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Recently updated Infant and Young Child Feeding Indicators Non-communicable Disease-related and their Association with Obesity in Addis Ababa, Ethiopia

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Abbreviations

AOR	Adjusted odds ratio
BF	Breastfeeding
CF	Complementary Feeding
COR	Crude odds ratio
EDHS	Ethiopian Demographic health survey
EFF	Egg and/or flesh food consumption
FMoH	Federal Ministry of Health
IDRC	International Development Research Center
IYC	Infant and young children
IYCF	Infant and young children feeding
LMIC	Low and middle income countries
MDD	Minimum dietary diversity
MUAC	Mid- upper arm circumference
NAFLD	Non-alcoholic fatty liver disease
NCD	Non-communicable disease
SSB	Sugar sweetened beverage
SwB	Sweet beverage consumption
TEAM	Technical Expert Advisory group on Nutrition Monitoring
UFC	Unhealthy Food Consumption
UNICEF	United National Children's Fund

WHO	World Health Organization
ZVF	Zero vegetable and fruit consumption

Abstract

Background: Infant and young child feeding (IYCF) indicators have been primarily focused on ensuring adequacy of nutrient intake and prevention of under-nutrition including micronutrient deficiencies. However, considering the increasing burden of obesity and diet-related non-communicable diseases (NCDs), in 2021 new indicators intended to monitor unhealthy eating behaviors among children have been introduced. However, these new indicators have not been measured in Ethiopia; furthermore, the relationship of these indicators with childhood overweight and obesity has not been measured.

Objective: This study aimed to measure the level of three newly introduced IYCF indicators – sweet beverage consumption (SwB), unhealthy food consumption (UFC), and zero-fruit and vegetable consumption (ZVF) among infant and young children (IYC) age 6-23 months in Addis Ababa, and measure their association with childhood overweight and obesity.

Methods: Community-based cross-sectional survey was conducted in Addis Ababa, Ethiopia. A total of 567 children age 6-23 months were selected from three sub-cities using multi-stage cluster sampling approach. Data were collected using interviewer-administered questionnaires electronically via the Kobo Tool box. Finally, Descriptive statistics, bivariate analysis and multivariable logistic regression analyses was performed by using SPSS software version 26 and P-value less than 0.05 was used to declare statistically significant association.

Results: The mean age of children was 14 month with ±5 standard deviation (SD) age in months and the girls-to-boys ratio was 1:1.01. From the new NCD related IYCF indicators consumption of sweet beverage consumption prevalence was 76.7% (95% CI: 73%, 80.1%), regarding the zero vegetable and fruit consumption the prevalence was 15.9% (95% CI: 13%, 19.2%). Regarding the third indicator, unhealthy food consumption the prevalence is 45.8% (95% CI: 41.6%, 50%). About 20.3% and 12.56% of children were obese and overweight respectively. Children who consumed more SWB (AOR: 1.958, 95%CI: 1.263, 3.034) and ZVF (AOR: 1.341, 95%CI: 0.770, 2.337) were more overweight and obese than those who consumed less sugar and ate fruit and vegetable.

Conclusion The findings indicated high level of unhealthy IYC feeding practice in Addis Ababa, Sweet beverage consumption and zero vegetable and fruit consumption were associated with overweight and obesity. IYCF counseling should incorporate NCD-related messages. The indicators may need to be optimized so that they can predict overweight and obesity.

Keywords infant and young child feeding, childhood overweight and obesity, sweet beverage consumption, Unhealthy food consumption, Zero Vegetable and fruit consumption.

1. Introduction

1.1 Background

Adequate nutrition during infancy and early childhood is fundamental to the attainment of each child's full human potential. It is well recognized that the period from birth to two years of age, known as critical window for the promotion of optimal growth, has huge implication for health and behavioral development (1). Optimal complementary feeding (CF) during early infancy plays a crucial role in children's growth, development, and survival (2). Complementary feeding, defined by the World Health Organization (WHO)as the process of providing foods in addition to milk when breast milk or milk formula alone are no longer adequate to meet nutritional requirements, generally starts at age 6 months until 23 months of age or beyond (3).

To promote optimal complementary feeding practices, UNICEF and the WHO's developed the infant young child feeding (IYCF) indicators in 2008(4), subsequently updated it in 2017, 2021 (5).The 2021 indicators recommended 17 indicators. The updated recommendation modifies the definitions of minimum dietary diversity, minimum meal frequency, and minimum acceptable diet. The three additional indicators unlike the previous one, intend to measure NCD-related issues were also included: these are Unhealthy food consumption (UFC), Sweet beverages consumption(SwB) and zero vegetable and fruit consumption(ZVF)(5).

The rationale for adding these 3 indicators is consumption of foods such as higher in sugar and salt and highly refined may one displace more nutritious foods and limit the intake of essential vitamins and minerals too contribute no nutrients other than energy and may displace more nutritious foods.

So far, the NCD-related IYCF indicators have not been measured in Addis Ababa where the burden of diet-related NCDs is alarmingly increasing. The associations of the indicators with overweight and obesity have not been explored. The purpose of the study is to measure the prevalence of SwB, UFC and ZVF and measure association with childhood overweight and obesity.

1.2 Statement of the problem

Appropriate complementary feeding timely, adequate, safe and properly fed(6). Inappropriate early life nutrition mainly due to suboptimal breastfeeding and complementary feeding practices may lead to childhood obesity, which is an increasing public health problem in many countries including low-and-middle income countries (LMICs) including Ethiopia (7).Especially high consumption of commercially produced energy dense snack food and beverage with high in salt or sugar, may increase risk of obesity (8) and low vegetable and fruit consumption leads to increased consumption of empty calorie food and delayed satiety resulting in hunger and over eating (9,10).

