RESEARCH ARTICLE

CHANGING FOOD PATTERN IN ADOLESCENTS AND IMPACT ON HEALTH

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ABSTRACT

Background: Lifestyle changes has compelled us so much that one has very little time to really think what we are eating. 'Eat healthy and live healthy', one of the essential requirement for long life is now being overlooked as today we have adopted to a system of consumption of food which has many side effects – like Junk food, the profound rise in the incidence of diabetes mellitus and coronary artery disease in the developing countries can be attributed to consumption often unhealthy food. Compared to the severity of problem the Indian literature is very scantly.

Aims & Objectives: To evaluate the changing food pattern in adolescents and its impact on health.

Materials and Methods: A group of 450 adolescents from 10 to 19 years was identified, details food consumption and habits were obtained, Body mass index was calculated and haemoglobin estimation was performed.

Results: Study result shows that 23.5% adolescents consumed junk food twice or more per week and from which middle aged adolescent was in higher percentage. The prevalence of risk of overweight and over weight (obese) was highest 50% in High socioeconomic adolescents. The habit of eating junk food more than two time / weak resulted in to risk of overweight and obesity were 27.4% and 1.9%. Adolescent also suffered from anaemia and prevalence in female was 80% and in male 73.5%. The anaemic had strong relationship with junk food consumption by adolescent, having 2 times per week junk food 81.5% suffered from anaemia. Similarly the adolescent, who skipped breakfast> two times /weak 96.6% suffered from anaemia.

Conclusion: By reduction in junk food and un healthy food eating we may decrease the incidence of obesity in turn which will lead to minimize the risk of hypertension, diabetes mellitus and coronary artery diseases, regular intake of nutritive and healthy food in breakfast, the serious condition like anaemia can be countered and that's key to healthy life.

Key Words: Junk Food; Body Mass Index (BMI); Anaemia; Food Pattern; Adolescents

Introduction

Globalization and Urbanization have greatly affected one's eating habits and forced many people particularly adolescents to consume fancy and high calorie fast foods popularly known as "Junk Foods". Research into the possible health hazards on consumption of such high calorie fast food has given an insight to avoid then but unfortunately measures taken are not effective as they need to be it seems to have engulfed, every age, race and the newest entrants on stage are children- adolescents in particular.

Diseases like hypertension, coronary artery disease and diabetes mellitus have shown profound rise in developing countries and such unhealthy junk food consumption is one of the noticeable factor to its contribution. The incidences of overweight and obesity are significantly high in adolescents and which may lead to adult hypertension and coronary diseases in later life. Considering this global problem of consumption of Junk food by Adolescents we have tried to evaluate the effect of such unhealthy food in our study. Through health education, a change towards good eating practice, reduction in consumption of Junk food and adaptation of healthy living we can reduce the hazardous effects and complications.

Obesity accounts for 3,00,000 deaths in the US alone. Research into junk food and fast food restaurants have found that there is a direct relationship between the number of fast food restaurants located within the local area and obesity rates.[1]

India is not an exception to this changing fast food trend. India's fast food Industry is growing by 40% a year. Statistics places India at 10th place in fast food per capita spending figures with 2.1% of expenditure of annual total spending.

What is a Junk food?

Junk food simply means an empty calorie food. An Empty calorie food is a high calorie or calorie rich food which lacks in micronutrients, such as vitamins, minerals, amino acids and fibers but has a high energy (calories). This foods also have ingredients considered unhealthy when eaten regularly will harm the body. The term Junk food was coined as slang in the public interest in 1772 by Michael Jacobson, Director of the Centre for Science,

Washington DC.[2]

This food contains high levels of refined sugar white flour, trans fat and polyunsaturated fat, salt and numerous food additives such as Monosodium glutamate and tartrazines.

Recognizing Junk food is essential and one can spot. What might be Junk food by looking at a food label.[3] Including that it has little nutritional value and has:

- >35% of calorie from fat
- > 10% of calorie from saturated fat any trans-fat.
- > 35% of calories from sugar, unless it is made with 100% fruit and no sugar added.
- > 200 calories per servings for snacks
- > 200 mg per serving for sodium (salt) for snacks
- > 480 mg for serving for sodium (salt) for initial meal.

Apart from easy availability, taste factor and attractiveness of the food are the appealing nature of these foods. Advertisement has a major role in attracting public particularly children and adolescents to various Junk Food.[4]

Materials and Methods

In conducting this study a total no. of 450 Adolescent children were identified. They were grouped as early 10 to 13 years, middle 14 to 16 years and late 17 to 19 years according to WHO guideline. The birthdates were confirmed by school registration and birth certificates. Anthropometric data were collected and the Body mass Index was calculated by Formula BMI = weight (kg) / height (m^2) and documented.

Detailed Diet history in form of consumption of Junk food per week, breakfast pattern, type of breakfast and dietary habits were obtained by questionnaire from each adolescent. Haemoglobin concentrations were analyzed calorimetrically, using sahli's haemoglobin meter. Modified Prasad classification (AICPI 917 January, 2012) was used to derive the socioeconomic class of the adolescent.

