

# Effect of Dietary Habits on Body Mass Index of the Selected Population in Tamil Nadu

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## Abstract

**Background:** Obesity remains to be a serious problem in all parts of the world and is not restricted to adults but also found in children, teenagers, and young adults. Consumption of snacks and junk foods high in fat and sugars constitutes a risk factor for obesity and cardiovascular diseases.

**Aim:** To study the influence of the dietary habits on the Body Mass Index of the selected population

**Methods:** About 1000 samples were selected using a stratified and simple random sampling technique. Height, weight, and BMI were measured for the subjects using appropriate methods.

An interview schedule was used to collect the details. Food frequency questionnaire and three-day dietary recall was used to collect the food consumption pattern. The obtained details were coded and subjected to statistical analysis. The required data were correlated.

**Results:** In the present study, BMI increases with an increased frequency of outside food consumption. BMI was higher among the vegetarian population compared to the mixed vegetarian diet and ova- vegetarian population. At the same time, underweight population (BMI less than 18.4kcal/m<sup>2</sup>) was less in the mixed diet population. Calorie-dense foods, namely packet foods, fried foods, noodles, parota, and chocolates, were consumed more by overweight participants, and it is highly significant at a 1% level.

**Conclusion:** Effective policies and programs are urgently required to reduce overweight and obesity. Consumption of wholegrains, vegetables, fruits, greens must be encouraged. The importance of antioxidants in the diet must be educated among the general public. Going back to traditional foods must be encouraged, such as ragi gruel, millets based food stuff, and fermented traditional recipes could be incorporated in the daily menu.

**Keywords:** Body mass index, Obesity, Overweight, Junk foods, Calories and Food craving

## Introduction

Individuals entering college are beginning to live independently (**Sam Abraham, 2018**). As they start college life, their regular life style in middle and high school levels changes to free life style, and as they escape from parent's control, they get outdoor activity and easily get irregular eating habit because of irregular class schedule and increased free time (**JeeHee Kim, 2016**). Following the transition to university from secondary school, where there occurs a significant increase in independency, students are faced with the challenge of making healthy food choices (**Tom Deliens, 2014**). Students' physical activity and eating habits usually shape or change during these years (**Sam Abraham, 2018**).

It is reported that college students at this period rather hardly recognize the importance of nutrition intake, and have never established value about eating habits, so they are appeared to have inappropriate eating habits because of the irregular meal, frequent meal skip, overeating, over drink and smoking, and overmuch interest in their appearance (**JeeHee Kim, 2016**).

Students are also influenced by taste preferences, time, convenience, social networks, including friends and peers. Their immediate environment, including availability, access, prices of foods, and the macro environment such as media and advertisements also influence the eating habits (**Tom Deliens, 2014**). This resulted in increased consumption of fast food, snacks, and meat with significantly reduced intake of fruits, vegetables, and whole wheat cereal products. Furthermore, a high prevalence of other detrimental habits, including smoking, consumption of excess levels of alcohol, and physical inactivity, have been reported (**Charikleia Kyrkou, 2018**).

Adequate and balanced nourishment is vital for upholding health and quality of life (**Memis, 2010**). However, students tend to choose fast food due to their palatability, availability, and convenience. Their dietary behavior is characterized by skipping meals, consuming unconventional meals, fast foods, and frequent “snacking.” Overall, their eating patterns are frequently erratic, and often these eating practices of young people contribute to obesity, eating disorders and increase the risk for several important chronic diseases later in life (**Kalaivani Ashok, 2016**).

### Primary Objectives

To the main objective of the research is to study the influence of dietary habits on Body Mass Index of the selected population.

### Secondary Objectives

To study the eating habits, food craving on Body Mass Index.

### Review of Literature

Obesity can be noted as the initial wave of a defined group of non-communicable diseases called “**New World Syndrome**,” generating a huge socioeconomic and public health burden in low and middle-income countries (**Dhanuraja, 2017**). Obesity is often expressed in terms of BMI is a measure of weight adjusted for height. Though several techniques are available to evaluate body fat, the variables for BMI are simple to measure. The value of BMI has been identified to be closely correlated with body fat in adults and children. Waist

circumference and waist-to-hip ratio are common adjuvant measures for classification of body fat distribution in people who are overweight since obesity-related complications are closely related to abdominal fat distribution.

