6.1
10	**Mother's Occupation**	(n=589)	
	Homemaker	521	88.5
	Private job	44	7.5
	Govt. Job	24	4.1
11	**Monthly Income**		
	Less than Rs. 10000	402	68.0
	Rs. 10000-Rs. 25000	121	20.5
	Rs. 25000-Rs. 50000	43	7.3
	Above Rs. 50000	25	4.2
12	**Pocket Money**		
	Never	67	11.3
	Daily	71	12.0
	Sometime	335	56.7
	Often	118	20.0

Table-I indicates that most (84.4%) of adolescents were in the age group of 13-15 years, nearly half(51.6%) were males and 48.4 % were females, more than half (56.3%) were from grade IX and rest from grade Xs. Most of the adolescents(90.9%) were Hindu and 95.8% hailed from rural area. Fathers of nearly half of respondents (49.4%) were engaged in private jobs and 88.5% mothers were homemakers. Majority, 68% of respondents' monthly family income was less than Rs.10,000,whereas only 4.2% had monthly income of above Rs. 50,000.More than half (56.7%) of the adolescents received pocket money sometimes (1-2 times/week) whereas 11.3% never got pocket money from their parents.

Table-II Breakfast Skipping and Fast Food Consumption

S. N	Dietary habits	Frequency (N=591)	% age
1.	**Breakfast Skipping**		
	Never	199	33.7
	Rare (1-2days/week)	184	31.1
	Occasional (3-4days /week)	134	22.7

ISSN: 2349-7637 (Online)

	Frequent (5-7days/week)	74	12.5
2.	**Cause for Breakfast Skipping**		
	Lack of time	144	24.4
	Habit	88	14.9
	Loss of appetite	111	18.8
	Not available	16	2.7
	To reduce weight	18	3.0
	No reason	214	36.2
3.	**Meals /Day**		
	Less than 3 meals	177	29.9
	3 meals	338	57.2
	More than 3 meals	76	12.9
4.	**Fast Food Consumption**		
	Yes	562	95.1
	No	29	4.9
5.	**Frequency of Fast Foods Intake**		
	Sometimes (1-2times/week)	301	53.6
	Often(3-4times/week)	211	37.5
	Daily	50	8.9

Table-II reveals the dietary habits of adolescents; majority (66.3%) of respondents skipped breakfast - 31.1% rarely, 22.7% occasionally and 12.5% frequently. Reasons as given by respondents were lack of time (24.4%), habit (14.9%), loss of appetite(18.8 %), food not available(2.7%) and reduction of weight (3.0%). More than half (57.2%) of adolescents were taking 3 meals a day. Majority (95.1%) used to consume fast food, out of which 53.6% sometimes, 37.5% often and only 8.9% took daily.

Table –III Nutritional Status of Students

S.N.	Nutritional Status	Based on Percentile Classification	Based on z Score
1.	Underweight	193 (32.7)	143(24.2)
2.	Normal	349 (59.1)	395(66.8)
3.	Overweight	29 (4.9)	44(7.4)
4.	Obesity	20 (3.4)	9(1.5)

 # Figures in parentheses indicate percentage

Table-III reveals the nutritional status of students. On the basis of WHO Anthroplus software for calculating percentile (BMI for age), it was found that 59.1% adolescents had normal nutritional status, 32.7% underweight,4.9 % overweightand 3.4%obese.

Table-IV Association between Breakfast Skipping and Socio- Demographic Characteristics

S.N.	Socio demographic Characteristics	Breakfast Skipping		χ2	p value	OR	95% CI
		Yes	No				
3.	**Grade**						
	IX	242(72.7)	91(27.3)	13.75	<0.001*	1.92	1.36-2.71
	X	150(58.1)	108(41.9)				
6.	**Birth Order**						
	Second /Last	271(69.3)	120(30.7)	4.60	0.032*	1.47	1.03-2.10
	1st	121(60.5)	79(39.5)				
11.	**Family Monthly Income**						
	Less than Rs. 10000	283(70.4)	119(29.6)	9.32	0.002*	1.75	1.22-2.50
	Rs 10,000 and above	109(57.7)	80(42.3)				

#Figures in parenthesis indicate percentage **statistically significant at p<0.05*

Table-IV indicates that the students of grade IX ($\chi2$= 13.75, p<0.001, OR= 1.92) were found significantly skipping their breakfast than grade X. Breakfast skipping was significantly associated with birth order ($\chi2$=4.6, p=0.032, OR=1.47). Likewise, students with family income less than Rs. 10,000 ($\chi2$=9.32, p=0.002, OR=1.75) were significantly skipping their breakfast than

ISSN: 2349-7637 (Online)

those with Rs. 10,000 and above. Other factors like age, religion, gender, residence, parents' education and occupation and pocket money received weren't significantly associated with breakfast skipping.