Results

106 out of 450 (23.5%) adolescents consumed junk food twice or more per week (Early 10.6%, middle 35.3% and late 24.6%) Junk foods is very easily available and cheap also ready to eat so adolescents often prefer them (figure 1). Adolescents from higher socioeconomic class were more at risk of overweight had overweight as compared

to lower socioeconomic class. As in higher socio-economic class the available money with adolescents for Junk food and high calorie diet is more so these children are more prone for obesity (figure 2). Similar observations were made by R. Goyal et al in their study (table 1).
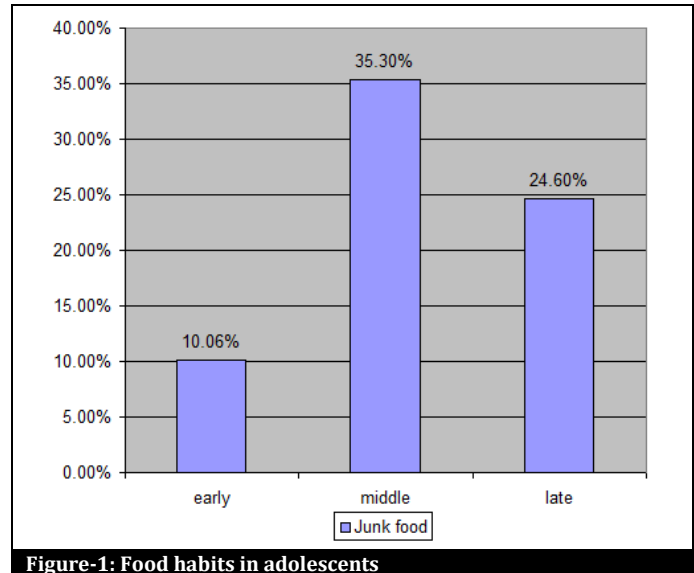

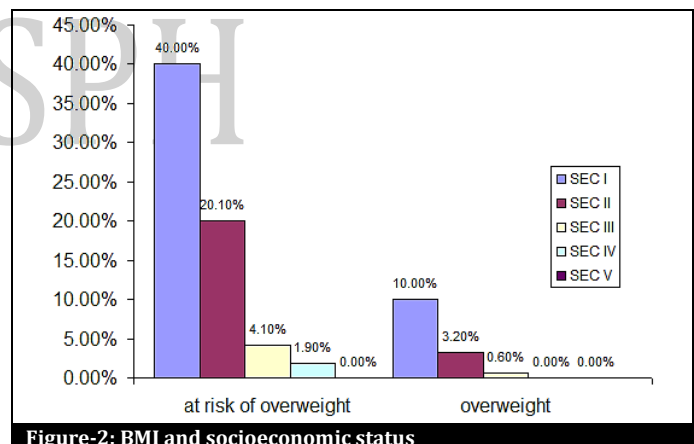
Figure-1: Food habits in adolescents

Figure-2: BMI and socioeconomic status

Adolescents consuming junk food twice or more in a week were more (1.9%) overweight and at risk of overweight (27.4%) as compared to them who consumed junk food only once or rarely in a week (1.5% and 4.4% respectively) (table 2). The haemoglobin estimation was clone only 325 adolescents. 248 (76%) out of 325 total adolescents, 112 (80%) out of 140 females and 136 (73.5%) out of 185 males were anaemic (table 3).

73.5%, 80.7% and 74.5% adolescents were anaemic in early, middle and late adolescent groups respectively. Prevalence of anaemia was 81.5% in adolescents who consumed junk food / twice or more per week as compared to 74.6% in adolescents who consumed junk food once or less per week. 96.6% adolescents who skipped breakfast twice or more per week were anaemic

as compared to 71.8% who skipped breakfast once or rarely in a week.

Table-1: Adolescents having BMI more than normal according to socioeconomic class

	High (SEC I)	Middle (SEC II & III)	Low (SEC IV & V)
In this study	50%	28%	1.9%
R. Goyal et al	70.2%	30%	0%

Table-2: Overweight and junk food

Junk Food	At risk of overweight	Overweight	Total
≥ times / week	29 (27.4%)	2 (1.9%)	106
< 2 time / week	15 (4.4%)	5 (1.5%)	344

Table-3: Anaemia in adolescents

	Anaemia	
	Female	Male
In this study	80%	73.5%
NFHS 2005-2006 report	56%	30%

Table-4: Anaemia and junk food

Junk food	Anaemia	Moderate to severe anaemia	Total
≥ 2 times / week	66 (81.5%)	44 (54.3%)	81
< 2 time / week	182 (74.6%)	127 (52.0%)	244

Table-5: Anaemia and skipping breakfast

Skipping Breakfast	Anaemia	Moderate to severe anaemia	Total
≥ 2 times / week	57 (96.6%)	54 (%)	59
< 2 time / week	191 (71.8%)	117 (44%)	266

Discussion

Metabolic Consequences of Junk Food

Food dense in calories, when oxidized in the body causes enormous formation of "Acetyl Co A". Acetyl co A in excess channelized out of mitochondria for its participation in other metabolic pathway and for its effective utilization. These pathways include denovo fatty acid synthesis and biosynthesis of cholesterol which causes fatty acid and cholesterol formation.

