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Biswas K conducted a study on assessment of childhood obesity and associated factors among school going children in a selected urban community of Bankura, West Bengal

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Abstract
A descriptive survey research design was adopted to assess childhood obesity and associated factors among school going children in a selected urban community of Bankura, West Bengal. The study findings revealed that 28.57% children were obese. Out of them 71.88% were boy, and 84.38% belonged to upper socio-economic class family, 78.12% children were never engaged in dancing, karate, swimming and 96.88% always using two or four-wheeler for school. The mean percentage of physical activity pattern area (67.77%) was higher than the dietary pattern area (51.98%). Significant association was found between childhood obesity and age, gender, mother's occupation and socio-economic class of child. So, promotion of optimum health by promoting physical activity, modification of dietary intake; early identification of childhood obesity and management may prevent complication like, non-communicable diseases in later life. For that need school, community-based health awareness program with the help of health personnel, community people and multisectoral coordination.

Keywords: Urban community, childhood obesity, school going children

Introduction

An abnormal or excessive accumulation of fat which presents a risk to health is called overweight or obesity. For children (age 5-19 years), overweight is BMI-for-age more than 1 standard deviation above and obesity is more than 2 standard deviations above WHO Growth Reference median. Overweight and obesity caused more people die than underweight [1].

Overweight and obesity is not a disease but is a predisposing factors of various non communicable diseases like type 2 diabetes, dyslipidaemia and non-alcoholic fatty liver in children and coronary artery disease, diabetes, hypertension, and cancer in adult life [2]. A survey on 20 different country (2021) showed fifth rank of obesity, after COVID19, stress, mental health and, cancer [3].

Now, obesity is an epidemic like big public health problem because, globally 4 million people is dying each year due to overweight or obesity. As per WHO statistics, prevalence of obesity among children (5-19 years) has increased from 4% to 18% from the year 1975 to 2016 [1].

In India, prevalence of childhood obesity is ranges from 5.5% to 17%. Higher prevalence was found among children of urban areas than rural areas. The growing prevalence is due to rapid economic development, globalization, urbanization which forced children to depend more on calorie rich, cheap and readily available foods, increased academic pressure, less time for outdoor activities, increased screen time and pocket money, and busy work schedule of parents add the magnitude of the problems [4].

As about 50% obese children will be obese adults so, prevention of childhood obesity is vital. Once obesity occurred it is near impossible to lose weight [5]. So, it should be better to prevent its occurrence through community awareness program.

Obesity is BMI for age more than 2 standard deviation above WHO growth reference median

Materials and Methods

Literature review for the present study has been done under the following headings

- Literature related to childhood obesity.
- Literature related to childhood obesity and associated factors.

Literature related to childhood obesity

Goyel A, Gali N A, Kumar R (2020) conducted a study on Prevalence of overweight and obesity among rural and urban school going adolescents (10-19 years) in north India: a population-based descriptive cross-sectional study was conducted among 1600 school going adolescents from 5th to 12th class of Govt and Private school in rural and urban areas of district Ambala, Haryana with the objectives, to assess the prevalence of overweight/obesity among 10-19 years old school students. Stratified random sampling techniques was used for selecting sample. Data were collected by structured questionnaires and by anthropometric measurement. The study results showed the prevalence of overweight and obesity were 18.02% and 7.98% respectively. The study suggested to take primordial preventive measure at an early age by educating school children regarding importance of diet, physical exercise, curtailing the period of TV watching in order to have good and a healthy future [15].

Ullah OM *et al*. conducted a cross sectional study on obesity of primary school children in Bangladesh (Sylhet city) (Dec 2014) with the aim to uncover the health status of primary school going children and to identify the liable factors and renovate the obesity problem. Data related to height, weight and other parameters were collected from 300 children (5-14years old) through house based purposive survey. The results showed that out of 300 children 76% were healthy weight, 13.3% were overweight, 5.3% were obese and also 5.3% were underweight, girls (3.3%) were more obese than boys (2%). Mother's occupation, income of family, general food intake, computer game and outside sports are found as predisposing factors of obesity. So, need to increase awareness level of parents to avoid horrific effect of overweight and obesity [27].

