JUNK FOOD CONSUMPTION AND LIFESTYLE PATTERN AMONG UNDERNOURISHED CHILDREN IN JAMMU REGION

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ABSTRACT

BACKGROUND

Changing lifestyles and easy availability both have led to increased consumption of junk food amongst all age groups. Such foods and beverages have low nutrient density, provide empty calories and have minimal amount of vitamins and minerals and their regular consumption can adversely affect our health. The association of junk food with obesity and cardiovascular risk factors has been well established, but less has been talked about its association with undernutrition.

Aims and Objectives- Current study was designed to assess the junk food consumption and lifestyle pattern among the underweight children.

MATERIALS AND METHODS

It is a prospective hospital-based study. Children aged 5-18 years, presenting to Paediatric OPD of a Medical College Hospital were screened for weight, height and BMI. Those with a BMI for age less than -2SD as per WHO BMI charts were included in the study. They were evaluated for dietary intake including junk food consumption, lifestyle pattern especially physical activity and screen time as per a predesigned proforma. The co-infections with which they presented were also evaluated. The height, weight and BMI of the parents were also recorded.

RESULTS

Out of the 203 study subjects, 58% were from urban areas while 42% belonged to rural area. Majority of the children belonged to the middle class with 49.2% being from upper middle class and 39.2% from lower middle class. Fast food consumption was reported as more than 4 times per week by 48.80 %, 2-4 times/week by 43.20%, at least once a week by 6.40%. 62.4 % of children reported daily intake of sweetened beverages with 44.8% reporting intake of more than one per day. 27.6% of the children reported having sweetened beverages at least 2 to 4 times in a week. Skipping of breakfast was common among school going children and observed 2-4 times/week in 49.20%, and >4 times/week by 6.0%. About 57.60% children had purchased the school lunch 2-4 times/week from canteen, 13.60% >4/week and 10.80% at least once a week. In the study subjects, approximately 52% of children spent more than the recommended 2 hrs./day on screen, 32.4% spent 1-2 hrs. on screen. About 75% of the children met the WHO recommendations for physical activity (i.e. moderate to vigorous physical activity of at least 60 minutes/day).

CONCLUSION

Cheap processed junk food has adversely affected the health of ordinary people. Such foods contain empty calories and hardly any vitamins, minerals or proteins and may be an important contributor to under nutrition in both upper and lower middle class where non-nutritive processed food and sugary beverages have replaced the traditional nutritious food. Both urban and rural population have fallen prey to this malady.

KEY WORDS

Junk Food, Underweight, BMI.

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BACKGROUND

Junk foods are foods or beverages that have low nutrient density, provide calories primarily through fats or added sugars and have minimal amounts of vitamins and minerals.

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Foods such as chips, Kurkure, soft drinks, juices, ice creams, chocolates and snacks, classified as junk foods are quite popular among children. Such foods are deficient in iron, calcium and other trace elements, and their sodium content is very high. Some may contain chemicals, artificial colours, flavours and preservatives which are bad for health.⁽¹⁾ Regular and consistent consumption of such foods over a long period of time may be deleterious to health. Ready availability, low cost, commercial marketing strategies and peer pressure makes junk food popular with children. High fat and sugary taste being addictive attract the children to junk food over healthy food.^(2, 3)

Junk food has displaced more traditional diets and is now available in every neighbourhood. Biscuits, savoury snack packets and the likes, costing between five and ten rupees have replaced many meals for a large chunk of population across rural and urban India. These children also consumed less of fresh fruits and vegetables and had less of milk intake.⁽⁴⁾

An increased consumption of junk food has been reported among school aged children as these are widely available in and outside the schools, through variety of outlets. Sale of junk food in these outlets often competes with more nutritious school lunch schemes.⁽⁵⁾

India is fast becoming the diabetes and heart disease capital of the world. The association of junk food with obesity and cardiovascular risk factors is well established. At the same time India leads the world in terms of underweight people with almost half the nation's under-five being underweight.^(6,7) Undernutrition is closely associated with communicable diseases like tuberculosis, malaria, pneumonia and diarrhoea.^(8,9)

The present study attempts to identify four risk factors for eating behaviour i.e. fast food intake, sweetened beverages intake, skipping of breakfast and purchased lunch amongst the underweight children.

MATERIALS AND METHODS

All children 5-18 yrs. of age attending Paediatrics Department OPD of Shri Maharaja Gulab Singh Hospital (SMGS-H), Jammu every Thursday over a period of one month were screened, their height and weight recorded, and BMI calculated. The underweight children, i.e. those with BMI less than -2SD for age and sex as per WHO BMI charts were included in the study.⁽¹⁰⁾ Their parents were explained the purpose of study and informed consent was taken. Sociodemographic details and history of present illness was taken, and a complete clinical examination was done focusing on the detection of co-morbid conditions. Each patient's dietary quality, eating behaviour, screen time and physical activity were evaluated as per the designed Performa. The height and weight of parents were also recorded, and BMI was calculated.