In 2019, an estimated 38.2 million children under the age of five years were overweight or obese. Once considered a high-income country problem, overweight and obesity are now on the rise in low- and middle-income countries, particularly in urban settings. In Africa, the number of overweight children under five has increased by nearly 24% between 2000 and2019 (11). From multilevel analysis of prevalence of overweight and obesity in Africa showed, pooled prevalence of under-5 overweight and/or obesity was 5.10% (95% CI: 4.45 – 5.76). This is in line with a report by the World Health Organization in 2020 that the global average prevalence of overweight/obese among under-5 children was 5.7%(12).

An increased risk of adulthood obesity, early mortality, and diet-related NCDs are linked to childhood obesity. Furthermore, when compared to children with a normal (Body Mass Index) BMI, overweight children had a 2.4–4.5 times higher chance of developing hypertension and a 2.4–8.0 fold increase in the prevalence of dyslipidemia as adults. Obese children also have higher chances of developing other health problems including insulin resistance, fractures and psychological consequences in addition to their elevated future dangers(11,13).

In Ethiopia the prevalence of childhood overweight and obesity is also increasing. In Ethiopia from the EDHS report it showed an increase in the overweight and obesity, For instance, in 2016 report it showed only 1% of children were overweight and increased in the 2019 report to 2% of children being overweight(14,15). From a systematic review and meta-analysis of prevalence and associated factor of overweight and obesity showed combined pooled prevalence of overweight and obesity among children and adolescents in Ethiopia was 11.30% (95% CI: 8.71, 13.88%)(16)

And from subgroup analysis revealed that the highest overweight/obesity prevalence among children and adolescents was observed in Addis Ababa, 11.94 (95% CI: 9.39, 14.50). From another study the prevalence of overweight/obesity among children and adolescent in Addis Ababa was 28.8% (95% CI: 25.29, 32.50)(17).

1.3 Rationale and significance of the Study

In recent years, Ethiopia has witnessed a concerning rise in the epidemiology of non-communicable diseases (NCDs), including cardiovascular diseases, diabetes, chronic respiratory conditions, and cancers. This shift, often attributed to urbanization, lifestyle changes, and dietary shifts, is significantly impacting public health. A major concern is that many of the risk factors for NCDs begin early in life, with children and adolescents increasingly exposed to unhealthy diets, lack of physical activity, and environmental pollutants.

From the Federal ministry of Health report the increase in NCD is alarming. This study is the first to assess the three indicators added in the context of NCDs, it will assess the indicators and its association with overweight and obesity in children aged 6-23 months, in Addis Ababa, Ethiopia. The finding may help to monitor consumption of unhealthy diet especially among infant and young children in Addis Ababa where the prevalence of NCDs is increasing.

Furthermore, the findings of this study can be used as an input for efforts to promote the elimination of unhealthy diet in IYC and may serve as a baseline for monitoring the newly added NCD-related IYCF indicates the findings can also be used as advocacy tool to mitigate consumption of SwB and UFC and increase vegetable and fruit consumption. In addition, it also benefits future researchers, who will use this research as a reference for different or further studies.

2. Literature Review

2.1 Increasing pattern of obesity and diet related disease

Worldwide obesity has nearly tripled since 1975(11) and rapid increases in the rates of obesity and overweight are widely documented, from urban and rural areas in the poorest countries of sub-Saharan Africa and South Asia to populations in countries with higher income levels(18). Overweight and obesity are defined as abnormal or excessive fat accumulation that may impair health. The common health consequence of overweight and obesity are NCDs such as cardiovascular diseases (mainly heart disease and stroke), diabetes, musculoskeletal disorders (especially osteoarthritis – a highly disabling degenerative disease of the joints) and some cancers (including endometrial, breast, ovarian, prostate, liver, gallbladder, kidney, and colon) (11).

In 2016, more than 1.9 billion adults, 18 years and older, were overweight. Of these over 650 million were obese .In Ethiopia the 2016 EDHS indicated that 11% of the adult population were overweight and obese and it showed sharp increase in women from 3% in 2000 to 8% 2016(11,14). And from different small-scale studies research done at different cities, the overall overweight and obesity prevalence was 24.4% in Addis Ababa , 28.5% in Dessie and 28.2% in Hawassa, the major dietary risk factors were low physical activity, high intake of alcohol, frequent consumption of sweets, meat and eggs (19–21).

In 2019, globally an estimated 38.2 million children under the age of 5 years were overweight or obese (11). In Africa, the number of overweight children under 5 has increased by nearly 24% between 2000 and 2019 (11).In other global study In Africa, the prevalence of childhood overweight and obesity in 2010 was 8.5%, and it is expected to increase to 12.7% in 2020—a relative increase of 49%(22). From multilevel analysis of prevalence of overweight and obesity in Africa showed, pooled prevalence of under-5 overweight and/or obesity was 5.10% (95% CI: 4.45 – 5.76). This is in line with a report by the World Health Organization in 2020 that the global average prevalence of overweight/obese among under-5 children was 5.7%(12).

In Ethiopia from Ethiopian demographic health survey (EDHS) report the pattern showed an increase from 1% in 2016 to 2% in 2019(14,15). And from different small-scale studies done at different cities of the country, the overall prevalence of overweight and obesity was 9.8% in a sub-city of Addis Ababa, 13.8% in Gondar town and 20.5% in Dire Dawa. The major factors identified

as risk factor of obesity were from families having higher income and maternal education, frequent consumption of sweetened foods and beverage, sedentary lifestyle, and high screen time, y(23–25).

2.2What is childhood overweight and obesity?

Overweight and obesity are defined as abnormal or excessive fat accumulation that may impair health. And for children under five overweight is the weight-for-height greater than 2 standard deviations above WHO Child Growth Standards median and obesity is weight-for-height greater than 3 standard deviations above the WHO Child Growth Standards median(11).

The increasing prevalence of overweight and obesity among children and adolescents is attributable to a complex interplay of factors, including lifestyle behaviors, genetic predispositions, environmental characteristics, dietary patterns, and socioeconomic status(26). From the major risk factors dietary pattern means regularly eating high-calorie foods, such as fast foods, baked goods, snacks, Candice and sugary drinks. The lifestyle behavior include lack of exercise, children who don't exercise much are more likely to gain weight because they don't burn as many calories. And the other factors are family factors, psychological factors, socioeconomic factors and certain medication(27).Children are exposed to ultra-processed, energy-dense, nutrient-poor foods, which are cheap and readily available. Opportunities for physical activity, both in and out of school, have been reduced and more time is spent on screen based and sedentary leisure activities(28).