Fried and processed food contains high amount of Trans fats, saturated fats in addition to oxycholesterol. Oxycholesterol is a little known type of cholesterol which may prove to be a lethal compound to heart health as reported by scientists from China in the National meeting of the American chemical society in August 2009.[5]

A high sodium level has been clearly implicated as the causing factor for high blood pressure. Sodium is known to affect rennin angiotensin system in Kidneys which produces vasoconstrictive effect on arterioles leading to development of high Blood pressure. Also the salt used for the preparation has an impact on their excretion through kidneys thus having an effect on renal system.[6]

As figure 1 shows that 23.5% adolescent consumed Junk food twice or more per week. (Early 10.6% middle 35.3% and late 24.6%). The availability of junk food and snacks at low prices and marketing strategies adapted by manufacturer of such food has triggered an evolution.

14.2% of total adolescents and 20% early adolescents skipped breakfast twice or more per week. The fast food consumption and breakfast skipping increased during the transition to adulthood and dietary behaviors are associated with both increased weight gain from adolescents to adulthood. This behavior may be appropriate targets for intervention during this important transition period.

Figure 2 shows the relation between socioeconomic status and Body Mass index (BMI). It is evident that higher socioeconomic class adolescents are more prone to overweight and at risk of overweight. This can be accounted because of availability of easy money for eating Junk food more frequently ultimately this may lead to overweight and obesity. Similar observation were made by R. Goyal et al in their study.[7]

In our study the striking observation is Adolescents consuming Junk food twice or more in a week were more 1.9% over weight and at risk of overweight 27.1% as compared to them who consumed junk food only once or rarely in a week (1.5% and 4.4% respectively).

Anaemia is also an important observed finding in this study. Total 76% adolescents suffered from anaemia 73.5% males and 80% of female had anaemia, Similar observation were noticed in NFHS 2005 – 2006 report.[8] In early, middle and late adolescents the proportion of Anaemia remains almost same. In the study we have tried to correlate the consumption of Junk food and anaemia. Prevalence of anaemia was 81.5% from which 54.3% had moderate to severe anaemia in adolescents who consumed Junk food twice or more times per week. On the other hand 74.6% adolescents had anaemia who consumed junk food once or less per week.

Skipping breakfast and anaemia have also shown strong relationship. 96.6% adolescents who skipped breakfast twice or more per week were anaemic as compared to 71.8% who skipped breakfast once or rarely in a week. Skipping breakfast which is homemade leads to increased tendency for having outside food with low nutritive value. Breakfast is a very important part of adolescent's diet and they should be educated and advised not to skip it.

Similar observations made by Kumar B. Shill, in their study in Bangladesh, that 55% students were anaemic of whom 36.7% were male and 63.3% well female. Correlation of Iron deficiency anaemia with BMI reveals that prevalence of anaemia was more in, underweight student's then overweight and obese subjects. Regular breakfast taking habit showed significant influence (P= 0.035, 95%, CI 0.5-1.0) on iron deficiency anaemia compared to irregular breakfast taking students.[9] Anaemia is categorized as one of the 10 most serious problems by world health organization.[10]

How science creates craving?

According to Witherly, when you eat tasty food there are factors that makes the experience pleasurable. There is sensation of eating food this includes what it taste like (salty sweet, umami), what it smells like and how it feels in your mouth. This last quality is known as Orosensation can be particularly important. In fact food companies are spending millions of dollars to discover the most satisfying level of crunch in potato chips and so on. One most important factor the scientists use is Dynamic contrast: It refers to a combination of different sensation in the same food. The food with dynamic contrast have an edible shell that goes crunch followed by something soft or creamy and full of taste active compounds. This rule applies to a variety of our favourite junk foods. Another factor is rapid food meltdown and vanishing caloric density – foods that rapidly vanish or "Melt in your mouth" signals to your brain that you are not eating as much as you actually are. In other words, these foods literally tell your brain that you are not full even though you are eating a lot of calories – you can just keep eating forever.

Children of adolescents find themselves amidst a complex society that is undergoing breath taking changes.[12] Good nutrition is of utmost priority in children at the time of steady growth between the ages of 6 to 12 years. In a study in Beijing China and published in year 2008 revealed eating junk food is a popular event among children between the ages of 8 to 16 years.[13] Eating habits in such age groups not only has an impact on their growth but also on their concentration, feeling and behaviour. Such nutritiously weak food becomes quickly addictive and can sow the seeds of infirmity and debilitating disease which ultimately leads to many incurable diseases.

Conclusion

Junk Food have certainly carved up to the 'third world' due to globalization[14] It has become integral part of life in the developed and also in the developing countries and coming up with massive increase in overweight& associated problems like, diabetes mellitus, coronary artery disease, hypertension and anaemia in adolescents. Replacement of homemade healthy breakfast by junk food adds to the complications in adolescents. It is not impossible to win the war with junk foods against healthy foods.[15]

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