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The Prevalence of Obesity among School Going Children between 5-12 Years age group and its association with its causation's factors.

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ABSTRACT

Background Obesity in childhood is one of the highly risk factors for obesity in adulthood. It is one of the important causes for all the health which includes hypertension, metabolic disorders cardiovascular diseases, gallbladder disease diabetes mellitus and osteoarthritis. The prevalence of obesity and factors causing it in school going children between 5-12 years play important role to halt all diseases .

Aims: Our main aim in this study is to assess the rate of prevalence of overweight and obesity among school age children (5-12 years) residing Haldia, purba Medinipur; understand the underlying various factors influencing overweight and obesity and its association with several factors affecting children's obesity.

Methodology: A cross sectional and institutional study adopting random sampling system sampling procedure. This study was done with 1200 school going adolescents of age 5 to 12 years was included in the study carried in the department of paediatrics at a medical college and hospital Age, sex, BMI, Socioeconomic status, occupation of the father, literacy status of parents, mode of conveyance to school, type and hours of physical activity, hours involved in seeing television or playing video games were assessed in the form of questionnaire. Consent has been taken from parents before proceeding study.

Results: A total 1200 participants participates in this study . Among Them 60.833% were overweight and 12.5% were obese. Among them 40% were boys and 60 % were girls. Proportion of overweight was higher among girls than among boys and was statistically significant ($p < 0.05$). Prevalence of overweight girls peak is at age of 12 years (29.9%) compared with boys (23.58%). Obesity is significantly higher among adolescents of higher socio-economic status (16.0%) as compared to lower socio-economic group where 6.68% adolescent are obese; occupation of fathers was either service/business or the others (22.94%); children from semi private schools; and children who consume junk food (30.14%). Similarly, incidence of overweight among group – I was higher than those among group – II. It has been seen that prevalence of overweight was significantly lower among the adolescents who participated in outdoor games than those who does not participate any outdoor games ($p < 0.005$).

Discussion and Conclusions: Based on the findings of this study, it is evident that Girls are more overweight as compare of boys of same socioeconomic group. As age increases both boys and girls are obese but girls obesity rate is more as compare to boys . low levels of physical activity, watching television, and consuming junk foods are associated with a higher prevalence of overweight that can be overcome by participation in household activities, regular physical exercise, TV viewing of more than 2 hrs a day and by avoiding outside foods

Key Words: Socio-economic status. Overweight, obesity,

INTRODUCTION

Childhood obesity was so far thought to be a problem of the developed world, but it is increasingly being reported from middle- and low-income countries, especially from urban areas ¹. During early days in India, under nutrition is widely reported resulting in low rates of childhood obesity ² where as in recent years the results are contradictory and the prominent reason behind is the life style modification. This resulted in replacement of outdoor games and other social activities among children. ^[2-5] According to various studies; the prevalence rate of childhood overweight in India is ranging from 4% to 22%; ^[4-5] whereas in worldwide it is an estimated as 10% of school going children between 5 and 17 yr of age, are overweight or obese. ^[6] The most significant consequence of childhood obesity is its persistence into adulthood with all its health risks including cardiovascular diseases and diabetes mellitus etc., which has increased possibility to continue when its onset is in late childhood or teens. ^[7-8]

Obesity in children is not as easy to quantify as in adults. Body mass index is not an accurate measure of obesity in children. It is important to recognise childhood obesity and manage it, because if untreated, it can result in obesity in adulthood with all its attendant metabolic complications.

When there is excess intake of high calorie foods or insufficient physical activity or both result in overweight and obesity in children and adolescents. ^[9] Even a relatively smaller increase in body weight, not only with marks obesity, but possess a health risk because of the body fat. ^[10] Obesity also results in poor physical strength, mental disorders, respiratory problems and diabetes mellitus entry even at the age of early adulthood. ^[11]

A numerous cross sectional studies in western countries have reported that overweight and obese children are comparatively less physically active than non – obese subjects. Less hours of physically activity, high social economic back ground and dietary transition were found to be major risk factors for childhood obesity. This study will analysis the role of participation in physical activities, partaking in household chores, lesser hour's physical inactivity such as television viewing and playing computer/ video games and consumption of junk food were also studied. Therefore this study was undertaken to estimate the overall prevalence of obesity and factors contributing to it in school going children between 5-12 years.

