



(RESEARCH ARTICLE)



A study on breakfast consumption and skipping pattern among college students in Coimbatore

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Abstract

Background: Breakfast, an important meal in a day provides 1/3rd of the days' requirement. Beyond satisfying hunger, breakfast improves both the health and cognitive ability of individual. This study aimed at exploring the breakfast consumption pattern, prevalence of skipping breakfast, reasons for skipping and perceptions toward this meal. The study also aimed to find a solution to reduce the prevalence of breakfast skipping.

Methodology: A cross-sectional survey was conducted among 612 undergraduate students from four colleges comprising of 2 Engineering and 2 Arts and Science colleges in Coimbatore district, Tamil Nadu. The questionnaire included socio-demographic, perception about each meal, reasons for skipping breakfast and their preference towards breakfast choices.

Results: In a sample of 612 undergraduate students, 73 percent reported skipped any one of the meals, of which breakfast accounts to 66 percent. Though 59 per cent participants believed that breakfast is an essential meal contradictorily, they skip breakfast. Reasons for breakfast skipping were enlisted to be lack of time (37 per cent) followed by not feeling hungry, waking up late. About 86 per cent of the students showed a positive response towards the acceptance of Ready-To-Eat (RTE) breakfast due to lack of time in the morning. They expressed this kind of RTE will help them to consume breakfast regularly.

Conclusion: Creating awareness on importance of breakfast alone would not contribute to reduce breakfast skipping. As preferred by the participants, development of affordable and available RTE (on-the-go meals) convenient foods would help them to consume it regularly thereby enhancing the nutritional and health status of the college students.

Keywords: Breakfast; Breakfast skipping; Lack of time; Ready-To-Eat

1. Introduction

Young people are the precious human resources of every country. Individuals in the age group of 20 to 24 years are referred as young adults. The transition of young people from school to university has many health implications. Due to increased urbanization and various other factors, there is a drastic change in the dietary patterns of college students. Globally there has been an increased intake of energy dense foods that are high in fat, salt and sugars but low in vitamins and minerals. Arora *et al* [1] stated that daily breakfast consumers have nutritionally better quality of food selection in other meals too as compared to those who skip or never consume breakfast. Poor eating habits in earlier stage of life have been directly linked to serious health problems in later such as osteoporosis, obesity, hyperlipidemia and diabetes. They tend to skip breakfast which is considered as an important meal in a day providing 25 percent of the day's

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requirement. Lateef *et al* [2] pointed out that breakfast is crucial to all humans since it is the first meal of the day after overnight fasting and it is expected to be consumed after seven to eight hours of sleep. Omitting breakfast can cause deficiency of major and micronutrients which are required by the brain, with subsequent reduction in nutritional status and mental function [3, 4]. The consequences of poor nutritional status at the early stage of life may be so serious that it can result in young student's ability of concentration, attendance, academic achievements, depression, lack of self-esteem, unconsciousness, anxiety, poor cognition and immune system [5, 1] Bhuvaneshwari and Nazni [6] found that the consumption of regular breakfast has a good impact in improving both nutritional status and academic performance among the adolescents who are the future healthy citizens. The aim of this study is, to explore breakfast consumption in a representative sample of undergraduate students. The objectives are to understand the perception towards breakfast, the reasons of skipping breakfast and to identify the consumption pattern of Fruits, Vegetables and millets along with their preference towards On-The -Go meal.

2. Methodology

2.1. Selection of locale and sample

A cross section study with multistage stratified random sampling was carried out in Coimbatore among 650 college students studying second and third year (young adults) undergraduate programme in Engineering, Arts and Science Colleges, Coimbatore. Name list of colleges was obtained from the website of Bharathiar University and Anna University as they were the two major universities contributing to the Arts and Science stream and Engineering stream respectively. Multistage stratified random sampling was used. In the first stage, the four geographical divisions (North, South, West and East) of the Coimbatore district were treated as strata. In the second stage, using simple random sampling three colleges were drawn from each stratum. Based on the permission granted by the concern to conduct the study, one of the three was finalized. In the third stage, from the list of departments, selective departments were included randomly and about 150 students from each college were selected for the study. Totally 650 students from four colleges were participated in the study including two Engineering and two Arts and Science colleges.

