



ASSESSMENT OF NUTRITIONAL STATUS OF OBESE SCHOOL GOING GIRLS FROM NAGPUR CITY

Shubhada Jambhulkar

Department of Home Science, Rashtrasant Tukadoji Maharaj Nagpur
University Nagpur

ABSTRACT

Obesity is an emerging major public health problem though the world and its prevalence has largely increased over the last decade in both developed and developing countries. Obesity has been more prone in school children. The present study was conducted on 150 school going girls from selected school of north Nagpur city to assess the prevalence of overweight and obesity. Information on socio-economic background, dietary and activity pattern were collected. Anthropometric measurements were taken. The data was collected by interview and questionnaire schedule and the data were analyzed to see the obesity among school going children. The result of the study showed that the height of the girls was observed less and weight was observed higher than the NCHS standards. All the girls prefer to eat junk foods. The results of the study reflect that, there is an urgent need to improve the diet of school children thorough nutrition education.

Keywords: Obesity, Overweight, public health

INTRODUCTION

The World Health Organization (WHO) describes overweight and obesity as one of the today's most important public health problems, which is escalating as a global epidemic. It is also increasingly recognized as a significant problem in developing countries and countries undergoing economic transition (Subramanian, 2003). Childhood overweight and obesity is determined by the use of BMI percentile cut-off points, adjusted for sex and age, and the 85th and the 95th percentiles, referring to at risk for overweight and obesity respectively (Heitmann, 2003). Overweight and obesity are influenced by many factors including hereditary tendencies, environmental and behavioural factors. Obesity is not always simply a result of overindulgence in highly palatable foods or of a lack of physical activities, biological factors (hormones, genetics), stress, drugs and ageing also plays a role. However, dietary factors and physical activity patterns strongly influence the energy balance equation and they are also the major





modifiable factors. Indeed, high- fat, energy – dense diets and sedentary lifestyles are the two characteristics most strongly associated with the increased prevalence of obesity world – wide (Singh, 2008).

Keeping this in view, the present study was done to assess the overweight and obesity among the school going girls from the selected school of north Nagpur city.

METHODOLOGY

The present study was carried out in the Gurunanak Primary and Secondary High School, Bezonbagh, North Nagpur. The sample of 150 overweight and obese girls from 11-13 years was purposely selected for the study. The data was collected by interview cum questionnaire method. The information regarding socio-economic information about the parents including, educational qualifications, occupation, family income was collected. Anthropometric measurements i.e., height (cm), weight (kg), arm circumference (cm), hip circumference (cm) and waist circumference (cm) were recorded by standard scientific instruments. The height and weight were measured using anthropometric rod and weighing balance respectively. Arm, hip and waist circumference were measured by measuring tape. Heights were taken to the minimum of 1 mm and weights were taken to the minimum of 100 gm with minimum clothing. Mean and standard deviation of each measurement were calculated and compared with National Centre for Health Statistics (NCHS). The daily dietary intake for three consecutive days was taken and was averaged out for one day. The daily nutrient intake was calculated with the help of the food composition tables of Gopalan et al. (2004). The calculated daily nutrients were compared with recommended dietary allowances for Indians.

RESULTS AND DISCUSSION

Data of the present study was tabulated and analyzed and discussed.

General Information: -

The general information of parents (Father) regarding educational qualifications, occupation and family income were discussed in Table No. 1.





