

Determinants of Food Consumption among Adolescents and Its Impacts on Health and Nutritional Status

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Abstract

Junk foods are defined as foods that are readily available, usually inexpensive, and have less nutrient value. These foods contain more calories, more salt, a higher content of saturated fat, and less iron, calcium, and dietary fibre. Common junk foods include fast food, carbonated drinks, chips, desserts, chocolates, etc. **Objectives of the study:** to assess the nutritional status of the respondents; to study the consequences of eating junk food among the respondents; to test the laboratory food items; and to evaluate the microbiological and nutrient content of them. **Methodology: Study design:** An analytical cross-sectional study was conducted among the selected college-aged adolescents in the Jharsuguda district of Odisha from January 2022 to April 2022. **Sample size:** The study consisted of 30 boys and 30 girls from the Jharsuguda districts of Odisha. The boys were taken from Jharsuguda engineering school, ages 17–19, and the girls were selected from Jharsuguda women's college, ages 17–19, respectively. **Tools used for the data collection:** data collection by interview and questionnaire schedule a self-structured questionnaire was used to collect the data from the selected respondents. **Analysis of the data:** The data was analysed by the appropriate statistical tests, like arithmetic mean deviation and two-tailed t-test, to find out the relationship between the two variables like age versus body mass index, age versus the portion of intake fast food, age versus frequency of intake fast food, body mass index versus amount intake, and income versus frequency of intake fast food among the selected respondent. **Result and discussion:** The above study concluded that fast food consumption is a fashionable trend in the current era. The result shows that out of a total of 40% of the boys and 42% of the girls, 40% prefer to eat fast food, with a mean deviation of due to easy availability and taste. The majority of the respondents spend more time outside due to college and coaching purposes. Thus, they do not carry tiffin from home because they think they are not schoolchildren and are not interested in eating homemade food. However, 65% of boys and 57% of girls prefer to eat fast food during mealtime because they enjoy eating fast food with their friends. The result of the cross-sectional study analysis was $p < 0.1$ and not significant. It is found that adolescents are more addicted to consuming extra quantities of tomato ketchup and chilli sauce on chowmin, manchurian, and rolls because they have no accurate knowledge of the harmful effects of colour-adulterated food and Chinese salt on health. In food testing, it is found that excess colour added to tomato ketchup is responsible for hyperactivity in Attention Deficit Hyperactivity Disorder (ADHD), behavioural changes like irritability and depression, hives, and asthma. Food dyes contain benzene, a known cancer-causing substance. Pani puri is made by the deep-fried cooking method and is high in fat and calories; therefore, it has a negative impact on health. Pani Puri water is not filtered water; therefore, sometimes microorganisms like Salmonella typhi develop in it, which is one of the causes of typhoid fever. Moreover, most food dyes are found in unhealthy processed foods that harm health. Findings reveal that increasing junk food consumption among teens may contribute to poor growth outcomes.

Keywords

Food Consumption, Nutritional Status, Disease Associated.

INTRODUCTION

In the contemporary period, healthy and nutritious foods have been replaced by the new food mantra of junk food. Junk food comprises anything quick, tasty, convenient, and fashionable that is rich in fats, carbohydrates, and detrimental non-nutritious food additives, including artificial colouring agents [1]. Most people prefer to eat because it is easy to buy, quick to prepare, colourful, tasty, and available at affordable prices. However, high consumption of nutrient-poor dietary items and inadequate consumption of protein and vitamin-rich diets can contribute to various health problems like malnourishment, metabolic disorders, and obesity [2].

Objectives

- To assess the nutritional status of the respondents.
- To study the consequences of eating junk food among the

respondents.

- To test the food items in the laboratory and evaluate their microbiological and nutrient content.

Hypothesis of the Study

- The high-class income group consumes more fast food as compared to the low-income group respondents.
- Those who belong to the obesity category eat more fast food.
- Boys consume more fast food as compared to girls.