Obesity remains to be a serious problem in all parts of the world and is not restricted to adults but also found in children, teenagers, and young adults. Body Mass Index is a simple index calculated using weight-to-height values and used to classify underweight, overweight, and obese individuals. BMI values are age-independent and same for both sexes. The most crucial time of life when obesity can develop easily is college years. Obesity can arise in the early years due to irregularity in diet, lack of exercise, and addiction. The young students who live away from home in hostels are more prone to have an unhealthy lifestyle. An unhealthy diet and a sedentary lifestyle at younger ages are the two major risk factors associated with raised levels of blood pressure, blood glucose, abnormal blood lipids, and major chronic diseases, including ischemic heart disease, cancer and diabetes (**Ravi Shekar, 2016**).

The World Health Organization (WHO) reported that nutrition-related diseases account for about 60% of all deaths as well as 43% of the global disease burden. By 2020, the impact of nutrition-related non-communicable diseases is expected to rise to 73% of all deaths, 60% of the global burden of diseases. As per the WHO, the conditions that promote unhealthy eating practices among individuals include a lack of adequate health and nutritional knowledge, and the acquisition of misinformation about health and nutrition matters (**Eza, 2017**).

Many researchers documented various poor eating habits among college groups in many recent studies. (**Brown et al. 2014**) conducted an experiment in which they implemented interventions on vending machine sales on a university campus. Many college students tended to choose quick and tasty options, which were usually available through vending machines. Some students develop poor eating habits and tend to select food according to convenience, taste, time, and price available to them, rather than their nutritional values. Establishing good eating habits during this time is critical. Because these behaviors often continue through adulthood and can

be very difficult to change once they are established. Brown et al. also stated, “overweight college students have a high possibility of becoming overweight adults and are at a higher risk for diet-related chronic diseases including diseases of the heart, type 2 diabetes, cancers as well as hypertension”.

It has been reported that the consumption of snacks and junk foods high in fat and sugars constitutes a risk factor for obesity and cardiovascular diseases. With the increasing number of fast-food ‘joints’ on campuses and a high frequency of undergraduates ‘eating out’ which increases the risk of non-communicable diseases. A survey of undergraduates in Ogun State South-West Nigeria revealed that over 70% consumed snacks regularly. Students opted for junk food because of their busy schedule, which leads to obesity and an increased threat of coronary heart diseases.

A study by (Chin 2009) reported that only 4.7% of respondents of the study frequently visit fast-food restaurants. However, in contrast, (Moy et al., 2009) reported 60-70% of primary school students to frequent fast foods. Also, the study conducted by (Kurubaran 2012) found a majority of respondents (73.5%) to have high frequencies (at least twice a week or more) of fast food consumption. A higher intake of sweets and snacks was used as an index of “unhealthy dietary habits.”

### Methodology

Adopting stratified and simple random sampling, 1000 college students in the age group of 19-22 years were selected from Chennai city, Capital of the southern state Tamilnadu, India. Ethical clearance was obtained to conduct the study, permission from college authorities, and consent from students to participate in the study was also obtained. After all these preliminary procedures, research was commenced. Height, weight, and BMI of the study population was obtained using appropriate techniques.

### Height

To measure the height, the subjects were asked to stand on a platform affixed to a vertical stand with a movable headpiece attached at right angles to the vertical surface. The students were made to

stand erect with feet flat on the floors, legs as well as back straight and arms at the sides. The subjects’ shoulder, back, buttocks, and feet should touch the surface of the measuring device. Height was recorded in centimeters (cm). Height should be read to the nearest 0.5 cm.

### Weight

In the present study, the weight of subjects was assessed using a bathroom scale. The zero error of the weighing scale was checked before taking every measurement and corrected as when required. The subject is asked to stand barefoot and to look straight with arms at the sides in a relaxed position. Body weight was recorded in kilograms.

