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Prevalance of Childhood Obesity and its Contributing Factors among Children in Selected Schools of Guwahati, Assam

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Abstract: ***Background- Childhood obesity and overweight were initially considered a disease in developed countries with higher per capita income. Overweight is defined as excess body weight relative to height, whereas obesity refers to surplus body fat. According to the World Health Organization (WHO), when body mass index is more than 25, the situation is denoted as overweight, and a Body Mass Index of more than 30 is considered an obesity condition. The burden of overweight and obesity among children has increased, becoming a global public health concern. In developing countries with emerging economies, the increasing trend of overweight and obesity among children poses a significant challenge to the healthcare system. The occurrence of overweight and obesity is higher in developed countries than in developing countries. The prevalence of childhood obesity has increased in developed countries.***

Materials and method-A descriptive quantitative approach and cross sectional research design was adopted for the study. The study was conducted at Little Pearls English Medium School, Narengi and R.K Memorial School Geetanagar by an interview schedule and using biophysiological method. The investigator used simple random sampling technique to select 109 children studying in schools of Guwahati,Assam.

Results- The study revealed that out of 109 children majority (40.4%) children were in the age group of 11-12 years. Majority of children (52%) were Male. Majority (92%) of the children were Hindu. Majority (52%) of the children belongs to joint family. Majority (38%) of children's father were HSLC pass. Majority (34%) children's mothers were HSSLC pass. Majority (40%) children's fathers were businessman/self employed. Majority (66%) children's mothers were home maker. Majority (95%) children were non-vegetarian. 15% children were overweight and 4% children were obese according to their BMI.94% of children take their breakfast regularly. 45% children take meals more than 3 times a day. 49% children prefer junk food over homemade food. 59% children eat snacks while watching TV. 45% children regularly take high fatty food. 74% children go to school by walking/ cycling. 52% children sleep in a day time regularly. 58% children sleep more than 8 hours every day. 31% children play outdoor games. 24% children are doing mild activities like running, dancing, gymnastic or house work. 35% children perform outdoor activities like skipping or jumping rope. 59% children perform meditation or yoga. 61% children have family history of obesity. The result showed that there was a significant association between the prevalence of childhood obesity and its contributing factors with demographic variables such as age, gender, religion, type of family, father's educational status, mother's educational status, father's occupation, mother's occupation and dietary habits.

Conclusions-From the findings of the present study, it shows that increasing BMI, sedentary life style, dietary factors and less physical activity are the major contributing factors of prevalence of childhood obesity among children studying in schools. Therefore, it is concluded that maintaining a healthy lifestyle and a healthy dietary habit can reduce the increasing contributing factors of developing childhood obesity.

Key words: Assess, School children, BMI, Contributing factors.

I. INTRODUCTION

Childhood obesity was initially considered as a disease in developed countries with higher per capita income. Overweight is defined as an excess body weight relative to height, whereas obesity refers to surplus body fat. According to the World Health Organization, when body mass index is more than 25 it is called as overweight and when the body mass index is more than 30 it is known as obesity. The burden 0f 0verweight and 0besity am0ng the chi1dren has increased becoming a global pandemic.

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In developing countries with emerging development of economics, the increasing trend 0f overweight and 0besity am0ng chi1dren possess a significant challenge to the healthcare system. The 0ccurence 0f overweight and obesity is higher in developed c0untries than deve1oping countries. The prevalence 0f chi1dhood 0besity is higher in developed countries. The conditi0n 0f 0verweight and 0besity 0ccurs due to energy imbalance between calories consumed, cal0ries exhausted and excessive calorie intake or insufficient physical activity. Childhood obesity and 0verweight is a precurss0r to metab0lic syndrome, poor physical health, mental disorder, respiratory problem and glucose intolerance. This may continue into adulthood. Childhood obesity and overweight is determined mainly by insufficient nutrition, physical inactivity, high socio-economic status, urban residency, traditional beliefs and marketing of transitional food companies.[2]

In Assam, a school based cross-sectional study was done among the students of class viii to X standard of Guwahati, Assam. 465 school children were selected using multistage simple random sampling. Data was collected using a pre-designed semi structure questionnaire. The result was prevalence of childhood overweight and obesity was found to be 5.5 and 2.8%.[3]

Overall, it was discovered that 6.2% and 10.8% of children were obese and overweight, respectively. Males were more likely than females to be classified as overweight or‖ obese (11.0% and 7.1%, respectively) (10.6% and 5.4%, respectively). It was discovered that there was a strong correlation between being overweight or obese and attending private schools, identifying as Muslim, and having a parent who works in business. [4]

Over 1.9 billion person who were under 18 years of age or older were underweight in 2016. More than 650 million of them were obese. In 2016 13% of adult over the age of 18 were obese and 39% were overweight. The majority of people on the planet resides in nation were the death toll from obesity and overweight is higher than that from underweight. In 2020 there were 39 million overweight or obese children under the age of five. In 2016, nearly 30 million kids and teenagers between the age group of 5 and 19 were overweight or obese.

Statement of the problem

A study to assess the Prevalence of Childhood Obesity and its Contributing Factors among Children in Selected Schools of Guwahati, Assam.

Specific objectives:

- To assess the prevalence of childhood obesity among children in selected schools of Guwahti, Assam.
- To find out the contributing factors of childhood obesity among children in selected schools of Guwahati, Assam.
- To find out the association between prevalence of childhood obesity among children and selected demographic variables.
- To find out the association between prevalence of childhood obesity among children with the contributing factors of childhood obesity.

Hypotheses

- H1- There will be significant association between prevalence of childhood obesity with the selected demographic variables.
- H2- There will be significant association between prevalence of childhood obesity among the children with contributing factors of childhood obesity.

II. RESEARCH METHODOLOGY

The research approach adopted for this study is quantitative research approach. In this study, considering the objectives a descriptive research design will be used to assess the prevalence of childhood obesity and its contributing factors among children in selected schools of Guwahati,Assam. There are total 150 numbers of Private Schools in Guwahati, Assam. Out of which for the present study two (2) schools were selected conveniently, namely Little Pearl English Medium School (Narengi) and R.K Memorial English Medium School (Geetanagar). The total number of schools was collected from the website. [37] In this study the target population is all the children under the age of 9-14 years and who are studying in class IV to VIII. The accessible population includes children under the age of 9-14 years and who are studying in class IV to VIII in conveniently selected schools of Guwahati, Assam. The selection of participants from the two schools was done by simple random sampling technique using lottery method in proportionate number. The sample size was calculated by using Raosoft sample size calculator. The sample consists of 150 children and the sample size was determined with margin of error 5 percent, confidence level 95 percent and the response distribution as 50 percent. After calculation by using Raosoft sample size calculator the required sample size was 109.Therefore, in this study sample size was 109 children. The tools used for the study were demographic variables, Biophysiological method to assess the prevalence of obesity among children by calculating BMI and self-structured interview questionnaires on contributing factors of childhood obesity. The analysis was done by descriptive and inferential statistics in terms of frequency and percentage distribution and chi square test to

find out the association between childhood obesity (acc to BMI table) with socio-demographic variables and to find out the association between overweight and obese children with contributing factor.

