



JIMMA UNIVERSITY, INSTITUTE OF HEALTH,
DEPARTMENT OF EPIDEMIOLOGY

PREVALENCE OF CHILDHOOD OVERWEIGHT AND OBESITY AMONG PRIMARY
SCHOOL CHILDREN AND ASSOCIATED FACTORS IN SHASHEMENE TOWN,
SOUTHERN ETHIOPIA

BY: AMAN SADO ELEMO

A RESEARCH THESIS TO BE SUBMITTED TO JIMMA UNIVERSITY, INSTITUTE OF
HEALTH, DEPARTMENT OF EPIDEMIOLOGY IN PARTIAL FULFILLMENT OF THE
REQUIREMENTS FOR THE DEGREE OF MASTERS OF GENERAL PUBLIC HEALTH

NOVEMBER 2018
JIMMA, ETHIOPIA

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ABSTRACT

Background: Obesity is abnormal or excessive fat accumulation that may impair health. Its prevalence is increasing worldwide. Childhood obesity is associated with a higher chance of obesity, premature death, and disability in adulthood. However, in Ethiopia information is very scarce in early age and untying childhood overweight and obesity as two outcome variables. Therefore, we aimed to assess childhood overweight, obesity, and associated factors among primary school children age 6-12 years Shashemene, southern Ethiopia.

Objective: To assess the prevalence of childhood overweight, obesity and associated factors among Primary school children in shashemene town, Southern Ethiopia.

Methods: A facility based cross-sectional study was conducted from April, 1-26/2018. Data were collected from 576 children and their mothers. Stratified systematic random sampling technique was used. Binary logistic regression was carried out to identify factors associated with overweight and obesity. Statistical significance was declared at p -value < 0.05 with 95% CI.

Results: The prevalence of childhood overweight and obesity were 14.9% (95%CI: 12.6%, 18.9%) and 5.2% (95% CI: 3.5%, 6.9%) respectively. Medium wealth status (AOR=4.7, 95%CI=2.3,9.6), eating snack(≥ 1 times/day) (AOR=4.4,95%CI=2.1, 9.1), skipping breakfast(< 4 times/week) (AOR=3.3, 95%CI=1.9, 5.7), vegetables and fruits consumptions(< 2 times/week) (AOR=3.9, 95% CI=2.1, 8.2), using vehicles for school (AOR=4.2, 95% CI=2.1, 8.2) were significantly associated with childhood overweight. High wealth (AOR=2.4, 95% CI=1.1, 5.5), breastfeeding (< 4 month) (AOR=6.5, 95%CI=2.8, 14.8), eating junk and sweet foods ≥ 2 times/week (AOR=2.5, 95% CI=1, 5.5) and use vehicles for school (AOR=5.5, 95%CI=2.3, 12.3) were significantly associated with childhood obesity.

Conclusion & Recommendation: The prevalence of childhood overweight and obesity among Shashemene primary school found to be as high as that of global prevalence estimate. Medium wealth status, more snack food consumption, skipping breakfast, less consumption of vegetable and fruits and inactive lifestyle were factors associated with childhood overweight. High wealth status, not breastfeeding, more junk food and sweet consumptions and inactive lifestyle were factors associated with childhood obesity. Active lifestyles, increasing consumption of healthy diets (more consumption of vegetables, fruits, and breakfast), decreasing unhealthy feeding (less consumption of snacks, sweet foods, and junk foods) and exclusive breastfeeding should be a public health priority.

Keywords: Childhood, 6-12years old, Overweight, Obesity, prevalence, Ethiopia

Acknowledgment

I would like to thank Jimma University, Institute of Health, Department of Epidemiology, for giving me a chance to do this research project. I would like to acknowledge the Shashemene town health office, Educational health office, study participants, data collectors, and supervisors. I would like to thank Students, Parents, and staff at schools. Finally, my heartfelt appreciation and thanks go to my advisors, Mr. Habtamu Jarso and Mr. Muktar Basher, for their valuable comments and guidance throughout my work.

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Acronyms and Abbreviations

BMI	Body Mass Index
CI	Confidence Interval
FANTA	Food and Nutrition Technical Assistance
GPAQ	Global Physical Activity Questionnaire
HDDS	Household dietary Diversity score
Hrs.	Hours
NCDs	Non-Communicable Diseases
NHANES	National Health and Nutrition Evaluation Survey
ORHB	Oromia Regional Health Bureau
PCA	Principal Component Analysis
SD	Standard deviation
SES	Socioeconomic status
SPSS	Statistical Package for Social Science
PCA	Principle Component Analysis
TV	Television
UNICEF	United Nation Children's Fund
US	United States
WHO	World Health Organization
VIF	Variance inflation factors

CHAPTER ONE: INTRODUCTION

1.1. Background

Overweight and obesity defined as abnormal or excessive fat accumulation that may impair health. Childhood overweight and obesity are defined as follows for children aged between 5–19 years: overweight is Body mass index (BMI)-for-age greater than 1 standard deviation(SD) above the World Health Organization (WHO) Growth Reference median; and obesity is greater than 2 standard deviations above the WHO Growth Reference median(1).

Childhood obesity is associated with a higher chance of obesity, premature death, and disability in adulthood. But in addition to increased future risks, obese children experience breathing difficulties, increased risk of fractures, hypertension, early markers of cardiovascular disease, insulin resistance and psychological effects(2).

Overweight and obesity are largely preventable. Supportive environments such as School-based health education and promotion tactics are fundamental in shaping children’s choices of healthier foods and regular physical activity have been helpful to minimize overweight/obesity(1, 3). Healthy diets and regular physical activity and strategy calls upon all stakeholders to take action at global, regional and local levels to improve diets and physical activity patterns at the population level(1). These interventions are more significantly at an early age of childhood(4). To solve this emerging health problem, Ethiopia incorporated about overweight/obesity into the national nutrition program and launched an initiative to promote physical activity in the population. However, the efforts do not target children in particular and age at which (5-7).

1.2. Statement of the Problem

The prevalence of childhood obesity is increasing both in developed and developing countries and globally overweight and obesity are linked to more deaths worldwide than underweight(1). Studies have reported that about 50–80% of children who develop obesity early in life, end up becoming obese in later life(8). Globally Childhood obesity is associated with a higher chance of more than 14 million premature deaths and disability in adulthood and the vast majority (85% or 11.8 million) of these premature deaths occur in developing countries(1, 2).

Childhood obesity is one of the most important risk factors for an epidemic of NCDs(9). Cardiovascular diseases, cancers, chronic respiratory diseases, diabetes, and NCDs makes the

largest contribution to mortality in the majority of developing countries and premature death from NCDs cause untold suffering, reduces productivity, curtails economic growth and poses a significant social challenge in most countries(2). Sub-Saharan Africa, like the rest of the world, is experiencing an increasing prevalence of these non-communicable diseases and Ethiopia was among Sub Saharan countries with high prevalence of NCDs(10). In Ethiopia, 51% of deaths were attributed to NCDs(11) and Overall prevalence of NCDs was 8.9%(12).

The worldwide prevalence of obesity nearly tripled between 1975 and 2016. Over 340 million children aged 5-19 were overweight or obese in 2016. The prevalence of overweight and obesity among children aged 5-19 has risen dramatically from just 4% in 1975 to just over 18% in 2016(1).

Although childhood obesity prevalence rates are excessively high in most developed countries, it has already become a major threat for many developing countries as well(13). In Africa, under-nutrition is the major nutritional problems affecting children. However, overweight/obesity is noticeably high with a prevalence of 8.5% in 2010 and predicted to be 12.7% by 2020. This situation pinpoints a double burden of malnutrition. Prevalence of overweight and obesity among school-aged children in Sub Saharan Africa were 10.6% and 2.5% respectively(14).

Studies in Ethiopia indicate that the prevalence of overweight and obesity among children were 8.92 and 2.39%, respectively(15). Prevalence of overweight and obesity among primary school children in Addis Ababa was 9.9% and 2.8% respectively(16) and that of Dire Dawa was 14.7% and 5.8% respectively(17). Though there are few studies conducted in Ethiopia, they revealed that childhood overweight and obesity are emerging and consistently increasing in magnitude particularly in private school children(15-17).

A number of factors could contribute to childhood overweight and obesity. Evidences from countries including Ethiopia depicted that factors such as an increased intake of energy-dense foods, an increase in physical inactivity, changing modes of transportation, increasing urbanization, changes in dietary, physical activity patterns are often the result of environmental and societal changes associated with development and lack of supportive policies it could be considered factors associated with childhood overweight and obesity (1, 15, 18, 19).

Even though there were childhood overweight and obesity studies done in Ethiopia, those studies have not indicated early childhood overweight, obesity prevalence, and associated factors, which

can be more important for early intervention. Interventions of overweight and obesity at 6-12 years of age groups showed that significant decrease in the prevalence of overweight and obesity (20) while children aged 12–19 age groups did n't show a decrease in obesity prevalence after interventions(4). Therefore, identifying factors and early interventions to prevent overweight and obesity seem to be most effective for children in 6-12 years age groups(21).

Even those limited studies were done in Ethiopia lack these specific age groups and more focus on adolescent age groups which are not more important for early intervention(16, 17, 22). Those studies were done in Ethiopia also did not tell us factors that independently related to Childhood overweight and factors related to childhood obesity specifically. Hence, the aim of this study was to assess the Prevalence of childhood overweight and obesity among primary school children age 6-12 years and associated factors in Shashemene town, Southern Ethiopia.

1.3. The significance of the study

Childhood obesity is a significant threat to the long-term health and well-being of the people. Obesity creates a significant burden in terms of chronic diseases, rising health care costs, disability, and premature death. The evidence-based early intervention of childhood overweight and obesity have a substantial impact on health, social, economic, political and environmental issues.

Previous studies indicate that interventions of overweight and obesity at 6-12 years' age groups showed that significant decrease in the prevalence of overweight and obesity while Adolescents aged 12–19 age groups didn't show a decrease in obesity prevalence. Therefore, identifying factors and early interventions to prevent overweight and obesity seem to be most effective for children in these age groups. Identifying prevalence and associated factors important for early intervention and control of epidemic of childhood and adulthood obesity. It also creates awareness to adopt action.

The primary beneficiaries of this study were children and the Community in the study area. Other outcomes of the study include a good recommendation for different responsible bodies like Town Health office, Education Office and Schools in the study area. Moreover, the findings will serve as a source of information for researchers who are interested in conducting research in this area in the future.

The study finding will elevate the need for program planners, policymakers, parents or guardians, clinicians, and all other stakeholders to give an emphasis on childhood overweight and obesity. We could not find a study done in Shashemene city during our literature review. Therefore, we aimed to assess childhood overweight, obesity and associated factors among private primary school children at Shashemene, Southern Ethiopia.

CHAPTER TWO: LITERATURE REVIEW

2.1. Prevalence of Childhood Overweight and obesity

A study was done in European countries of children age 6-11 years age group indicate that the prevalence of childhood overweight was 15.6%(21). A study done in urban elementary school children age 6-10 years in Romania depicted that the prevalence of overweight and obesity were 16.6% and 7.1% respectively(23).

A study was done in children aged 3–13 years in urban Cameroon indicated that prevalence of overweight 9.6% and obesity 2.9%(24). A study done in Kenya indicate that the prevalence of overweight and obesity among children age 9-14 years were 13% and 5.9% respectively(25). A study done in Dire Dawa, eastern Ethiopia revealed that the prevalence of overweight and obesity were 14.7% and 5.8% respectively(17). A study done among elementary school children in Addis Ababa, Ethiopia reveals that overall prevalence of overweight and obesity is 9.9% and 2.8% respectively(16).

2.2. Factors associated with childhood Overweight and obesity

2.2.1. Physical activity and sedentary behavior

Physical activity

A study done among urban school children age 10-15 years in Bangladesh shows that those children engaged in exercising ≥ 30 minutes in a day were less likely to develop childhood overweight and/or obesity(26).

A study done in Dire Dawa, eastern Ethiopia revealed that children who did not perform vigorous-intensity sports were about four times more likely to be overweight and obese compared to those who did vigorous-intensity sports for at least ten minutes(17).

A study did among Elementary School Children in Addis Ababa, Ethiopia reveals that there is a Significant association of overweight was observed among Children walking or riding a bicycle for at least 10 minutes per day(16).

Sedentary behavior

A study done in European countries indicates that in Eastern countries spending more hours per week watching Television (TV) was associated significantly with childhood overweight (including obesity)(21).

A study done in Shanghai, China among schoolchildren age 6-12 years depicts that Children spent ≤ 2 hours (hrs.)/day on-screen time was less likely to become overweight or obesity, compared with Children spent > 3 hrs./day on screen time(27).

A case-control study done among urban school children age 10-15 years in Bangladesh shows that engaging in sedentary activities for > 4 hrs. in a day was independent risk factors for childhood overweight and/or obesity(26).

2.2.2 Socio/demographic /cultural factors

SES (Socioeconomic status)

Childhood obesity has been associated with the higher socioeconomic class in the developing countries(28), however, studies in the developed World have shown an inverse association of socioeconomic class with childhood obesity(29, 30).

A study carried out on school children of 6–10 years of age in Romania depict that High SES was associated with increased risk of overweight(23). Study in primary school children age 6-12 years in Egypt showed that a significant association between socioeconomic class and Body Mass Index (BMI) (31) and SES effects were significant where children from higher SES family among study done in South Africa primary school children of 6–9 years old(32). A study among a cohort of children 7–8 years of age in Peru indicated that children from wealthier households were more likely to be overweight or obese than those from poorer households(33). A study done in Dire Dawa, eastern Ethiopia revealed that families belonged to high socioeconomic class were significantly associated with childhood overweight/ obesity(17).

Parental Occupational status

A study done in an Indonesian indicated that a higher prevalence of obesity was found in children of working mothers compared with stay-at-home mothers, especially mothers who worked in the private sector(34). A study in Nairobi, Kenya revealed that mother's occupation was significantly associated with overweight/obesity(25).

