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Determinants of junk food consumption and dietary diversity score among adolescent girls in Thoppampatty block

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Abstract
The adolescent period represents a time of extremely rapid growth and development accompanied by an increased need for energy and nutrients. The main objective of the study is t obtain general information on the personal, and socio-economic background of the selected adolescent girls, to assess the consumption of junk foods among the adolescent girls, and to validate the Diet Diversity Scores among the adolescent girls. A cross-sectional study was carried out in Government Higher Secondary in Thoppampatty block with a sample size of 30. A multistage simple random sampling technique was used and a structured close-ended questionnaire was used to find the frequency and percentage among them. The major findings of the study revealed that 26.6% and 26.3% of adolescent girls fall in the age group between 14 and 15 years and girls76.6% belonged to the early adolescent stage. Socioeconomic scores computed for the respondents revealed that 53.3% of them belonged to Upper Lower Class, and 40% of them belonged to Lower Middle Class. All the adolescent girls were consuming junk foods in every place with different varieties in every part of their life. Stumpy healthy food choice is observed among adolescent girls. The study concludes that the eating habits of adolescents are important because when they settle down as adults, they have to establish the eating behaviour of a new family.

Keywords: Adolescent girls, junk food, healthy food, micronutrient deficiencies, Thoppampatty block

1. Introduction

Adolescence is characterized by a process of growth and development that quickly occurs both physically, psychologically, and intellectually. Therefore, adequate and balanced nutrition is needed, including calories, protein, and various micronutrient substances. Various health problems in adolescents are related to the fulfillment of balanced nutritional needs [3]. Junk foods are defined as foods that are readily available, usually inexpensive, and have less nutrient value. These foods contain more calories, more salt, have a higher content of saturated fat, and contain less iron, calcium, and dietary fiber. Common junk foods include fast food, carbonated drinks, chips, desserts, chocolates, etc [8].

With an increase in disposable incomes and the advent of global food joints inflowing the Indian food market, India today ranks amongst the top ten fast-food per capita expenditure figures suggestive of the changing dietary patterns among adolescents as reported by Mulla *et al*. World Health Organization defines fast foods as "Foods that can be prepared quickly and easily and are sold in restaurants and snack bars as a quick meal or to be taken out". This dietary shift witnessed from traditional eating practices towards modern foods has augmented the consumption of processed foods and ready-to-eat foods, especially junk foods. The Indian Dietary Guidelines define "Junk foods as food that contains little or no protein, vitamin or minerals but is rich in salt, fat, and energy". The nutritional analysis conducted by Johnson *et al.* suggested that such junk foods are characteristically energy-rich and dense in fats, sugar, salt, Trans fats, and saturated fats and are also termed as High Fat, Sugar, Salt (HFSS) foods [4].

The dietary habits of adolescents are important factors to understand their present and future health. 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.

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In one of the prospective cohort studies, poor breakfast habits were the predictors of obesity in adulthood. Consumption of energy-dense snacks was most common among Indian adolescents [3].

Food choice plays a large role in determining diet quality, and adolescents experience more autonomy in their ability to choose their foods compared to younger children. Individual psychosocial factors (e.g., beliefs, knowledge, self-efficacy, food preferences), biological factors (e.g., hunger, mental health), behavioral factors (e.g., timing of eating events, dieting behaviors), and lifestyle factors (e.g., food costs, time demands, physical activity) are related to food choice among adolescents. Additionally, contextual factors include social and physical environmental influences, such as at school and in the household. For example, studies have shown that peers and peer pressure play a large role in food-related decision-making among adolescents, particularly in school settings. Other factors at school, such as the convenience of options, the timing of lunch schedules, and food quality and taste play a role in adolescents' food choices [1].

At present, there are not many studies that specifically identify and compare the consumption of unhealthy foods in adolescents both in general and by gender, which will contribute to certain prevention efforts [8]. Therefore, this research is aimed to identify the consumption of junk foods and to calculate Diet Diversity Scores among adolescent girls.

2. Materials and Method
The methodology of the study was presented under the following headings.

2.1 Objectives of the study
- To obtain general information on the personal, and socio-economic background of the selected adolescent girls.
- To assess the consumption of junk foods among adolescent girls.
- To validate the Diet Diversity Scores among adolescent girls.

A cross-sectional study was carried out in Government Higher Secondary in Thoppampatty block, Dindigul District, Tamil Nadu. A quantitative method was used for the study. The study consists of 30 adolescent girls who were in the age group of 13 to 16 years. A multistage simple random sampling technique was used to select the area and samples. Permission was obtained from District Educational Officer and Head Master for the recruitment of the study participants. A structured close-ended questionnaire was used to collect the data from the selected adolescent girls. The questions were translated into the regional language. The investigator administered the questionnaire and collected it after their completion. The data was coded in SPSS version 23 for further analysis.