TABLE 1
Selection of desired sample size from selected schools of Guwahati, Assam

NO. OF SCHOOLS	CLASS	TOTAL CHILDREN	PROPORTIONATE NO.
I (Little Pearls English Medium School)	IV	14	10
	V	10	7
	VI	14	10
	VII	15	11
	VIII	20	14
II (R.K Memorial English Medium School)	IV	12	9
	V	13	10
	VI	16	12
	VII	16	12
	VIII	20	14
TOTAL		150	109

III. RESULT

1) Finding related to demographic data

TABLE 2.1 Frequency and percentage distribution of children according to age
n=109

Age in years	Frequency (f)	Percentage (%)
9-10	25	22.9
11-12	44	40.4
13-14	40	36.7
Total	109	100

The data presented in table 2.1 shows that out of 109 children the majority 44 (40.4%) belongs to age group 11-12 years, followed by 40 (37%) age group of 13-14 years and 25 (23%) age group of 9-10 years of children.

n=109

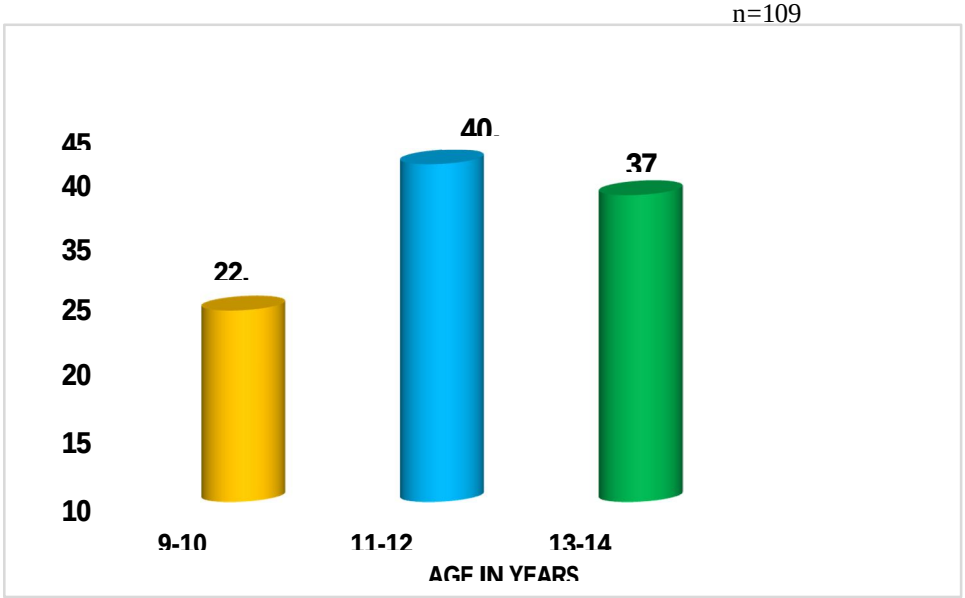

FIGURE 3.1

Bar diagram showing the percentage distribution of children according to their age.

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Table 2.1 Frequency and percentage distribution of children according to gender
n=109

Gender	Frequency (f)	Percentage (%)
Male	57	52.3
Female	52	47.7
Total	109	100

The data presented in table 2.2 depicts out of 109 children 57(52%) male and 52 (48%) female.

n=109

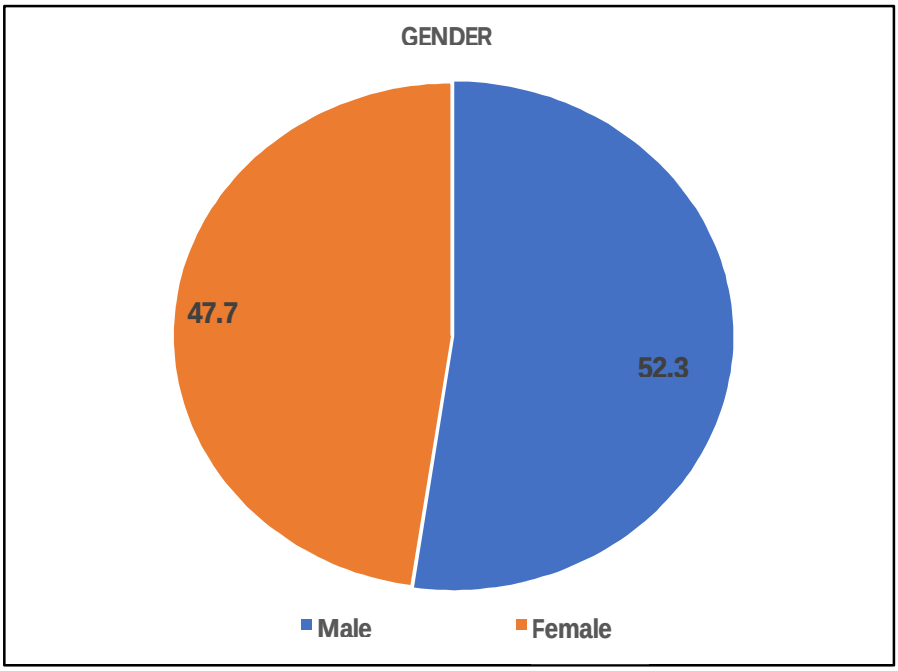

FIGURE 3.2

Pie diagram showing the percentage distribution of children according to their gender.

Table 2: Frequency and percentage distribution of the children according to religion
n=109

Religion	Frequency (f)	Percentage (%)
Hinduism	100	91.7
Islam	9	8.3
Christian	0	0
Total	109	100

The table 2.3 depicts out of 109 children the distribution of children according to religion is 100 (92%) Hindu followed by 9 (8%0 Islam and Christian are not found.