Parental Educational level

A study done in Ghana indicate that obese children were more likely to have parents who had attained high educational level compared to normal weight children(35). A study done in Sohag, Egypt Children indicate that Low level of maternal education was a significant risk factor for overweight and obesity(36).

2.2.3. Feeding and Diet-related factors

The short duration of breastfeeding

A number of meta-analyses and syntheses of the literature in Ireland study have concluded that decreased the risk of obesity by 51% for children who breastfed for 26 weeks or more(37). A study conducted in eight European countries examined among children aged 2–9 years revealed that the exclusive breastfeeding from 4–6 months of age was associated with protection against being overweight or obese compared with non-breastfed children (38). A longitudinal study to examine a fat mass in relation to the duration of breastfeeding in Australia examined children from 3 months to 8 years old show that there is an association between overweight children and a short duration of breastfeeding of ≤ 4 months(39).

Dietary Practice

A study conducted in the US investigated revealed that energy density intake was associated with BMI and with an increased intake of sugar or fat, and lower intake of vegetables and fruit(40).

A study done in Fars Province, southern Iran indicated that less access to a variety of food groups significantly associated with childhood overweight and obesity(41).

A study done among primary school children in Dire Dawa, eastern Ethiopia revealed that sweetened foods preference were found significantly associating with overweight and obesity(17).

A study done in Addis Ababa revealed that Significant association with overweight was observed among sweet food preference and buying ice cream(16).

Study in primary school children in Port Said city, Egypt showed that a significant association between faulty dietary habits; having more fast food, candy, chocolates, sugary Juices, and carbonated beverage lead to a higher BMI (p-value < 0.001), while having more fresh fruits and vegetables had lower BMI(31).

Snacks

A study done in Pakistani primary school children indicate that children eating snacks ≥ 1 per week was significantly more likely to be overweight and obese when compared with those who did not eat snacks(42). A study done in Addis Ababa revealed that Significant association with overweight was observed among children eating a number of snacks per day(16).

Skipping meals

A study was done in Finnish children aged 6–8 years show the Children who ate all three main meals, namely, breakfast, lunch and dinner, daily were reported to have 63% lower risk of being overweight or obese than those who did not(43). A study did among Elementary School Children in Addis Ababa, Ethiopia reveals that there is a Significant association of overweight was observed among Children eating breakfast irregularly(16).

1.3. Conceptual framework

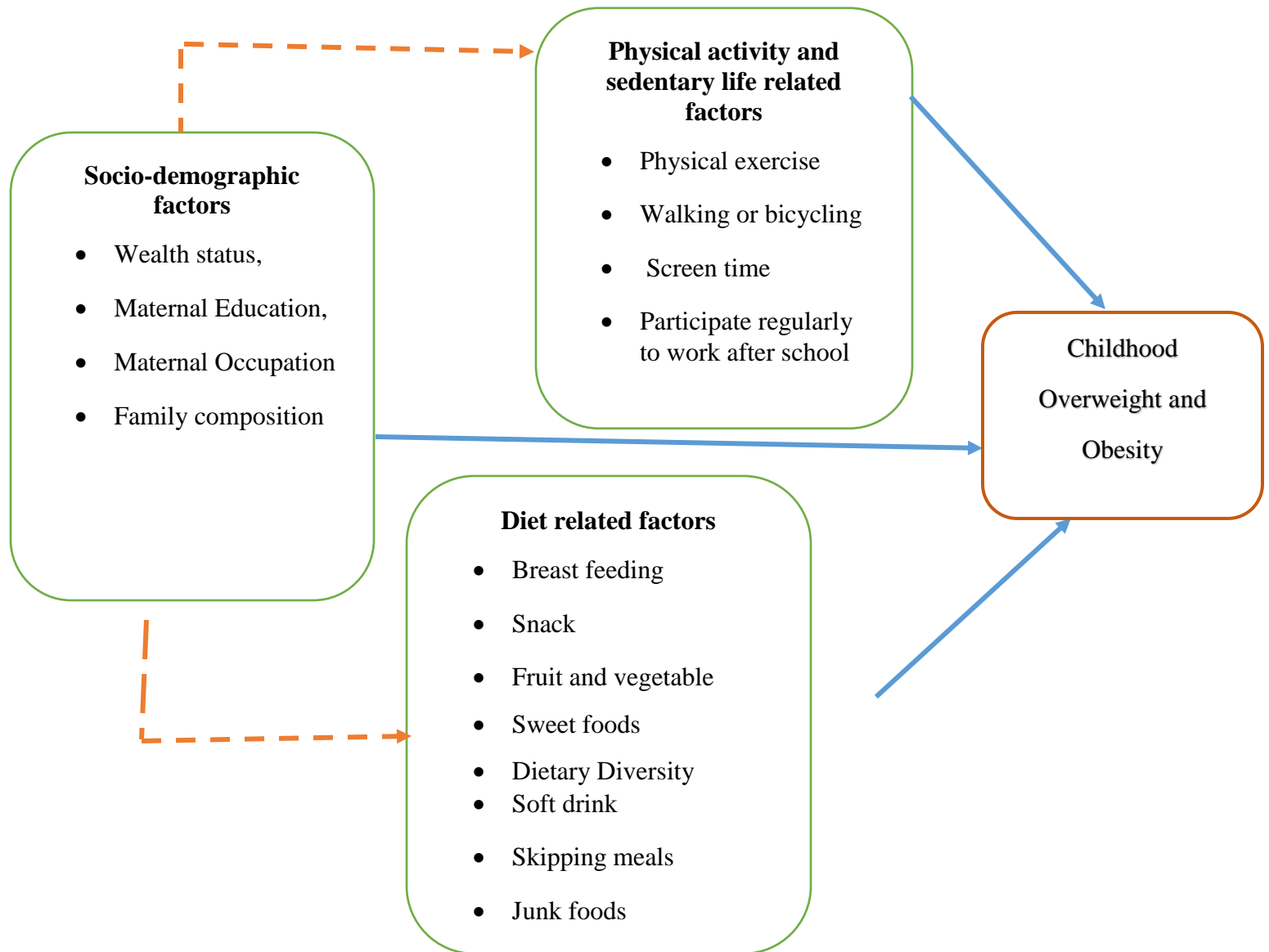


Figure 1: A conceptual framework to describe associated factors related to Childhood overweight and obesity, 2018

(Source: Adapted from different of literature by principal investigator)

CHAPTER THREE: OBJECTIVE OF THE STUDY

3.1. General objective

- To assess Prevalence of Childhood Overweight and Obesity among Primary School Children and associated factors in Shashemene town, Southern Ethiopia, 2018

3.2. Specific objectives

- To assess the prevalence of childhood overweight among primary school children in Shashemene town,
- To assess the prevalence of childhood obesity among primary school children in Shashemene town,
- To identify factors associated with childhood overweight among primary school children in Shashemene town
- To identify factors associated with childhood obesity among primary school children in Shashemene town

CHAPTER FOUR: METHODS AND MATERIALS

4.1. Study area and period

Shashemene is the capital city of West Arsi zone, Oromia Regional state, located at 250 km distance on the South of Addis Ababa. According to information obtained from Shashemene town as of the academic year 2017/18, Town's projected total population is 264,780. Shashemene has 18 primary schools. Study conducted from April 01-26/2018

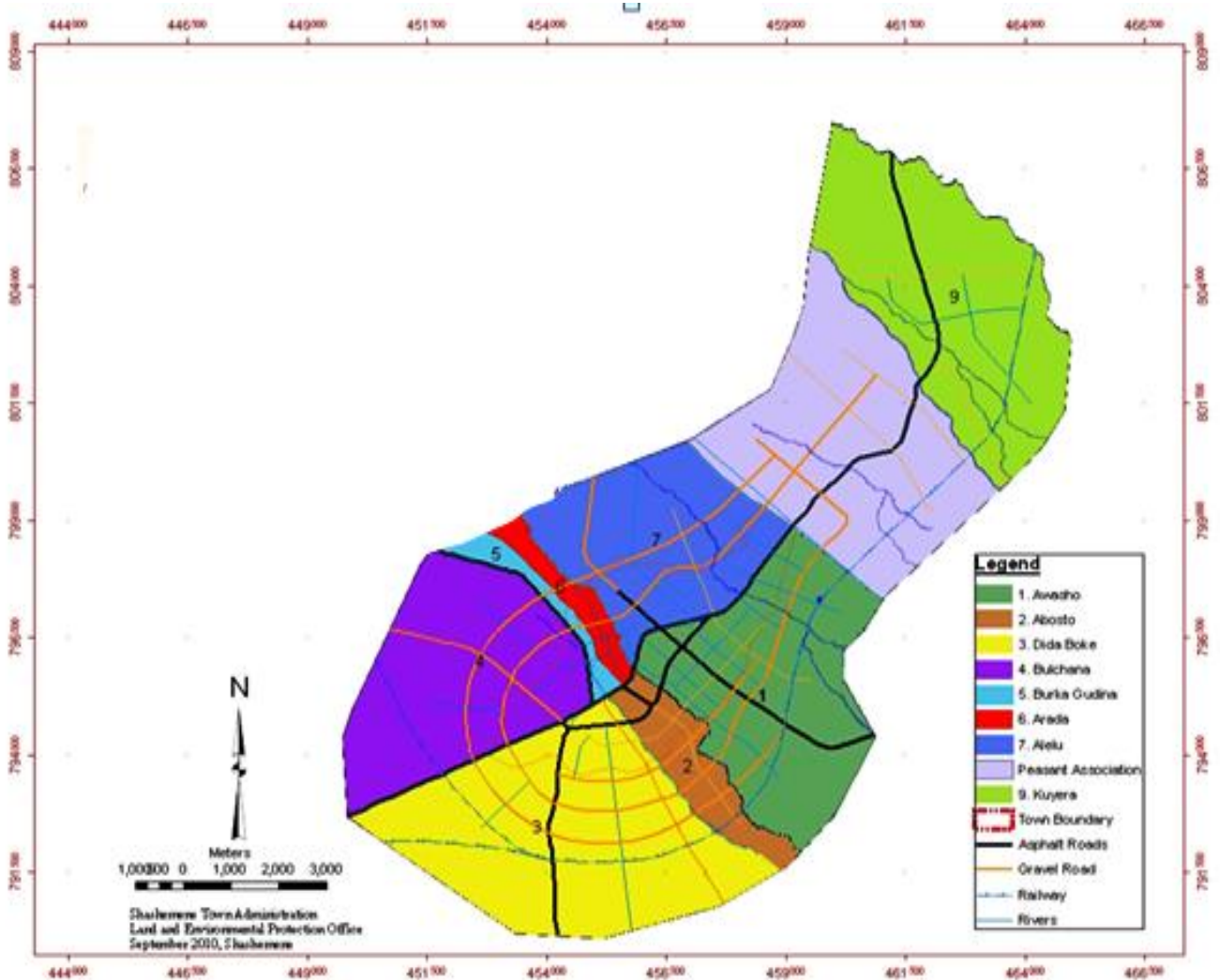


Figure 2; Map showing study area taken from Shashemene town health office report of 2018.

4.2. Study design

A facility based (School-based) cross-sectional study design was conducted

4.3. Population

4.3.1. Source population

The source population was all public and private primary school children in Shashemene town.

4.3.2. Study population

All public and private primary school children in 6-12 years' age group and available during the study in the Shashemene town.

4.4. Eligibility criteria

4.4.1. Inclusion criteria

Students from grade 1-6 in primary school in 6-12 years' age group and residents of Shashemene town.

4.4.1. Exclusion criteria

A child who has any current illness was not included in the study. A child whose parents were critically sick and unable to sustain an interview during the study period was not included.

4.5. Sample size and sampling technique

4.5.1 Sample size determination

Table 1: Determining sample size for the prevalence of overweight and obesity, Shashemene, 2018

dependent Variables	Childhood overweight	Childhood obesity
Prevalence	14.7% (17).	5.8% (17)
d=Margin of sampling error tolerated	3%	2%
Using epiinfo7, taking $Z_{\alpha/2} = 1.96$ at 95% CI and the calculated sample (n)	535	524
Total sample size with 10% non-respondent	588	576

Table 2: Determining sample size for factors of overweight and obesity, Shashemene, 2018

Common variables / factors considered	Proportions of childhood overweight and obesity among exposed (P_1) and unexposed(P_2) children		Using epinfo7, taking $Z_{\alpha/2}= 1.96$ at 95% CI and $Z_{\beta}= 0.84$ at Power 80%, the calculated sample (n)	
	Overweight	obesity	Overweight	obesity
School type	P_1 = Prevalence among Private school children 36(29.3%), P_2 = Prevalence of childhood among Public school children 30(9.2%) (17).	P_1 = Prevalence among Private school children 20(16.3%), P_2 = Prevalence among Public school children 6(1.8%) (17).	160	160

Sample size done for the first objective which was $n=535$ is greater than sample done for the factors ($n=160$). Therefore, we used $n=535$. Finally, by adding the possible non-response rate of 10%, the total sample size was **588**

4.5.2. Sampling technique

Stratified systematic random sampling technique used to select the study participants. A total 13,450 of children 6-12 year's age group enumerated from all public and private schools. The sample size proportionally allocated to size into all public and private schools in the town accordingly. The sampling frame was prepared based on the students' classroom register. Then participants selected using a systematic random sampling method. When there were two or more children from the same household only the first child for the study was included in the study and. Finally, **588** school going children were included in the study.