2.2.1 Over nutrition during complementary feeding

Optimal complementary feeding has four major components: first it should be timely meaning initiated at sixth month of age, secondly adequate meaning foods provide is sufficient enough to meet macro and micronutrients needs of the baby, thirdly safe meaning foods are hygienically stored, prepared and provided, and last responsively fed feeding meaning that foods are given with child’s signals of appetite and satiety(29). Complementary feeding is more than ensuring an adequate intake of nutrients; it also is about avoiding excess intakes of calories, salt, sugars, and unhealthy fats (30).Early feeding practices lay the foundation for food preferences and eating behavior and may contribute to future obesity risk(31).

2.3 Consequences of childhood overweight and obesity

Overweight children, often as a result of inappropriate complementary feeding, are at a higher risk of developing serious health problems later in life, including type 2 diabetes, high blood pressure (30). Obesity and a sedentary lifestyle increase the risk of type 2 diabetes and high blood pressure and high cholesterol can contribute to the buildup of plaques in the arteries, which can cause arteries to narrow and harden, possibly leading to a heart attack or stroke later in life(27). Overweight children have 2.4-4.5 times higher risk for developing hypertension and 2.4-8.0 fold rise in prevalence of dyslipidemia as adults aged 27-31 years, compared to children with normal BMI(13).

Furthermore, obese children are more prone to joint pain due to the extra weight causing extra stress on hips and knees, breathing problems such as asthma, and obstructive sleep apnea and Nonalcoholic fatty liver disease (NAFLD). This disorder, which usually causes no symptoms, causes fatty deposits to build up in the liver. NAFLD can lead to scarring and liver damage(27). Childhood obesity also poses numerous psychological challenges such as low self-esteem, depression symptoms, negative self-concept and social isolation(32).

2.4 New NCD-related IYCF indicators

2.4.1 Sweet beverage consumption

A “nutrition transition” has been identified in many LMIC, this nutrition transition can be seen in the increased consumption of snack foods and sugar-sweetened beverages (SSB) among infants and young children(33). In Ethiopia, the proportion of families consuming sugar-sweetened beverages (SSB) rose in urban regions between 2010 and 2016, whereas it fell throughout the country and in rural areas. Nonetheless, both nationally and in rural and urban areas, there has been an increase in the average daily calorie intake from sugar-sweetened beverages (SSB)(34).

Sugary drinks, such as soda, should be avoided because they contribute little other than energy, and thereby decrease the child’s appetite for more nutritious foods. Excessive juice consumption can also decrease the child’s appetite for other foods, and may cause loose stools(1,35). Sugar-sweetened beverages (SSBs) consumption has been linked to harmful health-related factors, such as weight gain, dental caries and insulin resistance in children(36).

2.4.2 Unhealthy food consumption

Unhealthy food consumption is defined as consuming often energy-dense, nutrient-poor and high in salt, sugar, saturated and/or trans fatty acids(5). Many LMICs are going through a nutritional transition, with diets shifting toward more added sugars, unhealthy fats, salt, and refined carbohydrates. As a result, children are consuming more unhealthy foods and sugary drinks leading to increased childhood overweight and obesity(18).This dietary shifting observed in many low- and middle-income nations are include higher intakes of added sugars, unhealthy fats, salt and refined carbohydrates. Commercially prepared food products are often energy-dense, nutrient-poor and high in salt, sugar, saturated and/or trans fatty acids (5).

The consumption of unhealthy food has shown higher prevalence in recent studies done in different part of Ethiopia. In one of the studies done in Gondar town the result showed 63.7% (95% (CI: 60.4, 67.2%), Children who got at least one food from the lists such as Juices, soda, coffee or tea with sugar, candies, chocolate, cakes, sweet biscuits, ice cream, potato chips and instant noodle were classified as meeting the unhealthy food consumption. The other study done in Addis Ababa showed 54% consumption of unhealthy food among adolescents, particularly fried foods. The other study assessed unhealthy food consumption in rural part of the country particularly, north wollo showed 37.4% consumption of ultra-processed food(37–39).

2.4.3 Zero Vegetable and fruit consumption

Fruits and vegetables are important components of a healthy diet. Including fruits and vegetables as part of the daily diet may reduce the risk of some NCDs including cardiovascular diseases and certain types of cancer. More limited evidence suggests that when consumed as part of a healthy diet low in fat, sugars and salt/sodium, fruits and vegetables may also help to prevent weight gain and reduce the risk of obesity, an independent risk-factor for NCDs(40).

The infant and toddler period is an opportune time to promote the acceptance of foods that are characteristic of healthy diets, such as fruit and vegetables(41). Low consumption of vegetable and fruit consumption leads to increased consumption of energy rich poor nutrient food and delayed satiety resulting in hunger. Since fruits and vegetables are high in water and fiber, and low in energy density adequate consumption of FV reduce risk of overweight and obesity (9,10).

In Ethiopia different studies showed low consumption of vegetable and fruit, particularly one that analyzed the EDHS showed children aged 6–23 months, 69.3% did not consume any vegetables or fruits a day preceding the survey (42) and the other studied in relation to vitamin A found 38.1% and 36.5% of the children studies did not eat vegetable and fruit in the week preceding the survey, respectively(43).