3. Results and Discussions
The results and discussion of the present study are presented under the following headings.

Table 1: Demographic and Socioeconomic status of the adolescent girls

Particulars	Respondents (N=30)	
	N	%
Age (in years)		
13	7	23.3
14	8	26.6
15	8	26.3
16	7	23.3
Stage of adolescence		
Early adolescence	23	76.6
Middle adolescence	7	23.3
Socio economic status		
Lower class	0	0
Upper Lower class	16	53.3
Lower Middle class	12	40.0
Upper Middle class	2	6.7
Upper class	0	0

As shown in table 1, the majority of the adolescent girls 26.6% and 26.3% fall in the age group between 14 and 15 years, and the remaining 23.3% constitute between 13 and 16 years. It is also clear from the table that the majority of the adolescent girls 76.6% belonged to the early adolescent stage and the rest of the adolescent girls constituted 23.3% in the middle adolescent stage respectively.
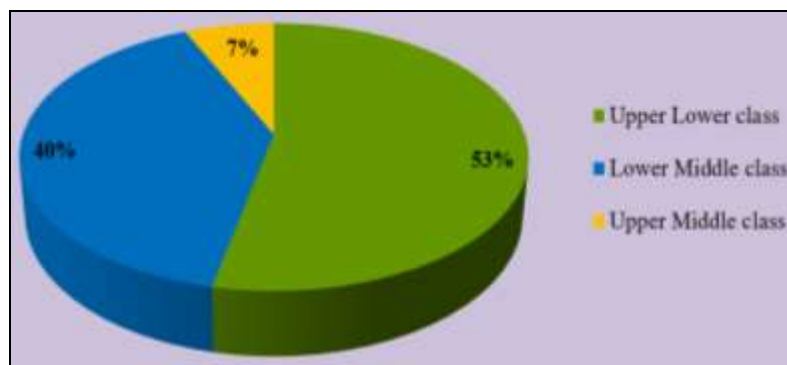
Fig 1: Socio economic status of the adolescent girls

As per the scale values, the total score for Lower Class <5, Upper Lower Class 5-10, Lower Middle Class 11-15, Upper Middle Class 16-25, and Upper Class 26-29.

Saleem & Jan describes the total score of Kuppuswamy SES ranges from 3 to 29 and it classifies families into 5 groups, "upper class, upper middle class, lower middle class, upper lower, and lower socio-economic class." The scale has been revised interminable over the past years because the parameter of the overall income of the family from all the sources scale loses its pertinence following the devaluation in the worth of the Indian rupee while the occupation of the head of the family and education of the head of the family remains the same with time.

As shown in table 1 and figure 1 the Socioeconomic scores computed for the respondents revealed that 53.3% of them belonged to Upper Lower Class, 40% of them belonged to Lower Middle Class and very few 6.7% of them belonged to Upper Middle Class. None of the adolescent girls belonged to Lower Class or Upper Class.

Table 2: Consumption of Junk foods among the adolescent girls

Particulars	Respondents (N=30)	
	Yes	No
Consumption of Junk Foods	30	0

Table 2 reveals that all the adolescent girls were consuming junk food. In South Asian countries, there is a clear rising trend of such junk food consumption. Despite established evidence of the negative impacts of junk foods on the human body, the consumption of junk foods is popular among youngsters [8].

Table 3: Type of junk food consumption in the past month among the adolescent girls

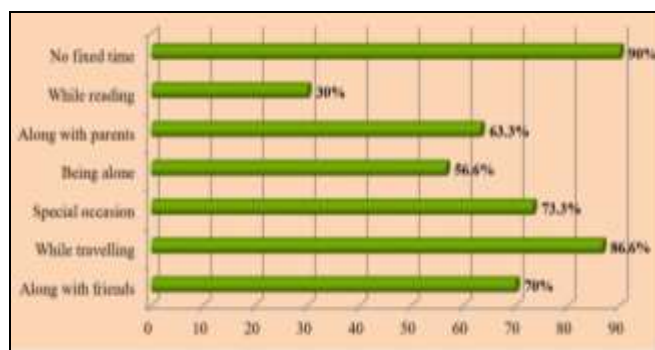| Particulars	Respondents (N=30)*	
	N	%
Salty snacks	26	86.6
Sweets	27	90
Sweetened beverages	21	70
Fast foods	30	100

Mutually exclusive responses

Table 3 shows the type of junk food consumption in the past month among adolescent girls. It is shocking to see that all the respondents consume fast food and the majority 90% of them reported that they consume sweets. The rest of the respondents 86.6% and 70% reported that they consume salty snacks and sweetened beverages.

Table 4: Time of consumption of junk foods among the adolescent girls

Particulars	Respondents (N=30)*	
	N	%
Along with friends	21	70
While traveling	26	86.6
Special Occasion	22	73.3
Being alone	17	56.6
Along with parents	19	63.3
While reading	9	30
No fixed time	27	90

Mutually exclusive responses

From table 4 and figure 2, it is clear that the majority 90% of adolescent girls don't fix any time to consume snacks or junk food. About 86.6% reported that they consume junk food while traveling. The rest 73.3%, 70%, 63.3%, and 30% of the adolescent girls reveal they consume on special occasions, along with their friends, and parents, and while reading books. Rahmawati reports the frequency of snacking had a high variance in all research subjects as shown by the difference between the minimum and maximum levels and the standard deviation of the frequency of snacking by ±35% from the overall mean which was not much different from the frequency of fast food consumption.