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n=109

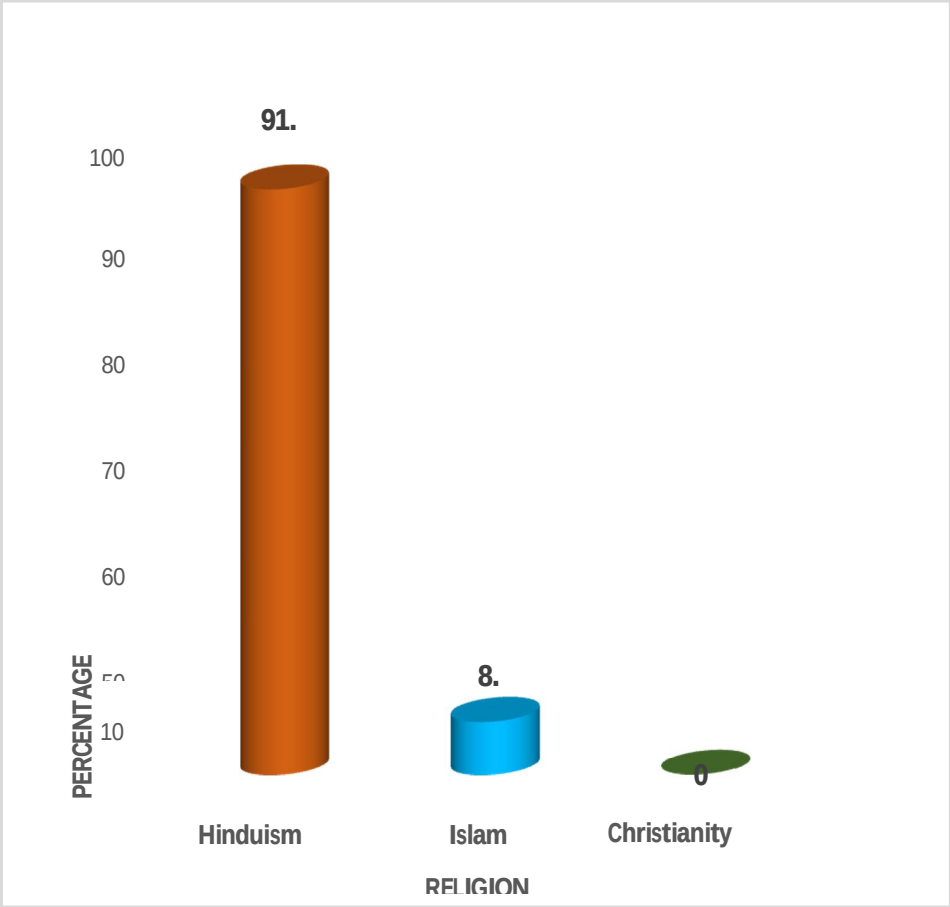

FIGURE 3.3

Bar diagram showing frequency and percentage distribution of children according to religion.

Table 2.4: Frequency and percentage distribution of children according to type of family

n= 109

Type of family	Frequency (f)	Percentage (%)
Nuclear	52	47.7
Joint	57	52.3
Total	109	100

The data presented in table 2.4 depicts out of 109 children the distribution of children according to type of family are 57 (52%) joint family and 52 (48%) nuclear family.

n=109

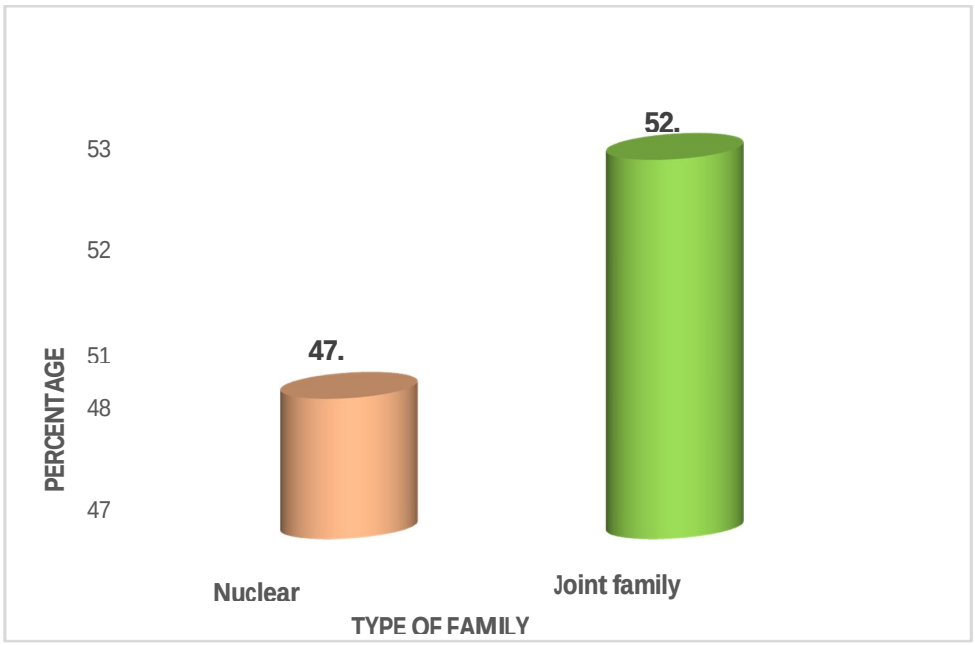

FIGURE 3.4

Bar diagram showing frequency and percentage distribution of children according to type of family.

TABLE 2.5: Frequency and percentage distribution of children according to the educational status of father.

n= 109

Father's education	Frequency (f)	Percentage (%)
No formal education	12	11
Primary education	9	8.3
HSLC Passed	16	14.7
HSSLC Passed	41	37.6
Graduate and above	31	28.4
Total	109	100

The data presented in table 2.5 depicts out of 109 children the distribution of children according to father 's educational status are 41 (38%) HSSLC pass, 31 (28%) graduates and above, 16 (15%) HSLC pass,12 (11%) no formal education and 9(8%) primary education.

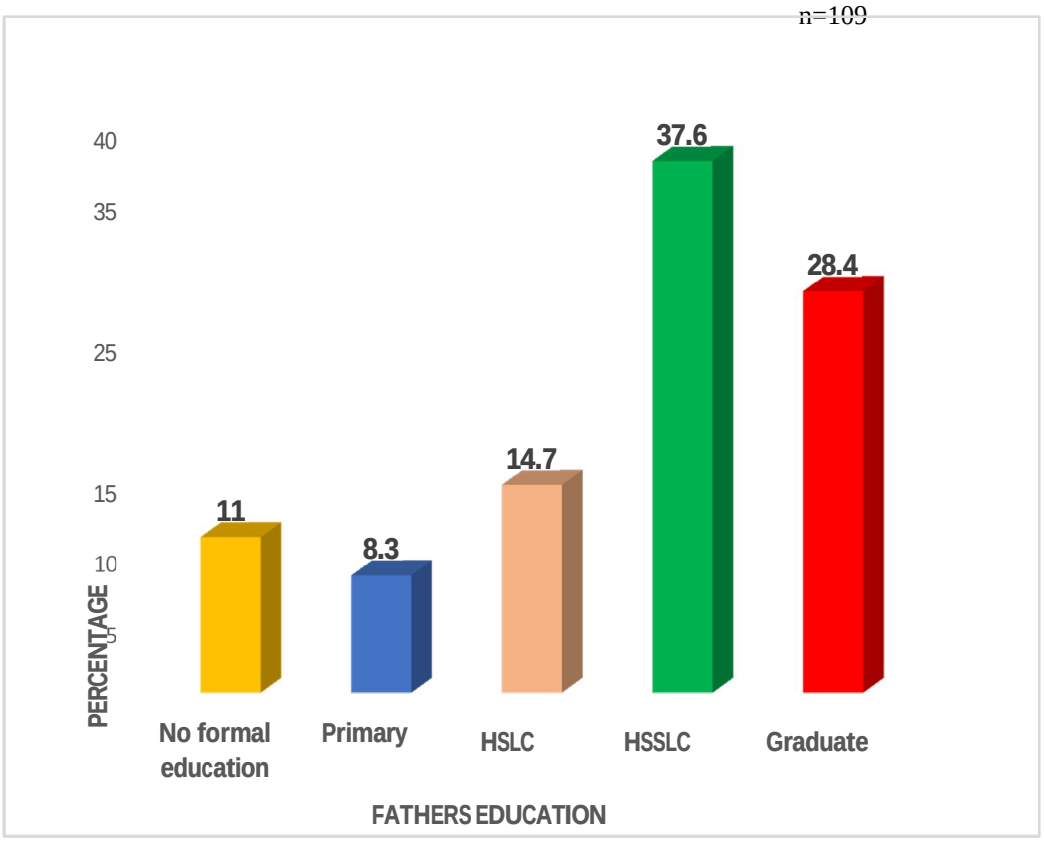

FIGURE 3.5

Bar diagram showing frequency and percentage distribution of children according to the educational status of father.