METHODOLOGY

An analytical cross-sectional study was conducted among the selected college-aged adolescents in the Jharsuguda district of Odisha from January 2022 to April 2022.

Sample size

For the study, 30 boys and 30 girls were selected from the Jharsuguda districts of Odisha. The boys were taken from Jharsuguda engineering school, ages 17–19, and the girls were selected from women’s college Jharsuguda, ages 17–19, respectively.

Tools used for the data collection

Data collection by interview and questionnaire schedule a self-structured questionnaire was used to collect the data from the selected respondents.

Statistical test used

The data was analysed by the appropriate statistical test, like the arithmetic mean deviation and two-tailed t-test, to find out the relationship between the two variables like age versus body mass index, age versus the portion of intake fast food, age versus frequency of intake fast food, body mass index versus amount intake, and income versus frequency of intake fast food among the selected respondent.

RESULT AND DISCUSSIONS

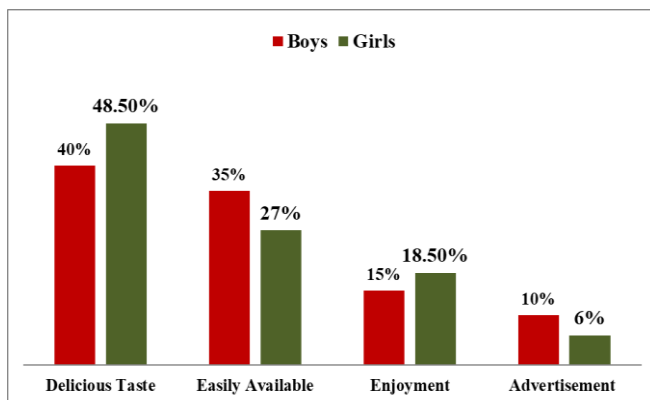


Figure 1. Reason to eat fast food by the respondents

Figure 1 - shows that fast food consumption among the respondents. Taste is one of the considerable factors in eating fast food 48.5% of the girls and 40% of boys eat fast food due to the factor of delicious taste. In comparison, preparing fast food uses additives like monosodium glutamate, lots of artificial tomato ketchup, and chilli sauce, which help enhance the taste of fast food [3]. The high sugar, high sodium, and high fat content in these fast-food meals also means they are high in taste. Fast food is widely accepted because it is inexpensive, convenient, and full of delicious taste. The result shows that due to the easy availability of fast-food stalls that are everywhere and anytime, 35% of the boys who responded preferred to eat fast food, compared to 27% of the girls. When they feel hungry between college hours, they also prefer to eat fast food from the nearby fast-food stall due to convenience. This ease is a major draw for many, especially students who spend a long time outside due to college and coaching purposes. The availability of fast-food stalls in the street and the rapid production of the chowmin, manchurian, chat, burger, French fries, and gupchup are mouth-watering to eat and much more convenient as

compared to stored products. Fast and processed foods are high in sugar, calories, Trans fat, and saturated fat and low in essential vitamins, minerals, and fibre. These foods release the neurotransmitters dopamine and oxytocin, which induce relaxation, pleasure, and enjoyment; therefore, they're called "comfort foods" because fast food makes us feel better. Fast food is popular because it is inexpensive, convenient, and excellent in taste. Fast food may include refined grains instead of whole grains, which contain saturated fat, cholesterol, and added sugar. It can be high in sodium, which is a preservative and makes food more flavourful and satisfying [4]. It is concluded that all respondents enjoy eating fast food regularly, with a mean deviation of 0.13 ± 0.15 .