Gothi N, Bairwa PR, Dodiyar R and Ghoti A conducted a school-based study to assess the prevalence of obesity among school children of age group 5-12 years (2021) in different parts of India. Ethical approval from institutional ethics committee and written informed consent were taken from parents 1 day prior to survey. The data were collected from 1000 study subjects by using questionnaires and anthropometric measurements. The results revealed that out of 1000 children, 544 were boys and 456 were girls. Boys 5.88% and girls 5.04% were overweight, 2.20% boys and 1.09% girls were obese. The study concluded that the overweight and obesity were higher in boys than in girls. Overweight children were maximum in the age 9-10 years, minimum in 11-12 years whereas obese children were maximum in age group 8-9 years and minimum in 11-12 years [28].

Pathak S *et al*. conducted a comparative, cross sectional, observational and questionnaire-based study on prevalence of obesity among 188 urban and rural school going adolescents (10-18 years old) of Vadodara, India (2018). The study results explained that out of 188 children, important difference was in weight (38.79 kg of rural children vs 48.88 kg of urban urban) and BMI (19.39 kg/m2 rural vs 22.79 kg/m2 in urban children) distribution among two groups. The BMI distribution were found 17.6%, 20.2%, 59% and 3.2% children were obese, overweight, normal, underweight respectively. In them 65.22% and 62.26% of urban males and females respectively were either obese or overweight in relation to 15.78% and 3.92% of rural males and females respectively. The significant association was seen between higher BMI and breakfast, liking of fast foods, involvement in outdoor games, using gadgets during meals and having obese family member of the children. So, this study showed that there is a tendency of high frequency of obesity and overweight among those who reside in urban area, have higher annual family income, frequency of restaurant and school canteen food and lesser frequency of physical training sessions conducted in schools [17].

Jagadesan S *et al*. conducted a study with an objective to determine the prevalence of overweight and obesity among 18955 school children and adolescents (ages 6-17 years) in Chennai (2014) across 51 schools, selected by systematic sampling method. Height, weight, waist circumference, and BP of the school children were measured. The results showed that the prevalence of overweight and obesity was significantly higher in private school compare to Govt school. Regression analysis showed that adolescent had 1.2 times greater odds of being overweight/obesity, private school participant had7.4 times greater odd of being overweight/obesity by IOTF criteria, blood pressure profile showed a steady increase in both systolic and diastolic blood pressure with age. So, overweight, obesity prevalence is higher in private school of Chennai [29].

Maiti S *et al*. conducted a cross sectional school-based study on overweight/ obesity among early adolescent school girls at urban area of West Bengal, India. Study subject was 1375 adolescent girls who were studying in 6th to 8th standard (10-14 years old). Height and weight were measured by using calibrated anthropometric rod and weighing scale. The results revealed that the prevalence of overweight including obesity was 10.62%, 7.64% and 7.49 depending on reference used (WHO, CDC, IOTF). Prevalence of obesity was 2.25%, 1.74% and 1.31% respectively. The overweight and obesity were higher in 14 years age group. The study showed the higher risk of overweight among school girls which suggest targeted intervention to promote increased physical activity and decreased consumption of energy dense foods [24].

Sen S, Renu Verma conducted a cross sectional study on assessment of childhood obesity in school going children (6-11 years) of a Y-category city of India (2015). 600 respondents were selected by simple random sampling from different socio-economic classes of Bhopal district. Information collected by questioning and by anthropometric measurements. After statistical calculation the study revealed that out of 600 children, 50% were male and 50% were female. Out of them, 13.5% were overweight and 13% were obese. Prevalence of obesity were higher in girls (61.5%) than boys (38.5%). Children from higher socio-economic class and nuclear family were 6 times and 2.5times at higher risk of obesity respectively. Family history of high BP showed a significant relationship with obesity. So, if aetiology and causative factors of obesity once identified, effective prevention and treatment program

can be designed by the health care providers and nutritionists to educate the parent, teachers and children [30].