2.5 Conceptual framework

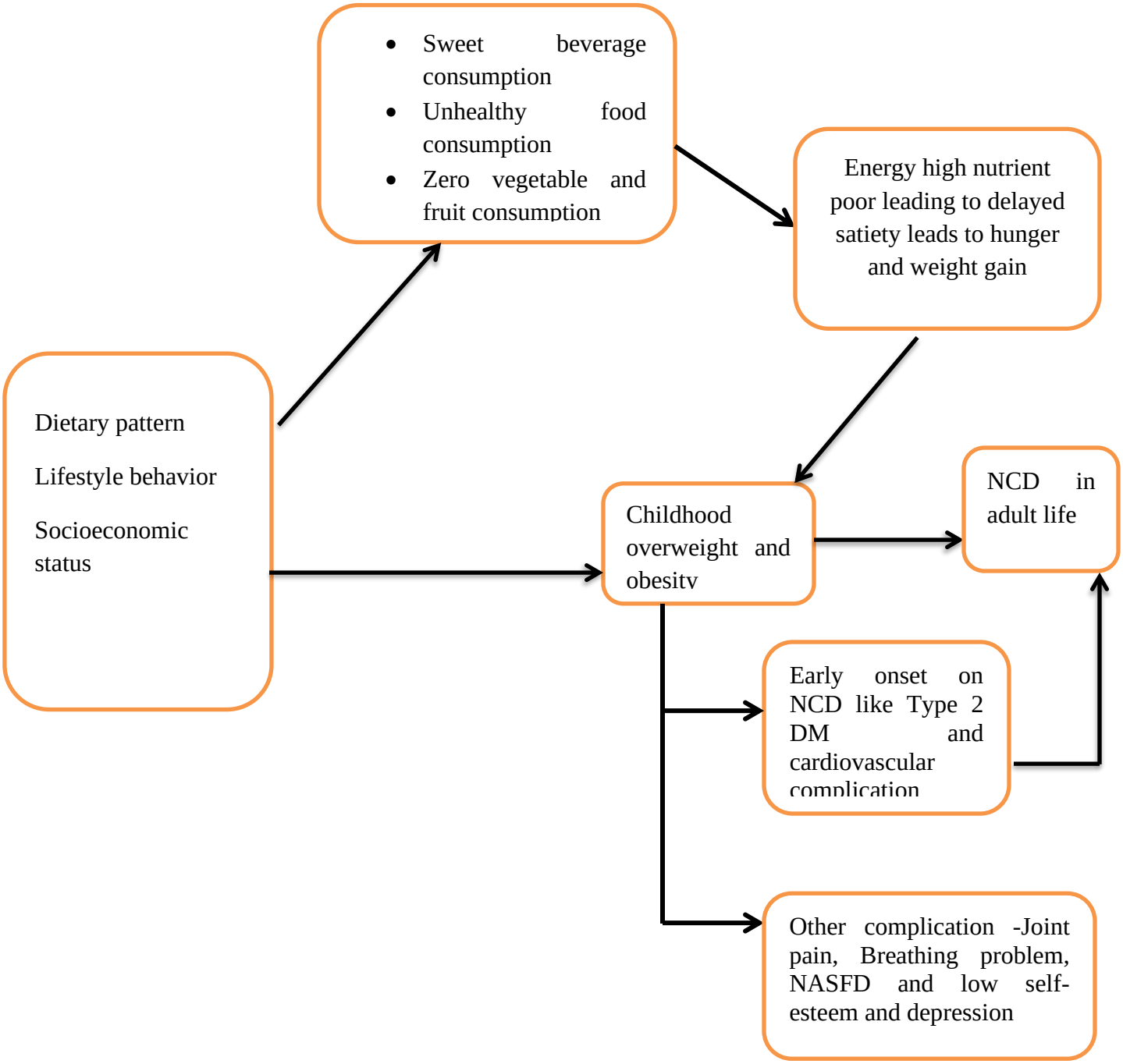

Figure 1 Conceptual framework on the new IYCF indicator and obesity later NCD in adult life.

3. Research Question

a) What is the prevalence of the three new IYCF indicators (SWB, UFC and ZVF) relevant to NCD and overweight and obesity among children 6-23months in Addis Ababa?

b) Is there an association between the three new IYCF (SWB, UFC and ZVF) indicators relevant to NCD and overweight and obesity among children 6-23months in Addis Ababa?

4. Objective

4.1 General objective

To determine the magnitude of the three new NCD-related IYCF (SWB, UFC and ZVF) indicators among children aged 6-23 months, and measure their association with childhood overweight and obesity in Addis Ababa, Ethiopia.

4.2 Specific Objectives

- To measure the magnitude of sweet beverage consumption (SwB), unhealthy food consumption (UFC) and zero vegetable and fruit consumption (ZVF) among children age 6-23 months in Addis Ababa, Ethiopia.
- To measure the association of SwB, UFC and ZVF with overweight and obesity among infant and young children aged 6-23 months.
- To determine the prevalence of overweight and obesity

5. Methods and Materials

5.1 Study area and period

The study was conducted between April and June 2024 in Addis Ababa, the capital and largest city of Ethiopia. Located in the central part of the country, Addis Ababa serves as the political, economic, and cultural hub of Ethiopia. Addis Ababa City Administration has an estimated total population of 3,384,569 according to the 2007 census and currently Addis Ababa's 2024 population is now estimated at 5,703,630. There are 11 sub cities and over 116 woredas, in Addis Ababa). As of 2014, Addis Ababa, had more than 52 hospitals, 13 of them state run, and more than 40 private and 98 Health Centers. From the 13 hospitals, six are referral hospitals, five are specialized hospitals, and two are military hospitals in Addis Ababa. According to the Addis Ababa City Administration Health Bureau data, there are a total of 6,860 health professionals working in primary public health facilities in the city in 2020.

5.2 Study Design

This was a community- based cross-sectional study. The study is quantitative and data were collected using the standard IYCF indicator questionnaires and methods recommended by UNICEF and WHO(5).

5.3 Study population and eligibility criteria

The source population was all children age 6-23 months living in Addis Ababa, Ethiopia. Whereas the study population was all children age 6-23 months living in the selected three sub-cities of Addis Ababa at the time of the study. All Children aged 6-23 months living in Addis Ababa were eligible for the study. Those children whose caregivers were not available for interview at home after three home visits were excluded. Data were collected from the primary caregivers of the children.