Table 2.6: Frequency and percentage of children according to the mother's educational status.

n=109

Mother's education	Frequency (f)	Percentage (%)
No formal education	19	17.4
Primary education	19	17.4
HSLC pass	12	11
HSSLC pass	37	33.9
Graduate and above	22	20.3
Total	109	100

The data presented in table 2.6 depicts out of 109 children the distribution of children according to mother 's educational status are 37 (34%) HSSLC pass, 22 (20%) graduate and above, 19 (18%) primary education, 19 (18%) no formal education, 12(11%) HSLC pass.

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n=109

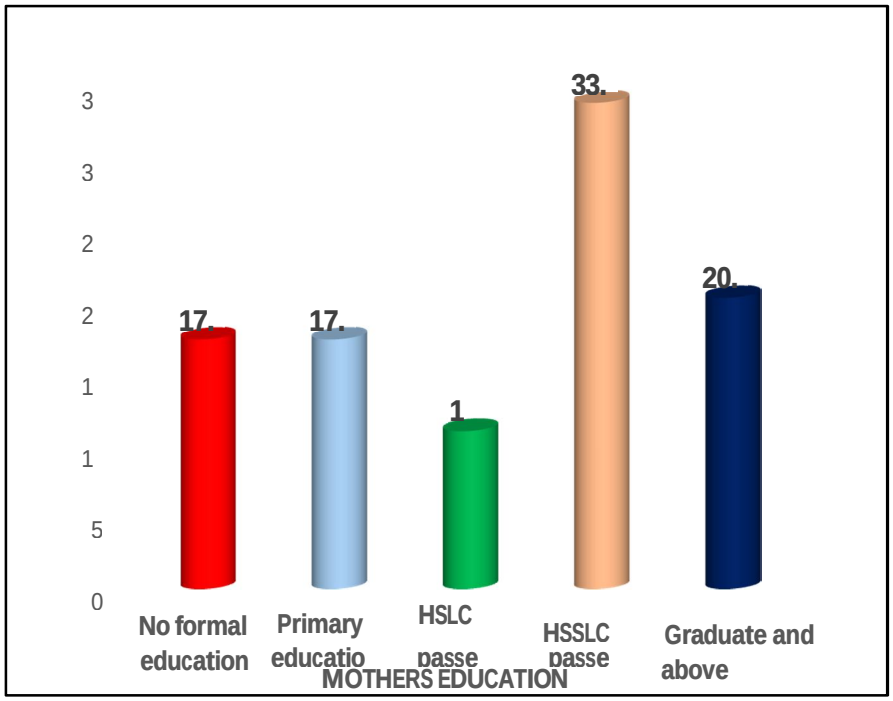

FIGURE 3.6

Bar diagram showing frequency and percentage distribution of children according to the mother's educational status.

TABLE 2.7: Frequency and percentage distribution of children according to father's occupational status.

n=109

Father's occupation	Frequency (f)	Percentage (%)
Government employee	35	32.1
Private employee	22	20.2
Business/ self employed	43	39.4
Daily wages	9	8.3
Total	109	100

The data presented in table 2.7 depicts distribution of 109 children according to father's occupational status are 43 (40%) businessman/ self-employed, 35 (32%)government employee, 22 (20%) private employee and 9 (8%) daily wage worker.

n=109

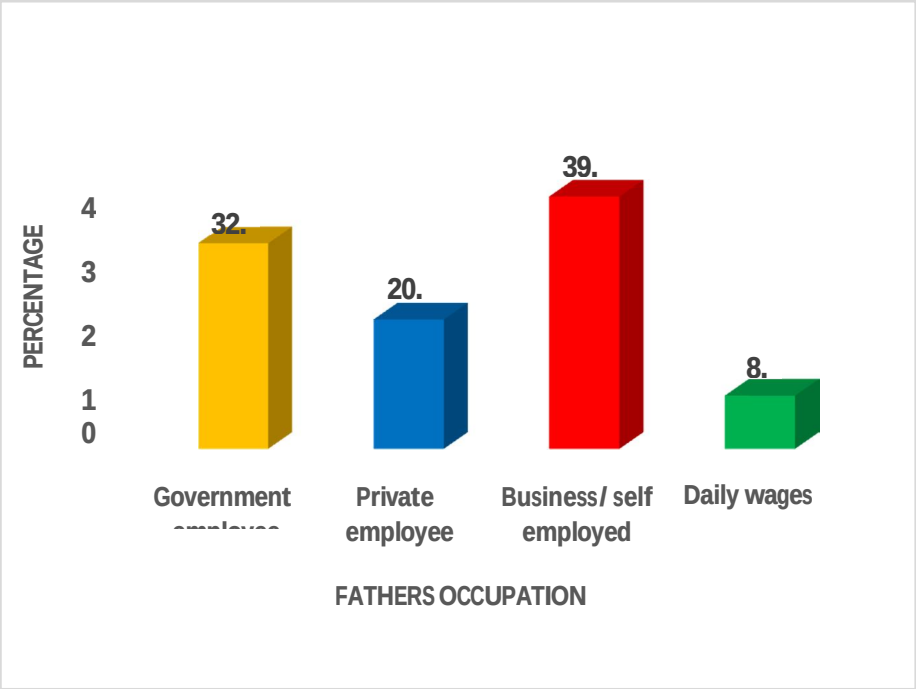

FIGURE 3.7

Bar diagram showing frequency and percentage distribution of children according to the father's occupational status.

TABLE 2.8: Frequency and percentage distribution of children according to mothers' occupational status.
n=109

Mother's occupation	Frequency (f)	Percentage (%)
Government employee	6	5.5
Private employee	10	9.2
Home maker	72	66.1
Business/ self employed	21	19.2
Total	109	100

The data presented in table 2.8 depicts that out of 109 children the distribution of children according to mother's occupation are 72 (66%) homemaker, 21 (19%) business/ self-employed, 10 (9%) private employee and 6 (5%) government employee.

