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Effect of Breakfast in Body Mass Index among College Going Students

J Godlin Jeneta
Student –First Year BDS
Saveetha Dental College

Dr. Preetha
(Physiology department)
Saveetha Dental College

Abstract:

Breakfast is considered as the important meal of the day. Some college going students skip breakfast thinking that it reduces BMI, but some studies shows that breakfast skipping increases BMI. Some other researches gives negative results. Therefore, we assessed the effect of breakfast skipping and Body Mass Index among college going students. A prospective randomised control study was conducted among a group of 80 college going students between age group of 17 – 25 years. Breakfast habit (consumed vs skipped), their exercising habit, socio economic status, health consciousness are obtained orally from the participants. Height and weight of the individuals are noted and BMI was calculated. 20% of the breakfast consumers were obese while 51% of the breakfast skippers were obese. 44.8% of the breakfast consumers were normal while 41.5% of the breakfast skippers were normal. The individuals who skip breakfast were observed to have comparatively more BMI than the breakfast consumers. The result of this study says that there is an association between breakfast and BMI.

INTRODUCTION:

Breakfast is regarded by many as "the most important meal of the day", because an adequate food intake at the beginning of the day helps to ensure they considered as the most important meal of the day. Some believe that breakfast omission results in weight loss[2]. Nowadays skipping breakfast becomes a trendy .People skip breakfast mainly for some reasons like lack of time and appetite, believing that skipping breakfast leads to weight loss and bored of same breakfast[3]. But instead Skipping breakfast results in increase in BMI[4]. A study suggests that "skipping breakfast may be an effective means to reduce daily energy intake"[5]. Breakfast skipping may lead to an up-regulation of appetite, possibly leading to weight gain over time and deleterious changes in risk factors for diabetes and cardiovascular disease[4].Breakfast skippers are found to have reduced recommended dietary allowances like Vitamin B6, Vitamin B12, Vitamin A, Calcium, Magnesium, Riboflavin, Zinc, Phosporous, Iron. Recent researches shows that skipping breakfast are disproportionately likely to have problems with metabolism, weight, and cardiac health[6,7]. Regular breakfast cereal consumers have healthier body weights but also tend to engage in healthier lifestyle behaviours than those who skip breakfast. Breakfast consumption, as with other meals, provides fuel for preferential oxidation of glucose. Children who regularly eat breakfast tend to have a lower BMI and are less likely to be overweight than those who eat breakfast less frequently[8]. The BMI is defined as the body mass divided by the square of the body height, and is universally expressed in units of kg/m2, resulting from mass in kilograms and height in meters. Commonly accepted BMI ranges are underweight: under 18.5, normal weight: 18.5 to 25, overweight: 25 to 30, obese: over 30[9,10]. The physical fitness of youth is influenced by many factor and one of those are BMI. BMI is a factor that significantly affects the physical fitness of children, adolescents, and adults[11]. Many studies were done to assess the BMI of breakfast skippers. The present study is done to compare the BMI of college going students between breakfast skippers and breakfast consumers.

MATERIALS AND METHODS:

A prospective randomised control study was conducted among a group of college going students to minimise selection bias. A group of around 80 college going students are selected (n=80) between the age group of 17 to 25, for this study. Of the selected participants 40 were male and 40 were female. In all participants height and weight were measured to obtain their BMI. They were observed whether they are breakfast skippers or consumers which is a main parameter. Parameters such as exercise , socioeconomic status and health consciousness of the individuals are also included. The informations were obtained by a questionnaire.

RESULTS:

Over a group of college going students only 36.3% were only the breakfast consumers and the remaining 63.8% were the breakfast skippers.

BREAKFAST CONSUMPTION

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	YES	29	36.3	36.3	36.3
	NO	51	63.8	63.8	100.0
	Total	80	100.0	100.0	

The participants who have BMI below 18.5 were considered as underweight, one with BMI between 18.5- 25 were considered as normal healthy individual and the participants who have BMI above 25 were considered to be an obese person. In this study 17.5% were underweight, 42.5% were normal and 40% were overweight.

BMI

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	UNDER WEIGHT	14	17.5	17.5	17.5
	NORMAL	34	42.5	42.5	60.0
	OVER WEIGHT	32	40.0	40.0	100.0
	Total	80	100.0	100.0	

Over the group of participants only 40% people were doing exercise which includes yoga, maintaining their body by going to gym, Zumba dance etc, while the remaining 60% of the participants were not involved in any kind of exercise.