5.4 Sample size determination

Sample size was calculated for each specific objective. The sample size calculated for the first specific objective using single proportion formula and prevalence of UFC 35%, SWB 69% and ZVF 44% (44) was taken as a working sample size to accommodate all the others. The following assumption is made:

Design effect=1.5

α level of significance= 5%

E (precision) = 5%

Zα=1.96

$$n = \frac{Df * Z^2 1 - \frac{\alpha}{2}\, p(1-P)}{E^2}$$

Table 1 Sample size calculation for the study of Non-communicable disease related Infant and young children feeding indicators and their association with obesity among children age 6-23 months old in Addis Ababa, Ethiopia.

Outcome	Expected prevalence	Design effect	α level of significance	E (precision)		n
Prevalence of ZVF	44%	1.5	5%	5%		**567**
Prevalence of UFC	35%	1.5	5%	5%		**524**
Prevalence of SWB	69%	1.5	5%	5%		**494**

For the second objective to assess the association between SwB, UFC and ZVF with overweight and obesity we calculate as from food and nutrition base line survey 2023 prevalence of overweight is 6% as outcome variable , UFC 35%, SwB 69% and ZVF 44% as covariates with 95% confidence level, 5% level of significance and power of 80.

$$n = \frac{(Z\alpha + Z\beta)^2 (P1(1-P1) + P2(1-P2)}{(P1-P2)^2}$$

Zα=1.96(95% confidence level)

Zβ=0.84 statical power of 80%

P1=6%(overweight prevalence)

P2= UFC 35% SWB 69% and ZVF 44%

So from the calculation we get n as 144 for UFC, 44 for SwB and 96 for ZVB, from this will take the highest number 144.

From the first and second objective calculation we have the highest sample size of **567** and that will be my final sample size.

A total of 567 participants were reached out by house to house survey to assess the prevalence of SWB, UFC and ZVF consumption among children age 6-23months.

5.5Sampling procedure

Multi-stage cluster sampling was used to select the study participants. Firstly, out of the 11 sub cities of Addis Ababa three were selected based on simple random selection by lottery method. Then from the selected sub cities, 2 woredas each were selected at simple random. Further, from each woreda, 2 blocks or Ketena were drawn. From those selected blocks, households were selected in systematic random technic at every 15^{th} interval, the selected house contained children aged 6-23 months if no children aged 6-23 month the house was replaced. The total sample size was distributed among the zones based on population density.

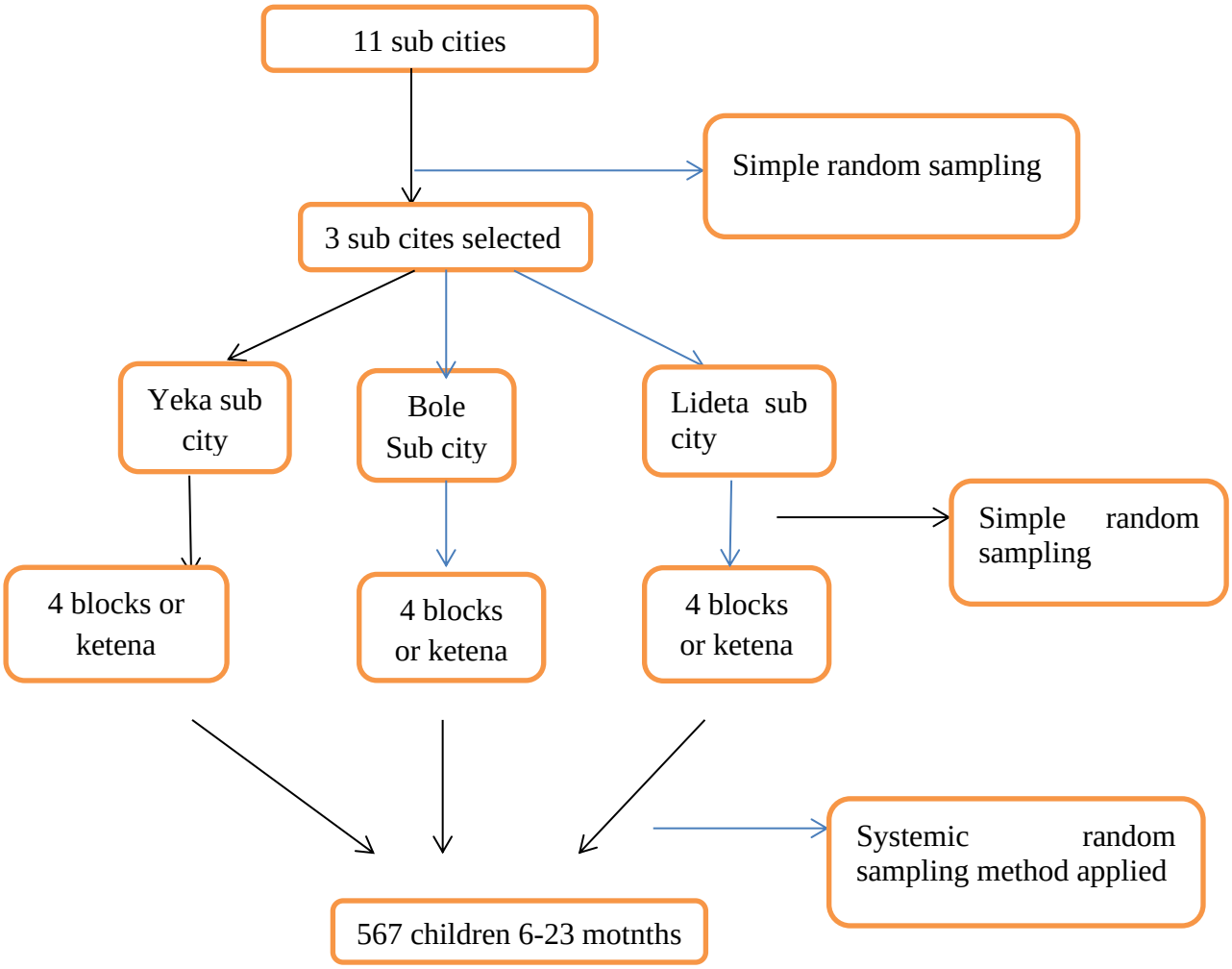

Figure 2 Schematic representation of the sampling procedure

5.6 Study variable

5.6.1 Dependent variable

For the last objective the dependent variable was overweight and obesity among children 6-23 months of age. The definition overweight is weight-for-height greater than 2 standard deviations

above WHO Child Growth Standards median and obesity as weight-for-height greater than 3 standard deviations above the median WHO Child Growth reference (11).