### Body Mass Index (BMI)

BMI is used to assess both forms of malnutrition (over-nutrition and under-nutrition). The ratio of weight in terms of kilograms to height in meter squared is referred to as Body Mass Index. It is also called the Quetelet Index (Antia, 1997). The weight and height already measured by the investigator are used to calculate the BMI of the subjects. In the present study, BMI categorization for Asians given by WHO is used. BMI is calculated using the following formulae:

$$\text{BMI} = \frac{\text{Weight (kg)}}{\text{Height (m}^2\text{)}}$$

The interview schedule was used to collect the background details and eating habits of the participants. A food frequency questionnaire was used to collect the intake pattern of the subjects. The Food Frequency Questionnaire (FFQ) is a retrospective review of intake frequency, that is, food consumed per day, per week, and per month. The FFQ is an advanced form of the checklist in dietary history method and asks respondents how often and how much food they ate over a specific period. Presenting about 100 to 150 foods, the food frequency questionnaire takes 20-30 minutes to complete and can self-administered or collected via interview. This method enables the assessment of long-term dietary intakes in a relatively simple, cost-effective, and time-efficient manner.

The Nutrient intake is assessed using a three-day dietary record. Measuring cups were exhibited to the participants by the researcher. This helps the participants to mention the exact amount of the food consumed by them, and participants were recorded each food they consumed (with the amount) in 24 hours and returned the schedule to the researcher. The three-day dietary record method was used to record the daily eating pattern, which includes the type and the amount of food chosen for each meal. The food consumed for three consecutive days were recorded by the subjects. Food intake data were converted into raw amounts in terms of food groups, and turn were

translated into energy, protein, fat, carbohydrate, and fiber using food composition tables (Gopalan, 2002). The nutrient intakes of the subjects were computed against Recommended Dietary Allowance (RDA) for ensuring the appropriateness of intake derived based on RDA. The data were tabulated and subjected to appropriate statistical analysis.

After collecting the required details, data are coded in excel and subjected to statistical analysis using SPSS Version 20.0. Food frequency data and waist circumference data were correlated, and the results were interpreted.

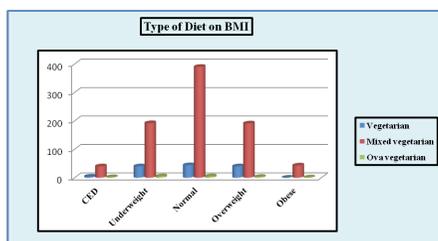
## Results and Discussion

**Table 1: Type of diet on BMI**

Type of diet	BMI Categorization						Chi-Square level	P value
	CED	Underweight	Normal	Overweight	Obese	Total		
Vegetarian	4	40	44	40	0	128	21.988	0.015*
	(3.1)	(31.3)	(34.4)	(31.3)	(0)	(100)		
	[8.7]	[16.9]	[10]	[34.2]	[0]	[12.8]		
Mixed vegetarian	40	192	390	191	43	856		
	(4.7)	(22.4)	(45.6)	(22.3)	(5)	(100)		
	[87]	[81]	[88.8]	[85.2]	[97.7]	[85.6]		
Ova-vegetarian	2	5	5	3	1	16		
	(12.5)	(31.3)	(31.3)	(18.8)	(6.3)	(100)		
	[4.3]	[2.1]	[1.1]	[1.3]	[2.3]	[1.6]		
Total	46	237	439	234	44	1000		
	(4.6)	(23.7)	(43.9)	(23.4)	(4.4)	(100)		
	[100]	[100]	[100]	[100]	[100]	[100]		

**Note:** Values within ( ) denote row percentage; Values within [ ] denote column percentage; \* denote 5% level significance

**Figure 1**



In the present study, BMI was higher among the vegetarian population when compared to the mixed vegetarian diet and ova-vegetarian population. At the same time, underweight population (BMI less than 18.4kcal/m<sup>2</sup>) was less in the mixed diet population, followed by vegetarians, and more ova vegetarians

falls in the underweight category. It is interesting to note that a higher number of normal BMI was found in the mixed group (45.6%) followed by vegetarians (34.4%) and ova vegetarian (31.3%). It is also surprising to note that none of the vegetarians were obese.