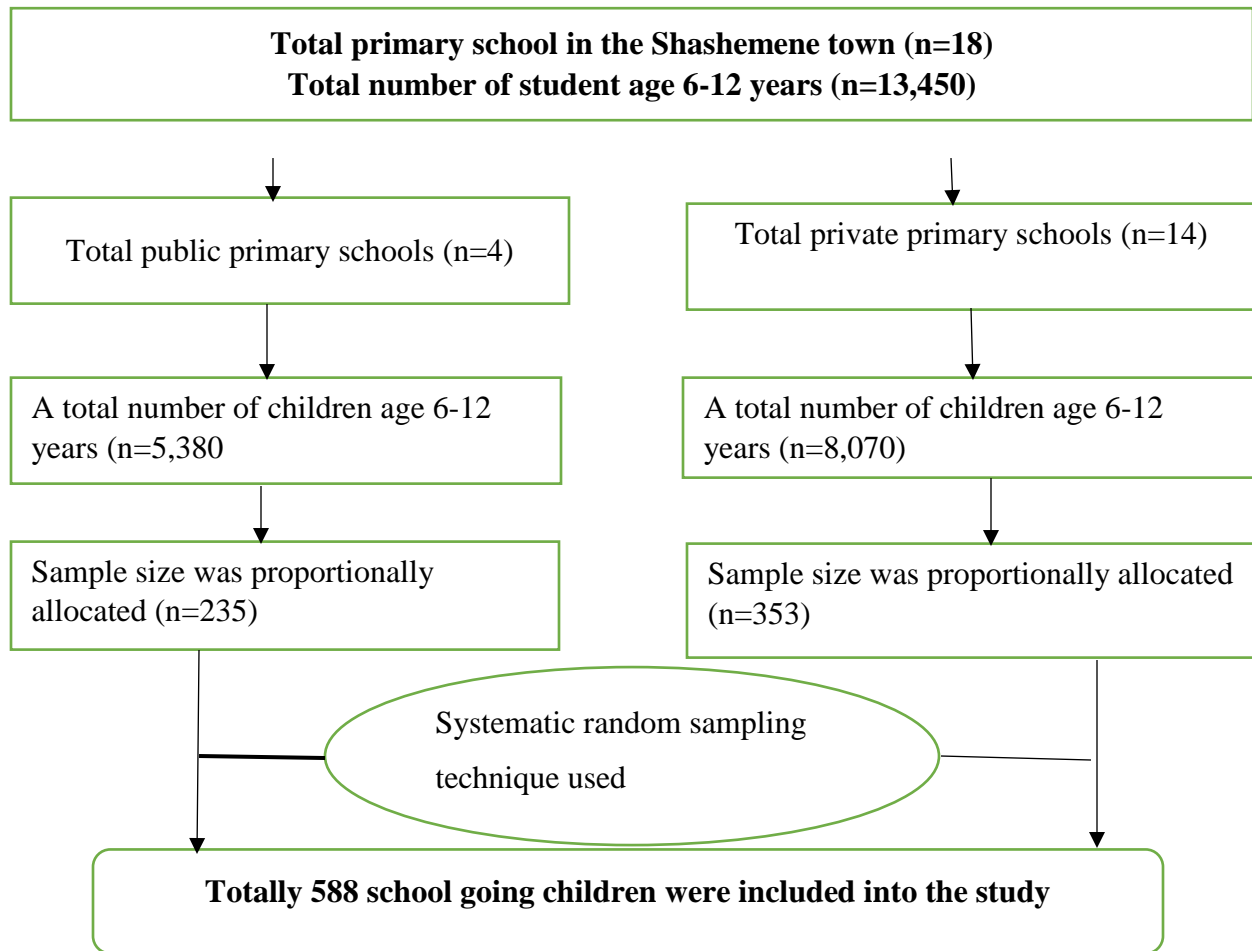


Figure 3: Schematic presentation of sampling procedure for study participants of the prevalence of childhood overweight and obesity among primary schools in Shashemene town, 2018

4.6. Study Variables

4.6.1. Dependent variable

Childhood overweight: BMI-for-age >1 SD above WHO growth reference median.

Childhood obesity: BMI-for-age >2SD above WHO growth reference median.

4.6.2. Explanatory variables

Socio/demographic: Wealth-status, maternal education, maternal occupation, family composition

Physical activity and sedentary life-related factors: physical exercise, walking or bicycling, Sitting/ reclining or Screen time,

Diet-related factors: Breastfeeding, Snack, Fruit and vegetable consumption, Place of breakfast mostly, eat while Watching TV or studying, breakfast consumption sweet foods, Dietary Diversity, Soft drink, Skipping meals, Junk foods

4.7. Data collection instruments and methods

4.7.1. Data Collection Instruments

Data collected using both structured and semi-structured questionnaires. The questionnaire was comprised of socio-demographic characteristics, physical activity, and sedentary lifestyle factors and dietary habits related questions. Most of the questionnaires were adapted, and modified to suit and relate to the study objective and area's context from different materials such as the global physical activity questionnaire (GPAQ)(44), World Health Organization(WHO) steps instruments for chronic disease risk surveillance(45), Food and Nutrition Technical Assistance(46) Household dietary diversity score(HDDS)(46) and National Health and Nutrition Evaluation Survey (NHANES)(47). Weight measured by using United Nation Children's Fund (UNICEF) Seca digital balance scale and height was measured using portable stadiometer. Height in centimeters (cm) and weight in kilograms (kg) was measured.

4.7.2. Data collection methods

Interviewer-administered structured and semi-structured questionnaires used to collect the data at the household level from biological parents or legal caregivers of children, because students at this age may not respond correctly to the prepared questionnaire. Six Health Extension Workers as a data collector and two health officers as a supervisor participated in the data collection process after they got two-day training by the principal investigator. The questionnaires first developed in English and will be translated into Amharic and Afan Oromo, and translated back to English again

to check its consistency. The pre-test carried out at Arsi Negele Town, which is outside of the study town and has similar socio-demographic characteristics.

Measurement of weight and height of the children was made at each school during mornings or early afternoons before the class start or at the break time. Weight was measured by using UNICEF Seca digital balance scale and recorded to the nearest 0.1 Kg. It was calibrated against known weight before the start of measurement regularly. During the procedure, the participants wearied light clothes and barefoot. Children's height was measured using portal stadiometer by placing a child in a standing position that heels, buttocks, scapula/upper body parts and occiput touching the measuring board. Height measurement values read and recorded to nearest 0.1cm. Before application, the instrument was checked by external tap meter for its accuracy. During the measurement of children's bags, books, exercise books, and other playing materials were put away by data collectors.

4.8. Data processing and Analysis

Data was coded manually, was checked for completeness and consistency. Individual BMI for age was generated based upon 2007 WHO reference population using WHO Anthro-plus version 1.0.4. Data were entered in Epi data manager version 4.1. And exported to Statistical Package for Social Science (SPSS) version 20.0; where recording, computing, and other statistical analysis was performed. Description of data was done using frequency tables and summary measures including; mean & Standard deviation for continuous variables. The odds ratios along with their corresponding 95% confidence intervals were calculated to assess the strength of association. The bivariable analysis was conducted in order to identify candidate variables and variables with P-value less or equal to 0.2 were selected as candidate variables for multivariable analysis. Finally, Multivariable regression analysis was used to identify independent factors of childhood overweight and obesity. In multivariable analysis, variables having a p-value less than 0.05 were considered as significant factors of childhood overweight and obesity. Multiple logistic regression was tested for model fitness by using Hosmer-Lemeshow model test (significance test at chi-square for overweight=0.177 and obesity= 0.279). Multicollinearity of the independent variables was checked by the standard error, while no variables with a standard error of greater than two were found from the multivariate analysis and also variance inflation factors (VIF) was checked, but no variable with $VIF > 2$ in both model.

4.9. Data Quality Assurance

Prior to data collection, both interviewers and supervisors trained on interview approach, ways to maintain confidentiality and privacy of the study participants for two days. Both weight and height measured two times for each individual and the average result taken. However, if the difference between the two measurements is $>\pm 0.5$, the third measurement was taken. Data collectors were selected carefully based on clearly established criteria. Data quality was also maintained by pre-testing the questionnaire on 5% of the randomly selected of student-parent pairs in Arsi Negele town, which is located at 31 km distance to North of Shashemene town.

The questionnaire was prepared first in English and then translated into Afan Oromo and Amharic to suit local applicability. Finally, to ensure its consistency, other people who have a similar experience translated the questionnaire back into English. The collected data checked for completeness by the supervisors on daily basis.

4.10. Ethical Assurance

Ethical clearance and supportive letter to undertake the study was obtained from Ethical Review Board of Jimma University. Letter of cooperation and support from the university together with the ethical approval letter was presented to Oromia Regional Health Bureau (ORHB) and Shashemene town health department to obtain a written permission to undertake the study. Letter of support was written from town Health office to town Education office and to each school and was informed about the purpose of the study to school administration and parents of the children. During household interview assent of the parents was asked each participant about the study protocol and a written consent was obtained to their child's participation and themselves prior to child measurement. Children whose parents refuse to participate were excluded from the study. Confidentiality and privacy of the study participants were assured and protected by using unique questionnaire identification number, removing their names and using other identifiers during an interview respectively. Children who have obesity or overweight and their partners were repeatedly counseled by HEWs and linked to health facilities with referral coupon. At least one health education session was given for all schools by health extensions workers

4.11. Operational definition / Term definition

Children: - Population that exist in the age group between 6 to 12 years

Overweight: BMI-for-age more than 1 SD above WHO growth reference median.

Obesity: BMI-for-age more than 2 SD above the WHO growth reference median.

Moderate exercise: Are activities are activities that require moderate physical effort and cause small increases in breathing or heart rate such as low-impact aerobic exercise classes, brisk walking or hiking, recreational team sports (volleyball, soccer, etc.) for at least 10 minutes.

Vigorous exercise Are activities that require hard physical effort and cause large increases in breathing or heart rate such as running or jogging, high-intensity aerobic classes, competitive full-field sports (soccer) or basketball for at least 10 minutes per day.

Junk food: food high in calories, low in nutrients and usually quick to prepare. Pasta, burgers, pizzas, fish and chips, crisps, and sweets

Minimum Dietary diversity: Among the total number of food groups consumed in 24hours those children who consumed four or more food groups at each household

Wealth index: Those respondents who were in the first to third quintiles to wealth status questions and will be declared as the poor to rich respectively for Overweight as outcome variable while it was divided as low and high wealth status for Obesity after composite variables were extracted by using Principal Component Analysis (PCA).

4.13. Dissemination plan

The finding of the study will be disseminated to Jimma University, Shashemene, town health office, and ORHB (Oromia Regional Health Bureau). Additionally, the finding of this study will be presented on Seminars and review meeting. Finally, maximum efforts will be done to publish the finding of this study on Public Journals for further utilization.

CHAPTER FIVE: RESULT

5.1 Socio-demographic characteristics

In this study, 576 children-parent pairs were assessed making a response rate of 97.9%.

Among 576 children, 305 (53%) were male. The mean age (SD) of the children was 9.7 (1.5) years. About 347(60%) of children were from private schools. Most of the parents, 389(67.5%) were from the Oromo ethnic group. Most of the religious group was Protestant accounting for 32.5(26.7%). Most of the children, 472(81.9%) had both parents. Leading proportion of mothers or caregivers, 236 (42.8%) attended secondary and above education level. Around one-third of mothers, 203(35.2%) were non- employed.

Table 3. Socio demographic characteristics of primary school children, Shashemene town, Southern Ethiopia, April 2018(n=576)

Variables		Frequency(N)	Percent (%)
Ethnicity	Oromo	389	67.5
	Amhara	69	12
	Wolaita	53	9.2
	Gurage	34	5.9
	Others*	31	5.4
Religion	Protestant	187	32.5
	Muslim	155	26.9
	Orthodox	154	26.7
	Catholic	64	11.1
	Others*	16	2.8
Family composition	Two parents	472	81.9
	Sole parent	74	12.8
	No biological parents	30	5.2
Maternal Education	No Education	135	24.4
	Primary level (1-8 grade)	181	32.8
	Secondary level and above	236	42.8
Maternal Occupation	Employed in Organizations	158	27.4
	Self-employed	191	33.2
	non-employed/housewife	203	35.2
Sex of the child	Male	305	53
	Female	271	47

Wealth status*	Low	166	28.8
	Medium	159	27.6
	High	251	43.6
School type	Public	229	39.8
	Private	347	60.2

Key: *Ethnicity categories indicate Tigre, Kembeta, and Sidama

*Religions categories indicate includes Wakefata, Adventists)

*Variables fit for a measure of Wealth status by PCA include Functional TV, Bicycle, home ownership, biffe/comedienne, Backyard, and Flush toilet

5.2. Prevalence of overweight and obesity

The prevalence of childhood overweight was 14.9% (95% CI: 12.6, 18.9). Most overweight children were from private school 60(69.7%). The prevalence of childhood obesity was 5.2% (95% CI: 3.5, 6.9) Most obese children were from private school 21(70%).

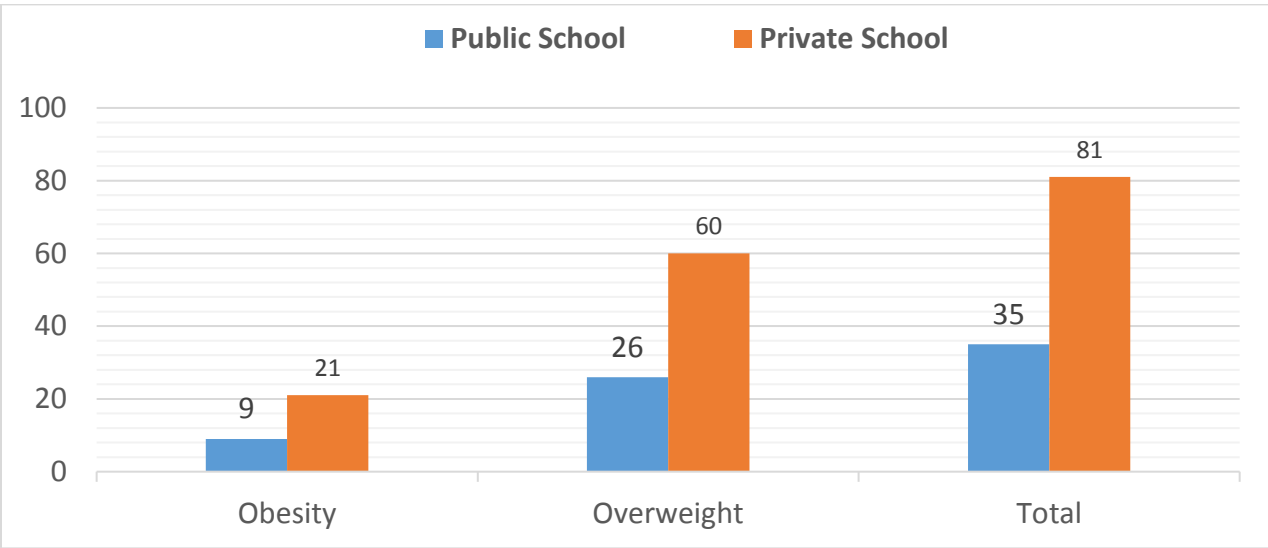


Figure 4: Childhood overweight and obesity among primary school in Shashemene town, Southern Ethiopia, April 2018

5.3. Factors associated with childhood overweight

In bivariate logistic regression, variables such as family with medium wealth status, learning in private school, eating snack more (>1times/day), eating skipping breakfast, less vegetables and fruits (<2times/week), using vehicles for school and no work after school were found to

significantly associated with overweight at P-value ≤ 0.2 and selected as candidate variables for multivariable logistic regression.