Fig 2: Time of consumption of junk foods among the adolescent girls

Table 5: Place of consumption of junk foods among the adolescent girls

Particulars	Respondents (N=30)*	
	N	%
On trip	16	53.3
At restaurants	6	20
At home	24	80
At school	23	76.6
At parties/festivals	21	70
At a street food stall	20	66.6

Mutually exclusive responses

Table 5 depicts that the majority of adolescent girls revealed that 80% and 76.6% of them consume junk foods at home and school. About 70% and 66.6% consume at parties/festivals and street food stalls. The rests 53.3% and 20% reported that they consume on trips and at restaurants.

Table 6: Weekly expenditure on junk foods among the adolescent girls

Particulars	Respondents (N=30)*	
	N	%
<10 Rupees	4	13.3
10 to 50 Rupees	27	90
50 to 100 Rupees	15	50
>100 Rupees	11	36.6

Mutually exclusive responses

Table 6 presents the weekly expenditure on junk foods among adolescent girls. The majority 90% of adolescent girls spend about 10 to 50 rupees per week. Fifty percent of the adolescent girls reported that they spend about 50 to 100 rupees per week. The remaining 36.6% and 13.3% spend more than 100 rupees and less than 10 rupees per week.

Table 7: Recommended Food group and assigned scores

Food Group	Assigned scores
Cereals/ Roots and Tubers	4
Green Leafy Vegetables/Other Vegetables	4
Fruits	4
Milk/ Dairy products	4
Legumes/Nuts and Seeds	2
Organ Meats/Flesh Meats/Fish/Egg	2
Oil/Sugars/Spices/Condiments	2

Diet Diversity Score was calculated by summing the number of unique food groups consumed during the last 24 hours as described by Krebs-Smith *et al*. 1987. Food groups considered were cereals/roots, vegetables, fruits, legumes/lentils, meat/fish/egg & milk/dairy products. If an individual eats any quantity of any food group at least once per day, was taken into count. Therefore, DDS was calculated without considering a minimum intake for the food group [6]. The scores for the food group categorised were assigned as 4 and 2 respectively.

Table 8: The mean Dietary Score within the food groups among the adolescent girls

Food Group	Respondents (N=30)	
	Mean	SD
Cereals/ Roots and Tubers	1.00	.000
Green Leafy Vegetables/Other Vegetables	1.30	.466
Fruits	1.53	.507
Milk/ Dairy products	1.70	.466
Legumes/Nuts and Seeds	1.50	.509
Organ Meats/Flesh Meats/Fish/Egg	1.63	.490
Oil/Sugars/Spices/Condiments	1.00	.000
Total	9.66	2.438

Table 8 shows the mean and standard deviation of consuming food groups among adolescent girls. The total mean dietary score within the food groups among the adolescent girls was 9.66±2.438 respectively.

Fig 3: Distribution of Adolescent girls by their food group

Figure 3 shows the distribution of adolescent girls by their food groups for the past three days. All the respondents reported that they consume cereals, oil, sugar spices, and condiments daily in their food pattern. One-third of the respondents 70% reported that they consume Green Leafy Vegetables and other vegetables. A few of the respondents 36.7% and 30% reported they consume meat and milk products in the past three days.

4. Conclusion
The findings of the present study reveal increasing junk food consumption among school-going adolescents, which may contribute to poor growth outcomes. Consumption during travel time, restaurants, home, and school was found to be more common. Family and peer roles were also found to be more influencing junk food accompanying the participant's increased consumption [8]. Diet quality is an important measure related to health in adolescents, as poor diet quality is associated with poor short-term and long-term physical and psychosocial health outcomes. The study also found that adolescent girls were largely influenced by their parents and the home food environment, which may be particularly relevant in times when they are home for prolonged periods (i.e., emergency school closures, summer, and winter breaks). Programs and policies that aim to improve healthy food access may positively impact adolescent food security and diet quality. In general, it is important to ensure that healthy foods are available and accessible to adolescents in the places where they spend the most time. Therefore, multilevel interventions in the home, school, and workplace may be most effective in encouraging healthy eating behaviors among adolescents [1].
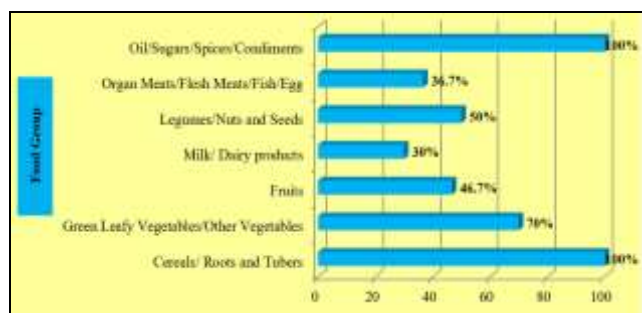
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