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CORRELATES OF OBESITY AMONG ADOLESCENT GIRLS IN PUDUCHERRY

V. Raji Sugumar and A. Anitha

Associate Professor,
Research Scholar
PG & Research Dept. of Home Science Bharathidasan Govt. College for Women (Autonomous) Puducherry

Abstract:-To study the prevalence and epidemiological determinants of obesity among adolescent girls in Puducherry. A cross-sectional descriptive study was carried out in urban and rural population of Puducherry in a sample of 1350 adolescent girls between the age group of 19-21 years. A self-administered questionnaire was used to seek details on their life style practices. Prescribed standard tool were used for assessing the body composition. A binary logistic regression was used to define the possible causation for prediction of obesity. The prevalence of obesity was found to be 19.9 percent. In univariate analysis, girls from urban residence, smaller family size, higher per capita income, mother's education and father occupation, non-vegetarian and breakfast skippers were prone for obesity and other factors like age group, religion, caste, birth order, father's education and mother's occupation was not statistically associated. Hence, overall socio-economic development, adequate nutrient intake and intervention programmes will certainly helps in reducing the prevalence of obesity among adolescent girls.

Keywords:adolescent girls, epidemiology, obesity

INTRODUCTION

Obesity is a worldwide growing phenomenon. Once considered highly prevalent only in high income countries, overweight and obesity are now dramatically increasing in developing countries3. In India obesity was most prevalent in urban populations (male -5.5 percent, female-12.6 percent) followed by urban slums (male-1.9 percent, female-7.2 percent) and lowest in rural population (male-1.6 percent and female-6.8 percent)7.

Life style has greatly contributed to obesity among adolescent girls over the last five years have been reported to be physically less active, more-home bound, spending more time on internet, playing video games and watching television, as well as easy access to fast foods in urban setting6.

A complication of adult obesity was made worse if the obesity begins in pubertal stage. Nearly 50-80 percent of adolescents will be continue as obese adults and falls at risk group of diabetes, hypertension, coronary heart diseases and many more obesity related diseases. Obesity and overweight are harder to treat in adult than among children and adolescence2.

Hence, the present study was carried out to study the prevalence and epidemiological determinants of obesity among adolescent girls in Puducherry.

MATERIALS AND METHODS

Study area and study subjects

The present cross-sectional descriptive study was carried out from August 2009 to July 2011. All the students of five government manned arts and science colleges located in urban and rural areas of Puducherry were targeted within the said age range of 19-21 years were the respondents for the study. Accordingly, 1350 adolescent girls enrolled at the time of this study were purposively picked to conduct present study. A total of 1350 samples, 838 were from urban and 512 from rural area of Puducherry.

Random sampling technique was adopted to pick the samples. Adolescent girls belonging to the age group between 19 and 21 years, attending government manned Arts and Science College in Puducherry was the inclusive criteria for picking

samples for the present study. The age group of 19-21 years is designated as late adolescent age group which implies the end of biological maturity and reflects the health status of future mothers, hence this age group was targeted.

Data collection

The tool used for collecting data was a self administered questionnaire which was exposed to pre – test and modification. A questionnaire was designed, encomposing all the related questions relevant to the present study and instruction was given by the researcher for filling up the questionnaire. For assessment of body composition analysis Omron (HBF 362) which work under the principle of Bioelectrical Impedence Analysis (BIA) was used. Prescribed standard equipments like stadiometer was used to measure height and for measuring waist circumference a flexible tape was used.

Statistical analysis

The data collected were tabulated and consolidated using Ms-excel. For Statistical Analysis SPSS 17.0 was used wherever applicable. Binary Logistic regression was adhered to compare the sets of dependent (body composition parameters) and Independent (socio-economic characters) variables. P value less than 0.005 was considered for the statistical significance.

RESULTS

A total of 1350 adolescent girls were screened for prevalence of obesity. The overall prevalence of overweight and obesity by standard weight for height was 19.9 percent. The prevalence of underweight, normal and obesity among adolescent girls was 36.6%, 43.5% and 19.9 % respectively as shown in Table 1.

Table 1: Prevalence of Obesity by Body Mass Index

BMI Cut-off points	Significance	No (%)
< 14.9	Severe underweight	30 (2.2)
15-18.4	Underweight	465 (34.4)
18.5-22.9	Normal	587 (43.5)
23-27.5	Overweight	195 (14.4)
27.6-40	Obesity (Grade-I)	69 (5.1)
>40	Obesity (Grade- II)	4 (0.3)

No (%) – Number of sample (Percentage)

In recent report of WHO, a BMI cut-off of >23 has been suggested as indicative of overweight for Asia-Pacific inhabitants due to their greater fat deposits (WHO Regional Report, 2000)8.

Various epidemiological factors which found to be significantly associated with obesity in adolescent girls have been tabulated in Table 2.