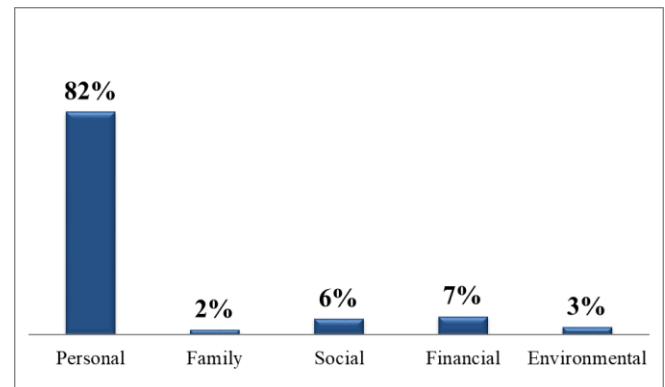


Figure 2. Factor influencing to select fast food.

Fast food consumption is a fashionable trend among adolescents due to the advertisements, convenience, cost, menu choices, flavour, and taste [2]. However, any food consumed by personal choice has a greater tendency to come from fast food outlets. It is found that through this study 82% of the boys, due to personal choice consume fast food regularly, whereas 55% of the girls choose to intake fast food due to personal reasons. Besides this, 22.5% of the girls consumed fast food due to social factors like friends circle enjoyment and easy availability, whereas only 7 % of both respondents chose fast food due to financial factors. Hence, it’s concluded that money is not a factor in consuming fast food because it’s available at 20 rupees; therefore, all income group respondents easily consume fast food as an alternative to their meals.

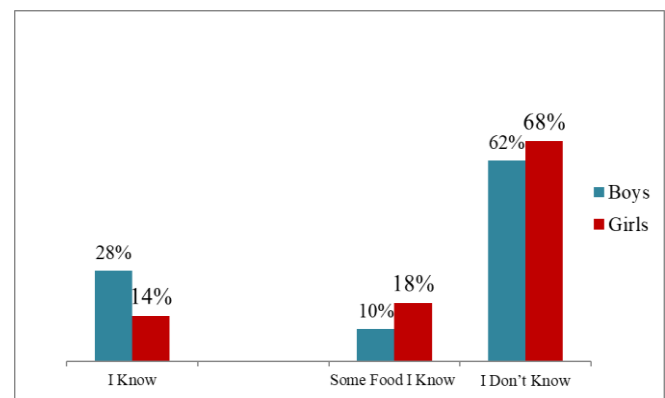


Figure 3. Knowledge about nutritional information and ingredients content in each fast food

Adequate nutritional knowledge helps to ensure eating a variety of different foods from the basic food groups and eating nutritious and healthy food, which can help to reduce the risk of chronic lifestyle diseases and protect from different deficiency diseases [5]. A healthy diet plan will also help ensure that you choose the right foods in the right portions. The result shows that among the respondents, 68% of girls and 62% of boys has no knowledge about nutritional information and ingredients in fast food. Meanwhile, only

28% of boys and 14% of girls have little knowledge and awareness regarding the nutritional value of the following fast foods: Good food and proper intake of nutritional-based food must be important for staying fit and healthy because food is a basic necessity in every individual's life. Proper knowledge of food helps to follow a healthy diet and makes it easier to choose the most nutritious foods for a healthy lifestyle.

Table-1. Association between Ages with Body Mass Index

Age With Body Mass Index (N=60)								
Age	Under Weight		Normal		Overweight		Obesity	
	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls
17	10%	30%	3.30%	23.30%	6.60%	13.30%	3.30%	3.30%
18	0%	10%	10%	10%	13.30%	0%	10%	0%
19	6.60%	0%	6.60%	6.60%	6.60%	0%	23.30%	3.30%

