



# HIGH-FAT SALT SUGAR INTAKE AMONG ADOLESCENT AND YOUNG BOYS AND GIRLS 14-25 YEARS OLD THROUGH MEALS, SNACKS AND BEVERAGES IN URBAN VADODARA, GUJARAT.

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**Abstract:** The objectives of the study were to assess the knowledge and practices of boys and girls with regards to HFSS (High Fat Salt and Sugar) intake from foods and beverages, perception of the parents regarding their child' HFSS intake, the BMI of the participants based on their reported data, to know their dietary meal pattern (snacks) with regards to HFSS content. The design and method of the study was an online cross-sectional study conducted using google forms among participants aged 14-25 years and also their parents/guardians. The sample size of the study was total of 101 participants (boys = 61 and girls = 40) aged 14-25 years were selected for the study through the purposive random and snowball sampling method. The results of the study were that above 70% of participants were having tea/coffee/milk for breakfast. Above 50% of participants were having tea/coffee/milk for their evening snack. 20%-40% of participants preferred poha and khakhra which are healthy snacks which were consumed for 2-4 days a week. 40% of participants were consuming fruit juice and tea/coffee as a healthy drink which was consumed for 2-4 days a week. 70% of the participants were not influenced by an advertisement for purchasing snacks or drinks which parents do also agreed. 41% of participants used to read nutritional label every time. 51% of the participants were aware that the beverages contain more sugar than what is mentioned on the label of the product. The study concludes that adolescent and young boys and girls participants are aware of the ill effects of HFSS foods consumption.

## I. INTRODUCTION

The focus is centred on the effects of obesity, especially during COVID-19. The emerging shreds of evidence suggest that individuals with obesity or overweight are at a greater risk of COVID-19 outcomes. While young people seem less clinically vulnerable to COVID-19 compared to adults. Primary evidence shows that the pandemic has influenced their diets. In the course of the first national lockdown, the children have consumed more unhealthy foods and snacks, but hardly any fruits and vegetables, chiefly those who are from most deprived backgrounds. The alteration in media habits has also occurred with increase screen time, more viewing of video-on-demand services and gaming which may have implications for exposure to HFSS marketing. (Critchlow, 2020). Special attention is given to healthy eating to promote health among young people. The individual who has consumed fast food is at risk of non-communicable diseases. (Baspakova et al., 2020). Fast-food consumption has been linked to a diet high in calories, saturated fat, sugar, and sodium, as well as body fatness, weight gain, and a high BMI. A sedentary lifestyle is another reason which could lead to health problems. According to a survey, fast food accounted for 23% of student meals, and 50% of

students said they ate at least three fast-food meals per week. Hence, the problem is eating a significant number of fast-food meals may lead to a dominant impact on future health. (Abraham et al., 2018).

HFSS (High Fat Salt Sugar) foods may be defined as foods (any food or drink, packaged or non-packaged) that contain low amounts of proteins, vitamins, phytochemicals, minerals, and dietary fibre but are rich in fat (saturated fatty acids), salt and sugar and high in energy (calories) that are known to harm health if consumed regularly or in high amounts. (Note\_Report\_HFSS\_08\_05\_2017.Pdf, n.d.).

The consumption of fast food is rapidly growing in all parts of the world, both in developed and developing countries. Because of changes and shifts in people's lifestyles and dietary habits, a growing number of people of all ages, especially teenagers and young adults, are gravitating toward fast food. (Majabadi et al., 2016). The success of fast food is due to changes in urbanization, the standard of living, and a large number of young people. The rising demand for ready-to-eat foods and fast foods is due to parents' increased opportunity costs as a result of their employment. In most developing countries, women have historically been in charge of food preparation and feeding is considered a primary maternal task; however, economic growth and increased involvement of women in economic activities have resulted in fewer hours available for mothers to prepare homemade food. (Agheli & Emamgholipour, 2017).