A study conducted by (Kanimozhy et al. 2014) showed that the ratio of overweight was much higher in the non-vegetarian (13.5%) when compared to vegetarians (10.2%). Another study conducted by (Baseer et al. 2015) showed vegetarians had lesser BMI than those who were taking a mixed diet, and this was statistically significant.

**Table 2: Effect of Frequency of outside food consumption on BMI**

	BMI Categorization						Chi-square level	P value
	CED	Underweight	Normal	Overweight	Obese	Total		
Daily	11	23	45	64	17	160	131.267	<0.001**
	(6.9)	(14.4)	(28.1)	(40)	(10.6)	(100)		
	[23.9]	[9.7]	[10.3]	[27.3]	[38.6]	[16]		
4 to 6 times / week	6	42	103	78	6	235		
	(2.6)	(17.9)	(43.8)	(33.2)	(2.6)	(100)		
	[13]	[17.7]	[23.5]	[33.3]	[13.6]	[23.5]		
1-3 times / week	21	132	179	57	16	405		
	(5.2)	(32.6)	(44.2)	(14.1)	(4)	(100)		
	[45]	[55.7]	[40.8]	[24.3]	[36.4]	[40.5]		
Rarely	8	33	89	28	2	160		
	(5)	(20.6)	(55.6)	(17.5)	(5.6)	(100)		
	[17.4]	[13.9]	[20.3]	[11.9]	[4.5]	[16]		
Never	0	7	23	7	7	40		
	(0)	(17.5)	(57.5)	(17.5)	(17.5)	(100)		
	[0]	[3]	[5.2]	[6]	[6]	[4]		
Total	46	237	439	234	4	1000		
	(4.6)	(23.7)	(43.9)	(23.4)	(4.4)	(100)		
	[100]	[100]	[100]	[100]	[100]	[100]		

**Note:** Values within () denote row percentage; Values within [] denote column percentage; \*\* denote 1% level significance

It is apparent from the above table that BMI increases with the increased frequency of outside food consumption. Outside foods are loaded with excess oil, sugars, and sodium. Among 160 participants who consumed outside food daily, about 50.6% were overweight, 28% had normal BMI, and only 21.3% were in lower BMI. Whereas when the BMI was compared with the participants who do not consume outside foods, only 25% were overweight, which is 50% less than the daily outside food consumers.

**Table 3: Energy-dense Food consumption on BMI**

Food frequency	Correlation coefficient	P value
Maida	0.550	<0.001**
Root vegetables	0.503	<0.001**
Traditional fried foods	0.580	<0.001**
Packet fried foods	0.515	<0.001**
Vanaspathi	0.431	<0.001**
Chocolates	0.535	<0.001**
Carbonated beverages	0.390	<0.001**

Chat items	0.552	<0.001**
Noodles	0.565	<0.001**
Parota	0.482	<0.001**

**Note:** \*\* denote 1% level significance

Maida is a refined wheat flour from which fiber has been eliminated and loaded with simple carbohydrates. It is also deficient in B Complex vitamins. It is evident from the above table that increased frequency of maida intake aggravates the risk of overweight and obesity with the correlation coefficient value of 0.550 and statistically significant ( $p < 0.001$ ). Multiple regression analysis conducted by (Ann M. Albertson 2016) showed a significant, inverse relationship between BMI and waist circumference concerning whole grains in both children and adults.

Root vegetables such as potato, yam, and colocasia are widely consumed by the college-age population. Generally, root vegetables are deeply fried for better taste. The minimal fiber in the root vegetable and increased amount of oil used in root vegetables resulted in elevated BMI. It is statistically

significant, with the correlation coefficient value of 0.503. There was a significant or inverse correlation between fruits and vegetable intake with body weight and BMI among female university students (Reihanesh et al., 2012).

Both the traditional fried foods such as bajji, bonda, samosa, vada, poori, and packet fried foods (branded items) are high energy carrying staples. They are loaded with calories, fat, and carbohydrates. Packet fried foods also contain trans fatty acids and excess sodium. Consumption of traditional and packet fried foods increases calories, thereby resulting in overweight or obesity in our study; this is statically significant ( $p < 0.001$ ) with the correlation coefficient of 563.825 and 767.884, respectively.