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n=109

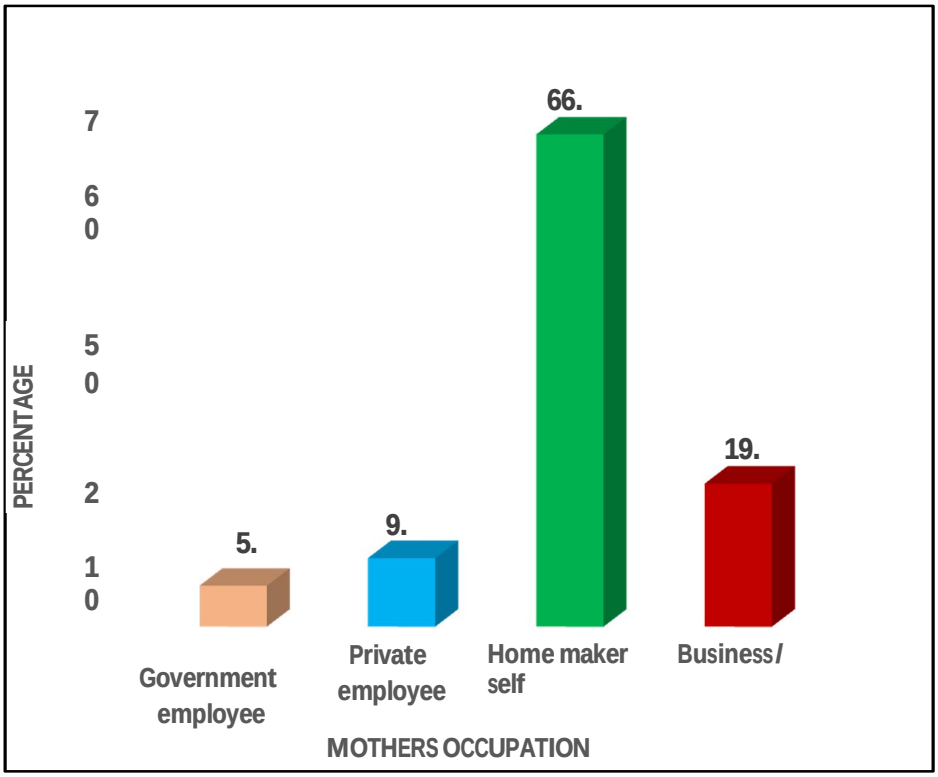

FIGURE 3.8

Bar diagram showing frequency and percentage distribution of children according to occupational status of mother.

TABLE 2.9: Frequency and percentage distribution of children according to dietary habits.
n=109

Dietary habits	Frequency (f)	Percentage (%)
Vegetarian	6	5.5
Non-vegetarian	103	94.5
Total	109	100

The data present in table 2.9 shows out of 109 children the distribution children according to dietary habit are 103 (95%) non-vegetarian and 6 (5%) vegetarian.

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n=109

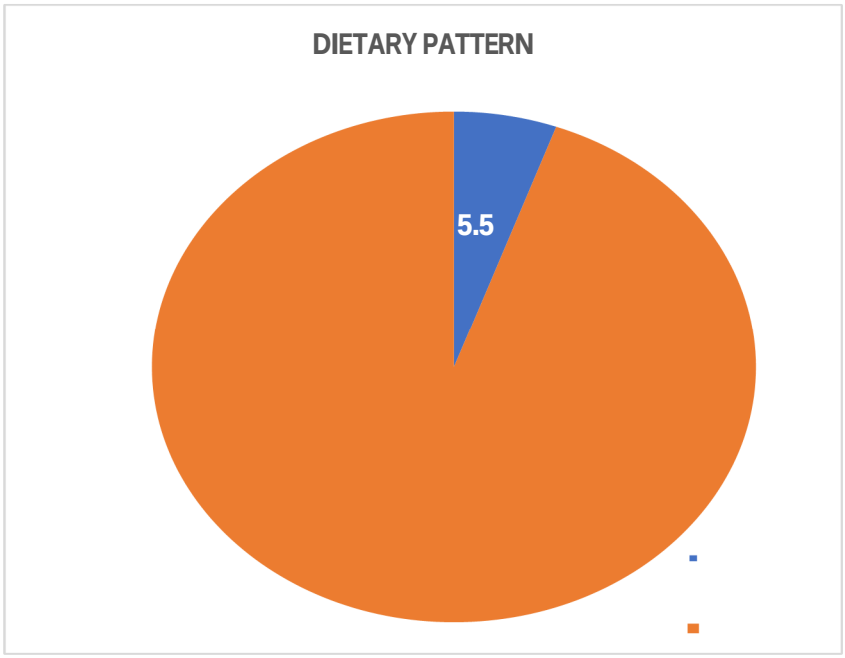

FIGURE 3.9

Pie diagram showing percentage distribution of children according to dietary habit.

SECTION II: This section deals with the frequency and percentage distribution of childhood obesity according to BMI table
The Body Mass Index of the 109 children was calculated and categorized into four weight status: Underweight (BMI <5th percentile), Healthy (BMI 5th and < 85th percentile), Overweight (BMI 85th and < 95th percentile), Obese (BMI 95th percentile). In the present study underweight, healthy and overweight in total is referred to as non-obese group.

TABLE 3.1
Frequency and percentage distribution of children according to prevalence of obesity

n=109

Body mass index	Frequency (f)	Percentage (%)
Underweight	13	11.9
Healthy	77	70.6
Overweight	16	14.7
Obese	3	2.8
Total	109	100

The above Table 3.1 depicts the prevalence 0f childhood obesity 16 (14.7%) overweight, 3(2.8%) obese = 19 and 77 (71%) are healthy, out of 109 children.

SECTION III: Frequency and percentage distribution of contributing factors od childhood obesity

This section summarizes and analyzed in terms of percentage and frequency of the contributing factors of childhood obesity among children of selected schools of Guwahati, Assam. In this study the contributing factors that included are dietary factors, sedentary lifestyle and family history. The findings are presented in table 4.1

TABLE 4.1

Frequency and percentage distribution of contributing factors of obesity among the children.

n=109

RISK FACTORS	YES		NO	
A. DIETARY FACTORS:	f	%	f	%
Do you take breakfast regularly?	102	93.6	7	6.4
Are you taking meals more than 3 times in a day?	49	45	60	55
Do you prefer junk food over homemade food?	53	49	56	51
While watching television do you often prefer to eat snacks?	63	58	46	42
Do you regularly take high fatty content food items like butter, cheese, ghee?	49	45	60	55
Do you regularly take high sugar content food items like chocolate, sweets?	51	47	58	53
Do you regularly consume soda cold drinks?	41	38	68	62
B. LIFESTYLE: Do you spend most of the leisure time by playing video games, computer or mobile games each day?	57	52.3	52	48
Do you go to school by walking/Bicycle?	80	73.4	29	26.6
Do you sleep in day time regularly?	57	52.3	52	48
Do you sleep more than 8 hours at night regularly?	63	58	46	42
C. PHYSICAL INACTIVITY Do you play any outdoor sports/game?	34	31	75	69
Are you doing mild activities like running, dancing, gymnastics or house work like sweeping the floors?	26	24	83	76
Are you performing any outdoor activities like skipping or jumping rope?	38	35	71	65
Are you doing any meditation or yoga?	64	58.7	45	41.3
D. FAMILY HISTORY Do you have any family history of obesity?	66	60.6	43	39.4

The data presented in table 4.1 depicts out of 109 children 102 (97%) of children take their breakfast regularly. 49(45%) children take meals more than 3 times a day.

(53)49% children prefer junk food over homemade food. 63(59%) children eat snacks while watching TV. 49(45%) children regularly take high fatty food. 51(47%) children take high sugar food items like sweets and chocolate. 41(38%) children consume soda drink regularly.57(52%) children spend leisure time by playing video games, computer and mobile game each day. 80(74%) children go to school by walking/ cycling. 57(52%) children sleep in a day time regularly. 63(58%) children sleep more than 8 hours every day. 34(31%) children play outdoor games. 26(24%) children are doing mild activities like running, dancing, gymnastic or house work. 38(35%) children perform outdoor activities like skipping or jumping rope. 64(59%) children perform meditation or yoga. 66(61%) children have family history of obesity.