The data was analysed using computer software Microsoft Excel and SPSS version 12.0 for windows.

RESULTS

- 800 children aged 5-18 yrs., who visited the outpatient patient wing of the Department of Paediatrics a, SMGS hospital were screened by BMI. Of them 203 satisfied the inclusion criteria and were thus included in the study.
- The study group comprised of 112(55.17%) females and 91(44.82%) males. (Table-1)
- 59(29%) children were between 5- 9 yr of age, 55(27%) between 10-11 yrs. and 89(43.8%) were more than 15 years of age. (Table -2)
- 88.4 % of the children belonged to the middle class with 49.2% being from upper middle class and 39.2% from lower middle class as per Modified Kuppuswamy Scale. (Table -3)
- 58% were from urban areas while 42% belong to rural area. (Table -4)

Sex	Underweight
Males	91 (44.82%)
Females	112 (51.17%)

Table 1. Association between Sex Distribution and BMI of Study Subjects (n=203)

Age Distribution (Years)	Underweight BMI < -2 SD
5-9 yrs.	59 (29%)
10-14 yrs.	55 (27%)
>15 yrs.	89 (43.8%)

Table 2. Association between Age Distribution and BMI of Study Subjects (n=203)

Family Status	Number of Patients	Percentage
Upper class	8	4.0%
Upper middle	100	49.20%
Lower middle	80	39.2%
Lower class	15	7.6%

Table 3. Demographic Characteristics of Study Subjects (n=203)

Population	Number of Patients	Percentage
Rural	85	42%
Urban	118	58%

Table 4

Figure 1

Figure 2

Feeding Characteristics of Study Subjects (Table -5)

- 62.4 % of children reported daily intake of sweetened beverages with 44.8% reporting intake of more than one per day. 27.6% of the children reported having sweetened beverages at least 2 to 4 times in a week.
- Skipping of breakfast was observed >4 times/week by 6.0%, 2-4 times/week in 49.20%, at least once a week by 22.70%.
- 13.60% of children purchased school lunch from canteen more than 4 times/week, 57.60% children did it 2-4 times/week and 10.80% at least once a week.
- Fast food consumption was more than 4 times per week by 48.80 %, 2-4 times/week by 43.20%, at least once a week by 6.40% and <1/week by 1.60%.

Characteristics	No. of Patients	Percentage
Sweetened Beverages		
<1 week	7	3.60%
1/week	13	6.40%
2-4 times/ week	56	27.60%
1/day	36	17.60%
>1/day	91	44.80%
Breakfast Skipped		
<1/week	45	22.10%
1/week	46	22.70%
2-4/week	100	49.20%
>4/week	12	6.0%
Purchased School Lunch		
<1 week	36	18%
1/week	22	10.80%
2-4/week	117	57.60%
>4/week	28	13.60%
Fast Food Consumed		
<1/week	3	1.60%
1/week	13	6.40%
2-4/week	87	43.20%
>4/week	100	48.80%

Table 5

- In the study subjects approximately 52% of children spent more than the recommended 2 hrs./day on screen, 32.4% spent 1-2 hrs. on screen.
- About 75% of the children met the WHO recommendations for physical activity (i.e. moderate to vigorous physical activity of at least 60 minutes/day).
- Children attended the hospital with acute illnesses, like gastroenteritis (30%), worm infestation (21%), anaemia (18%), upper respiratory tract infection (16%), urinary tract infection (12%) and acute hepatitis (3%).

Characteristics	No. of Patients	Percentage
TV - viewing/day		
<1 hr	20	10%
1-2 hrs	66	32.4%
2-4 hrs	106	52%
>4 hrs	11	5.60%

Table 6. Recreational Characteristics of Study Subjects

Among the parents of study subjects 70.80% of mothers are obese, 17.20% are overweight, 7.60% are extreme obese and 4.40% are having normal BMI, whereas 75.20% of fathers are obese, 15.20% are overweight, 6.0 % are extreme obese and 3.60% are normal. Hence degree of under nutrition did not correlate with parenteral nutrition (Table-7)

BMI (kg/m ²)	Mother		Father	
	Frequency	(%)	Frequency	(%)
Underweight (<18.5)	0	0.00	0	0.00
Normal (18.5-24.9)	10	4.90	7	3.40
Overweight (25.0-29.0)	35	17.20	31	15.20
Obese (30.0-40.0)	143	70.40	152	74.80
Extreme obese (>40.0)	15	7.38	12	6.00

Table 7. BMI of Parents of the Study Subjects (n= 203)**DISCUSSION**

The prevalence of moderate and severe underweight is highest in South Asia; one in 5 girls aged 5-19 years and nearly one third of their male peers are underweight. Physical growth is a key indicator of child health.⁽¹¹⁾

In the present study of 203 underweight children aged 5-18 years, 58% were from urban and 42 % from rural areas. Majority belonged to the middle class with 49.2% belonging to the upper middle class and 39.2 % belonging to the lower middle class. Intake of fast food and sweetened beverages was common in all age groups. Skipping breakfast and purchasing school lunch was a commonly observed behaviour.