Vanaspathi is hydrogenated fat, where the unsaturated fatty acids are converted to saturated fatty acids by replacing hydrogen. It is a source of trans fatty acids. Vanaspathi increases BMI and blood cholesterol levels. The wider range of population use vanaspathi in our study because it is an inexpensive source of fat used for cooking. In the current study, vanaspathi intake was found to be positively associated with overweight with a coefficient value of 0.431.

The sugar and fat present in the chocolates contribute calories and get accumulated as fat and increases the BMI. In the current study, girls are more fond of chocolates than the male population. Chocolate intake also raises the BMI in the present study with the correlation coefficient value of 0.535. A prospective study yielded a significant dose-response association between chocolate intake and BMI over time, but their cross-sectional analysis found an inverse association between chocolate intake and BMI (Greenberg, 2013).

In the present study, carbonated beverages intake is positively correlated with a higher BMI ( $p < 0.001$ ) with a correlation coefficient value of

0.390. Carbonated beverages are loaded with empty calories, which become the culprit to increase BMI. It is also consumed more by male participants than the female counterparts. Numerous studies have pointed out the role of soft drinks in weight gain (Basu et al., 2016). The reason for weight gain would be the high sugar content of the beverages, low satiety, and inadequate compensation for total energy. A study indicated that Waist circumference and BMI were positively correlated with sugar-sweetened carbonated beverages intake in boys and not in girls. Carbonated beverages consumption is positively associated with poor dietary choices in both males and females (Kate et al., 2010).

Maida based noodles are found to be loaded with preservatives and are a rich source of empty calories ripped of all nutrition. Excessive consumption may lead to obesity. It is very clear from the above table that the incidence of overweight and obesity is more among the students who consume noodles daily. The correlation coefficient is found to be 0.565.

The chat items consumption is more prevalent among the participants of our study. Chats items intake influences elevated BMI with the correlation coefficient value of 0.552. The absence of fiber content in maida is seen as a major negative factor in parota. It is also aggravated due to side dish used for parota. The correlation coefficient value is 0.482 and statistically significant ( $p < 0.001$ ). A Saudi-based study observed that overweight and obesity were prevalent among those participants whose junk food intake was higher (Mohamad Nidal Khabaz et al., 2017). A significant relation between obesity/overweight and consumption of junk foods showed that the prevalence of obesity was at 15.2% and overweight was 21.8%. The increased prevalence could be credited to their increased junk food consumption (Gopalakrishnan et al., 2012).

**Table 4: Food Craving on BMI**

Craving for sweets	BMI Categorization						Chi-square level	P value
	CED	Underweight	Normal	Overweight	Obese	Total		
Yes	35	171	262	172	29	669		
	(5.2)	(25.6)	(39.2)	(25.7)	(4.3)	(100)		
	[76.1]	[72.2]	[59.7]	[73.5]	[65.9]	[66.9]		

No	11	66	177	62	15	331	25.918	<0.001**
	(3.3)	(19.9)	(53.5)	(18.7)	(4.5)	(100)		
	[23.9]	[27.8]	[40.3]	[26.4]	[34.1]	[33.1]		
Total	46	237	439	234	44	1000		
	(4.6)	(23.7)	(43.9)	(23.4)	(4.4)	(100)		
	[100]	[100]	[100]	[100]	[100]	[100]		

**Note:** Values within ( ) denote row percentage; Values within [ ] denote column percentage; \*\* denote 1% level significance

Food craving is believed to be an important factor in calorie consumption with over consumption leading to weight gain. In the present study, about 278 participants reported being overweight. Among them, 201 (72%) overweight participants reported craving for chocolates and sweets, which shows craving has an influence on obesity in the present study. Cross-sectional studies have also demonstrated positive relations between increased levels of cravings and BMI (Abiles, 2010 and Chao, 2014).

### Conclusion

India faces both forms of Malnutrition. Malnutrition can say to have two sides of a coin with under-nutrition and over-nutrition. Weight is an important indicator of acute malnutrition (both under-nutrition and over-nutrition). BMI reflects the changes in weight. Increased weight and BMI (overweight) are associated with the risk of non-communicable diseases such as diabetes, hypertension and heart diseases, and few types of cancer.