5.6.2 Key independent variable

- **Sweet beverage consumption (SwB)** a child aged 6-23 months of age was considered as a sweet beverage consumer if s/he consumed a sugar sweetened beverage during the previous day (5).
- **Unhealthy Food Consumption (UFC)** a child aged 6-23 months of age was considered as unhealthy food consumer if s/he consumed unhealthy food during the previous day (5).
- **Zero fruit and vegetable consumption (ZVF)** a child aged 6-23 months of age was considered as zero fruit and vegetable consumer if s/he consumed did not take vegetable or fruit during the previous day. This list will include fruit and vegetable juice without sugar and starchy staple (5).

5.6.3 Other control variables for adjustment

- Socio-demographic factors- maternal age, maternal education, marital status, age of the child, sex of the child, occupation of the mother, family size, and household income.

5.7 Data collection

5.7.1 Tools and procedure

Data were collected in May 2024 using pretested and interview-administered questionnaire. The questionnaires were prepared as per the definition from WHO standard guideline(5) as closed question. After eligibility criteria checked and assent taken the data collectors collected the data. One-day training was given for data collectors (6 data collector 2 supervisors) on the data collection tool, interview technique, eligible study subjects, sampling techniques and consent. The questionnaire was prepared first in English then translated into Amharic. Data were collected electronically using Kobo Toolbox.

5.7.2 IYCF indicator measurements

For sweet beverage consumption it was calculated based on questions that asks about liquids that the child consumed yesterday during the day or at night. For certain types of liquids (animal milk, yogurt drinks, tea, coffee or herbal drinks and “other” drinks) the respondent is asked whether the drink was sweetened. There are also questions about chocolate drinks, fruit juice or fruit flavored

drinks and sodas, malt drinks, sports drinks or energy drinks which are all assumed to be sweet. Finally, if the child consumed from at least one sugar sweetened beverage, irrespective of the amount and frequency, the indicator was classified as “Yes”, otherwise as “no”.

For unhealthy food consumption was calculated based on questions on sentinel food sweet foods and sentinel fried and salty foods. The questions were consumption of Candies, frozen treats, cakes, and chips.

For zero vegetable and fruit consumption was calculated based on four separate questions which assessed consumption of vitamin A-rich yellow/orange vegetables, dark green leafy vegetables, other vegetables, vitamin A-rich fruits and other fruits in the previous day of the survey. Frequency and amount was consumption was disregard.

5.7.3 Anthropometric measurements

Training on anthropometric measurement was given for the data collector. Height, weight and MUAC were measured following standard procedures in the field. Measurement was taken. Weight was measured to the nearest 0.1 kg and Height was measured to the nearest 0.1 cm and the anthropometric section was mandatory so no missed data. Then Z-score was calculated using WHO Anthro software.

5.8 Operational definitions

- Sweet beverage consumption- children age 6-23 months who consumed sweet beverage in the last 24 hour prior the survey. Sweet beverages include commercially produced and packaged, sweetened beverages such as soda pop, fruit-flavored drinks, sports drinks, chocolate and other flavored milk drinks, malt drinks, it also includes 100% fruit juice as well as fruit-flavored drinks, whether made at home, by informal vendors or packaged in cans, bottles, boxes, sachets.
- Unhealthy food consumption:-children age 6-23 months who consumed from at least one of the four sentinel food group in the last 24 hour prior the survey. The sentinel food groups include candies, chocolate and other sugar confections, including those made with real fruit or vegetables like candied fruit or fruit roll-ups. Or frozen treats like ice cream, gelato, sherbet, sorbet, popsicles or similar confections. Or cakes, pastries, sweet biscuits and other

baked or fried confections which have at least a partial base of a refined grain, including those made with real fruit or vegetables or nuts, like apple cake or cherry pie. Or chips, crisps, cheese puffs, French fries, fried dough, instant noodles and similar items which contain mainly fat and carbohydrate and have at least a partial base of a refined grain or tuber.

- Zero fruit and vegetable consumption- children age 6-23 months who did not consume any fruit or vegetable in the last 24 hour prior to the survey.
- Overweight and Obesity is weight-for-height greater than 2 standard deviations above WHO Child Growth Standards median and obesity as weight-for-height greater than 3 standard deviations above the WHO Child Growth Standards median.
- Ever breastfed (EvBF) meaning percentage of children born in the last 24 months who were ever breastfed.
- Early initiation of breastfeeding (EIBF) meaning Percentage of children born in the last 24 months who were put to the breast within one hour of birth.
- Exclusively breastfed for the first two days after birth (EBF2D) meaning Percentage of children born in the last 24 months who were fed exclusively with breast milk for the first two days after birth.
- Continued breastfeeding 12–23 months (CBF) Percentage of children 12–23 months of age who were fed breast milk during the previous day.

5.9 Data quality management

Before data collection, a one-day theoretical and practical training was given for the data collectors on data collection techniques and procedures based on the questionnaires basically explaining the questions aim to assess the IYCF indictors and also about the main purpose of the study. Refreshment on anthropometric measurement was given to ensure quality.

The training was given by the principal investigator. The questionnaire is prepared in English and translated to Amharic and back to English to check the consistency of the questions. During data collection the principal investigator supervised all activities during the data collection along with the field supervisors. Data completeness and consistency was programed. After data collection data were analyzed and geographic mapping were plotted in kobo collect to ensure quality.