EXCERSICE

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	YES	32	40.0	40.0	40.0
	NO	48	60.0	60.0	100.0
	Total	80	100.0	100.0	

40% of the population in the group of participants were upper class people and 32.5% and 27.5% population were middle and lower class people.

SOCIO ECONOMIC STATUS

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	HIGHER	32	40.0	40.0	40.0
	MIDDLE	26	32.5	32.5	72.5
	LOWER	22	27.5	27.5	100.0
	Total	80	100.0	100.0	

52.5% participants were conscious about their health whereas 47.5% were not.

.

HEALTH CONSIOUSNESS

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	YES	42	52.5	52.5	52.5
	NO	38	47.5	47.5	100.0
	Total	80	100.0	100.0	

BREAKFAST CONSUMPTION * BMI

Under Breakfast consuming participants 34.5% were underweight, 44.8% were normal and 20.7% were over weight. Under breakfast skippers 7.8% were under weight, 41.5% were normal and 51% were obese.

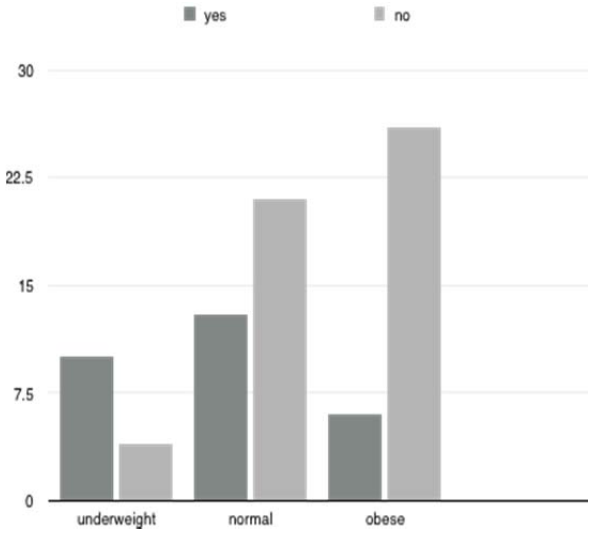
Crosstab

			BMI			
			UNDER WEIGHT	NORMAL	OVER WEIGHT	Total
BREAKFAST CONSUMPTION	YES	Count	10	13	6	29
		% within BREAKFAST CONSUMPTION	34.5%	44.8%	20.7%	100.0%
	NO	Count	4	21	26	51
		% within BREAKFAST CONSUMPTION	7.8%	41.2%	51.0%	100.0%
Total		Count	14	34	32	80
		% within BREAKFAST CONSUMPTION	17.5%	42.5%	40.0%	100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	11.796[a]	2	.003
Likelihood Ratio	11.904	2	.003
Linear-by-Linear Association	11.284	1	.001
N of Valid Cases	80		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 5.08.



SOCIO ECONOMIC STATUS * BMI

Socioeconomic also alters the BMI. The p-value is >0.05 which is statistically not significant.