**Table 5: Effect of Macro nutrients on BMI**

Nutrients	Correlation coefficient	P value
Energy	0.557	<0.001**
Protein	0.370	<0.001**
Fat	0.430	<0.001**
Carbohydrates	0.528	<0.001**
Fiber	0.008	<0.001**

**Note:** \*\* denote 1% level significance

Macro nutrients, namely protein, fat, and carbohydrates provide energy. Our study also interprets the positive association ( $p < 0.001$ ) of high carbohydrate, fat, and protein intake resulting in increased calories and thereby leads to higher BMI levels. The correlation coefficient values were found to be 0.370 for protein, 0.430 for fat, 0.557 for energy, and 0.528 for carbohydrates. The fiber intake showed an inverse relationship with BMI, with the correlation coefficient value of 0.008 and not statistically significant.

Several studies investigating the relationship among BMI, Waist circumference, and skin fold thickness with energy intake have suggested that the macronutrient composition of the diet (protein, fat, and carbohydrate) may play an important contributing role to obesity in childhood and adults (Gills et al., 2002).

In the present study, BMI increases with the increased frequency of outside food consumption. BMI was higher among the vegetarian population compared to the mixed vegetarian diet and ova-vegetarian population. At the same time, the underweight population (BMI less than 18.4kcal/m<sup>2</sup>) was less in the mixed diet population. Calorie-dense foods, namely packet foods, fried foods, noodles, parota, and chocolates, were consumed more by overweight participants, and it is highly significant at a 1% level.

Effective policies and programs are urgently required to reduce overweight and obesity. Nutrition professionals should take up the role, and spread the awareness in the general public and give them better guidance. A well-balanced diet, periodic physical activity, sufficient sleep, with good life style habits help in sound mind and healthy body leading to a happy life. Consumption of energy dense food like packet foods, carbonated beverages, bakery products, processed foods must be completely avoided by the population. Consumption of wholegrains, vegetables, fruits, greens must be encouraged. The importance of antioxidants in the diet must be educated among the general public. Going back to traditional foods must be encouraged, such as ragi gruel, millets based food stuff, and fermented traditional recipes could be incorporated in the daily menu.

### Limitations of the Study

- Only Tamilnadu is chosen for the study
- The sample size is minimum

### Recommendation for Future Research

- Other Metropolitan cities in India could be covered
- More number of nutritional parameters could be studied
- The study could be carried out on School children and adults of other age groups