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SECTION IV: The association between childhood obesity (according to BMI) and selected demographic variables.

This section summarizes and analyzed in terms of relation between the prevalence of childhood obesity among children and demographic variables.

TABLE 5.1
n=109

Demographic variables	BMI				c2 Value	*df*	Tabulated value	*P* value	Inference
	Under weight	Healthy	Over weight	Obese					
Age in years									
9-10	4	20	1	0	20.15	6	12.59	0.002	*S
11-12	5	34	2	3					
13-14	4	23	13	0					
Total	13	77	16	3					
Gender									
Male	8	41	7	1	1.374	3	7.82	0.71	NS
Female	5	36	9	2					
Total	13	77	16	3					
Religion									
Hinduism	12	72	14	2					
Islam	1	5	2	1	3.192	3	7.82	0.363	NS
Christianity	0	0	0	0					
Total	13	77	16	3					
Type of family									
Nuclear	3	41	7	1	4.457	3	7.82	0.216	NS
Joint	10	36	9	2					
Total	13	77	16	3					
Father's education									
No formal education	2	6	3	1					
Primary education	1	7	1	0					
HSLC passed	1	11	4	0	8.006	12	21.03	0.785	NS
HSSLC passed	5	30	4	2					
Graduate and above	4	23	4	0					
Total	13	77	16	3					

NS- Non Significant *S- Significant

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Mother's education									
No formal education	1	11	16	1					
Primary education	0	17	1	1	14.99	12	12.03	0.24	NS
HSLC passed	2	9	1	0					
HSSLC passed	5	27	5	0					
Graduate and above	5	13	3	1					
Total	13	77	16	3					
Father's occupation									
Government employee	6	25	3	1					
Private employee	2	14	6	0	7.563	9	16.92	0.579	NS
Business/ self employed	5	31	5	2					
Daily wages	0	7	2	0					
Total	13	77	16	3					
Mother's occupation									
Government employee	0	4	1	1					
Private employee	2	8	0	0	9.544	9	16.92	0.389	NS
Home maker	10	49	11	2					
Business/ self employed	1	16	4	0					
Total	13	77	16	3					
Dietary habit									
Vegetarian	4	2	0	0	18.31	3	7.82	0.003	*S
Non vegetarian	9	75	16	3					
Total	13	77	16	3					

NS- Non-Significant *S- Significant

The data on table 5.1 depicts the association between the prevalence of childhood obesity i.e. BMI with demographic variables such as age, gender, religion, type of family, father 's education, mother 's education, father 's occupation, mother 's occupation and dietary habits.

The calculated value for children age in years is χ^2=20.15 at df= 6 and dietary habit is χ^2=18.31 at df= 3. Thus, the value of reveals that there is significant association in regards to children 's age and dietary habit at 0.05 level of significance. Hence, research hypothesis H_1 is accepted and null hypotheses H_0 is rejected for the demographic variables such as age in years and dietary habits.

SECTION V: This section deals with the association between overweight and obese children with contributing factors.

TABLE 6.1
n=109

Contributing factors	Body mass index				*x2*	df	Tabulated value	p- value	Inference
	Obesity		No obesity						
	Obese	Over weight	Healthy	Under weight					
Q1. Taking breakfast regularly					2.959	3	7.82	.458	NS
No	1	4	31	7					
Yes	2	12	46	6					
Total	3	16	77	13					
Q.2 Taking meals more than 3 times a day					.810	3	7.82	.847	NS
No	1	9	42	11					
Yes	2	7	35	2					
Total	3	16	77	13					
Q.3. Prefers junk food over home-made food					1.966	3	7.82	.580	NS
No	1	6	42	7					
Yes	2	10	35	6					
Total	3	16	77	13					
Q.4. Snacking while watching TV					10.96	3	7.82	.012	*S
No	3	4	37	2					
Yes	0	12	40	11					
Total	3	16	77	13					

Q.5 Regularly take high fatty food.					3.924	3	7.82	.270	NS
No	0	9	43	8					
Yes	3	7	34	5					
Total	3	16	77	13					
Q.6.Regulary take high sugary items					4.467	3	7.82	.215	NS
No	0	7	44	7					
Yes	3	9	33	6					
Total	3	16	77	13					
Q.7.Regulary consume soda									
No	53	3	5	7	10.18	3	7.82	.017	*S
Yes	24	0	11	6					
Total	77	3	16	13					
Q.8.Spending most of the leisure time in playing games					.298	3	7.82	.960	NS
No	37	1	8	6					
Yes	40	2	8	7					
Total	77	3	16	13					
Q.9.Going school by bus/ walking					2.159	3	7.82	.540	NS
No	0	6	20	3					
Yes	3	10	57	10					
Total	3	16	77	13					
Q.10 Sleep regularly at day time					9.801	3	7.82	.020	*S
No	1	12	30	9					
Yes	2	4	47	4					
Total	3	16	77	13					
Q.11. Regularly sleep more than 8 hours at night									
No	2	8	29	7	2.508	3	7.82	.474	NS
Yes	1	8	48	6					
Total	3	16	77	13					

Q.12.Play outdoor sports									
No	3	10	50	12	5.540	3	7.82	.136	NS
Yes	0	6	27	1					
Total	3	16	77	13					
Q.13. Doing mild activities									
No	2	14	56	11	2.293	3	7.82	.514	NS
Yes	1	2	21	2					
Total	3	16	77	13					
Q.14. outdoor activities									
No	2	9	50	10	1.356	3	7.82	.716	NS
Yes	1	7	27	3					
Total	3	16	77	13					
Q.15. doing meditation/ yoga									
No	0	8	30	7	3.628	3	7.82	.304	NS
Yes	3	8	47	6					
Total	3	16	77	13					
Q.16.family history of obesity									
No	1	4	31	7	2.595	3	7.82	.458	NS
Yes	2	12	46	6					
Total	3	16	77	13					

NS – Non-Significant *S – Significant

The data on table 6.1depicts the association between overweight/ obesity children with the contributing factors of childhood obesity. The calculated value for snacking while watching TV is χ^2=10.963 at df=3, regularly consuming soda is χ^2=10.186 at df=3 and sleeping regularly at day time is χ^2=9.801 at df= 3. Thus, the value reveals that there is significant association in regards to contributing factors at 0.05 level of significance. Hence, research hypothesis H_2 is accepted and null hypothesis H_0 is rejected for the contributing factors.

IV. SAMPLING CRITERIA

Inclusion criteria

- Students of aged 9-14 years
- Students who are available during data collection period.

Exclusion criteria

- Students who were acutely sick

Demographic variables:

In this study demographic variables were age, gender, religion, type of family, father‘s education, mother‘s education, father‘s occupation, mother‘s occupation and dietary habits.

Research variables:

In this study, prevalence of childhood obesity and its contributing factors are the research variables.

V. DEVELOPMENT OF TOOLS

A research instrument is a device used to measure the concept of the interest in a research project that a researcher uses to collect data. Based on the objectives of the study, tools were developed in order to generate data. The following steps are used for development of the tools:

- An extensive review of research and non research literature.
- Discussion with expert.
- A draft of semi structured interview schedule was developed based on the problem and specific objectives.
- Reliability was computed.
- Final draft of the structured interview schedule was prepared.