The popularity of junk food is often influenced by junk food advertisements. (Younis & Eljamay, 2019). Adolescents are enticed to consume junk food by appealing to their taste buds and appealing food advertisements. One of the most visible and important aspects of the marketing process is advertising. Advertisements are broadcast on television, radio, the Internet, advertisements, newspapers, and magazines, and they affect people's minds. These communication methods for conveying promotional messages can have a significant impact on an advertisement's effectiveness. Food habits, food intake behaviour, and product sales are all influenced by advertising. Excessive media exposure to food advertisements raises the risk of fast food intake and, as a result, chronic diseases later in life. It also creates a desire for high-fat, high-sugar, and high-salt foods, especially among children and adolescents who watch more TV. (Mirhadyan, 2020).

Individual food consumption patterns are highly affected by the behaviour of neighbours, friends, and family in social and modernised life, a phenomenon known as "the emulation effect." Young people are more affected than other communities. In other words, rivalry among modern and young families, emulation and demonstration effects boost the demand for eating out. (Agheli & Emamgholipour, 2017).

Any general response of the body that overwhelms or attempts to overpower the body's ability to maintain homeostasis is described as stress. In general, psychological pressure occurs when a person's coping skills are pushed beyond their limits, and the stress response varies depending on the nature of the events and the person's characteristics. Stress, on the other hand, is now recognised as a global issue with negative consequences for human wellbeing. Scoring high grades are not the only reason for stress among school and college students. Excessively vague tasks, homework, and uncomfortable classrooms are all sources of stress. Aside from academic matters and relationships, time constraints and relationships with faculty members may also be stressful. Some students may be negatively affected by their friendships and family relationships, as well as their eating and sleeping patterns and isolation. Stress alters eating behaviour, redirecting food choices to food with greater palatability and energy value, especially those which are high in sugar and fat intake. (V. Bhavani, 2019).

## II. RESEARCH METHODOLOGY

### 2.1. Type of the Study

The world was affected by the COVID-19 pandemic so the survey was conducted through the media of questionnaires (Google forms) and various interviews among adolescents and young boys and girls aged 14-25 years and also their parents/ guardians. This was an online cross-sectional study.

### 2.2. Population and Sample

Total of 101 participants (boys = 61 and girls = 40) aged 14-25 years (adolescent boy= 44 and girls=13) (young boys=17 and girls=27) were selected for the study through the purposive random and snowball sampling method with help of family, friends and other contacts through emails and text messages. Through the snowball technique, the maximum number of participants in the specified age group were enrolled and

they were asked for their respective consents to fill the Google forms. Those who acknowledged were included in the study.

Tool: Google forms (questionnaires) for boys and girls and their parents was intended to collect data under the following questionnaires and their respective sections.

#### 1. Questionnaire for boys and girls.

The questionnaire was bifurcated into four sections.

Section 1: Background information of the participants.

Section 2: This section comprises the consumption of foods, snacks and drinks/beverages participants like.

Section 3: - Knowledge about the nutrition label of the participants.

Section 4: - Food frequency table.

#### 2. Questionnaire for parents

The questionnaire was bifurcated into two sections.

Section 1: - Information about the parents.

Section 2: - This section comprises the consumption of foods, snacks and drinks/ beverages their child likes and consumes.

### III. RESULT AND DISCUSSION

**Table No. 3.1. Background information of the participants.**

Parameters	Boys N=61		Girls N=40		Total N=101	
	n	%	n	%	n	%
Age						
14-19 years	44	72.1	13	32.5	57	56.4
20-25 years	17	27.8	27	67.5	44	43.5
No. of family members						
1-4 members	42	68.8	28	70.0	70	69.3
5-8 members	19	31.1	11	27.5	30	29.7
8 or more members	-	-	1	2.5	1	0.99
Mother's occupation						
Housewife	58	95.0	28	70.0	86	85.1
Working full time	1	1.6	9	22.5	10	9.9
Working half time	2	3.2	3	7.5	5	4.9

Table No. 3.1. shows that there were 101 total participants, with more than half of them being between the ages of 14 and 19. The majority of the participants belonged to families with 1-4 members and the majority of the participant's mothers were housewife.