Table 4: Factors associated with overweight among primary school children age 6-12 years in Shashemene town, April 2018(n=546)

Variables		Overweight		COR (95% CI)	P value
		yes	no		
Family composition	Two parents	72(16.1%)	374(83.9%)	1.2(0.6, 2.2)	0.59
	No biological parent**	14(14%)	86(86%)	1	
Maternal Education	No Education	15(12.1%)	109(87.9%)	0.9(0.5, 1.7)	0.73
	Primary level (1-8 grade)	27(16.3%)	139(83.7%)	1.2(0.7, 2.2)	0.42
	Secondary level and above	31(13.4%)	201(86.6%)	1	
Maternal Occupation	Employed in Org.	18(12.3%)	128(87.7%)	0.7(0.4, 1.4)	0.39
	Self-employed	24(13.6%)	153(86.4%)	0.8(0.4, 1.5)	0.58
	non-employed/housewife	31(15.6%)	168(84.4%)	1	
School type	Public	26(11.8%)	194(88.2%)	1	0.04*
	Private	60(18.4%)	266(81.6%)	1.6(1, 2.7)	
Wealth status	Low	17(11%)	137(89%)	1	<0.001*
	Medium	46(29.1%)	112(70.9%)	3.3(1.8, 6)	
	High	23(9.8%)	211(90.2%)	0.8(0.4, 1.7)	
breastfed	≥ 4 month	76(16.1%)	397(83.9%)	1	0.60
	<4month	10(13.7%)	63(86.3%)	0.8(0.4, 1.7)	
Snack per day	≤ 1 /day	12(7.8%)	141(92.2%)	1	0.002*
	>1/day	74(18.8%)	319(81.2%)	2.6(1.4, 5.1)	
Breakfast per week	<4 times	48(24%)	152(76%)	2.5(1.6, 4)	<0.001*
	≥ 4 times	38(11%)	308(89%)	1	
Place of breakfast mostly	home	61(16.7%)	304(83.3%)	1	0.67
	School cafeteria	17(15%)	96(85%)	0.8(0.5, 1.5)	
	Other places	8(11.8%)	60(88.2%)	0.6(0.3, 1.4)	
Eat while Watching TV or Studying?	no	75(16.2%)	388(83.8%)	1	0.5
	yes	11(13.3%)	72(86.7%)	0.8(0.4, 1.5)	

Minimum Dietary diversity(DDS)	>=4	43(16.5%)	218(83.5%)	1	0.65
	<4	43(15.1%)	242(84.9%)	0.9(0.5, 1.4)	
Fruits and vegetables consumption	>=2 times per week	19(7.5%)	232(92.5%)	1	<0.001*
	≤1 times per week	67(22.7%)	228(77.3%)	3.9(1.4, 10.6)	
Frequency of Soft Drinks?	>=2 times per week	27(15.3%)	149(84.7%)	0.9(0.5, 1.5)	0.85
	≤1 times per week	59(15.9%)	311(84.1%)	1	
Junk and sweet Foods consumption	>=2 times per week	38(16.4%)	193(83.6%)	1.1(0.6, 1.7)	0.70
	≤1 times per week	48(15.2%)	267(84.8%)	1	
Screen time(Hr./day)	<2hrs	67(14.7%)	390(85.3%)	1	0.48
	>=2hrs	13(17.8%)	60(82.2%)	1.2(0.6, 2.4)	
Vigorous-intensity activity?	yes	62(15%)	351(85%)	1	0.4
	no	24(18%)	109(82%)	1.2(0.7, 2.1)	
Moderate-intensity activity?	yes	69(15.5%)	375(84.5%)	1	0.78
	no	17(16.7%)	85(83.3%)	1.1(0.6, 1.9)	
Use vehicle for school	no	61(13%)	410(87%)	1	<0.001*
	yes	25(33.3%)	50(66.7%)	3.3(1.9, 5.8)	
Participate in work after school	no	18(29%)	44(71%)	2.5(1.3, 4.5)	0.003*
	yes	68(14%)	416(86%)	1	

Key: * Indicates significant at binary logistic regression at p-value ≤0.2

** No biological parent/s= includes no both parents or one parents

In multivariable regression medium wealth status, eating snack more (>1times/day), skipping breakfast, eating fewer vegetables and fruits (<2times/week), and using the vehicle for school were significantly associated with childhood overweight.

Children of a family with medium wealth status (AOR=4.7, 95% CI=2.3, 9.6) were significantly associated with childhood overweight. Children who ate snacks more than once per day (AOR=4.4, 95% CI=2.1, 9.1) were significantly associated with childhood overweight than those who didn't eat or eat once per day, while those who eating breakfast less than 4 times per week (AOR=3.3, 95% CI=1.9, 5.7) were significantly more overweight than those who consumed more 4 or more times per week.

Children who consumed fruits and vegetables twice or less per week (AOR=3.9, 95% CI=2.1, 7.3) were significantly associated with childhood overweight than those consumed more than once per day. Children who use vehicles for school (AOR=4.2, 95% CI= 2.1, 8.2) were significantly associated with childhood overweight.

Table 5: Factors significantly associated with overweight among primary school children age 6-12 years in Shashemene town, April /2018(n=546)

Variables		Overweight		COR (95% CI)	AOR (95%)	P value
		yes	no			
School type	Public	26	194	1	1	0.27
	Private	60	266	1.6(1, 2.7)	1.3(0.7, 2.4)	
Wealth status	Low	17	137	1	1	<0.001*
	Medium	46	112	3.3(1.8, 6)	4.7(2.3, 9.6)	
	High	23	211	0.8(0.4, 1.7)	1.2(0.6, 2.5)	
Snack per day	<=1/day	12	141	1	1	0.001*
	>1/day	74	319	2.6(1.4, 5.1)	4.4(2.1, 9.1)	
Breakfast consumption /week	<4 times	48	152	2.5(1.6, 4)	3.3(1.9, 5.7)	<0.001*
	>=4times	38	308	1	1	
Fruits and vegetables consumption	>=2 times/ week	19	232	1	1	<0.001*
	≤1 times/week	67	228	3.9(1.4, 10.6)	3.9(2.1, 7.3)	
Use vehicle for school	no	61	410	1	1	0.001*
	yes	25	50	3.4(1.9, 5.8)	3.8(1.9, 8.9)	
Participate in work after school	no	18	44	2.5(1.36, 4.5)	1.7(0.8, 3.6)	0.15
	yes	68	416	1	1	

5.3. Factors associated with Childhood Obesity

In bivariate regression, variables such as high wealth, breastfeeding(<4month), increasing sweet and junk foods consumption, moderate intensity activities and using vehicles for school were found to be significantly associated with obesity at P-value ≤ 0.2 selected as candidate variables for multivariable logistic regression.

Table 6: Factors associated with obesity among primary school children age 6-12 years in Shashemene town, April 2018(n=576)

Variables		Obesity		COR (95% CI)	P value
		yes	no		
Family composition	Two parents	26(5.5%)	446(94.5%)	1.4(0.5, 4.2)	0.49
	No biological parent/s**	4(3.8%)	100(96.2%)	1	
Maternal Education	Primary level **	18(5.7%)	298(94.3%)	1.1(0.5, 2.3)	0.75
	Secondary and above	12(5.1%)	223(94.9%)	1	
Maternal Occupation	Employed	10(6.3%)	148(93.7%)	1.2(0.5, 2.7)	0.55
	non-employed**	20(5.1%)	374(94.9%)	1	
Wealth status	Low	13(4%)	312(96%)	1	0.14*
	High	17(6.8%)	234(93.2%)	1.7(0.8, 3.6)	
School type	Public	9(3.9%)	220(96.1%)	1	0.26
	Private	21(6.1%)	326(93.9%)	1.5(0.7, 3.5)	
Breastfed	≥ 4 month	17(3.5%)	473(96.5%)	1	<0.001*
	<4month	13(15.1%)	73(84.9%)	4.9(2.3, 10.6)	
Snack per day	≤ 1 /day	6(3.8%)	152(96.2%)	1	0.35
	>1/day	24(5.7%)	394(94.3%)	1.5(0.6, 3.8)	
Breakfast per week	<4 times	12(5.7%)	200(94.3%)	1.1(0.5, 2.4)	0.71
	≥ 4 times	18(4.9%)	346(95.1%)	1	

Place of breakfast	home	18(4.7%)	362(95.3%)	1	
mostly	other places	12(6.1%)	184(93.9%)	1.3(0.6, 2.7)	0.47
Eat while Watching TV or Studying?	yes	6(6.7%)	83(93.3%)	1.4(0.5, 3.5)	0.48
	no	24(4.9%)	463(95.1%)	1	
Minimum Dietary diversity(DDS)	>=4	13(4.7%)	261(95.3%)	1	
	<4	17(5.6%)	285(94.4%)	1.2(0.5, 2.5)	0.63
fruits and vegetables consumption	>=2 times per week	11(4.2%)	251(95.8%)	1	
	≤1 times per week	19(6.1%)	295(93.8%)	1.4(0.7, 3.1)	0.32
Frequency of Soft Drinks?	>=2 times per week	11(5.9%)	176(94.1%)	1.2(0.5, 2.6)	0.61
	≤1 times per week	19(4.9%)	370(95.1%)	1	
Junk and sweet Foods consumption	>=2 times per week	18(7.2%)	231(92.8%)	2(0.9, 4.3)	0.06*
	≤1 times per week	12(3.7%)	315(96.3%)	1	
Screen time(Hrs./day)	<2hrs	24(5%)	457(95%)	1	
	>=2hrs	6(7.6%)	73(92.4%)	1.5(0.6, 3.9)	0.34
Vigorous-intensity activity?	yes	20(4.6%)	413(95.4%)	1	
	no	10(7%)	133(93%)	1.5(0.7, 3.4)	0.27
Moderate-intensity activity?	yes	21(4.5%)	444(95.5%)	1	
	no	9(8.1%)	102(91.9%)	1.8(0.8, 4.2)	0.13*
Use vehicles for school	no	18((3.7%)	471(96.3%)	1	
	yes	12(13.8%)	75(86.2%)	4.2(1.9, 9)	<0.001*
Participate in work after school	yes	25(4.9%)	484(95.1%)	1	
	no	5(7.2%)	62(92.5%)	1.5(0.5, 4.3)	0.38

Key: * Indicates significant at binary logistic regression at p-value ≤0.2

** No biological parent/s= includes no both parents or one parents

** Primary level= includes no education, primary level (1-8)

** Non-employed= includes self-employed, housewives, students, and others

In multivariable logistic regression high wealth status, breastfed, consumption of junk and sweet foods, and using the vehicle for school were significantly associated with childhood obesity.

Children of a family with high wealth (AOR=2.4, 95% CI= 1.1, 5.5) were significantly associated with childhood obesity when compared with children of the family with low wealth status.

Children who breastfed less than 4months during their infancy period (AOR=6.5, 95% CI= 2.8, 14.8) were significantly associated with childhood obesity when compared with those who breastfeed more than 4months during the infancy period. Children who consumed junk and sweet foods 2times or more per week (AOR=2.5, 95% CI=1, 5.5) were significantly associated with childhood obesity when compared to those who consumed less than 1 times per week. Students who use vehicles for school (AOR=5.4, 95% CI= (2.3, 12.5) were significantly associated with obesity when compared with those students who walk or use bicycles for school.

Table 7: Factors significantly associated with obesity among primary school children age 6-12 years in Shashemene town, April, /2018(n=576)

Variables		Obesity		COR (95% CI)	AOR (95% CI)	P value
		yes	no			
Wealth status	Low	13	312	1	1	0.027*
	High	17	234	1.7(0.8, 3.6)	2.4(1.1, 5.5)	
Breastfed	>=4month	17	473	1	1	<0.001*
	<4month	13	73	4.9(2.3, 10.6)	6.5(2.8, 14.8)	
Junk and sweet Foods consumption	>=2 times per week	18	231	2(0.9, 4.3)	2.5(1, 5.5)	0.025*
	≤1 times per week	12	315	1	1	
Moderate-intensity activity?	yes	21	444	1	1	0.126
	no	9	102	1.8(0.8, 4.2)	1.9(0.8, 4.7)	
Use a Vehicles	yes	18	471	1	1	0.001*
	no	12	75	3.3(1.9, 5.8)	5.5(2.3, 12.5)	

CHAPTER SIX: DISCUSSION

The study determined that the prevalence of overweight and obesity among primary school children in Shashemene town were 14.9% and 5.2%, respectively. Factors such as medium wealth status, eating snack more (>1times/day), skipping breakfast, eating fewer vegetables and fruits (<2times/week) and using vehicles for school were significantly associated with childhood overweight. Variables such as high wealth, not breastfed, more consumption of junk and sweet foods, and using vehicles for school were significantly associated with childhood obesity.