Fatima A conducted a study on overweight and obesity among children in India through review of journals, original articles and research papers with high relevance to topic by searching Google scholar, PubMed etc. to present childhood obesity in India. The study showed the summary of all the studies reviewed including their date of data collection, standards used and their major findings and was revealed an increasing prevalence of childhood overweight, obesity in different parts of India as overweight and obesity in Wardha City (2006) 3.1%, 1.2%, Pondicherry (2008) 5.5% and 5.9%, in Surat (2012) 14.6%, 12.8% respectively, in Chennai (2014) Total of both was 13.7%, in Guwahati (2015) overweight and obesity was 1.7%, 10% respectively. So, for combating the increasing prevalence of overweight, obesity, an urgent need of collective approach is required [16].

Manna S, TN Chauhan, Verma M conducted a cross sectional analytical study on assessment of obesity among adolescents from an urban area of Western India (2020) with the objectives to find out the prevalence of obesity among urban adolescents of Western India and to compare those BMI for age between WHO and CDC 2000 growth charts. Data were collected from purposively selected 300 adolescents (15-19 years). The results showed, the prevalence of overweight was 10.3% and obesity was 4.3% as measured by the standards of WHO 2007 reference and the prevalence of overweight was 7.6% and obesity was 3.3% by the standards of CDC. The results also revealed that mean BMI were higher in males than females, it was increasing with age, education of parents and socio-economic status. There were no significant association between gender and both of the BMI for age categories [36].

Literature related to childhood obesity and associated factors

Das KM, Dasgupta A, Sinha R and Das S conducted a school-based study on assessment of risk factors for overweight and obesity: A cross sectional study among rural school going children in Hooghly district, WB (2021). The Study subject was 761 students of classes VI – XII of Ramnagar Noot Behari Pal Chowdhury High School who resided at Tarakeswar Block, Hooghly. Necessary data were collected by using questionnaire, anthropometric measurements and blood pressure examination. After statistical test through SPSS, 16.0 version, the prevalence of overweight and obesity were found 12.3% and 3.2% respectively, where increased BMI among boys and girls were 12.6% and 11.6% respectively. In bivariate logistic regression analysis fast food intake, less physical activity, high blood pressure was significantly associated with increased body mass index and in multivariate analysis fast food intake, high blood pressure remains significant predictor. So, early identification and life style modification by trained health work force should be at top of national health care agenda [31].

Naskar P, Roy S conducted a descriptive observational cross-sectional study on BMI and Lifestyle Pattern – Across sectional study among Adolescent school students in an Urban Area of Burdwan, West Bengal, India. The 570 sample (students of classes VIII to XII) was selected through multistage sampling technique. Data were collected by using structured schedule, digital weighing scale, potable stadiometer and school record book. The study results showed that 3.5% were obese, 12.6% were overweight, 75.3% were normal weight and 8.6% were thin. Only 23.9% of students performed the recommended physical activity, 58.1% consumed vegetables, 31.1% consumed milk, and only 9.3% consumed fruits for 5-7 days in a week. Only 24% performed recommended physical activity, 46% and 53.2% used computer and mobile phone. The significant association was found between overweight/ obesity and type of family, vegetable consumption and history of chronic diseases in the family. Thus, promotion of healthy diet intake, regular physical activity and health check-up is recommended [32].