Healthy eating habits are integral to a healthy lifestyle; is an essential period for physical growth and sexual maturation. Adequate nutrition is an essential determinant of the physical growth of adolescents and is an important area that needs attention. Growth retardation is one of the most important health concerns for adolescents due to inadequate nutritional intake as per the recommended dietary allowances during adolescence. It has serious consequences throughout the reproductive years and beyond [6]. Poor nutrition during adolescence can impair the work capacity and productivity of adolescent boys and girls in their later years of life. Furthermore, malnourished girls are at increased risk of developing complications during pregnancy and of giving birth to a low-birth-weight baby, thus perpetuating a vicious cycle of malnutrition and ill health. Therefore, a good nutritious diet helps and keeps them flourishing if proper nutritious food is taken in a regular diet as prescribed by the RDA (recommended dietary allowances). In addition, regular physical exercise helps maintain a normal body mass index. However, the cross-sectional analysis of the two variables, ages and body mass index, shows that 30% of girls aged 17 are underweight due to low consumption of nutritional-based food and high consumption of calorie and fatty-dense fast food. In contrast, only 10% of boys under the age of 17 are underweight. Besides this, 23.3% of girls aged 17 have a normal body mass index due to their healthy dietary patterns; whereas 10% of boys aged 18 have normal health standards. Nevertheless, fast food and packed food consumption among teens are excessively common. The result shows that 13.3% of girls aged 17 falls into the overweight category, whereas 13.3% of boys aged 18 falls into the overweight category. Therefore, being overweight reflects obesity and is an important cause of some common diseases. Moreover, being overweight due to the intake of high-calorie dense foods and low intake of nutrients-rich foods during the adolescent stage has been associated with polycystic ovary syndrome

problems. The secondary data result shows that most girls during the adolescent stage suffer from these problems nowadays; it is the most common problem among teens. In the cross-sectional analysis, the two-tailed t-value is 0.4650 with a degree of freedom of 8, while the p-value is 0.654326. Hence, the result is insignificant at $p < 0.1$ in the association between age and body mass index. At this age, fast food consumption is more common among teens due to factors such as taste, convenience, and affordability. High consumption of calorie-dense, fatty processed foods with added calories, artificial colour additives, and chemical preservatives, insufficient nutritional knowledge, and a sedentary lifestyle mark overweight and obesity among adolescents.

Table 2. Association between Ages with Frequency of Intake of Fast Food

Age with Frequency of Intake				
VARIABLE	YES		SOMETIMES	
	Boys	Girls	Boys	Girls
AGE				
17	23.30%	36.60%	0%	33.30%
18	30%	16.60%	3.30%	3.30%
19	36.60%	6.60%	6.60%	3.30%

Adolescence is a period of rapid growth and development. It is a phase where remarkable changes are marked at this growing stage. The study shows that among the respondents who frequently take fast food, 36.6% of girls aged 17 take fast food and skip their meals because they spend lots of time outside and are not interested in eating homemade food. Fast food is easily available, and affordable; therefore, they take fast food at lunch time and enjoy the bite of fast food with their friends. Meanwhile, 36.6% of boys aged 19 frequently

consume fast food due to its excellent taste and availability. In the comparison between genders, only 33.3% of girls aged 17 and 6.6% of boys aged 19 sometimes eat fast food in a week, while the rest of the respondents consume fast food regularly. In the cross-sectional analysis, age was associated with the frequency of fast-food intake among the respondents. The association between the two variables had a two-tailed p-value equal to 1.0000 and a t-value of 0.0000 with a degree of freedom of 5 hence, the p-value was 1. The result is not significant at $p < 0.1$. To maintain dietary patterns and health status, proper diet and nutritional knowledge must be

essential, but it is proven here that the respondents have no knowledge according to their age, so they frequently consume fast food to replace lunch and breakfast because they do not know about healthy food and its nutritional role. Frequent fast food consumption may increase the risk of being underweight, overweight, or obese and act as a risk factor for different non-communicable diseases like heart disease, cancer, hypertension, diabetes, etc [4]. This is because most fast food is high in sugar, salt, saturated fat, Trans fat, processed ingredients, and calories. It is also generally low in antioxidants, fibre, and other nutrients.