Aims & Objectives

Our main in this study is to assess the rate of prevalence of overweight and obesity among school age children (5-12 years) residing Haldia, Purba medinipur; understand the underlying various factors influencing overweight and obesity and its association with several factors affecting children's obesity.

MATERIALS & METHODS

A cross sectional and institutional study adopting random sampling system sampling procedure. This study was done with 1200 school going adolescents of age 5 to 12 years was included in the study carried in the department of paediatrics at a medical college and hospital Age, sex, BMI, Socioeconomic status, occupation of the father, literacy status of parents, mode of conveyance to school, type and hours of physical activity, hours involved in seeing television or playing video games were assessed in the form of questionnaire. Consent has been taken from parents before proceeding study.

This study was carried out from Feb2024-July 2024, in the Department of Paediatrics in a medical college and hospital. The study protocol was approved by the institutional ethics committee.

After the approval of institutional ethical review board, consent from the heads of the educational institutions and the students were selected and oral assent from all the selected adolescents were obtained. A predesigned and pre tested questionnaire was used to interview the students. The data was analysed using SPSS. Adolescence were categorized into two groups, overweight (≥ 85 th percentile) and non overweight (< 85 th percentile) using age and sex.

Socioeconomic status is calculated based on modified Kuppusamy scale into lower (0-10), lower middle (11- 15), upper middle (16- 25) and upper (> 25). The occupation of the father are categorized into group 1 (service or business), group 2 (others). The literacy status of parents is grouped as group 1 ($\geq 10^{\text{th}}$ standard) and group 2 ($< 10^{\text{th}}$ standard).

All eligible candidates were examined physically and clinically by our team. All the Clinical investigation diagnosis were made by Dermatologist and medicine specialist on the basis of physical and clinically in the camp. Written consent was taken from all participants No any outsider were allowed in the camp.

RESULTS

A total 1200 participants participate in this study. Among them 60.833% were overweight and 12.5% were obese. Among them 40% were boys and 60% were girls. Proportion of overweight was higher among girls than among boys and was statistically significant ($p < 0.05$). Prevalence of overweight girls peak is at age of 12 years (29.9%) compared with boys (23.58%). Obesity is significantly higher among adolescents of higher socio-economic status (16.0%) as compared to lower socio-economic group where 6.68% adolescent are obese; occupation of fathers was either service/business or the others (22.94%); children from semi private schools; and children who consume junk food (30.14%). Similarly, incidence of overweight among group – I was higher than those among group – II. It has been seen that prevalence of overweight was significantly lower among the adolescents who participated in outdoor games than those who do not participate in any outdoor games ($p < 0.005$).

Table 1: Demographic profile of overweight and obesity on school going adolescents.

Age	Total	Overweight	Obese
5	150	75	15
6	150	78	14
7	150	87	16
8	150	94	19
9	150	96	18
10	150	94	19
11	150	98	23
12	150	108	26
Total	1200	730	150

In Table 1. It has been seen that as age increases, overweight and obesity increase in participants. In 5th age group 50% participants are overweight and 10% participants are obese, whereas at 12th age group their number increases to 72% participants are overweight and 17.33% participants are obese. Trends of increasing overweight more from 9th year of age. 1st of all participants overweight then they become obese with increasing age. Participants who do not engage in physical activity are more overweight as compared to other participants who do not engage in physical activity.

Table 2: Sex distribution

Gender	overweight	Obese	Total
Male	250	60	480
Female	480	90	720
Total	730	150	1200

Table no 2: In this table it is seen that Female are more overweight and obese as compared to male adolescent. Female are 3.68 times more overweight as compared to male participants (Odds=3.68, 95% CI, $z=11, p < 0.001$). Here P value is less than 0.001 so it is statistically significant. Females are also 2.2 times more obese as compared to male participants. Here Odds is 2.22 (odds=2.2, 95% CI, $z=304, p < 0.006$). Here P value is less than 0.006, so it is statistically significant.

Table 3: Association with Socio Economic Factors

Class	total	overweight	Obese
Lower	290	145	20
Lower middle	280	160	32
Upper middle	290	185	42
upper	340	240	56
total	1200	730	150

Table no: In Table no 3 it has been found that overweight and obesity is more found in upper class as compare lower socio economic group. Upper socio economic group participant are 60.8 % more overweight and 12.5% obese as compare to lower socio economic group . here odds ratio IS 12.1 (Odd=12.1,95%ci,z=13.2,p<0.001). P value is less than 0.001. so it is significant.