2.2. Ethical Clearance

The study was approved by the Institutional Human Ethics Committee, PSG Institute of Medical Research and Institute (PSGIMSR), Coimbatore. (Approval number: 17/177). A formal permission was obtained from the concerned colleges in person describing the need and significance of the study, requesting permission to conduct study with students. The confidentiality and anonymity of the information and measurements were assured. They were also given the consent form along with the questionnaire to get the willingness to participate in the study.

2.3. Drafting of questionnaire and collection of data

A self-administered questionnaire was framed to assess the breakfast skipping pattern among college students. The questionnaire comprised of three sections. The first section covered basic demographic data such as age, sex, residence, family type, family size, department and college, monthly income second section gathered the information on meal pattern, frequency of millets, fruits and vegetable consumption while third section comprised of questions to understand the breakfast skipping pattern, frequency of breakfast skipping, reasons to skip breakfast, their preference towards ready to eat breakfast cereals. Initially, a pilot study was conducted to test the validity and reliability of the questionnaire among 50 participants. The pretested questionnaire was further reframed and used to collect necessary data. After collecting and consolidating the data of 612 study participants comprising of 301 Engineering students and 311 Arts and Science students.

3. Results and discussion

3.1. Demographic profile of the selected college students

Initially about 650 students were selected for the study from two Arts and Science and Engineering colleges at Coimbatore. Of which, only 612 students were willingly participated and provided consent to be participants for survey. Hence, 38 students were eliminated from the study. Among 612 students, 311 and 301 students were from Arts and Engineering stream respectively and aged from 18 – 22 years. Of the total study participants, 54 (n - 329) and 46 (n - 283) per cent of them were girls and boys respectively. Of the selected 612 students, 60 percent were between 18 – 19 years and the remaining 40 percent were between 20 – 22 years. Similarly, about 68 percent of the selected families followed nuclear family system which is similar to the study conducted among college going students in Karnataka by Yadav *et al* [7] which was 79 percent. 68 percent of the participants were day scholar and 62 percent of families have 2

– 4 members. About 50 percent of boys and 47 percent of girls belong to middle income group whereas of the total, 24 and 27 percent come from low (Rs.2101 – Rs.4500) and high (Rs.7501 & above) income group respectively.

Table 1 Demographic profile of the selected college students (N = 612)

Demographic profile of the study participants		Boys (283)		Girls (329)		Total (612)	
		No.	%	No	%	No.	%
Age	18	85	30	119	36	204	33
	19	75	27	89	27	164	27
	20	57	20	45	14	102	17
	21	39	14	43	13	82	13
	22	27	9	33	10	60	10
Family type	Joint	100	35	96	29	196	32
	Nuclear	183	65	233	71	416	68
Stay type	Day scholar	186	66	233	71	419	68
	Hosteller	97	34	96	29	193	32
Family size	2	3	2	7	2	10	2
	3	89	31	87	26	176	29
	4	78	28	110	33	188	31
	5	66	23	68	21	134	22
	6	39	14	44	13	83	14
	7	7	2	13	4	20	3
	8	1	0	0	0	1	0
Father occupation	Government job	65	23	84	26	149	24
	Private job	129	46	146	44	275	45
	Business	89	31	99	30	188	31
Mother occupation	Government job	41	14	35	11	76	12
	Private job	86	30	86	26	172	28
	SHG / Business	36	13	42	13	78	13
	Housewife	120	42	166	50	286	47
Monthly income	Low (2101 - 4500)	59	21	88	27	147	24
	Medium (4501 - 7500)	142	50	156	47	298	49
	High (7501 & above)	82	29	85	26	167	27

3.2. Breakfast Consumption and perception towards breakfast

The meal consumption pattern, importance and attitude towards breakfast, breakfast skipping pattern, frequency of skipping breakfast, reasons of skipping of breakfast and effect of skipping breakfast were collected using the questionnaire. Among 612 participants, 67 per cent of male students and 74 per cent of female students skipped their meals regularly. In which, 45 and 51 percent of male and female students respectively skipped their breakfast.

More than 50 per cent participants strongly agreed that breakfast is an important meal in a day and contradictorily, 45% of male and 51 % of female students skip their breakfast. Similarly, higher percentage (52 per cent) of Undergraduates in Ekiti State, Nigeria also skipped breakfast [8]. As suggested by Badrasawi [9] awareness of the importance of breakfast was not a significant contributor for skipping breakfast, compared to other structural and cultural factors.