**Table No. 3.2. Nutritional Status of the Adolescent Participants (N=57) (BMI for age).**

Category	Boys N=44		Girls N=13		Total N=57	
	n	%	n	%	N	%
Underweight - BMI for age = <-2 SD to 3SD	5	11.3	0	0	5	8.7
Normal – BMI for age = ( -2 SD to + 2 SD)	36	81.8	11	84.6	47	82.4
Overweight – BMI for age = (> + 2SD to 3 SD)	3	6.8	2	15.3	5	8.7

Table No. 3.2. shows that the majority of the boys (81.8%) and girls (84.6%) participants fall under the normal category.

**Table No. 3.3. Nutritional Status of the Young Participants. (N=44) (Asia Pacific Classification).**

Category	Boys N=17		Girls N=27		Total N=44	
	n	%	n	%	n	%
Underweight (BMI:<18.5)	2	11.7	5	18.5	7	15.9
Normal (BMI: 18.5-22.9)	9	52.9	15	55.5	24	54.5
Overweight (BMI: 23-24.9)/Obese (BMI: > 25)	6	35.2	7	25.9	13	29.5

Table No. 3.3. shows that in the normal category, nearly half of the participants were boys (52.9%) whereas more than half of the participants were girls (55.5%). In the overweight/obese category, less than one-third of the participants were boys (35.3%) whereas about one-fourth of the participants were girls (25.9%).

Above 50% of participants were aware that having HFSS foods will increase their weight while 38% of participants were thinking having HFSS foods will not increase their weight.

More than half of the participants think that soft drinks and other sweetened drinks from the market will not increase their weight while 45% of participants think that it will increase their weight.

The majority of boys (85.2%) and girls (70.0%) participants were having tea/coffee/milk for breakfast and 20%-30% boys (21.3%) and girls (30.0%) participants were having roti/paratha/bhakhri/cereals/thepla, as their breakfast. For the mid-morning, 26.2% of boys were having chips whereas the 37.5% of girls were having nuts & fruits. 37.7% of the boys participants and 42.5% of the girls participants were having roti, sabji, dal, rice, buttermilk/ pickle/papad/chutney, for lunch. Above 50% of boys (55.7%) and girls (70.0%) participants were having tea/coffee/milk for their evening snack, less than 25% of boys participants consume namkeens whereas, 35% of girls consume biscuits. 45% of the boys participants were having roti/bhakhri/paratha/rotla, sabji, rice, dal/kadhi and 40% of girls participants were having roti/bhakhri/paratha/rotla, sabji, salad/papad for their dinner.

The consumption of high-fat sugar and salt was 42.4%, 58.1% and 29.2% respectively consumed for evening snack and lunch. Whereas, HFSS was consumed comparatively less for breakfast and dinner.

Above 50% of the boys and girls participants does not go to the restaurant after the COVID-19 pandemic.



More than 50% of parents revealed that their child doesn't add salt to the food whereas less than 50% of parents revealed that their child sometimes adds salt.

20%-40% of boys (22.9% & 21.3%) and girls (37.5% & 25.0%) participants preferred poha and khakhra which comes under healthy snacks whereas less than 20% of boys and girls participants preferred idli sambhar, upma and thepla which also comes under healthy snacks. 30-40% of boys and girls participants consume namkeen, chips and biscuit (37.6%, 27.7%, 22.7%) which was under unhealthy snacks. Healthy and unhealthy snacks were consumed for 2-4 days a week by boys and girls, 44.2% and 47.5% respectively.

40% of boys and girls participants were consuming fruit juice (39.6%) and tea/coffee (45.0% & 30.0%) as healthy drink whereas, less than 20% of participants consume coke and sprite (21.3% & 22.9%) as unhealthy drinks.