Hossain TM, Luis KS, Biswas T conducted a school based cross-sectional study on prevalence and factors associated with overweight and obesity among primary school children (9-14 years) in a selected area of Dhaka, Bangladesh (2020). 150 children were selected from four purposively selected primary school (private and public), following simple random sampling technique. Anthropometric measurements were done by using locally manufactured stadiometer, and digital weight machine and BMI were calculated to classify children by using CDCP age and sex specific cut-off points. Necessary data were collected by using semi-structured interviewer administered questionnaire regarding socio demographic information, household activities, sports participation, sedentary activities and food habits. The study results revealed the prevalence of overweight (36.0%) and obesity (25.3%) was comparatively higher among children in private schools. Overweight and obesity more among girls in public schools (35.7% and 17.9%) and boys in private schools (38.8% and 32.7%). Associated factors were found; not engaged in household activities, sports, involved in sedentary behaviour, eating breakfast, having money for buying foods [8].

Karki A, Shrestha A and Subedi N (2019) conducted a cross sectional descriptive study on prevalence and associated factors of childhood overweight and obesity among primary school children in Nepal. Non-experimental research approach was used to conduct the study. The study was conducted in purposively selected private school of Lalitpur Metropolitan city in central Nepal. Two stage cluster random sampling was used to select 575 sample. Data were collected from students and parent by using separate self-administered questionnaires. Height and weight of the student were measured by using standard measuring tape and digital weighing machine and the anthropometric calculation was done using WHO Anthro plus software. The study showed the prevalence of overweight and obesity among children were18.6% and 7.1% respectively Among 328 male children, 62(19.0%) were overweight and 35(10.6%) were obese, and among 247 female 45(18.2%) were overweight and 6(2.4%) were obese. Sex of children, educational level of mother, and occupation of mothers had a more likelihood to be overweight / obesity. Likewise, children consuming energy-dense less nutrient food item, lacking active travel to and from school, and sedentary behaviours were greater likely of being overweight/obese. As per study results, one in four children in grades 1-5 at private school were either overweight or obese. So, needs to arrange school health and awareness program with the aim to reduce intake of energy-dense foods and promote an active lifestyle [7].

Koirala M, Khanal V, Khatri RB, and Amatya A conducted

a cross-sectional study on prevalence of overweight and obesity and factors related to it in childhood period among private school children, Lalitpur District, Nepal (2013). The data were collected from 986 subjects by using structured self-administered questionnaires with parents of children aged 6-13 years and BMI were calculated by doing height, weight measurements. The prevalence of overweight and obesity was done in proportion and factors association were examined by using chi square tests followed by logistic regression analysis. The results were found, out of 986 children 144 (14.6%) were overweight and 111 (11.3%) were obese. The associated factors found were family with ≤ 2siblings, upper class family, larger birth weight and advantage ethnic group etc. [33].

Mishra KA, Acharya PH conducted a cross sectional study on factors influencing obesity among school going children in Sambalpur district of Orisha (2017) to find out the prevalence and determinants of overweight and obesity among 10-12 years school children. 300 children were selected through stratified multistage random sampling technique and data were collected by using semi-structured, close ended questionnaire, and measurement of height, weight for calculation BMI. The prevalence of overweight/obesity together were found 9.6% in them, overweight and obesity prevalence among boys (5.6% and 3.4%) and girls (7.4% and 3.3%) respectively. The outdoor activities, cycling after school hours, mode of transportation to school, hours of TV viewing or computer use were significantly associated with BMI status of school children [34].

Desalew A, Mandesh A and Semahegn A **(**2017) conducted a school based cross-sectional study on 'Childhood overweight, obesity and associated factors among primary school children in Dire dawa, eastern Ethiopia. Multistage sampling method were used to select 456 primary school children. Face to face interview technique and anthropometric measurement were used to collect data. The study showed that the prevalence of overweight and obesity were14.7% and 5.8% respectively. Identified associated factors were private schooling, higher socio-economic class, intake of sweetened foods, not engaged in regular physical exercise, and maintaining sedentary life style like watching TV, playing computer game and having no close friends [35].