### References

- Abiles, V. et al. "Psychological Characteristics of Morbidly Obese Candidates for Bariatric surgery." *Obesity Surgery*, vol. 20, no. 2, 2010, pp. 161-167.
- Abraham, Sam, et al. "College Students Eating Habits and Knowledge of Nutritional Requirements." *Journal of Nutrition and Human Health*, vol. 2, no. 1, 2018, pp. 13-17.
- Albertson, Ann M, et al. "Whole Gram Consumption Trends and Association with Body Weight Measure in the U.S: Results of Cross-Sectional National Health and Nutrition Examination Survey 2001-2012." *Nutrition Journal*, vol. 15, 2016.
- Antia, F.P. and Phillip Abraham. *Clinical Dietetics and Nutrition*. Oxford University Press, 1997.
- Baseer, Md, et al. "Dietary Habits and Lifestyle among Pre-University College Students in Raichur, India." *International Journal of Research in Health Sciences*, vol. 3, no. 3, 2015, pp. 407-411.
- Basu, M. et al. "Patterns and Determinants of Overweight and Obesity among Medical Students of Kolkatta." *International Journal of Pharmaceutical Sciences and Research*, vol. 7, no. 1, 2016, pp. 377-386.
- Brown, M. et al. "The Effects of a Nutrition Education Intervention on Handing Machine Sales on a University Campus." *Journal of American College Health*, vol. 62, no. 7, 2014, pp. 512-516.
- Chao, A. et al. "Food Cravings, Food Intake and Weight Status in a Community-Based Sample." *Eating Behaviors*, vol. 15, no. 3, 2014, pp. 478-482.
- Chin, Y.S. and M.T. Mohd Nasir. "Eating Behaviors Among Female Adolescents in Kuantan District, Pahang, Malaysia." *Pakistan Journal of Nutrition*, vol. 8, no. 4, 2009, pp. 425-432.
- Collison, Kate S. et al. "Sugar-Sweetened Carbonated Beverages Consumption Correlates with BMI, Waist Circumference and Poor Dietary Chollers in School Children." *BMC Public Health*, vol. 10, 2010.
- Deliens, T. et al. "Determinants of Eating Behavior in University Students; A Qualitative Study Using Four Group Discussion." *BMC Public Health*, vol. 14, no. 53, 2014.
- Dhanuraja, V. et al. "A Study on Prevalence and Determinants of Overweight/Obesity among Medical College Students in Kancheepuram District." *National Journal of Research in Community Medicine*, vol. 6, no. 1, 2017, pp. 33-36.
- Eze, Ngozi, et al. "Awareness of Food Nutritive Value and Eating Practices among Nigerian Bank Workers: Implications of Nutrition Counseling and Education." *Medicine*, vol. 96, no. 10, 2017.
- Ganasegaran, Kurubaran, et al. "Social and Psychological Factors Affecting Eating Habits among University Students in Malaysian Medical School: A Cross-Sectional Study." *Nutrition Journal*, vol. 11, no. 48, 2012.
- Ghalaeh, Reihaneh Seyed, et al. "Fruit and Vegetable Intake, Body Mass Index and Waist Circumference among Young Female Students in Isfahan." *Journal of education and health promotion*, vol. 1, no. 29, 2012.
- Gills, L.J. et al. "Relationship between Juvenile Obesity, Dietary Energy, and Fat Intake and Activity." *International Journal of Obesity*, vol. 26, no. 4, 2002, pp. 458-463.
- Gopalakrishnan, S. et al. "Prevalence of Overweight/ Obesity among Medical Students, Malaysia", *The Medical Journal of Malaysia*, vol. 67, no. 4, 2012, pp. 442-444.
- Gopalan, C. et al. *Nutritive Value of Indian Foods*. National Institute of Nutrition, 2002.

- Greenberg, James A. and B. Buijsse. "Habitual Chocolate Consumption May Increase Body Weight in a Dose-Response Manner." *Plos One*, vol. 8, no. 8, 2013.
- Kalaivani Ashok, C. and S. Karunanidhi. "Prevalence of Overweight and Obesity among Young Female College Students in Chennai City." *Journal of Obesity and Metabolic Research*, vol. 3 no. 1, 2016, pp. 23-31.
- Kanimozhy, K. et al. "Nutritional Status and its Determinants among Selected Polytechnic College Students, Puduchery: A Cross Sectional Study." *Global Journal of Medicine and Public Health*, vol. 3, no. 6, 2014.
- Khabaz, Mohammad Nidal, et al. "Dietary Habits, Lifestyle Pattern and Obesity Among Young Saudi University Students." *Journal of Pakistan Medical Association*, vol. 67, no. 10, 2017, pp. 1541-1546.
- Kim, Jee Hee and Yun-Jeong Kim. "A Subjective Study on Eating Habits Among Female College Students." *Indian Journal of Science and Technology*, vol. 9, no. 46, 2016, pp. 1-5.
- Kyrkou, Chariklela, et al. "Changing Trends in Nutritional Behavior among University Students in Greece, between 2006-2016." *Nutrients*, vol. 10, no. 64, 2018.
- Memis, E. and Nevin Sanlier. "Analysis of Nutrition Habits of the Teachers and Nurses." *Pakistan Journal of Nutrition*, vol. 9, no. 12, 2010, pp. 1176-1182.
- Moy, F.M. et al. "Breakfast Skipping and its Associated Factors among Undergraduates in a Public University in Kuala Lumpur." *Malaysian Journal of Nutrition*, vol. 15, no. 2, 2009, pp. 165-174.
- Shekhar, Ravi, et al. "Lifestyle and Body Mass Index among Students of a Nursing College in Bihar." *Bio Medical Research*, 2016.

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