A. Validity of the tool

To ensure the content validity the prepared tool along with the statement of problem, specific objectives, hypotheses and operational definitions were submitted to seven (7) experts. Among them four (4) experts were from Obstetric and Gynecological nursing department, one (1) from child health nursing department, one (1) from community health nursing department and one (1) physician from Obstetric and Gynecological department. Based on their expertise and interest in the problem, the experts were requested to give their opinion and verify the item for relevancy, accuracy and appropriateness. With 100% agreement the approved items were accepted. To ensure the validation of the weighing machine, instrumental error was corrected before data collection in order to obtain accurate measurement. The weighing machine was checked for the zero marking before recording the weight. Proper functioning of the weighing machine was assessed by weighing a known weight. To ensure the validation of the non-stretchable measuring tape, proper functioning of the measuring tape was assessed by a known height.

B. Reliability of the tool

Reliability is the degree of consistency and accuracy with which an instrument measures the attribute for which it is designed to measure. The reliability of the structured interview questionnaires on the contributing factor of childhood obesity has been done by using Karl Pearson‘s Split Half Method. The items of the tool were divided in two equal parts through grouping in odd number questions and even number questions. In split half method, the value of ‗r‘ is found to be 0.86 which indicate that the tool was reliable and statistically significant. The reliability of the instruments (weighing machine and non-stretchable measuring tape) was tested by using Karl Pearson‘s test-retest reliability method among 4 samples the investigator administered the instrument twice and compared the measurements. The value of ‗r‘ is found +1 for weighing machine which indicates perfect reliability and the value of ‗r‘ is found 0.90 for non-stretchable measuring tape which indicates an acceptable level of reliability, hence the instruments were reliable .

C. Pilot study

Pilot study is a trial study carried out before a research design is finalized to assist in defining the research questions or to test the feasibility, reliability and validity of the proposed study design.

Pilot study is a small preliminary investigation of the general characters as the major study, which is designed to acquaint the researcher with the problem that can be corrected in preparation for a large research project.

The purposes of the pilot study are:

- To evaluate the tool/instrument developed
- To find out the feasibility of conducting the final study
- To determine the method of statistical analysis

After obtaining formal permission from the authority (Appendix E_1)the pilot study was conducted at Modern High School, Geetanagar. After a brief explanation of the research ―procedure consent was taken from the subjects and their guardians‖.

Collected data from the children of class IV to VIII.BMI was checked by measuring height and weight. ―The data were analyzed by using descriptive and inferential statistics.

The pilot study was conducted‖ onmonth of January 2024 (19-01-2024) among 11 numbers of children studying in that school. The pilot study findings revealed that the majority of the children 21 (70%) are healthy, followed by 4 (13%) overweight, and 3 (10%) underweight and 2(7%) obese found among the 11 students that 87% of children take their breakfast regularly. 37% children take meals more than 3 times a day. 57% children prefer junk food over homemade food. 33% children eat snacks while watching TV. 43% children regularly take high fatty food. 17% children consume soda drink regularly. 77% children spend leisure time by playing video games, computer and mobile game each day. 20% children go to school by walking/ cycling. 67% children sleep in a day time regularly. 43% children sleep more than 8 hours every day. 100% children play outdoor games. 60% children are doing mild activities like running, dancing, gymnastic or house work.20% children perform outdoor activities like skipping or jumping rope. 23% children perform meditation or yoga. 47% children have family history of obesity. After completing the pilot study, the study was found to be feasible and practicable.

D. Ethical consideration

Ethics in nursing research is the act of principles which the researcher has to follow while conducting nursing research to ensure the right and welfare of the individual, groups or community under study. In the present study, following ethical formalities were taken into consideration.

- Prior to the data collection written permission was obtained from the principal of CPMS College of Nursing
- Study was done after obtaining ethical approval from the institutional ethical committee of PEWS Group of Institution, Guwahati- 26. (Annexure I)
- Permission was taken from the principal of Little Pearl English Medium School and R.K Memorial English Medium school.(Annexure X(a)- (b))
- After a brief explanation of the research procedure, written and verbal—consent was taken from the subjects and their guardians. (Annexure XIII)
- The subjects ware ensured of the confidentiality of the data obtained.

VI. DATA COLLECTION PROCEDURE

Data collection is the precise, systematic gathering of information relevant to the research purpose or the specific objectives, questions or hypotheses of the study. Before collecting the data, permission was obtained from the principal of Little Pearl English Medium School and R.K Memorial English Medium School, Guwahati. The written and verbal —consent was obtained‖ from —all the‖ subjects of the study after explaining the purpose and other details of the study and also assured anonymity and confidentiality of information provided by them. The data was collected from 29th April 2024 to 25th May 2024.Data collection was done by the administering the interview method and using biophysiological method (using weighing machine and non-stretchable measuring tape) . Data collection was done in following steps-Varia—Variables are attributes or characteristics that can have more than one value such as height or weight. In other words, variables are qualities, quantities, properties or characteristics of people, things or situations that change or vary. In this study, two types of variables were used‖.