Table 2: Epidemiological correlates of obesity

Variables	Obese/Overweight N=268 (19.9%)	Nonobese/ Nonoverweight N=1082 (80.1%)	Univariate analysis odds ratio (95% CI)
Height [a]	156.2 (5.51)	155.9 (5.25)	0.99 (0.9-1.0)
Weight [a]	64.5 (9.6)	45.1(6.2)	0.66 (0.6-0.7)
Family size [a]	4.54 (1.24)	4.72 (1.57)	1.08 (0.9-1.2)
Per capita Income [a]	1858 (2235.6)	1383 (1601.1)	1.0 (1.0-1.0)
Puberty [a]	12.9 (1.13)	13.5 (1.03)	1.55 (1.3-1.7)
Region [b]			
Rural	67 (25)	445 (41.1)	1 (ref)
Urban	201 (75)	637 (58.9)	2.09 (1.5-2.8)
Mother Education [b]			
Illiterate	51 (19)	344 (31.8)	1 (ref)
Literate	217 (81)	738 (68.2)	0.50 (0.3-0.7)
Father Occupation [b]			
Unemployed	27 (10.1)	111 (10.3)	1(ref)
Employed	241 (89.9)	971 (89.7)	0.92 (0.6-1.5)
Dietary habits [b]			
Vegetarian	24 (9)	54 (5)	1 (ref)
Non-vegetarian	237 (88.4)	1004 (92.8)	1.88 (1.1-3.1)
Ova-vegetarian	7 (2.6)	24 (2.2)	1.52 (0.5-4.0)
Breakfast skipping [b]			
No	121 (53.1)	482 (43)	1 (ref)
Yes	107 (46.9)	640 (57)	0.63 (0.4-0.8)

a - Mean (Standard Deviation), b - No. (%) CI – Class Interval, OR-odds ratio

Out of 1350 adolescents who were interviewed, 838 were from urban area and 512 from rural area. Majority of obese subjects belonged to well educated parents. More than ninety percent of girls were vegetarian and breakfast was the most commonly skipped meal among the respondents (55%).

Mean of height (156.2<155.9), weight (64.5<45.1) and per capita income (1858<1383) of obese subjects was high as compared with that of subjects without obese. Whereas family size (12.9 >13.5) and age at puberty (4.54>4.72) was less in obese subjects respectively.

In univariate analysis, girls with urban population had a 2 times greater risk of obesity than rural population (OR=2.09, CI=1.5-2.8). Other predictors of obesity were mother education (OR=0.50, CI=0.3-0.7), father occupation (OR=0.92, CI=0.6-1.5), non-vegetarians (OR=1.88, CI=1.1-3.1) and breakfast skippers (OR=0.63, CI=0.4-0.8). Age group, religion, caste, birth order, father's education and mother's occupational status of adolescent girls didn't show any significant relationship with the prevalence of obesity (p>0.005).

DISCUSSION

The present cross-sectional study in Puducherry among adolescent population to age ranged from 19 to 21 years was assessed for prevalence of obesity. Overall prevalence of obesity among adolescent girls was 19.9 percent. Aounallah-skhiri et al, (2011)1 also noted similar prevalence of obesity among adolescent girls in South-Mediterranean country.

As explored in the study, most of the adolescent girls showed a clear socio-economic gradient in the prevalence of obesity was observed. It was noted that approximately three fifth of the adolescent girls who came from urban region, low-income group, with family history of obesity, hypertension and CVD were prone for obesity. A NNMB (2002) survey reported that the prevalence of adolescent obesity was higher among urban group mainly due to less physical activity with increasing use of automated transport, technology in home and more passive leisure pursuits.

Interestingly, the food consumption pattern of the respondents revealed a habitual breakfast skippers and the most common reasons given for skipping were dislike towards a particular food item and lack of time. Nan Singleton (1982) also found that the most common reasons given for skipping were no time, not being hungry, less common reasons included being on a diet to lose weight, not feeling good, no one to prepare food, dislike towards the food served and food not being available.

Mean of height and weight of obese subjects was significantly high than non-obese subjects, which suggest that obesity affects the overall growth of adolescents. Mean family size was less among obese subjects; hence the quality and quantity of food consumption was not affected by number of members in the family which also paves a way for increased prevalence of obesity.

CONCLUSION

In present study, a statistically significant association of overweight and obesity was found with urban residence, smaller family size, higher per capita income, mother's education and father occupation, non-vegetarian and breakfast skippers. Other factors like age group, religion, caste, birth order, father's education and mother's occupation was not statistically associated. Based on the findings, the study concluded that overall socio-economic development, adequate nutrient intake and intervention programmes will certainly helps in reducing the prevalence of obesity among adolescent girls.

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V. Raji Sugumar
Associate Professor, PG & Research Dept. of Home Science Bharathidasan Govt. College for Women (Autonomous) Puducherry

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