Table No. 1: - General Information of the Father

Sr. No.	Parameters	Numbers (N= 50)	Percentage (%)
1.	Educational Qualifications S.S.C.	06	04
2.	H.S.C.	30	20
3.	Graduates	54	36
4.	Post Graduates	60	40
	Total	150	100
	Occupation		
1.	Private	66	44
2.	Government	84	56
	Total	150	100
	Monthly Income (/ -)		
1.	5,000-10,000	15	10
2.	10,001-15,000	25	16.6
3.	15,001-20,000	25	16.6
4.	20,001-25,000	35	23.3
5.	25,001-30,000	50	33.3
	Total	150	100

From the above table it is observed that maximum 40 % fathers were post graduates followed by 36 % graduates, 20 % 12th passed and 04 % were 10th passed. 56 % fathers were working in government jobs and 44 % were working in private firms. Maximum of 33.3 % girls were from the families where their fathers monthly income ranged between 25,001-30,000/- followed by 23 % in a income range of 20,001-25,000/-, 16.6 % in a income range of 15,001-20,000/- & 10,001-15,000/-, 10 % in a income range of 5,000-10,000/- respectively.

Anthropometric Measurements: -

The anthropometric data was age wise categorized and presented in Table No.2.





Table No. 2. Mean Height, Weight and BMI of Girls.

Sr. No.	Parameters	Age (Yrs.)		
		11+ (N=50)	12+ (N=50)	13+ (N=50)
1.	Height (cm)	143	145.1	146
	S.D.	± 6.4	± 5.6	± 6.8
	Range (Min.-Max.)	130-160	135-160	135-165
	NCHS Standard	142	148	155
	Excess / Deficit (%)	0.70	-1.95	-5.80
2.	Weight (kg)	48.6	56.3	67.6
	S.D.	± 8.1	± 9.7	± 10.2
	Range (Min.-Max.)	40- 80	40- 82	40- 85
	NCHS Standard	33.7	38.7	44.0
	Excess / Deficit (%)	44.21	45.47	53.63

S.D.-Standard Deviation

From the table no. 2 it is observed that the height of the girls in the age group of 13 years was higher i.e. 146 cm as compared to other age groups i.e. 143 cm for 11 years and 145.1 cm for 12 years. Only the girls in the age group of 11 years are found 1 cm tall when compared with NCHS standards i.e. 142 cm (0.70 % excess height). The height of the girls from the 12 and 13 years of age category are found to be less than the NCHS standards i.e. 148 and 155 cm (-1.95 % and -5.80 % deficit).

The weight of the girls in all the age groups is found to be higher than the NCHS standards. The weight of the girls from 11, 12 and 13 years of age category was observed 48.6, 56.3 and 67.6 kg respectively which are found to be higher than the NCHS standards i.e. 33.7, 38.7 and 44.0 kg for 11, 12 and 13 years of age category respectively (44.21 %, 45.47 %, 53.63 % excess weight).

Dietary Intake: -

According to environmental theories, causes of obesity are fundamentally related to changes in life style and eating habits. Food intake has been related to obesity not only in terms of the volume of food ingested, but also in terms of the composition and quality of diet.





Nutrient intake of the girls was calculated on the basis of the mean of the three days dietary recall. Mean and standard deviation was calculated and compared with Recommended dietary allowances. The data is presented in Table No. 3.

Table No. 3. Nutrient Intake of Girls.

Sr. No.	Nutrients		Age (Yrs.)		
			11+ (N=50)	12+ (N=50)	13+ (N=50)
1.	Energy (kcal)	Mean & S.D.	1958.3 ± 0.33	2034.9 ± 0.41	2040.1 ± 0.43
		RDA	1956	2032	2037
		Excess / Deficit (%)	0.11	0.14	0.15
2.	Protein (gm)	Mean & S.D.	52.83 ± 0.40	51.12 ± 0.58	60.9 ± 0.59
		RDA	55.0	55.0	62.1
		Excess / Deficit (%)	-3.94	-7.05	-1.93
3.	Fat (gm)	Mean & S.D.	35.93 ± 0.55	36.32 ± 0.16	36.9 ± 0.7
		RDA	32	32	32
		Excess / Deficit (%)	12.28	13.5	15.31
4.	Vit. C. (mg)	Mean & S.D.	37.83 ± 0.30	38.42 ± 0.22	39.11 ± 0.12
		RDA	40	40	40
		Excess / Deficit (%)	-5.42	-3.95	-2.22
5.	Calcium (mg)	Mean & S.D.	540 ± 0.23	583 ± 0.17	548 ± 0.11
		RDA	600	600	600
		Excess / Deficit (%)	-10	-2.83	-8.66
6.	Iron (mg)	Mean & S.D.	38.4 ± 0.22	38.9 ± 0.14	39.12 ± 0.12
		RDA	40	40	40
		Excess / Deficit (%)	-4	-2.75	-2.2