5.10 Data management and analysis

Data was collected using Kobo collect. The completed questionnaire was sent to the server and exported to SPSS for analysis. This research was conducted in Addis Ababa, Ethiopia. Before data collection, data collectors were trained on how to use Kobo tool and anthropometric measurements. Analysis of the data was conducted by using the Statistical Package for Social Sciences (SPSS) version 26 and the nutritional status of the children was computed using WHO anthro software.

Descriptive statistical analysis was conducted using frequency, percentage, mean (SD), median (IQR) and p-value to describe the study population by explanatory variables and Z score for age status.

Binary logistic regression was done to investigate the association between explanatory variables and outcome variable. Variables with P-value < 0.25 on the bivariate regression analysis and important variables for the objective of the study based on literature review were entered to the multivariate model.

Finally multivariate logistic regression was used to statistically adjust the estimated effects of each variable in the model. Multicollinearity of the independent variables were also checked by variable of influence factor (VIF) and no variables had VIF of greater than two. Finally, adjusted odds ratio with 95% CI at p-value less than 0.05 were used to declare statistically significant association.

5.11 Ethical Considerations

Ethical clearance was secured from the Research Review Committee of School of Public Health, College of Health Science, Addis Ababa University. Permission letter was written to Addis Ababa Health Bureau then to health unit of each sub cities. The participant who fulfills the criteria was informed that participation is on voluntary basis. Verbal informed consent was obtained from participants and afterwards the data collectors clearly explained the aim of the study. Participants had the right to refuse and discontinue and withdraw at any time they want during the intervention and data collection time. The information obtained from the study was used only for the purpose

of study and the recorded data will not be accessed by a third party except the principal investigator, and confidentiality will be kept. And access to data is strictly prohibited to the research team members.

5.12 Dissemination of result

The thesis report will be submitted to the School of Public Health, College of Health Sciences, Addis Ababa University. Results shall also be disseminated to Addis Ababa City Administration Health Bureau as well. Additionally, for potential publishing and conference presentation

6. Results

6.1 Socio demographic and economic characteristics

A total of 567 infant and young children 6-23 months were included in the survey. Data were collected from the biological mothers or primary caregiver of the children. Table 2 shows the socio-demographic and economic characteristics of the respondents. Among 567 respondents, 490 were biological mothers, 32 fathers and 45 were other primary caregivers of the index child. The mean age of children was 14 month with ±5 SD age in months. One-third (33.9%) of the children were at 6–11 months of age. Half (50.1%) of them are girls. About one third of the respondents (29.9%) had no formal education.

The mean age of the respondent was 30 years with ± 5.79SD. Majority of the participants (94.2%) were married and a similar percentage (96.7%) were between the ages of 19-45 years. Regarding the occupation of participants, more than half 55.2% were housewives.

The household member of 5 or less is 81.6% which is the majority and economic characteristics of study participants showed and nearly half of the represented households 40.6% monthly between 5000 to 10000ETB, and the mean in come is 7803 with ± 5759 SD.

Table 2 Socio-demographic characteristic of caregiver and children age 6-23 months in Addis Ababa, Ethiopia

Character	frequency	Percent (%)
Age of index child (in month)		
6-11	194	33.9
12-17	192	33.7
18-23	181	31.8
Sex distribution of index child		
Boy	281	49.4
Girl	286	50.1
Age of respondent (in years)		
<18	11	1.9
19-30	276	48.5
31-45	275	48.2
>45	5	0.9
Relationship to the index child		
Mother	490	85.9
Father	32	5.6
Other primary care giver	45	7.9
Educational level		
No formal education	44	7.7
Primary school	170	29.9
Secondary school	211	36.9
College and university	142	25
Marital Status		
Not ever married	13	2.3
Married	537	94.2
Divorced	13	2.3
Widowed	4	0.7

Occupation of the mother		
Housewife	215	55.2
Trade	101	17.8
Manual	37	6.5
Professional	36	6.3
Student	4	0.7
other	74	13
Household size		
≤5	465	81.5
>5	102	17.9
Household income		
≤2500ETB	75	13.2
2501-5000ETB	141	24.8
5001-10000ETB	232	40.6
>10001ETB	119	20.9

6.2 Summary of infant and young child feeding indicators

From the 567 children aged 6-23 months breastfeeding history was taken from the result 94.2% are breastfeed and 92.4% were given colostrum in the early days.

Ever breastfed (EvBF) was 94.2%. The second one is Early initiation of breastfeeding (EIBF) was 91.7%. Third one exclusively breastfed for the first two days after birth (EBF2D) was 60.2%. The last one is continued breastfeeding 12–23 months (CBF) Percentage of children 12–23 was 73.1%.

Table 3 Breastfeeding history of children age 6-23 month in 3 sub cities of Addis Ababa

variable	Frequency	Percent (%)
Was the child ever breastfeed		
Yes	533	94.2
No	34	5.8
Are you still breastfeeding		
Yes	485	85.5
No	82	14.5
Timely initiation of breastfeeding		
Initiated within hours	520	91.7
Days	47	8.3
Was colostrum given		
Yes	524	92.4
No	43	7.6
Did the child past 24 hour drink from a bottle with a nipple		
Yes	369	65
No	198	35

6.2.2 Complementary feeding indicators

Introduction of solid, semi-solid or soft foods 6–8 months (ISSSF) meaning Percentage of infants 6–8 months of age who consumed solid, semi-solid or soft foods during the previous day was 16% and the other one is Minimum dietary diversity (MDD) Percentage of children 6–23 months of age who consumed foods from at least five out of eight defined food groups during the previous day was 51.0%. The specific food groups are presented below (Figure 3). Regarding egg and/or flesh food consumption 6–23 months (EFF) indicate is 76.9%.