Prevalence of overweight was 14.9%. The findings of the present study are consistent with studies conducted in Dire Dawa (17), Kenya(25), European countries (21) and Romania(23). However, this finding was higher than studies conducted in Addis Ababa(16), Bahirdar(19) and Cameroon (24). This might explained by the change in the lifestyle factors of the society, age category difference, and standard used for defining obesity and overweight.

Prevalence of obesity in this study was 5.2%. The findings of cross-sectional studies conducted in Dire Dawa (17), Cameroon (24) and Kenya(25) support the current result. However other pooled study was done in Ethiopia (15), Addis Ababa (16) and Bahidar(19) were lower than the current study. This might be due to age category difference of the student and our study was interested only in 6-12 years' age group children in contrast to the above studies. In contrary to this, a study done in Egypt was higher than the current study. This difference might be attributed to the difference in standard used for defining obesity and overweight as Egypt used local standard curve while we used WHO 2007 growth reference(31).

Children of a family with higher wealth status were significantly more likely to be overweight and obese when compared with children of the family with low wealth status. This finding was comparable with studies done in Dire Dawa(17), Egypt(31), Peru(33), South Africa(32) and Romania(23). Studies in developing countries indicated that similar founding(28). However, studies in the developed World have shown an inverse association of socioeconomic class with childhood overweight and obesity (29,30, 48). Hence, habits of eating junk foods are increasing currently among increasing socioeconomic status community, the rapid development of fast-food outlets and the easy availability of junk food is a matter of concern. Children of a family with higher SES are more easily can receive food that is high in energy and of poor nutritional value, perhaps because mothers or care providers are more concerned with placating their homes than with the long-term health of the children(1, 28, 30).

Children who eat snacks ≥ 1 /day were significantly associated with overweight than those who did not eat or eat once per day. The finding of this study can be compared with the study done in Addis Ababa (16) and Spain(49). Due to the fact that eating more snacks will cause more energy saturation(50) and snacks are most of the time sweet foods and junk foods that cause overweight. However, a study done among china students had an inverse association. This difference was due to the fact that Snacking in China children were dominated by fruit consumption(51).

Children who skip breakfast less than 4 times per week were significantly more at risk of being overweight than eating breakfast more than 4times. Similar studies were done in Addis Ababa(16), French(48), among Pakistan primary school children(42)and Finnish children(43) show that skipping breakfast was more likely to be overweight when compared with those who did not. This might be due to fact that early eating will have higher energy expenditure and more calories loss. In other part missing breakfast will cause late more consumption which will have less energy expenditure and cause fat accumulation and overweight(52).

Children who consume vegetables and fruits less frequently were significantly higher to be overweight than those consumed more than once per day. Studies were done in Egypt children 6-14years(31), the Middle East and North Africa countries(9) and India(53) shows similar findings. This might be due to the Consumption of vegetables and fruits have low calories and high micronutrients for which is important for overweight and obesity prevention(40).

Children who used the vehicle for school were significantly more likely to be overweight and obese than children walked or use a bicycle for school. A study was done in Dire Dawa(17), Addis Ababa(16) and Egyp Port Said city(31) also show a similar result with our study. This can be related not only with inactivity but also during sedentary life eating habit will increase and indirectly cause overweight and obesity(27).

Children who breastfed less than 4month during their infancy period were significantly more likely obese than those who breastfed more than 4months. Studies in Ireland(37), European countries (38) and in Australia show that there was an association between childhood obesity and breastfeed(39). Indicative reasons can be breast milk has more potassium than sodium which decreases the risk of obesity and children who don't breastfeed may use formula milk which can cause childhood obesity(30, 37, 38).

Children who consumed junk or sweet foods ≥ 2 times per week were significantly more likely to be obese when compared to those who consumed less than one time per week. The finding of our study was consistent with studies done in Dire Dawa(17) and Addis Ababa (16), and also studies done in China Shanghai(27) and Pakistan(42) were similar with our study. This can be explained as junk and sweet foods are with high calories and poor nutritive value that will affect a child with obesity adversely and complication early(8).

6.3. Strength and Limitation of the study

6.3.1 Strength of the study

All schools have been included in the study by systematic sampling technique to select study participants. In contrast to other studies, we have used to classify nutrition status by WHO Anthro-plus software, which recommended for African countries. This study has tried to assess childhood overweight and obesity separately unlike other studies.

6.3.2 Limitation of the study

Hence we have used self-reporting (interview response) which might have social desirability bias such as food frequency and dietary diversity. Some questions also required the participants to recall factors such as breastfeed during infancy, which might affect the results and there might be misclassification during data collection for some variables such as food frequency questions and physical activity questions. Non-modifiable factors such as parental factors of hereditary disease, of childhood overweight and obesity were not studied due to feasibility.

CHAPTER SEVEN: CONCLUSION AND RECOMMENDATION

7.1 Conclusion

The prevalence of childhood overweight and obesity among Shashemene primary school found to be as high as that of global prevalence estimate.

Medium wealth status, eating snack more (>1times/day), skipping breakfast, eating fewer vegetables and fruits (<2times/week), and using vehicles for school were significantly associated with childhood overweight. High wealth, not breastfed, more consumption of junk or sweet foods, and using vehicles for school were significantly associated with childhood obesity.

7.2 Recommendations

Family-level

It is essential that parents should be aware of the potential risk the child is facing due to obesity and take actions to control the problem. Promoting active lifestyles, increasing consumption of healthy diets (more consumption of vegetables, fruits, and breakfast), decreasing unhealthy feeding (less consumption of snacks, sweet foods, and junk foods) and exclusive breastfeeding can be effective at household.

School-level

Children take at least one meal at school. Hence, schools can encourage kids to make a healthy food choice like reducing the intake of sugary foods, encourage kids to drink healthy fruit juices, vegetables and fruits. Schools which provide meals can have healthy nutritious food items with an emphasis on a balanced diet. Involve kids in physical activity by strategies like lengthening the time of physical activity and Classroom-based health education.

Stakeholders (Health office, community organizations, and etc.)

Organizing social events like healthy food festivals, imparting healthy messages, and educating and encouraging children to adopt a healthy lifestyle, like walk to school, providing playgroups with safe playgrounds and bike paths for kids to play outside will reduce their time spent in front of television sets. Influence media or local entertainment to promote healthy educational programs for parents and children.

Program planners and policymakers

National level strategies for the prevention of childhood obesity should be a public health priority. The multi-sectoral approach of different sectors like education department, food industry, media, and people should contribute to halting this problem of childhood obesity.

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ANNEXES

ANNEX I. INTERVIEW QUESTIONNAIRE (ENGLISH VERSION)

JIMMA UNIVERSITY INSTITUTE OF HEALTH, SCHOOL OF GRADUATE STUDIES

Confidentiality and consent

Good morning/ good afternoon? My name is _____ I am collecting information on behalf of Mr. Aman Sado who is doing a research as partial fulfillment for the requirement of Masters of Public Health at Jimma University Institute of Health and me politely asking you for your time to participate in this study. The purpose of this study is to assess factors associated with childhood overweight and obesity. I am going to ask you some questions and also measure your child's height and weight at school that are very important for childhood overweight and obesity intervention. The interview will take about 20-30 minutes. Any references to information that would reveal your identity will be removed or disguised in the preparation of the research reports and publications. Your name will not be written in this form and the information you give is kept confidential. If you don't want to include your child and or answer all of or some of the questions, you do have the right to do so.

Would you be willing to participate yourself and your child? Yes No

Contact address:- If there are any questions or enquires any time about the study, please contact and speak to principal investigator Mr. Aman Sado, Cell Phone +251 938989571 / +251910791698

E-mail Address:- E-mail-amansado2@gmail.com

Instruction for data collectors

1. Collect data from Biological Parents or Legal Care givers in the household
2. Check the completeness of the questionnaire before ending the interview with the respondent

Time interview started: hour: _____ minute: _____

Time interview ended: hour: _____ minute: _____

001. Questionnaire identification number _____

002. Region: - Oromia

003. City/ Town: - Shashemene

004. Name of School _____ Grade _____

005. Kebele _____ House's number _____

PART ONE: SOCIODEMOGRAPHIC FACTORS				
S.no	Questions	Response	Skip	Code
101	What is your ethnicity?	1. Oromo 2. Amhara 3. Gurage 4. Tigre 5. Kembeta 6. Wolaita 7. Others specify_____		
102	What is your Religion?	1. Orthodox 2. Protestant 3. Catholic 4. Muslim 5. Other specify_____		
103	Family composition	1. Two parents and Children 2. Sole mother and children 3. Sole father and children 4. No biological parents 5. other specify	► skip to 106	
104	What is Maternal or Caregivers educational status?	1. No education 2. Read and write 3. Primary level (1-8 grade) 4. Secondary level (9-12 grade) 5. Higher education		
105	What is maternal or caregivers Occupation status	1. Housewife 2. Got employee 3. Non-gov't employee 4. Self-employed 5. Student 6. Daily laborer 7. Merchants 8. Others_____		
106	Sex of the child	1. Male 2. Female		
107	What is the grade of a child?	Grade_____		
108	How old is the child?	Age in years_____		
109	What is school ownership?	1. Public 2. Private		
PART TWO: DIET RELATED FACTORS				
201	Have you ever breastfed your child?	1. Yes 2.No	If no skip to 204.	
202	If yes, for how long do you exclusively breastfed?	In months_____		
203	For how long do you continuous breastfeeding?	In months_____		

204	How many times do you feed your child snack per day?	In no. _____	
205	The frequency of breakfast consumption per week	In number-----	
206	Place of breakfast mostly	1. home 2. school cafeteria 3. other places (food stalls)	
207	Do your child eat while studying/ Watching TV?	1. No 2. Yes 3. Don't Watch TV	

Dietary diversity score in the last 24 hour

Now I would like to ask you about the types of foods that your child ate yesterday during the day and at night (in the last 24hr).		Yes	No
301	Grains, roots or tubers (bread, <i>injera</i> (prepared from maize, sorghum, millet, wheat, barley, teff), macaroni, pasta, rice, sweet potato, potato, carrot,	1	0
302	Vitamin A rich foods (carrot, cabbage, mango, papaya....)	1	0
303	Fruit and vegetables (banana, orange, apple, kale, other dark green leaves, avocado	1	0
304	Meat, Eggs, poultry, fish, (organ meat, muscle meat, <i>Doro Wot, asa tibsi, enqulal firfir, xibsi, qiqil...</i>)	1	0
305	Pulses/legumes/nuts (<i>telba, Shiro Wot, ocholoni qibe</i> , lentil, half grinded beans or <i>kiki, peas</i>)	1	0
306	Milk and milk products (cheese, yogurt, milk, butter,)	1	0
307	Foods cooked in oil/fat/butter ((like porridge, <i>caccabsa, cuko,</i>)	1	0

Food frequency questionnaires

Now I would like to ask you about the types of foods that your child ate during the last 7 days.		Response
401	How often does your child eat Vegetables like cabbage, lettuce?	1. More than once/day 2. Once per day 3. 3-6 times per week 4. 1-2 times per week 5. Never
402	How often does your child eat Fruits? (like banana, mango, avocado, orange, grape, apple, pineapple,)	1. More than once/day 2. Once per day 3. 3-6 times per week 4. 1-2 times per week 5. Never
403	How often does your child eat Sweet foods? (like ice cream, cake, honey,)	1. More than once/day 2. Once per day 3. 3-6 times per week 4. 1-2 times per week 5. Never

404	How often does your child use Soft drinks? (like Miranda, coca cola, Fanta, sprite)	1. More than once/day 2. Once per day 3. 3-6 times per week 4. 1-2 times per week 5. Never	
405	How often does your child eat junk foods? (like chips, sanbusa, koker,)	1. More than once/day 2. Once per day 3. 3-6 times per week 4. 1-2 times per week 5. Never	
406	How often does your child eat Food cooked with oil, fat or butter? (like porridge, <i>caccabsa</i> , <i>cuko</i> ,)	1. More than once/day 2. Once per day 3. 3-6 times per week 4. 1-2 times per week 5. Never	

PART THREE- SEDENTARY BEHAVIOR OF THE CHILD

501	Does your child view TV including video show or DVD?	1. Yes, 2. No	If no skip to 506
502	How many days in weekdays (Monday-Friday) your child view TV/ DVD	In no._____	
503	For Qn 502 how many hours per day does your child view TV/ DVD?	In hours_____	
504	How many days in weekend days (Saturday and Sunday) your child view TV/ DVD?	In no._____	
505	For Qn 504 how many hours per day does your child view TV/ DVD?	In hours_____	
506	Does your child play any computer/mobile games?	1. Yes, 2. No	If no skip to 601
507	How many days in weekdays (Monday-Friday) your child plays any computer/mobile games?	In no._____	
508	If yes to Qn 507, how many hours per day does your child plays any computer/mobile games?	In hours_____	
509	How many days in weekend days (Saturday and Sunday) your child plays computer/mobile games?	In no._____	
510	If yes to Qn 509, how many hours per day does your child plays any computer/mobile games?	In hours_____	

PART FOUR- PHYSICAL ACTIVITY OF THE CHILD

Think first about the time your child spends. In answering the following questions '**vigorous-intensity activities**' are activities that require hard physical effort and cause large increases in breathing or heart rate. **Examples:** Jogging, running, Basketball, Bicycling, vigorous walking upstairs, carrying heavy loads, Jumping rope, Soccer, Tennis.