Table-3

Association between Body Mass Index Vs Quantity of Consumed Fast Food among the Respondents						
	Small		Medium		Large	
	Boys	Girls	Boys	Girls	Boys	Girls
Under Weight	0	10%	6.60%	13.30%	3.30%	23.30%
Normal	3.30%	10%	13.30%	33.30%	3.30%	3.30%
Overweight	6.60%	0%	16.60%	3.30%	3.30%	0%
Obesity	6.60%	0%	16.60%	3.30%	20%	0%

The study shows the range of nutritional status of the respondents by calculating the body mass index. Under this, it is concluded that the respondents who come from the underweight categories have a high intake of fast food. The data revealed that 23.3% of girls in underweight categories consume a high intake of fast food, whereas only 13.3% of girls consume a moderate amount of fast food. Besides this, 33.3% of girls and 13.3% of boys are under the normal body mass index and consume moderate amounts of fast food. In comparison, only 16.6% of boys in the overweight category consume moderate quantities of fast food. Therefore, it is proven that the cause of being overweight among boys does not only emerge from fast food consumption; a sedentary lifestyle is also a cause of weight gain. Junk food is found to be associated with obesity due to its high energy content, the amount of fat present, free sugar, chemical additives, sodium, and low nutrients. It is found that 20% of boys belonging to the obese category consume huge quantities of fast food every day, whereas 16.6% of boys intake medium quantities. The result shows that a large intake of fast food is responsible for the increase in body fat among male respondents. Meanwhile, girls who consume large quantities of fast food are underweight because it's rich in calories, fats, and nutrients. On the other hand, those girls who consume processed food every day are underweight because processed food contains fewer nutrients than healthy foods like idly, dhokla, uttapaam, etc. Girls mostly prefer to eat fast food for taste, convenience, and friend circle enjoyment. Hence, regular consumption of fast food leads to nutrient deficiency and is associated with chronic diseases like obesity, heart disease, and diabetes. Therefore, to change the dietary patterns among the respondents, we need to provide nutritional education and

proper follow-up with nutritional counselling. In the cross-sectional analysis between the variables, the two-tailed p-value equals 1.0000, and the t-value is 0.0000 with the degree of freedom of 11. The p-value is 1; hence the result is insignificant at $p < 0.1$, respectively.

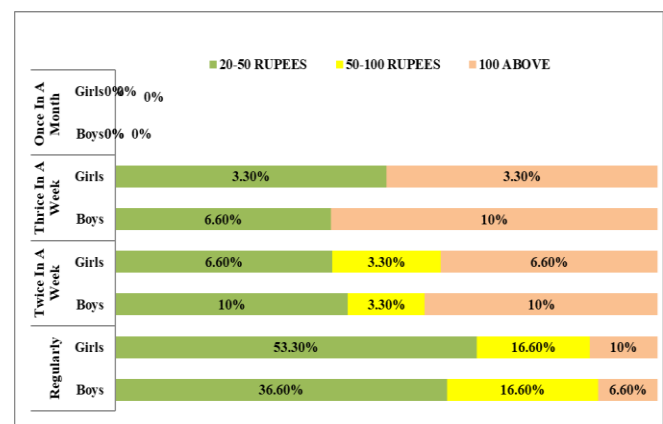


Figure 4. Association between Incomes with Frequency of Intake of Fast Food among the Respondents

More consumption of fast-food leads to chronic diseases. Several studies on fast food found that consuming fast food more than once a week was linked with a higher risk of obesity. On the other hand, eating fast food more than twice a week is associated with a higher risk of metabolic syndrome, type 2 diabetes, and coronary heart disease. The study result shows that when eating fast food, money is not the only reason for consuming it. The reason is that it is available, for instance, from 10 rupees for panipuri to 200 rupees for pizza; hence, financial status is not a foremost factor in eating fast food. Personal choice and interest, easy