Yeole LU, Dighe DP, Gawali PP, Adkitte GR and Gharote MG conducted a cross sectional study on Assessment of obesity and factors responsible for obesity among school going children in randomly selected schools of Pune City with the purpose to assess the prevalence of obesity among school going children and factors associated to it. Data were collected form 100 school children by self-administered questionnaire. Assessed body-mass-index and waist hip ratio and categorized the student into underweight, healthy, overweight and obese by using WHO approved CDC age specific charts. The study showed BMI status among children were 13% underweight, 47% healthy, 22% overweight and 18% obese. The prevalence of overweight and obesity was significantly higher in males than females. About 88% populations were spending 0-2 hours in watching TV, 72% in playing video games, only 16% in daily playing and 86% preferred to play outdoor games, also around 62% were mentioned as lacking of physical activity in family [2].

Anteneh AZ, Gedefaw M, Tekletsadek NK, Tsegaye M and Alemu D conducted a school based cross-sectional survey research study on risk factors of overweight and obesity among high school students at city of Bahir Dar in North-West Ethiopia (2015). Multistage sampling was used to select 431 samples. After obtaining ethical clearance from Ethical review committee of GAMBY collect necessary information by using Self-administered questionnaire and by measurement of height and weight. The study results showed that the prevalence rate of overweight, obesity both was 16.7%. The factors corelated with overweight and obesity were sex, type of school, family monthly income, having family vehicle, frequently eating from outside of home, and number of doing physical activities weekly. So, to improve health of the student need to take collaborate intervention from all, Regional Government, school authority and from family [37].

Data collection tools and techniques

Variables to be measured	Tool	Techniques
Demographic Variables	Tool I Semi-structured demographic profile	Interviewing
Grading of obesity	Tool II Biophysical measurement proforma (*in-vivo*)	Biophysical measurement of height and weight
Associated factors of obesity	Tool III Structured rating scale	Interviewing

Instrument used

1. Calibrated Tape measure to measure height of the children.
2. Calibrated Weight machine to measure body weight of the children.
3. BMI for age 5 to 19 years (Z-scores) according to WHO (2007 Reference) to calculate BMI of children.

Results

Findings related to demographic characteristics of the children

- Maximum (28.12%) obese children belonged to the age of 10 years whereas maximum (28.75%) non obese children belonged to the age of 6 years.
- Majority (71.88%) boys were obese and (58.75%) girls were non-obese.
- Majority (53.13%) obese children were one siblings and majority (56.25%) non-obese children were two siblings
- Most of the (81.25%) obese children belonged to the nuclear family and most of the (81.25%) non obese children also belonged to the nuclear family.
- Majority (53.13%) father of obese children and maximum (41.25%) father of non-obese children were graduate.
- Maximum (40.62%) mother of obese children were graduate whereas maximum (35%) mother of non-obese children were Higher Secondary passed.

- Most of the (84.38%) father of obese children and most of the (92.50%) fathers of non-obese children were service holder.
- Majority (59.38%) mother of obese children and most of the (81.25%) mothers of non-obese children were home maker.
- Most of the (84.38%) obese children and majority (60%) non-obese children belonged to the family of upper socio-economic class.

Findings related to assessment of obesity in childhood period

- Out of 112 children, 80 (71.43%) were non-obese and 32 (28.57%) were obese.
- Maximum (6.25%) boys and (12.50%) girls belonged to underweight group.
- Maximum (16.19%) boy and (22.32%) girls belonged to normal weight group
- Maximum (6.25%) boys and (7.14%) girls were in overweight group
- Maximum (20.54%) boys and (8.04%) girls belonged to the obesity group.