Gupta A et al in their study of children in the age groups 12-18 years from Govt Schools in the rural areas of Himachal Pradesh found high prevalence (36%) of consumption of junk food. They found that most popular junk food item was chips (71%) followed by chocolate (14%) bakery products (13%), soft drinks (7%) and sugar sweetened beverages (5%). They also observed that junk food was consumed mainly as snacks from shops outside the school.⁽¹²⁾

Kaur M et al in their study screened 2636 children aged between 4 and 15 years from rural schools and reported that fast food prevalence was high among all age groups and both the genders and nearly 60% of these consumed fast food on a daily basis. All the children had inclination for fast food and 25% skipped meals for fast food.⁽⁴⁾

Most of the western countries and few schools in India have banned the sale of junk food in school cafeteria. In United Kingdom and many European countries, all commercial activities in primary school are restricted as per the directive of Union Of European Beverages Association (UNESDA).⁽¹³⁾ However, there is lack of stringent law and regulation pertaining to fast food sale in Indian schools.

In the present study these underweight children had reported to the paediatric outpatient department with various ailments like acute gastroenteritis (30%), worm infestation (21%), anaemia (18%), upper respiratory tract infection (16%), urinary tract infection (12%), acute hepatitis (3%). Childhood underweight is becoming increasingly important contributor to adolescent undernutrition and diseases, both deficiency as well as infections. Children who are undernourished are at increased risk of various infectious diseases due to weak immune system. The increased intake of fast food predisposes children to infections due to poor

hygiene during preparation, storage and handling of junk food.^(9,14)

Reicheit Ac & Rank MM have also highlighted the negative impact of junk foods on cognition and behaviour during adolescence. They further proposed that poor dietary choices may derail the normal adolescent maturational process, which can predispose individuals to dysregulated eating and impulsive behaviour.⁽¹⁵⁾

Jalambo MO et al in their study of female adolescents aged 15-19 years reported significant association between iron deficiency anaemia and dietary habits like skipping breakfast and the amount of junk food consumed and cognitive impairment.⁽¹⁶⁾

Burrows et al in their review of literature reported that breakfast consumption and quality meal patterns had positive association with academic achievement whereas negative associations were reported with junk food.⁽¹⁷⁾

Children are on the receiving end of a barrage of fast food and sugary beverage advertising. Television advertisement plays an important role in promoting junk food by the use of animation and favourite cartoon characters. Exposure to marketing of energy dense, nutrient poor food and beverages has been shown to adversely affect children's eating habits.⁽¹⁸⁾

In the study subjects approximately 52% of children spent more than the recommended 2 hrs./day on screen, 32.4% spent 1-2 hrs. on screen.

Dixon HG et al, in a survey of 919 five and six grade students, reported that heavier commercial TV viewing was associated with more positive attitudes towards junk food and was independently associated with higher junk food consumption. They further concluded that changing the food advertising environment on children's TV to one where nutritious foods are promoted and junk foods are relatively unrepresented would help to normalise and reinforce healthy eating.⁽¹⁹⁾

Coon KA et al also reported that greater TV use has been associated with higher intakes of energy, fat, sweet and salty snacks, and carbonated beverages and lower intakes of fruits and vegetables, placing children at risk of poor nutritional status.⁽²⁰⁾

Sadeghirad B et al in a systematic review and meta-analysis of randomised trials concluded that unhealthy food and beverage marketing increases dietary intake and preference for energy dense, low -nutrition food and beverage in children.⁽²¹⁾

An interesting observation in the present study was that in a number of households the parents are overweight and obese while the children are underweight. Rising family incomes and easy accessibility to junk food seem to have made middle class vulnerable to both forms of malnutrition i.e. obesity and underweight.

Black et al reported that maternal and child malnutrition in low income and middle income countries encompasses both undernutrition and a growing problem with overweight and obesity.⁽²²⁾ Van et al reported that fast food intake was common in young adults due to time limitations, convenience and taste. Television was reported to be the most effective medium influencing their food choices.⁽²³⁾

Promotion of healthy eating habits and education of parents and children about junk food therefore need to be strengthened. Strict enforcement of the laws to regulate the

marketing and advertising of junk food in and around school premises may also be helpful in reducing the consumption of junk food among school aged children.