Table 4: Literacy Status

literacy	Total	overweight	Obese
<10	756	542	92
>=10	444	189	58
total	1200	730	150

Table no 04 : In Table no 04 it has been found that Participants whose father are less literate are highly overweight and obese as compare to highly literate people . 70% Participants are more overweight whose father are literacy rate below 10th pass.. so kit is seen that literacy arte also causing factor for overweight and obesity.

DISCUSSION

A total 1200 participants participates in this study .Among Them 60.833% were overweight and 12.5% were obese. Among them 40% were boys and 60 % were girls Proportion of overweight was higher among girls than among boys and was statistically significant (p < 0.05). Prevalence of overweight girls peak is at age of 12 years (29.9%) compared with boys (23.58%). Obesity is significantly higher among adolescents of higher socio-economic status (16.0%) as compared to lower socio economic group where 6.68% adolescent are obese; occupation of fathers was either service/business or the others (22.94%); children from semi private schools; and children who consume junk food (30.14%). Similarly, incidence of overweight among group – I was higher than those among group – II. It has been seen that prevalence of overweight was significantly lower among the adolescents who participated in outdoor games than those who does not participate any out door games (p<0.005).

Obesity is a global nutritional concern. In this study showed that the overall incidence of obesity is high in Haldia, Purba medinipur. Among 1200 adolescents in the age group of 5 – 12 years included in the study,730 were overweight and 150 were obese. Overall prevalence of overweight is

22.1%; prevalence of obesity is 4.1%. This results correlates with other studies carried out by Baby S Nayak *et al.*, 2011, ^[12] Laxmaiah *et al.*, 2007, ^[13] Dietz W H 2004

Our study i proportion of overweight was higher among girls (29.9%) than among boys (23.58%) and the difference found was statistically significant ($p < 0.05$) regarding obesity the difference is same as of overweight. In this study it is showed a higher prevalence rate of overweight/obesity among girls, as did a previous study done in Chennai. ^[15,16] There is a higher degree of influence among gender and adolescence on obesity can be featured to hormonal changes at puberty and the development of secondary sexual characteristics which result accumulation and redistribution of fat.

The present study it is documented that the prevalence of overweight and obesity was higher in the higher socio economic status (70.588%) compared to those with lower socio economic status (50%). These results show consistency with results from other Indian studies. ^[16,21,22] Combined influences of socioeconomic status, lifestyle and chronological age with a high incidence of obesity among adolescents as seen in our study have also been reported earlier. ^[23,24] . life style is contributory factor for obesity and overweight , this is revealed in our study.

There is a positive co-relationship between overweight and obesity with the consumption of unhealthy foods. Approximately 60% of adolescents preferred to consume junk food because they are their favourite dishes. Children of those who consume junk food were overweight, with the prevalence being 30.14%. The prevalence found in this variable is statistically significant. Our results correlate with the study carried out by Keerthan Kumar *et al.*, 2011. ^[26] Prevalence of overweight among group – I (those come by car, bus, and motorcycle) was significantly higher (31.42%) than those among group – II (by bicycle and walking)

[27]

the prevalence of overweight was significantly lower ($p > 0.05$) among adolescents who either walked to school or came on bicycle than among the adolescents who used vehicular transport such as motorcycles or cars. Similarly, Goyal *et al.*

CONCLUSION

Based on the findings of this study, it is evident that Girls are more overweight as compare of boys of same socioeconomic group. As age increases both boys and girls are obese but girls obesity rate is more as compare to boys . low levels of physical activity, watching television, and consuming junk foods are associated with a higher prevalence of overweight that can be overcome by participation in household activities, regular physical exercise, TV viewing of more than 2 hrs a day and by avoiding outside foods

The main conclusion comes from this study is that low levels of physical activity, watching television, and consuming junk foods are associated with a higher prevalence of overweight. So engaged in participation in household activities and regular physical exercise could help in lowering the prevalence of overweight somehow. Tv make children lethargies ,TV viewing of more than 3 hrs a day, is a reported major culprit for childhood obesity, parents and teachers should be advised to engage children in outdoor games and healthy activities. Children who carry home cooked foods, tend to be energetic and active.

Elders-parents and teachers are recommended to educate children about the ill effects of aerated drinks and energy dense food. There is an urgent need to educate the urban community on the aspects of healthy food habits and desired lifestyles to prevent overweight/obesity and its associated ill effects.

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