S.D.-Standard Deviation, RDA- Recommended Dietary Allowances

From the table no. 3 it is observed that the diet of the girls from all the age groups are high in fat and energy and less in vit. C, calcium and iron. The energy intake of the girls from 11 years of age group is 1958.3 ± 0.33 kcal which are 0.11% excess than the RDA. The girls from the age group of 12 and 13years showed the same features that are the mean energy intake is 2034.9 ± 0.41 and 2040.1 ± 0.43 kcal respectively which are 0.14 and 0.15 % excess than the RDA.





Protein is an important nutrient for the body building but in this survey protein intake of the sample was observed less than the RDA. The girls in the age group of 11, 12 and 13 years consumed 52.83 ± 0.40 , 51.12 ± 0.58 and 60.9 ± 0.59 gms protein in their daily diet respectively. But it is -3.94, -7.05 and -1.93 % deficit than the RDA respectively.

The observations from the table showed that the fat consumption was extremely higher in the surveyed sample. The fat intake in the age group of 11 years was 35.93 ± 0.55 gm which is 12.28 % excess than the RDA (32). 36.32 ± 0.16 and 36.9 ± 0.7 gm fat consumption was observed in 12 and 13 years age group which is 13.5 and 15.31% excess than the RDA.

The content of vitamin c in the diet of the 11 years age group of girls was observed 37.83 ± 0.30 mg which is -5.42 % deficit than RDA. The same trend observed in the age group of 12 and 13 years category. In the age group of 12 and 13 years the intake of vitamin c of the girls was found to be 38.42 ± 0.22 mg and 39.11 ± 0.12 mg which is -3.95 % and -2.22 % less than the RDA respectively.

The RDA for calcium requirement in the age group of 11, 12 and 13 years is 600 mg. But the intake of this mineral was observed less than the RDA. In the age group of 11 years the calcium intake is 540 ± 0.23 mg which is -10 % deficit than RDA. 583 ± 0.17 mg and 548 ± 0.11 mg calcium intake was observed in 12 and 13 years of age group which is -2.83 % and -8.66 % deficit than RDA respectively.

The iron content in the diet of the girls is observed less than the RDA. It was 38.4 ± 0.22 mg, 38.9 ± 0.14 mg and 39.12 ± 0.12 mg observed in the diet of the girls in 11, 12 and 13 years of age category respectively. This is -4 % deficit than RDA in 11 years age category and -2.75 % deficit in 12 years age category and -2.2% in 13 years of age category.

There are many factors responsible for this increase in over nutrition. The main causes of this emerging problem mentioned were: increasing incomes, ready access to energy dense food stuffs, changes in lifestyle (i. e. Children engaging in less physical exercise; spending more time on sedentary activities like watching TV, playing on the computer, etc.); high





stress on school tasks and examinations, and greater consumption of fatty and fibreless fast/junk food (Malik, 2008).

Now a days , eating habits of children have changed and current habits- including the low consumption of fruits, greens and milk, increasing consumption of titbits/ goodies (cookies with fillings, salty industrialized snacks and sweets) and soft drinks, as well as not having breakfast it results the continuous increase in adiposity among children.

CONCLUSION

It is concluded that the girls of this age group were observed obese and they were consuming high fat diet. In order to promote healthier eating habits, and, consequently, decrease the rates of obesity, knowledge about food and nutrition is important. So regular nutrition education programmes should be conducted in the school to develop good and healthy eating habits and to reduce the risk factors of health among children.

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