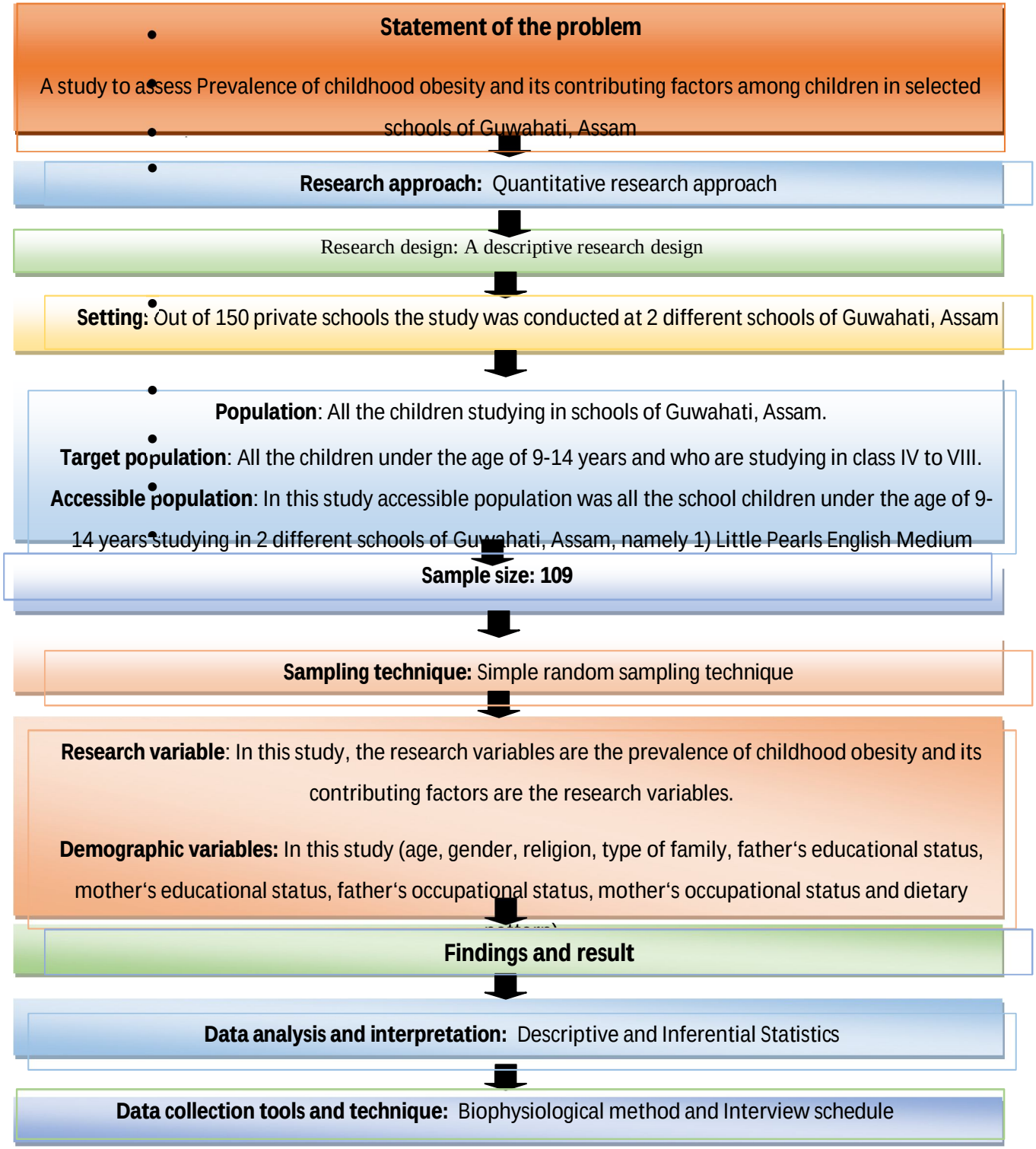
A. Measurement of BMI

The weight was checked with a weighing machine, and height was measured with non-stretchable measuring tape to obtain the BMI .*Weight*- Weight was measured by using Krupp‘s weighing machine (adult weighing machine) in kilograms. Instrumental error was corrected before each data collection in order to obtain accurate measurement. The machine was checked for the zero marking before recording the weight of each student. During the weighing process, students were allowed to remove their footwear and stand and look straight. The same instrument was used throughout the study. *Height*- Height was measured by using non-stretchable measuring tape. The children were made to stand upright without shoes against a vertical wall. The four points of the body, i.e. occiput, shoulders, buttocks and heels were allowed to touch the wall. The head was held erect with eyes aligned horizontally and ears vertically without any tilt. By placing the hardboard on tip of the head, a line with pencil is marked on the wall. The distance between the line and the floor was measured in centimeters with the help of non-stretchable measuring tape and height was measured. The same instrument was used throughout the study. After measuring weight and height of the employees, BMI was calculated and recorded .

B. Semi structured interview method is used for assessing the contributing factors of childhood obesity.

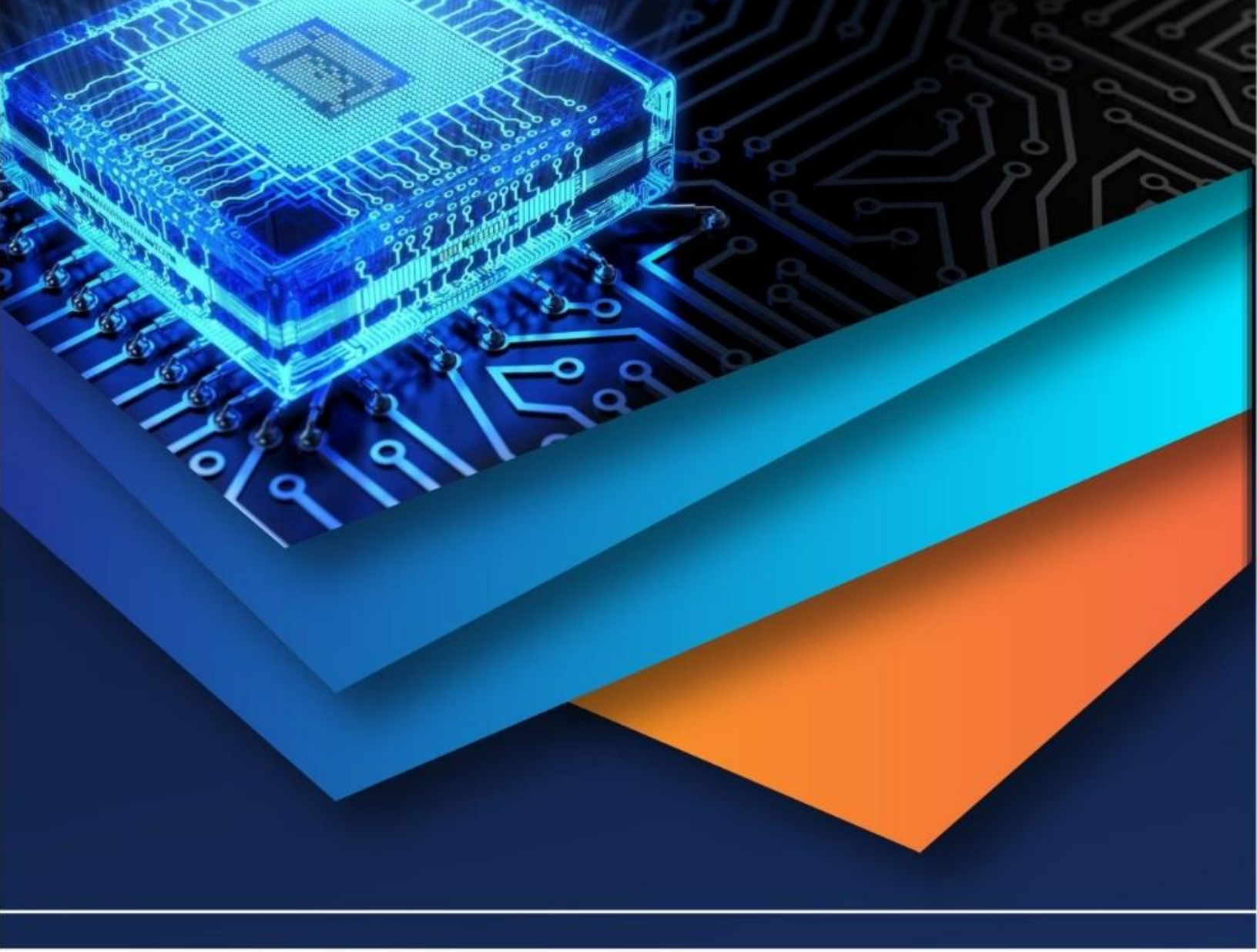
Plan for data analysis The data obtained are analyzed on the basis of the objectives of the study using both descriptive and inferential statistics. Inferential statistics which are based on laws od probability provide a means of drawing conclusion about population from which data are obtained for the study. Subject descriptions in terms of demographic characteristics are given in

percentage and frequent terms. Details are presented by using various graphical devices like bar diagram and pie diagram. The prevalence of childhood obesity among children in schools was assessed by frequency and percentage distribution with the help of BMI Index.The frequency and percentage that will be utilized in the examination of socio demographic variables and the prevalence of factors that contributes to childhood obesity in children.



Need of the study

FIGURE 2: Schematic representation of research methodology



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