Moderate-intensity activities that require moderate physical effort and cause small increases in breathing or heart rate. **Examples:** Walking fast, Dancing, standing, Walking downstairs planting, raking, mopping, Lifting or carrying moderate loads, Playing with children: kneeling, lifting, Rowing, Volleyball

601	Does your Child do vigorous-intensity activity?	1. Yes, 2. No	If no skip to 604
602	In a typical week, on how many days does your Child do vigorous-intensity activities?	days_____	
603	How much time does your child spend doing vigorous-intensity activities on a typical day	Hours_____	
604	Does your Child work moderate-intensity activity?	1. Yes, 2. No	If no skip to 607
605	In a typical week, on how many days do your children do moderate-intensity activities?	days_____	
606	How much time does your child spend doing moderate-intensity activities on a typical day?	hours_____	
607	Does your child use the vehicle to get to and from school?	1. Yes, 2. No	
608	Does your child participate in work after school?	1. Yes, 2. No	

PART FIVE: WEALTH STATUS

Does the household have any of the following properties? (Circle)		Yes	No	Does the household have any of the following properties? (Circle)		Yes	No
701	Functioning CD player/ Radio/iPod/G-bass	1	0	715	Home ownership	1	0
702	Functioning Television	1	0	716	Chest drawer/ biffe/ comadienno	1	0
703	A mobile telephone	1	0	717	Chair/Table	1	0
704	Refrigerator(fridge)	1	0	718	Digital Camera / Video camera	1	0
705	Electric stove / Gas Stove/Cylinder	1	0	719	Household have a bank or microfinance saving account	1	0
706	Bicycle	1	0	720	Cement type of floor	1	0
707	Motor Cycle	1	0	721	Piped/tap drinking water source	1	0
708	Cart/Gari	1	0	722	Corrugated iron sheet type of roof	1	0
709	Sofa	1	0	723	Livestock	1	0
710	Mattress	1	0	724	Horse, Mule, and Donkey	1	0
711	Car	1	0	725	Sheep and goats	1	0
712	Bajaj	1	0	726	Farmland owned by family	1	0
713	Taxi	1	0	727	Backyard owned by family	1	0
714	Washing machine	1	0	728	Flush toilet	1	0

B. Consent and assent for anthropometric measurements of the children

Good morning/ good afternoon? My name is _____ I am assessing children on behalf of Mr. Aman Sado who is doing a research as partial fulfillment for the requirement of Masters of Public Health at Jimma University and I politely asking your school children to participate in this study and we have got the permission from the parents also. The purpose of this study is to assess

the prevalence and factors associated with childhood overweight and or/obesity. We would like your assistance. I am going to measure the child’s height and weight. It is very important for childhood overweight and obesity intervention. Any references to information that would reveal your school and student identity will be removed or disguised in the preparation of the research reports and publications. Your school name and student name will not be written in this form and the result will be kept confidential. Can we begin now? 1. Yes, 2. No

PART SIX- ANTHROPOMETRIC MEASUREMENTS OF THE CHILD					
		A	B	C	
Number of measurements (must be 2times for each child, 3 rd measurement if difference b/n two $> \pm 0.5$, the third measurement will be taken)		Measu rement 1	Measu rement 2	Measu rement 3	Average of two $= \frac{A+B}{2}$
The weight of the child	In kilograms(Kg)				
The height of the child	In centimeters (cm)				
Childs Date of birth	dd/mm/yyyy_____				
Date of Data Collection	dd/mm/yyyy_____				

THANK YOU VERY MUCH!

Data Collectors Name _____ Sign _____ Date _____

Supervisor: Name _____ Sign _____ Date _____

ANNEX II. INTERVIEW QUESTIONNAIRE (AFAN OROMO VERSION)

YUNIVERSIITII JIMMAATTI INSTITIYUTII FAYYAA

A. Akkataa Hayyama/Waliigaltee fi Iccitti ittin eegamu

Ani maqaan koo _____ jedhama. Ani kanaan hojjechaa jiru ragaa qorannoo Obboo Amaan Saaddoo baruumsa isaa Masters Fayyaa Hawaasa (MPH) Yuunivarsiitii Jimma, Institiyuutii fayyaa hojjachaa jiran miseensa ta'uu dhaan. Qorannoon kunis" ulfaatina fi ulfaatina cimaa ijoollee mana baruumsa sadarkaa tokkoffaa magaalaa Shaashamannee keessatti argaman adda baasuufi akkasumas sababoota isaa addaan baasu dha. Gaaffii muraasa isin gaafadha; akkasumas muca keessan ulfaatina fi hojjaa daa'immaa sadarkaa mana baruumsatti kan madalamu ta'a. Gaaffii fi deebii kana xumuruuf daqiiqaa 20-30 qofa fudhata. Ragaan isin naaf kennitan tarkanfii fudhachuu keessatti gahee guddaa qaba. Isinis ta'ee daa'imni keessan akka irratti hirmaatan kabajaan isin gaafanna. Maqaan keessan guca kana irratti hin barreeffamu, akkasumas ragaa naaf kennitan waliin qabsiifne itti hin fayyadmnu. Gaaffiin isin deebisuu hin barbaadne yoo jiraate dhiisuun mirga keessani, akkasumas yeroo barbaaddanitti gaaffii fi deebii keessan addan kutuu ni dandeessu. Kanaafu, gaaffilee hundaaf deebii sirrii ta'e kennuun kayyoo qorannoo kanaa galmaan gahuuf baay'ee barbaachisa dha.

Odeeffannoo dabalataaf ykn immoo gaaffii dabalataa yoo qabaatan qorataa qorannaa kana Obbo Amaan Saaddoo argachu kan dandeessan karaa lakk. Bilbila +251 938 989 571/+251 910 791 698 Ee-meelii: amansado2@gmail.com

Hirmaachuuf fedhii qabduu?

A. Eeyyee _____ (Eyyee yoo ta'e gaaffilee kanaa gadii gaffachuutti darbi)

B. Lakkii _____ (Lakkii yoo ta'e nama gaafatamu kan itti anutti darbi)

Hubachiisa

1. Ragaan kan funaanamu haadha ykn guddiftu daa'ima irraa manaa manatti deemuu dhaan.
2. Gaaffii fi deebii osoo hin xumuriin dura qabiyyee guca gaaffii kana hunda gaafachuu kee fi guutuu ta'uu mirkaneeffadhu.

Yeroo gaaffannoon itti jalqabe. Sa'aa _____ daqiiqaa _____

Yeroo gaafannoon itti xumurame. Sa'aa _____ daqiiqaa _____

001. Lakk addaa gaaffii _____

002. Naannoo: Oromiyaa 003. Magaala: Shashamannee

004. Maqaa M/Barnoota _____ Kutaa _____

KUTAA-1- GAAFANNOO DHIMMA HAWAASUMMAA FI DINAGDEE			
T/L	Gaaffilee	Deebii	Ce'i
101	Sabumman kee maali?	1. Oromo 2. Amaara 3. Guraage 4. Tigiree 5. Kambataa 6. Wolaytaa 7. Kan biroo _____	
102	Amantaan kee maali?	1. Ortodoksii 2. Pirotistaantii 3. Kaatolikii 4. Islaama 5. Kan biroo(ibsi) _____	
103	Haala Maatii	1. Haadha, Abbaa fi ijoollee 2. Haadha qofaafi ijoollee 3. Abbaa qofaaf ijoollee _____ → skip to 106 4. Abbaa fi Haadha kan hin qabne 5. Kan biroo	
104	Sadarkaa barumsa haadhaa ykn guddiftu Daa'ima	1. Dubbisu fi barreessuu hin dandeessu 2. Dubbisuu fi barreessuu ni dandeessi 3. Kutaa1-8 4. Kutaa 9-12 5. Kolleejjii /Yunivarsitii	
105	Hojii haaadhaa ykn guddiftu	1. Mana keessa 2. Hojjattuu mootummaa 3. Hojjatu miti mootumma 4. Hojii dhuunfaa 5. Barattuu 6. Hojjettuu guyyaa 7. Daldaltu 8. Kan biroo(ibsi) _____	
106	Saala daa'imaa	1. Dhiira 2.Dhalaa	
107	Kutaa mucaan baratu/ttu	Kutaa _____ ffaa	
108	Umurii Mucaa	waggaan _____	
109	M/Baruumsa mucaan keessan itti baratu	1. Kan Mootummaa 2. Kan Dhuunfa	
KUTAA- 2- GAAFANNOO WAA'EE NYAATAA FI KUNUUNSA DAA'IMMANII			
201	Daa'ima kee harma hoosiftee beektaa?	1. Eeyyee 2.Lakkii	Yoo lakkii ta'e gara 204 tti darbi.
202	Eeyyee yoo ta'e hagamiif harma haadhaa qofa hoosifte?	Ji'aan _____	
203	Hagamiif itti fufiinsaan harma hoosifte?	Ji'aan _____	

204	Daa'ima keessan guyyatti si'a meeqa nyaata dabalataa kennituuf	Lakk_____	
205	Torbe keessatti daa'imni keessan ciree guyyaa meeqa nyaata?	Lakk._____	
206	Iddoo daa'imni yeroo baay'ee ciree itti nyaatu	1. Mana 2. Mana nyaata M/B 3. Iddoo Biroo	
207	Daa'imni kee yeroo qo'atu/TV ilaalu nyaata?	1. Lakki 2. Eeyyee 3. TV hin ilaalu	

Gaafannoo gartuu gosa nyaataa sa'aa 24 keessatti daa'imni soorate

Kanatti aansee gosa nyaataa daa'imni kee kaleessa ganamaa kaasee haga har'a ganamaatti halkan edaa dabalatee nyaate natti himta.		Eeyyee	Miti
301	Gosa midhaani fi hiddaa (buddena, daabboo, macaroni, pasta, dinnicha, midhaan boollaa...)	1	0
302	Kuduraalee fi fuduraalee vaayitaamin A dhaan badhaadhan kannen akka kaarootii, raafuu maraa, qaaraa, kkf)	1	0
303	Kuduraalee fi fuduraalee kanneen biroo (fknf muuzii, avokaado, burtukaana...)	1	0
304	Gosa Foonii fi Hanqaaquu (foon,qurxummii,lukkuu,booyyee,tiruu fi kkf)	1	0
305	Gosa baaqelaa fi loozii,shiroo,kiikkii gosa adda addaa kan shiroof oolan	1	0
306	Gosa aannanii fi bu'aa isaa(fknf aannan,baaduu, itittuu, ittoo)	1	0
307	Nyaata zaayitaa fi dhaadhaa waliin qophaahan kanneen akka marqaa, caccabsaa, cuukkoo,fi kkf), Nyaata mimmi'ahoo tahan kanneen akka keekii, kireemii cabbie, biskutii fi kkf	1	0

Gaafannoo hammamtaa nyaataa daa'immanii

Nyaata daa'imni kee guyyoota 7n darban keessa soorate hammamtaasaa natti himta		Deebii	
401	Daa'imni keessan nyaata gosa kuduraalee kanneen akka raafuu, qoosxaa, qaaraa, baala magariisaa fi kkf si'a meeqa soorate?	1. Guyyaatti si'a tokkoo ol 2. Guyyaatti si'a tokko 3. Torbanitti si'a 3-6 4. Torbanitti si'a 1-2 5. Gonkumaa	
402	Daa'imni keessan nyaata gosa fuduraalee kanneen akka avokaadoo, burtukaana, muuzii, paappayyaa, appilii, maangoofi kkf si'a meeqa soorate?	1. Guyyaatti si'a tokkoo ol 2. Guyyaatti si'a tokko 3. Torbanitti si'a 3-6 4. Torbanitti si'a 1-2 5. Gonkumaa	
403	Daa'imni keessan nyaata mimmi'ahoo tahan kanneen akka keekii, kireemii cabbii, biskutii, damma si'a meeqa soorate?	1. Guyyaatti si'a tokkoo ol 2. Guyyaatti si'a tokko 3. Torbanitti si'a 3-6 4. Torbanitti si'a 1-2 5. Gonkumaa	
404	Daa'imni keessan nyaata dhugaatii lallaafaa kanneen akka mirindaa, faantaa, kokaakollaa, ispirayitii fi kkf) si'a meeqa fayyadame/te?)	1. Guyyaatti si'a tokkoo ol 2. Guyyaatti si'a tokko 3. Torbanitti si'a 3-6 4. Torbanitti si'a 1-2	

		5. Gonkumaa	
405	Daa'imni keessan nyaata kanneen akka saanbuusaa, qoqorii, chiipsii si'a meeqa soorate?	1. Guyyaatti si'a tokkoo ol 2. Guyyaatti si'a tokko 3. Torbanitti si'a 3-6 4. Torbanitti si'a 1-2 5. Gonkumaa	
406	Daa'imni keessan nyaata zaayitaa fi dhaadhaa waliin qophaahan kanneen akka marqaa, caccabsaa, cuukkoo, fi kkf) si'a meeqa soorate?	1 Guyyaatti si'a tokkoo ol 2. Guyyaatti si'a tokko 3. Torbanitti si'a 3-6 4. Torbanitti si'a 1-2 5. Gonkumaa	

KUTAA-3- GAAFANNOO AMALOOTAA TAA'UMSA DAA'IMMANII

501	Daa'imni keessan TV/Vidiyoo, DVD ni daawwataa?	1. Eeyyee 2. Lakkii	Yoo lakkii ta'e gara 506 tti darbi.
502	Daa'imni keessan guyyaa hojii meeqa (wiixataa-jimaata) TV/ DVD daawwata?	Baay'ina guyyaa_____	
503	Gaaffii 502 tiif, Daa'imni keessan guyyaatti sa'atii meeqaaf TV/ DVD daawwata?	Sa.aatii_____	
504	Daa'imni keessan guyyaa (Sanbataa-Dilbataa) guyyaa meeqa TV/ DVD daawwata?	Baay'ina guyyaa_____	
505	Gaaffii 504 tiif Daa'imni keessan guyyaatti sa'atii meeqaaf TV/ DVD daawwata?	Sa.aatii_____	
506	Daa'imni keessan tapha mobaayilaa/kompuuyuteraa ni taphataa?	1. Eeyyee 2. Lakkii	Yoo lakkii ta'e gara 601 tti darbi.
507	Daa'imni keessan guyyaa hojii guyyaa meeqa(wiixataa-jimaataa) tapha mobaayilaa/kompuuyuteraa taphata?	Baay'ina guyyaa_____	
508	Gaaffii 507 tiif guyyaatti sa'atii meeqaaf tapha mobaayilaa/kompuuyuteraa taphata?	Sa.atii_____	
509	Daa'imni keessan guyyaa (sanbataa-Dilbataa) guyyaa meeqa tapha mobaayilaa/kompuuyuteraa taphata?	Baay'ina guyyaa_____	
510	Gaaffii 509 tiif Daa'imni keessan guyyaatti sa'atii meeqaaf tapha mobaayilaa/kompuuyuteraa taphata?	Sa.aatii_____	

KUTAA - 4 - GAAFANNOO SOSOCHII QAAMAA DAA'IMMANII

Dursii Daa'imni kee yeroo isaa maaliin akka dabarsu yaadi. Itti aansuudhaan gaaffiilee kannen akkataa garee isanin deebisu yaali.