Table-V Association of Breakfast Skipping with Meals per Day

S.N.	Characteristics	Breakfast Skipping		χ2	p value	OR	95% CI
		Yes	No				
1.	**Meals per Day**						
	Less than 3 meals	146(82.5)	31(17.5)	29.536	<0.001	3.22	2.08-4.97
	3 and above	246(59.4)	168(40.6)				

#Figures in parenthesis indicate percentage **statisticallysignificant at p<0.05*

Table-V reveals that the adolescents having less than 3 meals per day (χ2=29.536, p value<0.001) were significantly 3.22 times more breakfast skippers than those who had 3 meals per day or more.

Table-VI Relationship between Breakfast Skipping and Nutritional Status

S.N.	Breakfast Skipping	Nutritional Status		r	p value
		Overweight/Obese	Underweight/Normal		
1.	Yes	40(10.2)	352(89.8)	0.10	0.018*
2.	No	9(4.5)	190(95.5)		

#Figures in parentheses indicate percentage **Correlation significant at p<0.05*

Table-VI reveals that breakfast skipping and nutritional status were significantly related (r=0.10, p value=0.018). Breakfast skippers were found significantly more overweight/obese than the non skippers.

IV. DISCUSSION

This study was conducted on 591 government senior secondary school IX and X adolescents selected by multistage sampling technique from 111 schools in Una District, Himachal Pradesh. The aim of the study was to assess the relationship of breakfast skipping and nutritional status on theses adolescents.

The study found overall 66.3 % breakfast skippers, out of which 31.1% skipped breakfast rarely, 22.7% occasionally and 12.5% respectively, as compare to 33.7 were no breakfast skippers. Similar studies conducted in Dhaka, Bangladesh in 2014,KaulaLumpur 2009, Greek 2003 found lower prevalence(nearly half) of breakfast skippers as compared to the present study which found 35.8%, 29.2 % and 29.4% respectively.10,11,12Another study in Kurukshetra, India in 2013 had also found slightly lower prevalence (41.25%) of breakfast skippers.9In contrast to this survey the one conducted in Kuala Lumpur in 2006 revealed 12.6% prevalence of breakfast skipping in adolescents.13These differences may be variation in time management, working parents, habit, economic status of family and attitude towards body &health and to look attractive. Another important factor can be media exposure to lose weight and achieve thin ideal body.

Regarding nutritional status, based on BMI for age, the study found that 59.1% adolescents had normal nutritional status followed by 32.7% underweight, 4.9 % overweight and 3.4 % obese. The study conducted in rural Wardha, India in 2006 found 53.8% underweight adolescents, this finding is higher than that of present study, whereas only 2.2% were overweight which is lower than the findings of present study.14 Another study conducted in Bhilai Nagar, Chhattisgarh in 2012 indicated very high magnitude of overweight (23.8%) and obesity (8.4%) as compared to the present study. The study highlighted that junk food, chocolate, eating in front of TV etc have remarkable effect on prevalence on overweight and obesity among low to high SES group.15

Students from grade IX were found significantly skipping their breakfast (χ2= 13.75, p<0.001, OR= 1.92) than grade X. Breakfast skipping was significantly associated with birth order (χ2=4.6, p=0.032, OR=1.47) in IX & X adolescents. Likewise, students with family income of less than Rs. 10,000 (χ2=9.32, p=0.002, OR=1.75) were significantly skipping their breakfast than those with Rs. 10,000 and above. These findings are supported by the study in Udupi district, Karnataka in 2014 which found that children of class ninth with lower socio economic status skipped their breakfast more as compared to the other groups.8This could be because of children, at this level of growth tend to become more conscious about their health, physique and way they look. The breakfast skipping was more in middle and last child in this study which may be related with more attention towards the first child by the family. Breakfast skipping was also more in children's with low family income this may lead to unavailability of food or they cannot afford eatables. Breakfast skipping and nutritional status were found to be significantly related (r=0.10, p value=0.018). Breakfast skippers were also found significantly more overweight/obese than the non skippers. Similar finding was reported by studies in Dhaka, Bangladesh in 2014 and Saudi Arabia in 2010.10 16

ISSN: 2349-7637 (Online)

V. CONCLUSION

According to the present study the prevalence of breakfast skipping was found high among the adolescents of government senior secondary schools of district Una. The adolescents who skipped breakfast were more overweight and obese than breakfast non skippers. Students of grade IX were found significantly skipping their breakfast than grade X. Birth order, meals per day and family income were significantly associated with breakfast skipping. Other socio-demographic factors weren't found significantly associated with breakfast skipping. Breakfast skipping affects a number of parameters of nutritional status.

The study has many limitations; the sample of this study was small viewing the large number of school adolescents, it was only limited to government schools and private school children were not included, therefore reasonable inference cannot be drawn, and the study utilized anthropometric measurement which might have some errors that have affected the results.