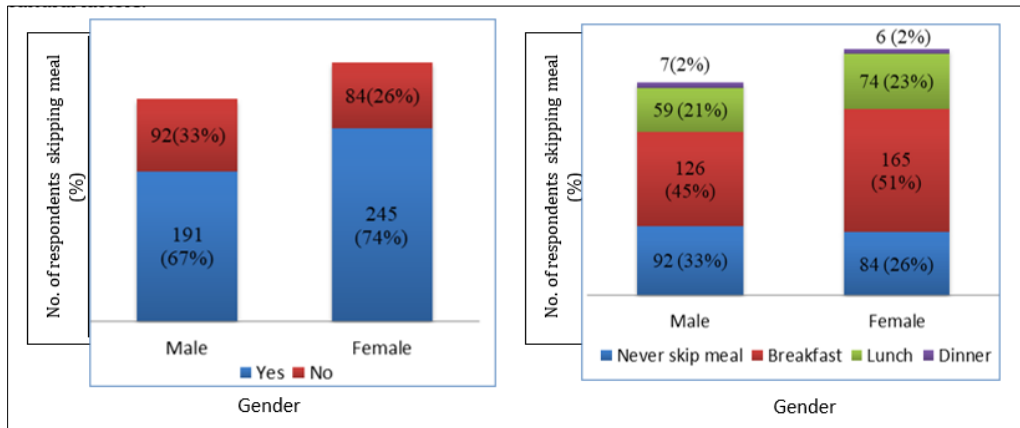


Figure 1 and 2 Meal skipping pattern and missed meals among college selected students

Table 2 Breakfast skipping pattern among selected participants

Breakfast skipping	Stream	Male		Female		Total		
		No.	%	No.	%	No.	%	
Yes	Arts	55	19	65	20	120	20	292 (48%)
	Engineering	85	30	87	27	172	28	
No	Arts	78	28	113	34	191	31	320 (52%)
	Engineering	65	23	64	19	129	21	
		283	100	329	100	612	100	

Table 3 Reasons for breakfast skipping

	Male n (%)	Female n (%)	Total n (%)
Lack of time	99 (35)	127 (39)	226 (37)
Not hungry	67 (24)	63 (19)	129 (21)
Not like food	14 (5)	26 (8)	43 (7)
Peer influence	23 (8)	29 (9)	49 (8)
Dieting	24 (9)	29 (9)	55 (9)
Food not available	11 (4)	9 (3)	18 (3)
Wake up late	45 (16)	46 (14)	92 (15)

Among 48 per cent of the breakfast skippers, 49 per cent skipped breakfast more than three days per week (often), 41 per cent were moderate breakfast skippers since they skip breakfast less than three days per week. 10 per cent of them skipped breakfast rarely (once a week). The reasons for skipping breakfast and effect of skipping breakfast among the

participants are presented in Table 3. Reasons for breakfast skipping were enlisted to be lack of time (37 per cent), not feeling hungry (21 per cent), waking up late (15 per cent) and remaining 27 per cent included other reason such as does not like the food, peer influence, dieting and foods not available. The results were in accordance with the finding of Moy *et al* [10] who identified that reasons for skipping breakfast was no time to eat (43.8 per cent), did not like to eat early (18.6 per cent), no appetite and overslept (9.5 per cent).

Around 24 and 21 per cent of the breakfast skippers felt sleepy and inactive respectively. About 15 to 18 per cent of the breakfast skippers stated that they experience depressed, difficulty in listening in classes and had headache. Only minimum per cent (7%) of them felt that they were normal even when they skip breakfast.

Table 4 Experience by study participants on breakfast skipping

	Male		Female		Total	
	No.	%	No.	%	No.	%
Sleepy	35	24	34	22	69	24
Inactive	28	20	34	22	62	21
Depressed	18	13	28	18	46	15
Headache	27	19	25	16	52	18
Difficulty in listening	26	19	20	13	46	16
Normal	7	5	12	8	19	7
	140	100	152	100	292	100

3.3. Consumption pattern of millets, fruits and vegetables among selected participants

Consumption of fruits and vegetables among the selected participants was found to be equal in both the gender. Majority of the respondents 41 and 44 percent rarely consume fruits and vegetables. Only 20 – 22 per cent of the students had included fruits and vegetables in their regular diet. The results are similar with study of Abiba *et al* [11] who stated that 20.4 percent of respondents take fruit every day, 27.6 percent take it three times in a week 25.5 percent take it four or more times in a week and 26.5 percent take it occasionally. Only 21 percent of the selected students consumed millets regularly, around 40 percent of the students had included millets rarely in their diet.