Sosochii qaama cimaa jechuun humna guddaa fi yeroo hojjatamu immoo hargansuu fi dhahannaa onnee baay'ee kan dabaluu jechu dha. FKN: Utaalu, fiigicha, kubbaa saphaana taphachu, biskiletii oofuu, tabba

ykn gamoo bahu, meeshaa ulfaata baachuu, haada irra utaalaa taphachuu, kubbaa miila, teenisa tapachachuu.

Sosochii qaama salphaa jechuun humna guddaa kan hin gaafannee fi yeroo hojjatamu immoo hargansuu fi dhahannaa onnee baay'ee kan hin dabaltee dha. FKN: Dafanii deemu, sirbu, dhaabachuu, gamoo irraa gadi ykn tabba irra-gadee fiiguu, biqiltu dhaabu, haxawuu, mana miicuu, meeshaa baay'ee hin ulfaanne baachuu ykn dhiibuu, ijoollee wajiin taphachuu(jibibiin, waldhiibuun, marmaruun fkkf)

601	Daa'imni keessan sosochii qaama cimaa hojjataa?	1. Eeyyee 2. lakki	Yoo lakk ta'e gara 604 darbi
602	Torbee keessatti daa'imni keessan guyyaa meeqa sosochii qaama cimaa hojjataa?	Baay'ina guyyaa_____	
603	Guyyaa keessatti daa'imni keessan sa'aa meeqa sosochii qaama cimaa hojjataa?	Sa'aa_____	
604	Daa'imni keessan sosochii qaama salphaa hojjataa?	1. Eeyyee 2. lakki	
605	Torbee keessatti daa'imni keessan guyyaa meeqa sosochii qaama salphaa hojjataa?	Baay'ina guyyaa_____	
606	Guyyaa keessatti daa'imni keessan sa'aa meeqa sosochii qaama salphaa hojjataa?	Sa'aa_____	
607	Daa'imni keessan M/Barumsaaf deemee deebi'uuf Konkolataa fayyadama?	1. Eeyyee 2. lakki	
608	Mucaan keessan sa'aa baruumsan ala hojii humna hojjataa?	1. Eeyyee 2. lakki	

KUTAA - 5 - GAAFANNOO QABEENYA MANAA

Mana keessan keessa meeshaaleen armaan gadii ni argamuu? (itti mari)		Qaba	Hin qabu
701	CD player/ Radio/IPod/G-bass dalagu	1	0
702	Televijinii dalagu	1	0
703	Mobaayilii	1	0
704	Firijii	1	0
705	Elektiriikii istoovii, istoovii gaasii/Silinderii	1	0
706	Biskilitii	1	0
707	Dokdokkee ykn Mootorsaayikilii	1	0
708	Gaarii	1	0
709	Soofaa	1	0
710	Ispoonjii siree ykn ispoonjii firaashii	1	0
711	Konkolaataa	1	0
712	Baajaajii	1	0
713	Taaksii	1	0
714	Maashina uffata miichu	1	0
715	Mana dhuunfaa	1	0
716	Chesti diraweerii/ biiffee/ komadiinoo	1	0
717	Taa'umsa/Xarapheezaa	1	0
718	Dijitaalaa kaameeraa/ Vidiyoo kaameeraa	1	0

719	Galmee qusannoo herrega baankii	1	0
720	Simmintoo/shakila ta'uu keessa lafa mana	1	0
721	Bishaan dhugatii ujumoo/bomba/ dallaa keessa qabaachuu	1	0
722	Irri keessi manaa qorqorroo	1	0
723	Beeylada mana qabachuu(sa'a, sangaa)	1	0
724	Farda,Gaangee,Harree	1	0
725	Re'ee fi Hoolaa	1	0
726	Lafa Qonnaaf oolu qabaachuu	1	0
727	Man-dubee qabachuu	1	0
728	Mana fincaanii dhunfaa bishaan kan qabu	1	0

B. Hayyamaa/ Waliigalte Ijoollee Safaruu dhaaf

Ani maqaan koo_____ jedhama. Ani kanaan hojjechaa jiru ragaa qorannoo Obboo Amaan Saaddoo baruumsa isaa Masters Fayyaa Hawaasa (MPH) Yuuniversitii Jimma, Institiyuutii fayyaa hojjachaa jiran miseensa ta'uu dhaan. Qorannoon kunis" ulfaatina fi ulfaatina cimaa ijoollee mana baruumsa sadarkaa tokkoffaa magaalaa Shaashamannee keessatti argaman adda baasuufi akkasumas sababoota isaa addaan baasu dha. Baratoota keessan ulfaatina fi hojjaa isanii mana baruumsatti kan madalamu ta'a. Ragaan Kun tarkanfii fudhachuu keessatti gahee guddaa qaba. Maatii baratoota hayyamsifnee dhufneera. Isinis akka nuuf hayyamtan kabajaan isin gaafanna. Maqaan Mana baruumsaas ta'ee kan baratoota keessanii guca kana irratti hin barreeffamu, akkasumas ragaa naaf kennitan waliin qabsiifne itti hin fayyadmnu. Ijoolleen hirmaachu hin barbaadne yoo jiraate dhiisuun mirga isaanitti, akkasumas yeroo barbaaddanitti addan kutuu ni dandeessu. Baratootaaf (hirmaachuuf fedhii qabduu?) Eeyyee_____ Miti_____

KUTAA-6- SAFARTUULEE ANTIROPOMEETEERII DAA'IMMANII

Tokko tokkon daa'imani si'a lama safaramuu qabu. Garuu yoo garagarummaan isan laman giddu jiru $\geq \pm 0.5$ ta'e safartuu 3ffaa fudhachuun dirqama.		A	B	C	
		Safartuu 1ffaa	Safartuu 2ffaa	Safartuu 3ffaa	Avirejii $= \frac{A+B}{2}$
Ulfaatina Daa'ima	Kiilooiraamiidhaan(KG)				
Hojjaa Daa'ima	Seentimeetiriidhaan(cm)				
Guyyaa Dhaloota	gg/jj/www_____/_____/____				
Guyyaa ragaaan itti sasabame	gg/jj/www_____/_____/____ _				

GALATOOMA!

Nama ragaa sassabu: Maqaa_____ mallattoo_____ guyyaa_____

Qindeessa: Maqaa_____ mallattoo_____ guyyaa_____

ANNEXES III: INTERVIEW QUESTIONNAIRE (AMHARIC VERSION)

በጅማ ዩኒቨርሲቲ ጤና እንስሳት-የት የደህረ-ምራቃ ት/ት ክፍል

ሀ. ምስጢራዊነት እና ስምምናት /ፈቃደኝነት/ ለወለጅ

ሰላምታ፡ እኔ አቶ/ወ/ሮ/ወ.ረት-----እባለሎ። እዚህ የመጣሁት አቶ አማን ሳይ በጅማ ዩኒቨርሲቲ ለድህረ ምረቃ ትምህርታቸውን በወፍረት እና ከመጠን በላይ ወፍረት በአንደኛ ደረጃ ት/ት ቤት ተማሪዎች ላይ የምያደረገውን ጥናት ቡድን አባል ሆኜ ነው። እርስዎም በዝህ ጥናት ተሳታፊ እንድሆኑ በትህትና እንጠይቃለን። ይህ መጠይቅ የተዘገጀበት ዋና ዓላማዉ በሻሽመኔ ከተማ ወፍረት እና ከመጠን በላይ ወፍረት በአንደኛ ደረጃ ት/ት ቤት ተማሪዎች ላይ ምን ደረጃ ላይ እንደአለ ለማወቅ እና ዋና ምክንያቶችን በማወጣት እረምጃ ለመወሰድ እንድረደን ነው። ከ20-30 ደቅቃ የሚወስደውን ጥቂት ጥያቄዎችን እጠይቆታለሁ፤ እንዲሁም የልጅት ቁመት እና ክብደት እንዲለካ ፈቃደኝነታዎን እንጠይቃለን።

በዚህ ጥናት ለመሳተፍ ሙሉ ፈቃደኝነት ያስፈልጋል።በዚህ ጥናት የመሳተፍ ወይም ያለመሳተፍ ሙሉ መብት አለዎት። ለመሳተፍ ካልፈለጉ ደግሞ በማንኛውም ጊዜ በመሀል ራስዎን እና ልጅን ከጥናቱ ማግለል(ማቋረጥ) ይችላሉ። ካቋረጥኩኝ ጥቅም ይጎልብኛል ብለው አያስቡ። መመለስ የማይፈልጉትን ማንኛውም ጥያቄ ለመመለስ አይገደዱም።

ስለጥናቱ ጥያቄ ወይም ተጨማሪ መረጃ ከፋለጉ የጥናቱ ባለቤት አቶ አማን ሳይ በተከታዩ አድራሻ መግኘት ይችላሉ

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የስምምነት ማረጋገጫ ከተስማሙ ይቀጥሉ ካልተስማሙ ያቋርጡ

ማሳሰቢያ

1. ከእያንዳንዱ ቤት የሚሰጠው መረጃ ከልጁ እናት ወይም ከአሳደግ መሆን አለባት
2. እያንዳንዱን መጣይቅ ሞልተን ሰንሐድ በፊት ያልተሞላ ጥያቄ ካሌ መፈተሽ

የተጀመረበት ሰዓት-----ደቅቃ-----
ያለቀበት ሰዓት-----ደቅቃ-----

001. የጥያቄ መለያ ቁጥር _____
002. ክልል : አሮሚያ
003. ከተማ : ሻሻማኔ
004. የት/ት ቤት ስም _____ ክፍል ከተማ _____
005. የቀበሌ ስም _____ የቤት ቁጥር-----

ክፍል አንድ : የቤተሰብ ሁኔታ፣ ማህበራዊና ኢኮኖሚያዊ ጉዳዮች

ተ.ቁ	ጥያቄ	መልስ	ወደ ቀጣዩ እለፍ/ዝለል
101	ብሔረሰብ	1. ኦሮሞ 2. አማራ 3. ጉራጌ 4. ትግሬ 5. ካምባታ 6. ወላይታ 7. ሌላ_____	
102	ሀይማኖት	1. ሙስሊም 2. ኦርቶዶክስ 3. ፕሮቴስታንት 4. ካቶሊክ 5. ሌላ ካለ ይጠቀስ_____	
103	የልጅ ቤተሰብ ሁኔታ	1. ሁለቱ ወለጆች እና ልጆች 2. ሁለቱ ወለጆች እና ልጆች 3. እናት እና ልጅ ብቻ 4. አባት እና ልጅ ብቻ 5. የስጋ ወለጆች የለላቸው 6. ሌላ-----	→ ወደ 106 ዕላፍ
104	የልጅ እናት ወይም የአሰዳጊ የትምህርት ደረጃ	1. ማንበብና መጻፍ የማይችሉ 2. ማንበብና መጻፍ የሚችሉ 3. 1 ኛ -8ኛ ክፍል 4. 9ኛ-12ኛ 5. ኮለጅ/ዩኒቨርሲቲ	
105	የእናት ስራ	1. የቤት እመቤት 2. የመንግስት ሰራተኛ 3. መንግስታዊ ያልሆኑ ድረጅት ሰራተኛ 4. የግል ስራ 5. ተማሪ 6. የቀን ሰራተኛ 7. ነጋዴ 8. ሌላ(ይገለፅ) _____	
106	የልጅ ጾታ	1. ወንድ 2. ሴት	
107	የልጅ ትምህርት ደረጃ /ክፍል/	ክፍል-----	
108	የልጅ ዕድሜ	በዓማት_____	
109	የትምህርተ ቤት በላቤት	1. ህዝብ 2. የግል	
ክፍል ሁለት: ከአመጋገብ ጋር የተያያዙ ምክንያቶች			
201	ልጅዎ ጡት ጠብተው ያወቃል	1. ዓዎ 2. ዐያወቅም	ዐያወቅም ከ ሆነ ወደ 204 ዝለል
202	ጡት ብቻ ለ ስንት ወር ጠባ	በወር_____	
203	ልጅዎ ጡት ባጠቃላይ ለስንት ወር ጠባ	በወር_____	
204	ልጅትን በቀን ስንት ጊዜ መክሰስ ይመግባሉ	በቁጥር -----	
205	በሳምንት ውስጥ ልጅ ስንት ቀናትን ቁርስ ይመግባል	በቁጥር -----	
206	ልጅት ቁርሱን ብዙ ጊዜ ከየት ይመግባል	1. ከቤት 2. ከትምህርት ቤት ካፌ 3. ከሌላ ቦታ	