Findings related to associated factors of childhood obesity

- Majority (53.12%) obese children were rarely consuming fast food.
- Maximum (31.25%) obese children sometimes taking candy, chocolate.
- Maximum (40.63%) obese children were rarely taking cake, pastry, cookies.
- Most of the (78.12%) obese children were rarely drinking sugar containing soft drinks
- Maximum (34.38%) obese children were always consuming oily and fried food
- Maximum (28.12%) obese children were both frequently and sometimes taking fatty food, butter, ghee.
- Maximum (46.87%) obese children were never consuming read meat,
- Maximum (40.62%) obese children were always taking sweet and beverage
- Most of the (87.50%) obese children were never taking extra table salt.
- Maximum (40.62%) obese children were always consuming nuts and oil seeds.
- Maximum (50%) obese children were sometimes taking food on watching TV or mobile phone.
- All of the (100%) obese children were never taking medicine which induced obesity.
- Maximum (46.88%) obese children were sometimes playing during leisure time in school.
- Maximum (43.75%) of obese children were always engaging in outdoor games.
- Majority (59.38%) obese children were always watching television/ using mobile phone for long time.
- Most of the (96.87%) obese children were never maintaining sleeping time <7 hours
- Majority (78.12%) obese children were never engaged in dancing, karate, swimming and others.
- Most of the (96.88%) obese children were always using school bus/two-wheeler or four-wheeler for going to school.
- Maximum mean percentage score related to factors of childhood obesity in physical activity pattern area (68.33%), were higher than the mean percentage score in dietary pattern area (56.58%).

Findings related to association between childhood obesity and selected demographic variables

- There were significant association between childhood obesity and age (7.75 at df 1), gender (8.57 at df 1) of children at 0.05 level of significance.
- There were also significant association between childhood obesity and occupation of mother (5.83 at df 1) and socio-economic status of the family (6.13 at df 1) of children at 0.05 level of significance.

Discussion

Discussion related to demographic characteristics

The findings of the present study revealed that maximum (28.57%) children were obese. Among them, majority (71.88%) obese were boy and (28.12%) obese were girl child. The present study showed that the prevalence of obesity was higher in nuclear families (81.25%), and most of the (84.38%) obese children were belonged to the family of higher socio-economic class.

The findings of the present study were partially supported by a cross-sectional study conducted by Hossain TM, Luies KS and Biswas T, on prevalence and factors associated with overweight and obesity among 150 primary school children (9-14 years) in a selected area of Dhaka, Bangladesh (2019). The study revealed that majority (52.7%) children were overweight/obese. In them majority (67.1%) were boys [8].

The present study was partially supported by a cross sectional school-based study carried out by Yeole LU, Dighe DP, Gawali PP, Adkitte GR and Gharote MG on assessment of obesity and factors responsible for obesity among 100 school going children at Pune City (2016). The analysis showed that the prevalence of obesity was 18%, in which 8% were girls and 10% were boys [2].

The present study was also partially supported by a population-based study conducted by Goyal A, Gadi AN, and Kumar R, on prevalence of overweight and obesity among rural and urban school going adolescents in north India (2020). The study showed that overweight and obesity were higher in nuclear family (26.98%), and the overweight and obesity were significantly higher in the upper socio-economic class family [15].

The present study was partially supported by a study conducted by Koirala M, Khatri BR, Khanal V and Amatya on prevalence and factors associated with childhood overweight/obesity in private school children in Nepal (July 2014) among 986 children showed that 25.9% children were overweight/obese [33].

The present study was also partially supported by a study conducted by Thomas MU, Narayanappa D and Sujantha MS on prevalence of overweight and obesity among 440 school children in Mysuru revealed that increased prevalence of obesity was observed among children from nuclear families (but p= >0.05) and among those from urban areas, among children from higher socio-economic class (p= 0.01) [4].

Discussion related to associated factors of childhood obesity: The findings of the present study indicated that maximum (40.62%) obese children were always taking sweet and beverages, maximum (40.62%) obese children

always consuming nuts and oil seeds, Majority (50%) obese children sometimes taking food on watching TV. Maximum (46.88%) obese children were sometime playing during leisure time in school, and majority (78.12%) obese children were never engaging in dancing, karate, swimming. Majority (59.38%) obese were always watching TV, mobile phone for long time and most of the (96.88%) obese children always using school bus/two-wheeler or four-wheeler for going to school.