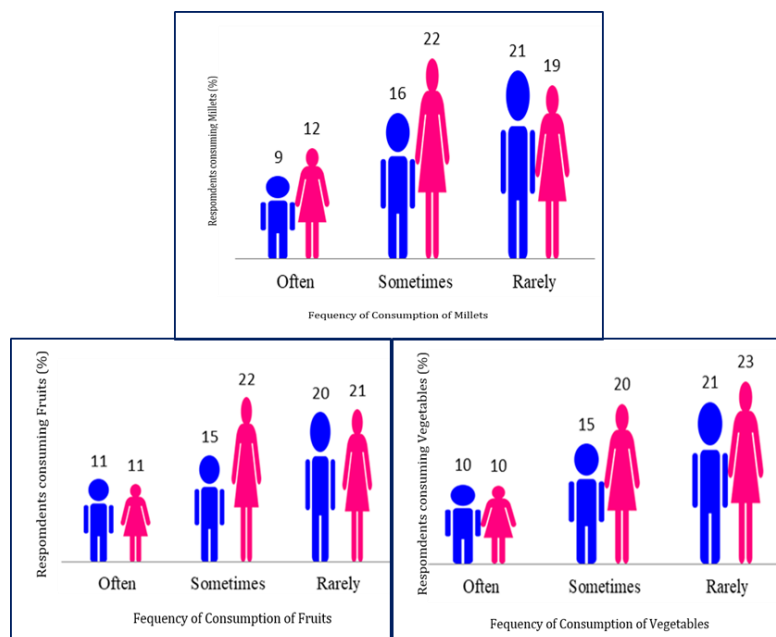


Figure 3, 4 and 5 Consumption of millets, fruits and vegetables

3.4. Preference towards RTE breakfast among the selected participants

McKevith and Jarzebowska [12] stated that role of breakfast cereals in a balanced diet has been recognized for many years. Ready to eat breakfast cereals are relatively inexpensive, nutrient-dense, and convenient foods which can be recommended to form part of a healthy balanced diet. Their regular consumption can ensure an adequate nutrient intake and may assist in reducing the risk of being overweight or developing CVD or diabetes [13]. About 86 per cent of the students showed a positive response towards the acceptance of RTE breakfast due to lack of time in the morning. They expressed this kind of RTE would help them to consume breakfast regularly.