VI. RECOMMENDATIONS

This research can provide important impetus and baseline data for increasing school health promotion programmes. It will also help to evolve strategies to make parents and children aware regarding the importance of breakfast consuming. Various health programs should be organized by the government, NGOs, INGOs etc. for promoting eating habits focusing on intake of balanced nutritious contents in all the meals. Media can also be used for promoting health promotion and healthy lifestyle. Besides these, research studies should be enhanced in this important field.

VII. ACKNOWLEDGEMENTS

It is my great pleasure to acknowledge my sincere gratitude to the Department of Public Health and Hospital Administration, Akal College of Health and Allied Sciences for providing me a golden opportunity to conduct this thesis work. I express my deepest gratitude and appreciation to my Guide, Dr. HS Chauhan, Professor and Head, Department of Public Health and Hospital Administration for his regular inspirations, guidance and great scientific advices

I feel great pleasure to acknowledge all officers of District Education Office, Una for giving me permission. Sincere thanks and gratefulness goes to administration and teachers of senior secondary schools of Una district for consistent support and cooperation during data collection. I extend my cordial thanks to all the students of Grade IX and X who voluntarily participated in this study.

This work would never had accomplished and completed without the confidence, endurance and support of my parents and family members. They are always a source of my inspirations, encouragement, moral and financial support.

REFERENCES

1. World Health Organization. Adolescent development, 2016[cited 2016 Feb 25] Available from: http://www.who.int/maternal_child_adolescent/topics/adolescence/dev/en/.
2. United Nations Children's Fund (UNICEF). Progress on Children: A Report card on Adolescents. New York, USA: United Nations Children's Fund (UNICEF), 2012 Apr. 53 p. Report No.: 10.
3. United Nations Children's Fund (UNICEF). The State of World's Children 2011. New York, USA: United Nations Children's Fund (UNICEF), 2011 Feb.
4. Wall C, Ministry of Health, New Zealand. Ministry of Health. Food and Nutrition Guidelines for Healthy Adolescents: A background paper [Internet]. 1998[2016 Feb 26] Available from: http//www.moh.govt.nz.
5. European Food Information Council. Child and Adolescent Nutrition, 2016 [cited 2016 Mar 1] Available from: http://www.eufic.org/article/en/page/barchive/expid/basics-child-adolescent-nutrition/.
6. Sajjad A, Anwer MO, Anwer S, Zaidi SAA, Hasan A. Missing breakfast, sleep and exercise: are you skipping out years of life. J Nutr Health Sci. 2014; 1(3): 308.
7. Rampersaud GC, Pereira MA, Girard BL, Adams J, Metzl JD. Breakfast habits, nutritional status, body weight, and academic performance in children and adolescents. J Am Diet Assoc. 2005 May; 105 (5):743-60; quiz 761-2.
8. Garg M, Rajesh V, Kumar P. Effect of Breakfast Skipping on Nutritional Status and School Performance on 10-16 Years Old Children of Udupi District. Health and Population - Perspectives and Issues. 2014; 37 (3, 4):98-117.
9. Goel S, Kaur T, Gupta M. Increasing Proclivity for Junk Food among Overweight Adolescent Girls in District Kurukshetra India. Int Res J Bio Sci. 2013;2(3): 80-4.
10. Goon S, Islam MS. Breakfast Skipping and Obesity Risk among Urban Adults in Bangladesh. Int J Public Health Sci.2014; 3(1):15-22.
11. Moy FM, Johari S, Ismail Y, Mahad R, Tie FH,Wan Ismail WMA. Breakfast Skipping and Its Associated Factors among Undergraduates in a Public University in Kuala Lumpur. Mal J Nutr. 2009; 15(2): 165 -74.
12. Gikas A, Oriantafillidis JK, Perdikaki P. Breakfast skipping and its association with other unhealthy food habits among Greek high school adolescents. Ann Gastroenterology. 2003; 16(4):321-27.
13. Ming FM, Ying CG, Kassim MZS. Eating Patterns of School Children and Adolescents in Kuala Lumpur. Mal J Nutr. 2006;12(1): 1-10.

14. Deshmukh PR, Gupta SS, Bharambe MS, Dongre AR, Maliye C, Kaur S et al. Nutritional Status of Adolescents in Rural Wardha, India. Indian J Pediatr. 2006; 73:139-41.
15. Jain G, Dr Bharadwaj SK, Dr Abhaya, Joglekar R. To study the prevalence of overweight and obesity among school children (13-17yrs) in relation to their socioeconomic status and eating habits.*IJSRP*.2012;2(6):2250-3153.
16. Latifah M, Oboudi AL. Impact of Breakfast Eating Pattern on Nutritional Status, Glucose Level, Iron Status in Blood and Test Grades among Upper Primary School Girls in Riyadh ZZZCity, Saudi Arabia. Pak J Nutr. 2010; 9(2): 106-11.

ISSN: 2349-7637 (Online)