The present study was partially supported by a cross-sectional study conducted by Desalew A, Mandesh A and Semahegn A on childhood overweight, obesity and associated factors among primary school children in Dire dawa, Eastern Ethiopia (2016). The study findings indicated that prevalence of overweight and obesity were significantly associated with children who preferred sweetened foods, not engaged in regular physical exercises, and spent free time in watching TV, playing computer game [35].

The present study was nearly fully supported by a study done by Mishra KA, Acharya HP on factors influencing obesity among school-going children in Sambalpur district of Odisha (2017). The study result revealed that 54.67% students watch television or use computer for more than 2 hours/day, and the overweight and obesity were significantly increases with increasing hours of TV watching/using computer per day. It also revealed that in overweight/obese students, 68.9% have the habit of eating something during watching TV or using computer, and 58.6% of them have fast-food eating habit of >3 times/week [34].

The present study was partially supported by a cross sectional survey conducted by Karki A, Shrestha A and Subedi N on prevalence and associated factors of childhood overweight/obesity among 575 primary school children in Nepal (2019) revealed that high junk food consumption (≥ 2 times per week), confectionaries such as sweets, ice cream (>2 times per week), sedentary activity, mode of transport to and from school were found significantly associated with childhood overweight/obesity [7].

The present study was partially supported by a cross sectional school-based study carried out by Yeole LU, Dighe DP, Gawali PP, Adkitte GR and Gharote MG on assessment of obesity and factors responsible for obesity among 100 school going children at Pune City (2016). The study result showed that about 88% children were spending 0-2 hours in watching TV, 72% were spending 0-2 hours in playing video games and only 16% were involved in daily playing [2].

Conclusion

From the present study findings, it can be concluded that childhood obesity is prevalent/widespread among school going children and it is associated with several factors like, age, gender, consumption of junk food, fried food, butter, ghee, sweet and beverages, and taking of nuts, oil seeds regularly, engaging with long time in watching TV or mobile phone, and also negatively associated with playing during leisure time in school, dancing, karate and swimming. These factors can be controlled through life style modification. So, need to increase the knowledge level of parents, family and as a whole community regarding the causes and effects of it in childhood and in adulthood period and how they should prevent it. These should be effectively done by developing Govt health policy on promotion of optimum health, prevention of obesity (primary prevention), early identification and management of childhood obesity (secondary prevention) and prevention of complication as a predisposing factor of non-communicable disease (tertiary prevention) and develop this policy through continuous research activity. So, need to arrange school, family or community- based health education, health awareness programs and health check-up programme by various category of health personnel in the community. Community participation, and inter-sectoral coordination among various department are very necessary for the successful implementation of the programme. Because, this mass community participation will support/inspire each and every individual to do physical activity, modification of dietary intake, and avoidance of inactive health behaviours which may reduce childhood obesity as well as prevalence of non-communicable diseases in later life.

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To identify factors responsible for childhood obesity so that a child can maintain healthy food habit and include physical activities in daily life schedule which can prevent obesity as well as prevent non-communicable diseases in childhood period and in later life. The results of the similar study conducted by Hossain TM, Luies KS and Biswas T showed majority (52.7%) children were overweight/obese. In them majority (67.1%) were boys.
Goyal A, Gadi AN, and Kumar R showed that overweight and obesity were higher in nuclear and upper socio-economic family.
Desalew A, Mandesh A and Semahegn A revealed that prevalence of overweight and obesity were significantly associated with children who preferred sweetened foods, not engaged in regular physical exercises, and spent free time in watching TV, playing computer game.
Mishra KA, Acharya PH indicated that 68.9% overweight/obese students have the habit of eating something during watching TV or using computer, and 58.6% of them have fast-food eating habit of >3 times/week.

Conflict of Interest
Not available

Financial Support
Not available

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