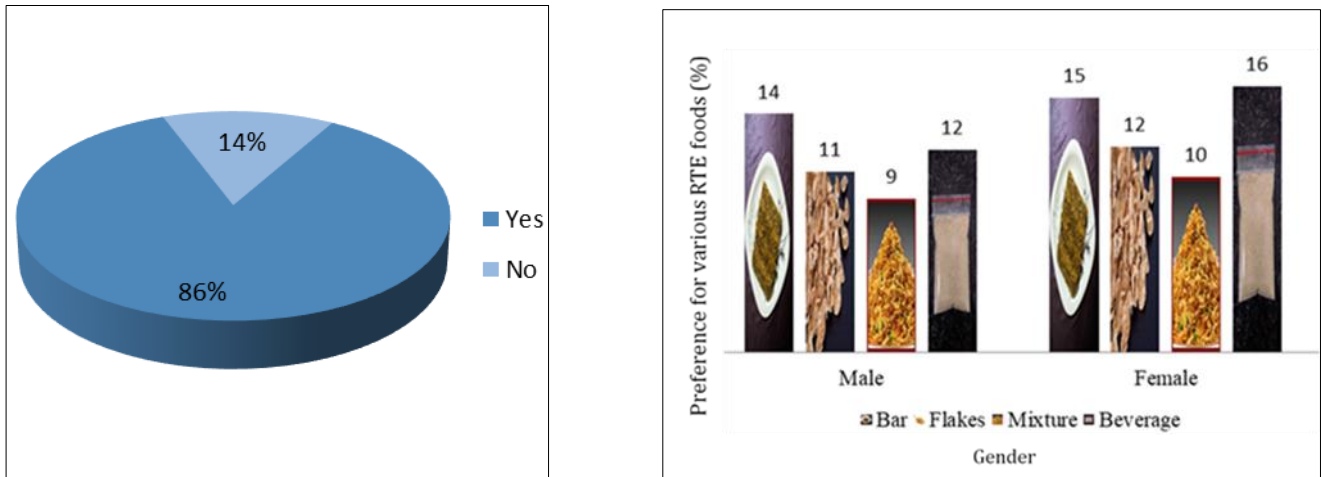


Figure 4 & 5 Preference for RTE by study participants

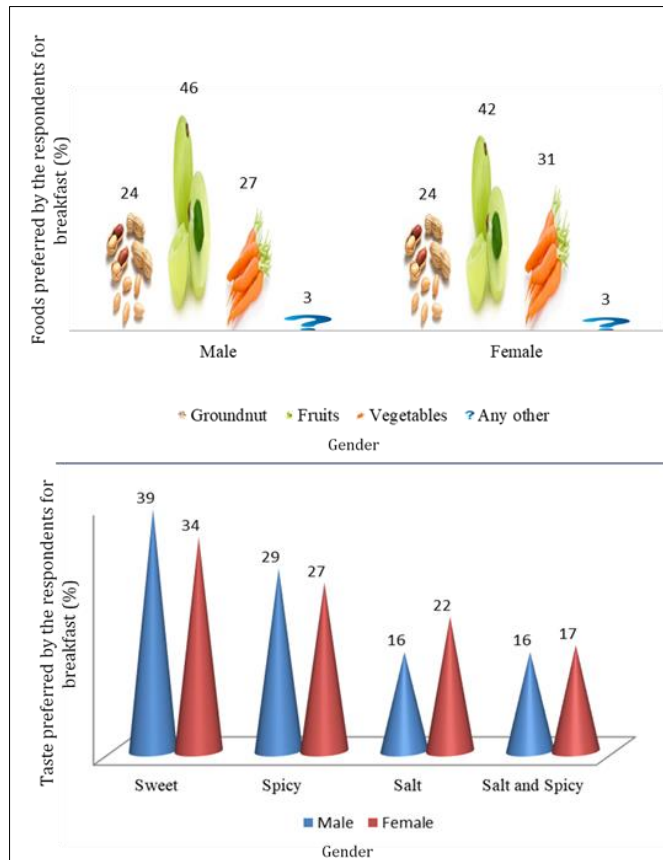


Figure 6 & 7 Taste preference for Breakfast by college students

According to Ferreira *et al* [14] the cereal bars can offer high concentrations of fibers, vitamins and minerals being a practical and convenient way to ingest nutrients considered essential for a good organic functioning and thus preventing and controlling certain pathologies such as obesity, cancer, diabetes, among others. Around 29 and 28 percent of the students were interested to take RTE in bar and health drink form which is convenient for them to consume even during travelling. However, 23 and 19 percent of the participants liked it in flakes or mixture form.

Apart from the regular cereals and pulses, other ingredients such as millets, groundnuts, amla and carrot when added to the product would be preferred by the selected college students. 24 per cent of both the genders preferred nuts in the breakfast bar. 42 and 46 per cent of girls and boys liked fruit in the breakfast bar. Among girls, 31 per cent of them preferred that a vegetable should also be a part of breakfast item compared to boys of 27 per cent. Preference of taste for the RTE breakfast was obtained through the questionnaire, 34 & 39 percent of the respondent's preferred sweet taste irrespective of the gender. The second option was spicy followed by salty and spicy.

4. Conclusion

The present research provides evidence that prevalence of breakfast skipping among college students in Coimbatore was around 48 percentage. Skipping breakfast leads to many health implications such as obesity, diabetes, cardiovascular problems in later stages of life. Effective measurement should be undertaken to improve their nutritional status and reduce the prevalence of breakfast skipping in order to prevent the metabolic consequences. Besides understanding the importance of breakfast, participants skip breakfast due to improper time management. Further, consumption pattern of fruits, vegetables and millets was not adequate. Instead of focusing on creating awareness on benefits of breakfast consumption, creating awareness on time management and to know their preference which satisfies their need is highly important. It is observed from the study that the college students prefer to consume more ready to Eat (RTE) Breakfast as **on-the-go** meal with variety of ingredients to provide the essential nutrients which contributes to physical and mental improvement of rising generations.

Compliance with ethical standards

Acknowledgments

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Disclosure of conflict of interest

The authors declare that there is no conflict of interest regarding the publication of this document.

Statement of ethical approval

The study was duly approved by Institutional Human Ethics Committee (IHEC), PSG Institute of Medical Sciences & Research (PSG IMS&R), Peelamedu, Coimbatore, Tamil Nadu, India. (Approval No. 17/177).

Statement of informed consent

Informed consent was obtained from all individual participants included in the study.

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