**Table No. 3.4. Frequency of consumption of healthy and unhealthy drinks/beverages. (N=101)**

Categories	Boys		Girls		Total	
	n=61	%	n=40	%	n=101	%
Daily	14	22.9	18	45.0	32	31.6
4-5 days	6	9.8	3	7.5	9	8.9
2-4 days	30	49.1	17	42.5	47	46.5
Occasionally	7	11.4	1	2.5	8	7.9
Never	4	6.5	1	2.5	5	4.9

**Comparing boys and girls for frequency of consumption of drinks/beverages: Chi-Square = 5.73\***

Table No. 3.4. shows that the mentioned healthy and unhealthy drinks/beverages were consumed for 2-4 days in a week by boys and girls, 49.1% and 47% respectively.

The reason behind consuming HFSS foods was that the taste is enjoyed by the participants.

The majority of participants were aware of the snacks they were consuming were healthy for them whereas less than half of the participants weren't aware of the snacks they were consuming were unhealthy for them.

The majority of parents thinks that consumption of high fat/sugar/salt snacks will spoil child's health.

The consumption of various food groups, in daily category only milk and cereals were consumed above 60% by all the participants. The least consumption of cheese/butter was reported by the participants in the daily category. For 2-4 times a week, 30-40% of participants consume food groups like curd/buttermilk, cheese/butter, green leafy vegetables, other vegetables, fruits, pulses, and dry fruits and nuts were consumed. Milk and cereals consumption was the least.

In the normal category, about 40%-70% of the adolescent participants reported that they had these foods more than 4 times a week except for curd/buttermilk and cheese/butter. The consumption of fruits was doubled for over-weight/obese participants (40.0%) compared to under-weight adolescent participants (20.0%).

In the normal category, between 30%-50% of adolescent participants (31.9%, 46.8%, 44.6%, 40.4%, 31.9%, 29.7%, 57.4%, 46.8) were consuming healthy foods like milk, curd/buttermilk, green leafy vegetables, other vegetables, fruits, cereals and dry fruits less than 4 times a week.

In the normal category, the majority of the young participants (79.1%, 66.6%, 66.6%, 95.8%, 70.8%) were consuming milk, green leafy vegetables, other vegetables, cereals and pulses more than 4 times a week. In the Over-weight/Obese category, none of the participants was not consuming cheese/butter more than 4 times a week. On contrary, the consumption of green leafy vegetables, other vegetables and cereals were more among overweight/obese young participants (76.9%, 76.9%, 84.6%).

In the normal category, the minimum number of participants (16.6%, 58.3%, 33.3%, 33.3%, 45.8%, 4.1%, 29.1%, 50.0%) were consuming healthy foods like milk, curd/buttermilk, green leafy vegetables, other vegetables, fruits, cereals, pulses and dry fruits less than 4 times a week while cheese/butter was consumed

by the majority of young participants (66.6%). In the overweight/obese category, the majority of participants (76.9%) were consuming cheese/butter less than 4 times a week.

The majority of participants were not purchasing snacks or drinks after seeing an advertisement. Less than 50% of mothers revealed that advertising influences their child's food choices. The majority of mothers revealed that their child never asks them to purchase any snacks or drinks.

Nearly half of the participants sometimes read the label on the food packet, 41% of participants every time read the label while 10% of participants don't read the label. Nearly half of the participants every time read the label on the drinks while the least number of participants never read the label. More than half of the participants purchase a particular food product based on their previous experience, brand/company name, nutritional status and expiry date given on the food packets/drinks. More than half of the participants were aware that the beverages contain more sugar than what is mentioned on the label of the product.

Less than half of the participants consume less when they are emotionally upset, followed by participants who eat the same. More than half of the parents revealed that their child doesn't eat snacks/drinks when they're emotionally upset.

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