availability, and delicious taste are the major factors in consuming fast food among adolescents. The data shows that by spending 20 to 50 rupees, 53.3% of girls and 36.6% of boys consume fast food frequently. Whereas 16.6% of both respondents regularly consume fast food by spending 50 to 100 rupees per day at fast food outlets. Only those respondents belonging to high-income groups spend 100 rupees or more and consume fast food every day and twice a week. In the association between incomes and frequent fast-food intake, the two-tailed p-value equals 0.8705 and the t-value is 0.1669, with the degree of freedom being 11. The p-value is 0.870477; hence, the result is insignificant at $p < 0.1$. Income is not the only criterion for fast food consumption among adolescents. Taste is an important factor, and high consumption of fast food reduces diet quality and provides unhealthy options for adolescents, increasing the risk of obesity. Consuming fast food not only negatively affects physical health, but it also affects people mentally.

The hypothetical analysis is false here because income is not a criterion for consuming fast food. Fast food is available at an affordable price, so respondents from every income group easily prefer to eat fast food as an alternative to meals. In the study, it was found that low-income group respondents more often consume fast food for its availability, delicious taste, and pocket-friendliness. In low-income families, it is not practised to prepare healthy and nutritious food at home; therefore, for college students, it is the easiest option to eat idly, puri, and samosa from outside at breakfast.

FOOD LABORATORY TESTING REPORT

Parameter was tested in (chowmin, manchurian, food gravy, coldrinks, Tropicana fruit juice, chilli sauce, and Tomato ketchup)

- Test of starch
- Test of sugar
- Test of artificial sweeteners (saccharin, dulcin, cyclamate)
- Extraneous matter
- Added colouring matter

Parameter was tested in supply water and prepared ghupchup water.

- E coli, Total coli form, Total plate count, yeast and moulds, organic and inorganic.

Analysis:

- Food colours are substances added to food products and food drinks to change the colour and improve the visual quality of the food to create attraction among customers. In the microbiological analysis of the collected samples, it was found that artificial colour was added to homemade red and green chutney made by street vendors. Besides this starch presence in food gravy, the test for sugar and starch contained in tomato ketchup was positive.
- In the physical appearance of cold drinks, which are carbonated water and black in colour, laboratory testing

has found a positive sugar level, a positive carbon dioxide test, and total sugar content (% by volume) of 10.2%. Whereas, in the physical appearance of Tropicana juice, the colour is turbid white, and in laboratory testing, sugar was added. "The effects of added sugar intake on the risk of higher blood pressure, inflammation, weight gain, diabetes, and fatty liver disease are all linked to an increased risk for heart attack and stroke," says Dr. Hu. Whereas in the test of formol number, it was found positive. (The formol number (also known as the formol index) is a parameter used for evaluation of the quality of fruit juices and wines.)

- In the food samples tested for chowmin, manchurian, and food gravy, the result of the added artificial colour was positive, and the result of the test for starch was positive. High consumption of starch-containing foods is associated with increased body weight and type-2 diabetes. Several studies revealed that diets high in refined carbs and sugar have also been linked to high blood pressure, heart disease, and obesity, hyperactivity, and mood disorders. The study is similar to Erik E.J.G. Eller's (2011).
- Whereas people who consume more artificially coloured fast food have a higher risk of having problems like sleeplessness, irritability, and restlessness, and it also leads to problems like depression, memory loss, and aggressiveness. The study is similar (Evaluation of the Toxicity of Synthetic Food Colours on Human Normal Flora and Yeast by Washim, 2017).
- On the other hand, ghupchup is one of the favourite fast foods of adolescents; more than 80 percent of adolescents like to eat ghupchup from roadside vendors precisely because of its taste and reasonable price. In the microbiological analysis of Ghupchup water, the result showed a total plate count of 910,000 and yeast and mould cfu/ml of 10, while inorganic and organic matters were not detected. This ghupchup water does not contain E. coli or all forms of E. coli because it is supplying water.