CONCLUSION

Fast foods have become an important part of dietary menu for most children. There is a high prevalence of food consumption amongst the underweight children belonging to the upper- and middle-class families in both urban and rural areas. Individual counselling for children and their families on healthy eating habits, restricting junk food and replacing it with available, affordable traditional food is the need of the hour.

REFERENCES

- [1] Kaushik JS, Narang M, Parakh A. Fast food consumption in children. *Indian Pediatrics* 2011;48(2):97-101.
- [2] Rudert C. The effect of an unregulated fast food industry on nutrition in Asia. UNICEF EAPRO 26 August 2014.
- [3] Jackson P, Romo MM, Castillo MA, et al. Junk food consumption and child nutrition. *Nutritional anthropological analysis. Rev med Chil* 2004;132(10):1235-42.
- [4] Kaur M, Hegde AM. Are we aware of what we are, we are what we eat - an epidemiological survey. *Int J Clin Pediatr Dent* 2008;1(1):13-6.
- [5] Missbach B, Pachschooll C, Kuchling D, et al. School food environment: quality and advertisement frequency of child-oriented packaged products within walking distance of public schools. *Preventive Medicine Reports* 2017;6:307-13.
- [6] Payab M, Kelishadi R, Qorbani M, et al. Association of junk food consumption with high blood pressure and obesity in Iranian children and adolescents: the CASPIAN - IV Study. *J Pediatr (Rio J)* 2015;91(2):196-205.
- [7] Wang Y, Chen HJ, Shaikh S, et al. Is obesity becoming a public health problem in India? Examine the shift from under - to over-nutrition problems over time. *Obes Rev* 2009;10(4):456-74.
- [8] Padmapriyadarsini C, Shobana M, Lakshmi M, et al. Under-nutrition and tuberculosis in India: situation analysis and the way forward. *Indian J Med Res* 2016;144(1):11-20.
- [9] Calder PC, Jackson AA. Under-nutrition, infection and immune function. *Nutr Res Rev* 2000;13(1):3-29.
- [10] Cole TJ, Flegal KM, Jackson AA. Body mass index cut offs to define thinness in children and adolescents: international survey. *BMJ* 2007;335(7612):194.
- [11] Global database on Child Growth and Malnutrition. UNICEF - WHO - The World Bank: Joint child malnutrition estimates - Levels and trends. 2018. www.who.org.
- [12] Gupta A, Kapil U, Singh G. Consumption of junk foods by school - aged children in rural Himachal Pradesh, India. *Indian J Public Health* 2018;62(1):65-7.
- [13] The UNESDA Commitments (<http://www.unesda-commitments/no-advertising-to-children-under-12/>).

- [14] Jones TF, Angulo FJ. Eating in restaurants: a risk factor for foodborne disease? *Clinical Infectious Diseases* 2006;43(10):1324-8.
- [15] Reichelt AC, Rank MM. The impact of junk foods on the adolescent brain. *Birth Defects Res* 2017;109(20):1649-58.
- [16] Jalambo MO, Karim NA, Nasir IA, et al. Prevalence and risk factor analysis of iron deficiency and iron deficiency anaemia among female adolescents in the Gaza Strip, Palestine. *Public Health Nutr* 2018;21(15):2793-802.
- [17] Burrows T, Goldman S, Pursey K, et al. Is there an association between dietary intake and academic achievement: a systematic review? *J Hum Nutr Diet* 2017;30(2):117-40.
- [18] Batada A, Seitz MD, Wootan MG, et al. Nine out 10 food advertisements shown during Saturday morning children's television programming are for foods high in fat, sodium or added sugars or low in nutrients. *J Am Diet Assoc* 2008;108(4):673-8.
- [19] Dixon HG, Scully ML, Wakefield MA, et al. The effect of television advertisements for junk food versus nutritious food on children's food attitudes and preferences. *Soc Sci Med* 2007;65(7):1311-23.
- [20] Coon KA, Tucker KL. Television and children's consumption patterns. A review of the literature. *Minerva Pediatr* 2002;54(5):423-36.
- [21] Sadeghirad B, Duhaney T, Motaghipisheh S, et al. Influence of unhealthy food and beverage marketing on children's dietary intake and preference: a systematic review and meta-analysis of randomised trials. *Obes Rev* 2016;17(10):945-59.
- [22] Black RE, Victoria CG, Walker SP, et al. Maternal and child under-nutrition and overweight in low-income and middle income countries. *Lancet* 2013;382(9890):427-51.
- [23] Van MK, Steyn NP, Marais MI. Characteristics and factors influencing fast food intake of young adult consumers in Johannesburg, South Africa. *S Afr J Clin Nutr* 2010;23(3):124-30.