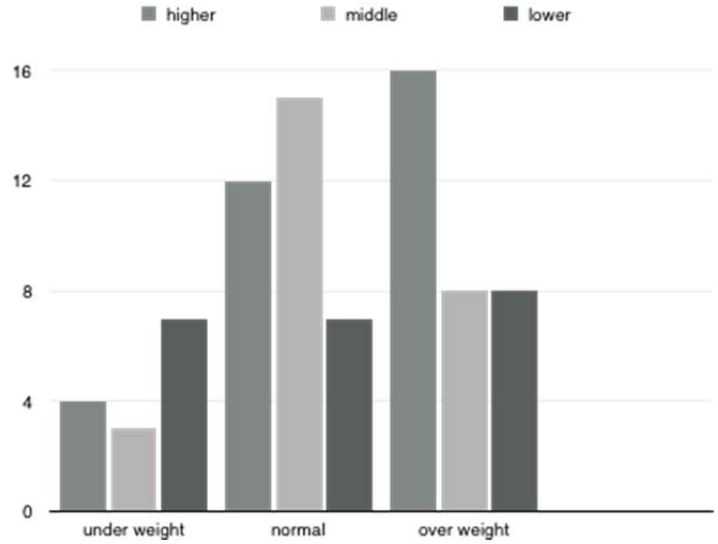
Crosstab

			BMI			
			UNDER WEIGHT	NORMAL	OVER WEIGHT	Total
SOCIO ECONOMIC STATUS	HIGHER	Count	4	12	16	32
		% within SOCIO ECONOMIC STATUS	12.5%	37.5%	50.0%	100.0%
	MIDDLE	Count	3	15	8	26
		% within SOCIO ECONOMIC STATUS	11.5%	57.7%	30.8%	100.0%
	LOWER	Count	7	7	8	22
		% within SOCIO ECONOMIC STATUS	31.8%	31.8%	36.4%	100.0%
Total		Count	14	34	32	80
		% within SOCIO ECONOMIC STATUS	17.5%	42.5%	40.0%	100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	7.180[a]	4	.127
Likelihood Ratio	6.709	4	.152
Linear-by-Linear Association	2.733	1	.098
N of Valid Cases	80		

a. 2 cells (22.2%) have expected count less than 5. The minimum expected count is 3.85.



SOCIO ECONOMIC STATUS * HEALTH CONSCIOUSNESS

The upper class people and the middle class people has more knowledge about health more than lower class people. The p-value is <0.05 which is statistically significant.

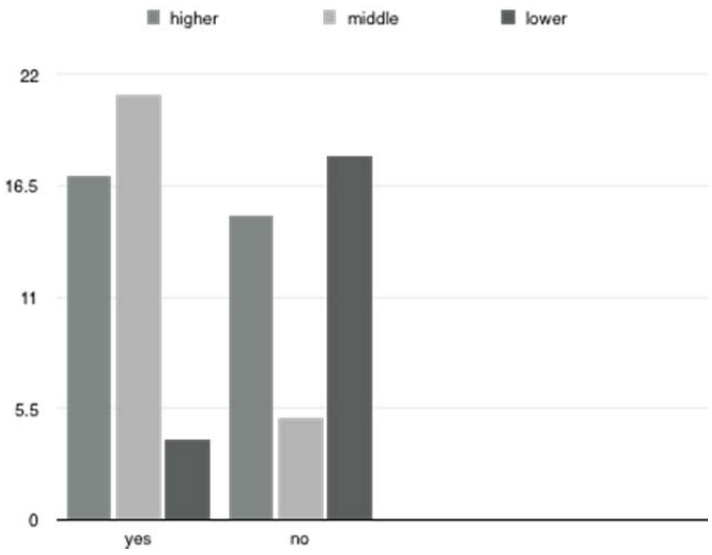
Crosstab

			HEALTH CONSIOUSNESS		
			YES	NO	Total
SOCIO ECONOMIC STATUS	HIGHER	Count	17	15	32
		% within SOCIO ECONOMIC STATUS	53.1%	46.9%	100.0%
	MIDDLE	Count	21	5	26
		% within SOCIO ECONOMIC STATUS	80.8%	19.2%	100.0%
	LOWER	Count	4	18	22
		% within SOCIO ECONOMIC STATUS	18.2%	81.8%	100.0%
Total		Count	42	38	80
		% within SOCIO ECONOMIC STATUS	52.5%	47.5%	100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	18.727[a]	2	.000
Likelihood Ratio	20.148	2	.000
Linear-by-Linear Association	4.509	1	.034
N of Valid Cases	80		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 10.45.



BMI * HEALTH CONSCIOUSNESS

There is no significance seen between the underweight and normal and overweight people and their knowledge about health.