CONCLUSIONS

The above study concluded that fast food consumption is a fashionable trend in the current era. The result shows that out of a total of 40% of the boys and 42% of the girls, 40% prefer to eat fast food, with a mean deviation of due to easy availability and taste. The majority of the respondents spend more time outside due to college and coaching purposes. They do not carry tiffin from home because they think they are not school children, therefore they are not interested in eating homemade food. 65% of boys and 57% of girls during mealtime prefer to eat fast food because they enjoy eating fast food with their friend circle. In the cross-sectional study analysis, the result of $p < 0.1$ is insignificant. It is found that adolescents are more addicted to consuming extra quantities of tomato ketchup and chilli sauce on chowmin, manchurian, and rolls because they have no accurate knowledge of the harmful effects of colour-adulterated food and Chinese salt

on health. In food testing, it is found that excess colour added to tomato ketchup is responsible for hyperactivity in Attention Deficit Hyperactivity Disorder (ADHD), behavioural changes like irritability and depression, hives, and asthma. In addition, the primary food dyes contain benzene, a known cancer-causing substance. PaniPuri is made by the deep-fried cooking method and is high in fat and calories, which is why it has a negative impact on health. Excessive heating of fats and oils can lead to the breakdown of glycerol, which can harm the mucous membrane of the intestines. This is why foods cooked in repeatedly heated fats and oils cause irritation to the throat and digestive tract. Homemade panipuri water has several benefits, including improved digestion. Adding mint, cumin, and asafoetida to the water also helps reduce inflammation and menstrual cramps. But street food vendors use panipuri water, which is not boiled and is usually highly contaminated. The vendor usually prepares the panipuri with his bare hands, which makes it very unsafe for consumption. Contaminated water contains bacterial pathogens such as *Escherichia coli*, *Staphylococcus aureus*, and *Salmonella*, which cause typhoid, cholera, gastroenteritis, hepatitis, or food poisoning. However, most food dyes are found in unhealthy processed foods that harm health. Findings reveal that increasing junk food consumption among teens may contribute to poor growth outcomes.

RECOMMENDATIONS

1. There is need to provide posters and pamphlets on the college campus to spread knowledge and awareness among the adolescents.
2. To change the adolescents' dietary patterns and include food that is rich in essential nutrients, both macronutrients and micronutrients, in their daily diets.
3. Take action against sale of fast food in college areas and restrict the addition of extra colour and Chinese salt while preparing food, as well as give the knowledge of health and hygiene practises to the street vendors so they can adopt such rules while preparing fast food.
4. There is a need for nutrition counselling to bridge the gap between knowledge and practise among the respondents.
5. Changing the attitude and perception of street vendors towards cleanliness, it is not possible to bring about a change in behaviour. Therefore, we need to conduct a training programme on food safety and food handling practises.

REFERENCE

- [1] Vaida Naheed in the year (2013) Titled on —prevalence of fast food intake among Urban adolescent students vol-2 Issue-1 page-353-359, ISSN- 2319-1805, International Journal of Engineering and science, Srinagar India.
- [2] Sharma & Hai (2016) —Trends of fast food consumption among adolescent In Ludhiana, vol-7 No-2, Food science research journal.
- [3] Ramesh & Sreekantha (2015) —Dietary habits and life style among pre university College students in Raichur, India. Vol-

- 3, Issue-3 ISSN -2321 7251.www.International journal of research in health science, (India).
- [4] Singh & kiran (2016) the consumption pattern of fast food among adolescent Girls and boys of sultanpur. Vol-2 ISSN - 2395-7476. Wwww. Home science journal .com
- [5] Brijesh Patel, Smruti and Chirag Jain: A Descriptive Study to Assess the Knowledge regarding ill Effects of Junk Foods among Students in Selected Constituents of charusat, Changa Jain *et al.* 2018 Vol. 7 Issue 1 www. jolnt.com [ISSN 2456-1630]
- [6] Subhalakshmi. K and Dhanasekar. "A study on fast food culture among teenagers in urban India" International Journal of Pure and Applied Mathematics Volume 120 No. 5 2018, 215-238ISSN: 1314-3395.