207	ልጅት ቴሌቪዥን በሚከፈሉት/በሚያጠናቡት ጊዜ ምግብ ይመጣል	1. አይመጣም 2. ይመጣል 3. ቴሌቪዥን አያይም	
የአመጋገብ ዐይነት በቀን (ባለፉት 24 ሰዓታት ውስጥ)			
ዐሁን የምጠይቅዎት ልጅዎ ባለፈው 24 ሰዓት ውስጥ የተመገበውን የምግብ አይነት ይሆናል			አዎ
301	ዐዘርትና ስራስር (ዳቦ፣እንጀራ፣መኮሮ፣ ፕስታ፣ ሩዝ፣ ጣፋጭ ድንች፣ድንች፣ከሮት፣ሸንኮራ		0
302	በቪታሚን ኤ የ በለፀጉ አተክልቶች (ከሮት፣ ጎመን፣ማንጎ...)		0
303	አተክልት ና ፍራፍሬ(ሙዝ፣ብርትካን፣አፕል፣አፕክዶ)		0
304	ስጋ፣የዶሮ ስጋ፣አሳ፣ እንቁላል፣ጉብት፣ኩላልት(የዶሮ ወጥ፣ አሳ ጥብስ (እንቁላል ፍርፍር፣ጥብስ፣ ቅቅል...)		0
305	ተልባ፣ባቁላ፣አተር፣ኑግ፣አሻሎኒ(ሸሮ ዎጥ፣ የአሻሎኒ ቅቤ፣ምስር፣ክክ)		0
306	ወተት ና የወተት ተዋጾኦ(እርጉ፣አይብ፣ቅቤ፣አጋት....)		0
307	በቅቤ/በዘይት/የተሰሩ ምግቦች(ገንፎ፣ጨጨብሳ፣ቸኮ፣ጣፋጭ ምግቦች አይስክሬም ,ኪክ ,ብስኩት፣ቸኮሌት ,ማር)		0
የምግብ ድግግሞሽ			
አሁን የምጠይቅዎት ልጅዎ ባለፈው አንድ ሰዎንት(7 ቀን) ውስጥ የተመገበውን የምግብ ድግግሞሽ ይሆናል			መልስ
401	ልጅዎ እንደ ጎመን ና ሰላጣ ያሉትን አተክልት ስንቴ ተመግበዋል	1. በቀን ከአንድ በላይ 2. በቀን አንዴ 3. ከ 3-6 ጊዜ በሳምንት 4. አንዴ/ሁለቴ በሳምንት 5. እንደወም አልበላም	
402	ልጅዎ ፍራፍሬን እንደ ሙዝ፣ብርትካን፣ አፕል፣ ዌይን፣ አናናስ፣አፕካይ ና የመሳሰሉትን ስንቴ ተመግበዋል	1. በቀን ከአንድ በላይ 2. በቀን አንዴ 3. ከ 3-6 ጊዜ በሳምንት 4. አንዴ/ሁለቴ በሳምንት 5. እንደወም አልበላም	
403	ልጅዎ ጣፋጭ ምግቦችን (እንደ፣ማር፣ኪክ፣ብስኩት፣አይስክሬም...የመሳሰሉትን)ስንቴ ተመግበዋል	1. በቀን ከአንድ በላይ 2. በቀን አንዴ 3. ከ 3-6 ጊዜ በሳምንት 4. አንዴ/ሁለቴ በሳምንት 5. እንደወም አልበላም	
404	ልጅዎ ለስላሳ መጠጦችን(እንደኮከባ፣እስፕራይት፣ፋንታ የመሳሰሉትን)ስንቴ ይጠቀማል	1. በቀን ከአንድ በላይ 2. በቀን አንዴ 3. ከ 3-6 ጊዜ በሳምንት 4. አንዴ/ሁለቴ በሳምንት 5. እንደወም አልበላም	
405	ልጅዎ ጃንክ ምግቦችን (እንደ ቸፕስ፣ሳንቡሳ፣ቆቆር) ስንቴ ይጠቀማል	1. በቀን ከአንድ በላይ 2. በቀን አንዴ 3. ከ 3-6 ጊዜ በሳምንት 4. አንዴ/ሁለቴ በሳምንት 5. እንደወም አልበላም	
406	ልጅዎ ከ ቅቤና ዘይት የተሰሩ እንደ ጭኮ፣ጨጨብሳ፣ገንፎ፣ብስኩት፣ፋስቲኒ የመሳሰሉ ምግቦችን ስንቴ ይበላል፤	1. በቀን ከአንድ በላይ 2. በቀን አንዴ 3. ከ 3-6 ጊዜ በሳምንት 4. አንዴ/ሁለቴ በሳምንት 5. እንደወም አልበላም	

ክፍል ሶስት: የልጆች የመቀመጥ ፀባይ መጠየቅያ			
501	ልጅዎ ቲቪ፣ቪዲዮ ማሳሰቢያ ድራማዎችን ያያል	1. ሳይ 2. አይ	አይም ከሆነ ወደ 506 ዝለል
502	በስራ ቀናት(ከሰኞ-አርብ)ልጅዎ ቲቪ ማሳሰቢያ ስንት ቀን ያያል	ቀን በ ቁጥር_____	
503	በጥያቄ 502 ላይ ልጅዎ ቲቪ ማሳሰቢያ በቀን ለስንት ሰዓት ያያል	ሰዓት_____	
504	በእረፊፍት ቀን(አሁኑ ምድብ ልጅዎ ቲቪ ማሳሰቢያ ስንት ቀን ያያል?	ቀን በ ቁጥር_____	
505	በጥያቄ 504 ላይ ልጅዎ ቲቪ ማሳሰቢያ በቀን ለስንት ሰዓት ያያል?	ሰዓት_____	
506	ልጅዎ የኮምፕዩተርና የሞባይል ገምገማዎች ይጫወታል?	1. ሳይ 2.አይ	አይም ከሆነ ወደ 601 ዝለል
507	በስራ ቀናት(ከ ሰኞ- አርብ)የኮምፕዩተርና የሞባይል ገምገማዎች ቀን ይጫወታል	ቀን በቁጥር_____	
508	በጥያቄ 507 ላይ ልጅዎ የኮምፕዩተርና የሞባይል ገምገማዎች በ ቀን ለስንት ሰዓት ይጫወታል	ሰዓት_____	
509	በእረፊፍት ቀን(አሁኑ ምድብ ልጅዎ የኮምፕዩተርና የሞባይል ገምገማዎች ቀን ይጫወታል	ቀን በ ቁጥር_____	
510	በጥያቄ 509 ላይ ልጅዎ የኮምፕዩተርና የሞባይል ገምገማዎች በቀን ስንት ሰዓት ይጫወታል?	ሰዓት_____	

ክፍል አራት የሕጻናት የአካል እንቅስቃሴ መጠይቅ

በመጀመሪያ ልጅዎ ጊዜውን በምን እንደሚያሳልፍ ያስቡ። ከዚህ በታች ያሉትን ጥያቄዎችን ለመመለስ፤

ከባድ የአካል እንቅስቃሴ ማለት ብዙ ጉልበት የሚጠይቅ እና የልብ ምትን እንድሁም ትንፋሽን በብዙ የሚጨምር የአካል እንቅስቃሴ መለት ነው። ለምሳሌ መዝለል ፣ ፍጫ ፣ የቅረጫት ኪስ ፣ ብስክሌት መሽከረከረ ፣ ደረጃ ወደ ላይ ወይም ደገት በመውጣት መጫወት ፣ ከባድ እቃን መሸከም ፣ የገመድ ዝላይ ፣ እግር ኪስ ጫወታ ፣ ቴኒስ።

ቀላል የአካል እንቅስቃሴ ማለት መካከለኛ ጉልበት የሚጠይቅ እና የልብ ምትን እንድሁም ትንፋሽን በመጣን የሚጨምር የአካል እንቅስቃሴ መለት ነው። ለምሳሌ በፍጥናት መሄድ ፣ መደነስ ፣ መቆም፣ ቁልቁለት ወይም ደረጃ መውረድ ፣ መትከል ፣ መጥረግ ፣ ቤት መወልወል ፣ መካከለኛ ክብደት ያለውን እቃ ማንሳት ወይም መግፋት ፣ ከልጆች ጋር መጫወት ፣ በመንበረክክ ፣ መግፈት ፣ መሽከረከር ፣ የእጅ ኪስ

601	ልጅዎ ከባድ የአካል እንቅስቃሴ ያደርጋል ወይ ?	1.አይ 2. አይ	
602	በሰምንት ወሰን ልጅዎ ስንት ቀን ከባድ የአካል እንቅስቃሴ ያደርጋል?	በቀን-----	
603	በቀን ወሰን ልጅዎ ስንት ሰዓት ከባድ የአካል እንቅስቃሴ ያደርጋል?	በሰዓት-----	
604	ልጅዎ ቀላል የአካል እንቅስቃሴ ያደርጋል ወይ ?	1.አይ 2. አይ	
605	በሰምንት ወሰን ልጅዎ ስንት ቀን ቀላል የአካል እንቅስቃሴ ያደርጋል?	በቀን-----	
606	በቀን ወሰን ልጅዎ ስንት ሰዓት ቀላል የአካል እንቅስቃሴ ያደርጋል?	በሰዓት-----	
607	ልጅዎ ት/ቤት ለመሄድ ታሽካረካር/መክና ይጣቃማል?	1.አይ 2. አይ	
608	ልጅዎ ከት/ት መልስ ስራ ይሰራል?	1.አይ 2. አይ	

ክፍል አምስት : የቤት ሀብት

ቤቶች ውስጥ የሚከተለው ዕቃዎች ይገኛሉ/ አላችሁ?	አይ	አይ	ቤቶች ውስጥ የሚከተለው ዕቃዎች ይገኛሉ/ አላችሁ?	አይ	አይ
701 የሚሰራ ሲዲ ፒሌሀር/ ሬድዮ/ አህፖድ/ጅፓስ	1	0	715 የግል ቤት	1	0

702	የሚሰራ ፍላጎት ቴሌቪዥን	1	0	716	ብሬ፣ ኮመዲዮ፣ ቸስት ዲሮይር	1	0
703	ተንቀሳቃሽ ስልክ	1	0	717	ጠረጴዛ ፣ ወንበር	1	0
704	ፍሪጅ	1	0	718	ዲጂታል ካሜራ/ቨዲዮ ካሜራ	1	0
705	ኤሌክትሪክ /ጋስ /ስልንደር እስቶቭ	1	0	719	የባንክ ወይም የአነስተኛ ብድር ተቋም የተቀማጭ ደብተር	1	0
706	ባይሳይክል	1	0	720	ወላሎ ሲሚንቶ ቤት	1	0
707	ሞተር ሳይክል	1	0	721	የቧንቧ ውኃ ለመጣጥ	1	0
708	ጋሪ	1	0	722	ጣራው ቆርቆሮ ቤት	1	0
709	ሶፋ	1	0	723	ክብቶች	1	0
710	እስፖንጅ ፍራሽ	1	0	724	ፈረስ፣ አህያ፣ በቅሎ	1	0
711	መኪና	1	0	725	በግ፣ ፍየል	1	0
712	ባጃጅ	1	0	726	የሚታረስ መሬት	1	0
713	ታክሲ	1	0	727	ጓር/ የኣታክልት እና ፍራፍሬ ቦታ	1	0
714	የልብስ ማጠቢያ ማሽን	1	0	728	ዉሀ ያለው ሽንት ቤት	1	0

ለ. ፈቃደኝነት የልጆች አንትሮፖሎጂ ለመላካት

ሰላምታ፡ እኔ አቶ/ወር/ወ.ረት-----እባላለዉ። እዚህ የመጣሁት አቶ አማን ሳዶ በጅማ ዩኒቨርስቲ ለድህረ ምረቃ ትምህርታቸዉ በዉፍረት እና ከመጠን በላይ ወፍረት በአንደኛ ደረጃ ት/ት ቤት ተማረዎች ላይ የምያደረገዉን ጥናት ቡድን አባል ሆኜ ነዉ። ተማረዎች በዝህ ጥናት ተሳታፊ እንድሆኑ የተማረወች እና የት/ት ቤት አስተዳደረ ፈቃደኝነት እንጠይቃለን።ይህ መጠይቅ የተዘገጀበት ዋና ዓላማ በሻሸመኔ ከተማ ወፍረት እና ከመጠን በላይ ወፍረት በአንደኛ ደረጃ ት/ት ቤት ተማረዎች ላይ ምን ደረጃ ላይ እንደአለ ለማወቅ እና ዋና ምክንያቶችን በማዉጣት እረምጃ ለመዉሰድ እንዲረዳን ነዉ። የልጆች ቁመት እና ክብደት እንዲነሳ ፈቃደኝነተዉን እንጠይቃለን። በዚህ ጥናት ለመሳተፍ ሙሉ ፈቃደኝነት ያስፈልጋል።በዚህ ጥናት ተማረወችን ለማሳተፍ ወይም ያለማሳተፍ ሙሉ መብት አለዎት። ለማሳተፍ ካልፈለጉ ደግሞ በማንኛውም ጊዜ በመሀል ልጆችን ከጥናቱ ማግለል(ማቋረጥ) ይችላሉ። ካቋረጥኩኝ ጥቅም ይጎልብኛል ብለው አያስቡ። ማሳተፍ የማይፈልጉትን ማንኛውም ልጅ ለመሳተፍ አይገደዱም። የስምምነት ማረጋገጫ

ከተስማሙ ይቀጥሉ ካልተስማሙ ያቋርጡ

ክፍል አምስት የልጆች አንትሮፖሎጂ መለኪያ					
		A	B	C	አዠረ ጅ = $\frac{A+B}{2}$
ለእያንዳንዱ ልጆች ሁሉት ግዜ ክብደት እና ቁማት መላካት አለባት ነገር ግን በሁሉቱ መሓል ያለው ልዩነት ከ ±0.5 በላይ ከሆኔ ሶስተኛ መለኪያ መዉሰድ ይጠበቅብናል		መለኪያ-1	መለኪያ-2	መለኪያ-3	
የልጅ ክብደት	በኪሎግራም(KG)				
የልጅ ቁመት	በሴንትሜትር(cm)				
ልጅ የተወለደበት ቀን	ቀቀ/ወወ/ሃሃሃሃ				
መረጃ የተሰበሰበበት ቀን	ቀቀ/ወወ/ሃሃሃሃ				

አመሰግናለሁ!

መረጃ ሰብሰብ ስም _____ ፊረማ _____ ቀን _____

ሱፔረሚደር ስም _____ ፊረማ _____ ቀን _____