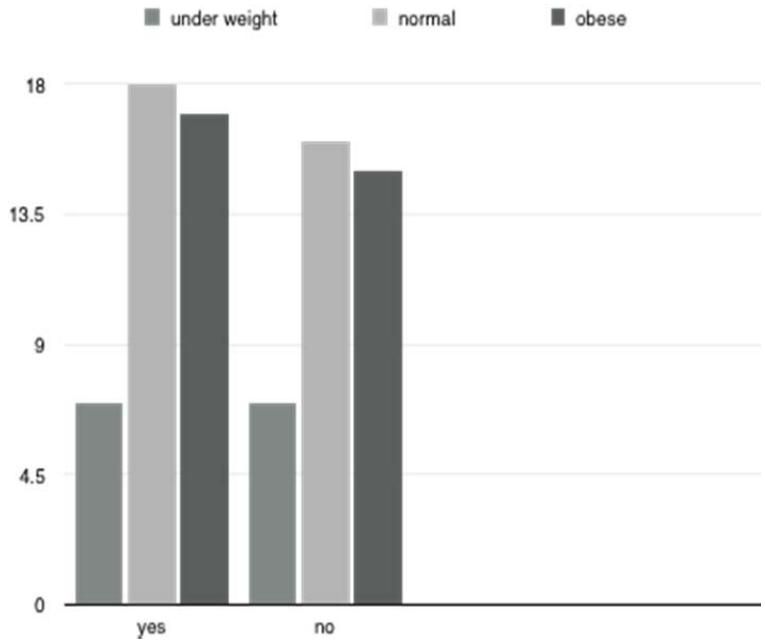
Crosstab

			HEALTH CONSIOUSNESS		
			YES	NO	Total
BMI	UNDER WEIGHT	Count	7	7	14
		% within BMI	50.0%	50.0%	100.0%
	NORMAL	Count	18	16	34
		% within BMI	52.9%	47.1%	100.0%
	OVER WEIGHT	Count	17	15	32
		% within BMI	53.1%	46.9%	100.0%
Total		Count	42	38	80
		% within BMI	52.5%	47.5%	100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	.043[a]	2	.979
Likelihood Ratio	.043	2	.979
Linear-by-Linear Association	.029	1	.866
N of Valid Cases	80		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 6.65.



BMI * BREAKFAST CONSUMPTION * EXCERSICE Crosstabulation

EXCERSICE				BREAKFAST CONSUMPTION YES	BREAKFAST CONSUMPTION NO	Total
YES	BMI	UNDER WEIGHT	Count	3	3	6
			% within BMI	50.0%	50.0%	100.0%
		NORMAL	Count	6	13	19
			% within BMI	31.6%	68.4%	100.0%
		OVER WEIGHT	Count	1	6	7
			% within BMI	14.3%	85.7%	100.0%
	Total		Count	10	22	32
			% within BMI	31.3%	68.8%	100.0%
NO	BMI	UNDER WEIGHT	Count	7	1	8
			% within BMI	87.5%	12.5%	100.0%
		NORMAL	Count	7	8	15
			% within BMI	46.7%	53.3%	100.0%
		OVER WEIGHT	Count	5	20	25
			% within BMI	20.0%	80.0%	100.0%
	Total		Count	19	29	48
			% within BMI	39.6%	60.4%	100.0%

Chi-Square Tests

EXCERSICE		Value	df	Asymp. Sig. (2-sided)
YES	Pearson Chi-Square	1.920[a]	2	.383
	Likelihood Ratio	1.991	2	.369
	Linear-by-Linear Association	1.859	1	.173
	N of Valid Cases	32		
NO	Pearson Chi-Square	12.004[b]	2	.002
	Likelihood Ratio	12.667	2	.002
	Linear-by-Linear Association	11.564	1	.001
	N of Valid Cases	48		

a. 4 cells (66.7%) have expected count less than 5. The minimum expected count is 1.88.

b. 2 cells (33.3%) have expected count less than 5. The minimum expected count is 3.17.

DISCUSSION::

On this study it is observed that 42% population had normal BMI and 40 % were obese. 20% of the breakfast consumers were obese while 51% of the breakfast skippers were obese. 44.8% of the breakfast consumers were normal while 41.5% of the breakfast skippers were normal. On observing the effect on consumption of breakfast, it was found that the prevalence of overweight and obesity was comparatively higher among the individuals who don't consume breakfast. And the individuals who do exercise regularly and those who are conscious about health have normal BMI.

This research showed that breakfast skippers comparatively have a higher mean BMI than the breakfast consumers. Similar findings have been reported in several other studies[2,4,12,13,14]. Skipping breakfast alone is not the reason for increase in BMI, intake of junk food is also included[15]. Although breakfast skippers results in increase in body mass index, many skip break fast just thinking that it reduces BMI[3]. Exercise and socio economic status are the parameters which also plays a role in this study.

Some limitation should be noted in this study. First is The sample space is less . Since the sample space is less there may be some alteration overall. How often they skip breakfast is not noted. All these were not observed directly, these are self-reported answers, which may be inaccurate. Junk food intake is not included too. Type of food they intake is not also included.

CONCLUSION:

The results of the present study says that, ,fast skipping leads to increase in BMI. Breakfast and exercise keeps the body fit. Breakfast is more important. Skipping breakfast leads to increase in body mass index. Efforts should be taken that every college going students should take breakfast every day. Everyone should have health consciousness.

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