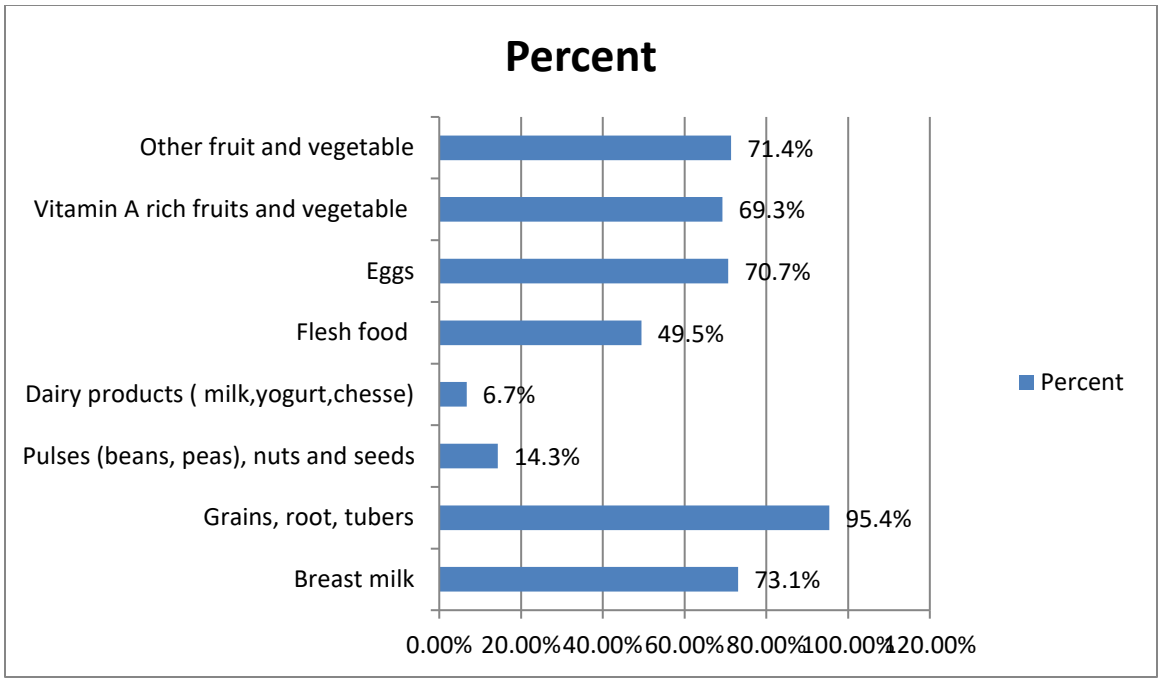

Figure 3 Main eight food groups and there consumption among children age 6-23 months

6.2.3 NCD-related IYCF indicators

From the new NCD related IYCF indicators consumption of sweet beverage consumption prevalence was 76.7% (95% CI: 73%, 80.1%), regarding the vegetable and fruit consumption the prevalence was 15.9% (95% CI: 13%, 19.2%), 1 out of 5 children did not consume any fruit and vegetable in the past 24 hour during survey. Regarding the third indicator, unhealthy food consumption the prevalence is 45.8% (95% CI: 41.6%, 50%), 2 out of 5 children consumed at least one kind of unhealthy food in the past 24 hour prior to survey.

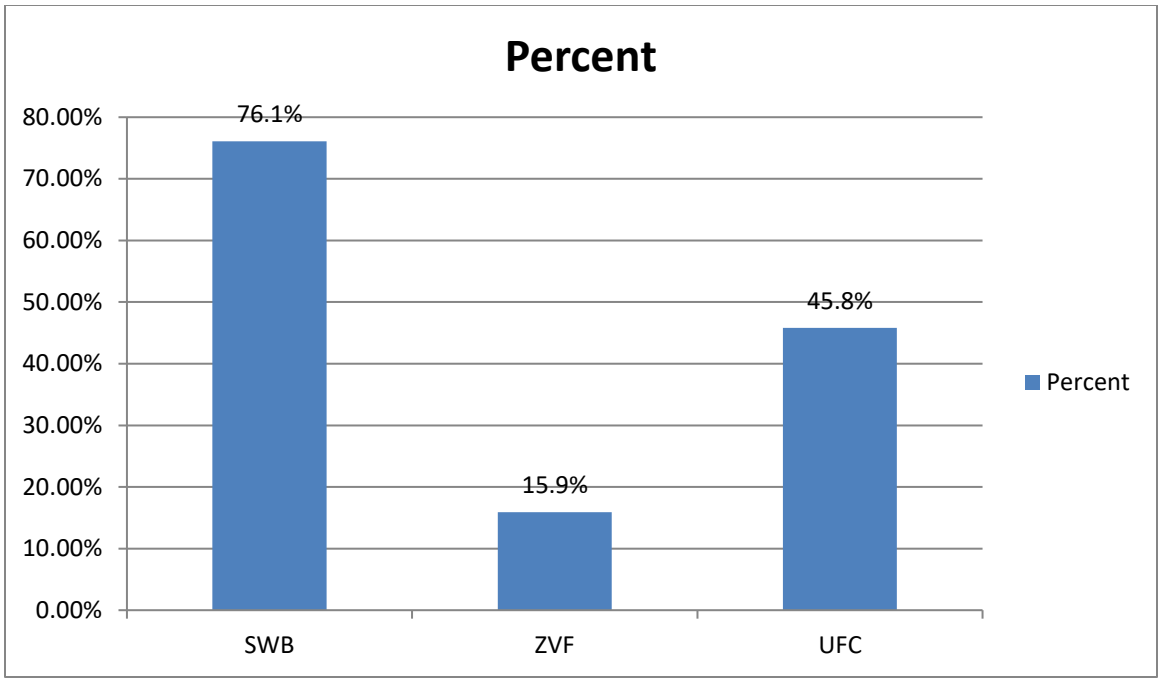

Figure 4 Status of NCD related IYCF indicator prevalence among children age 6-23month in Addis Ababa, Ethiopia

6.3 Anthropometric status of children

Using the weight-for-Length and more than half of the children 58.5% have normal Z score meaning weight-for-length is between -2 and 2. The overall overweight and obesity result showed total of 12.5% and 20.3% respectively. The MAM and SAM result showed 3% and 3.9% respectively giving cumulative of 6.9% of under nutrition.

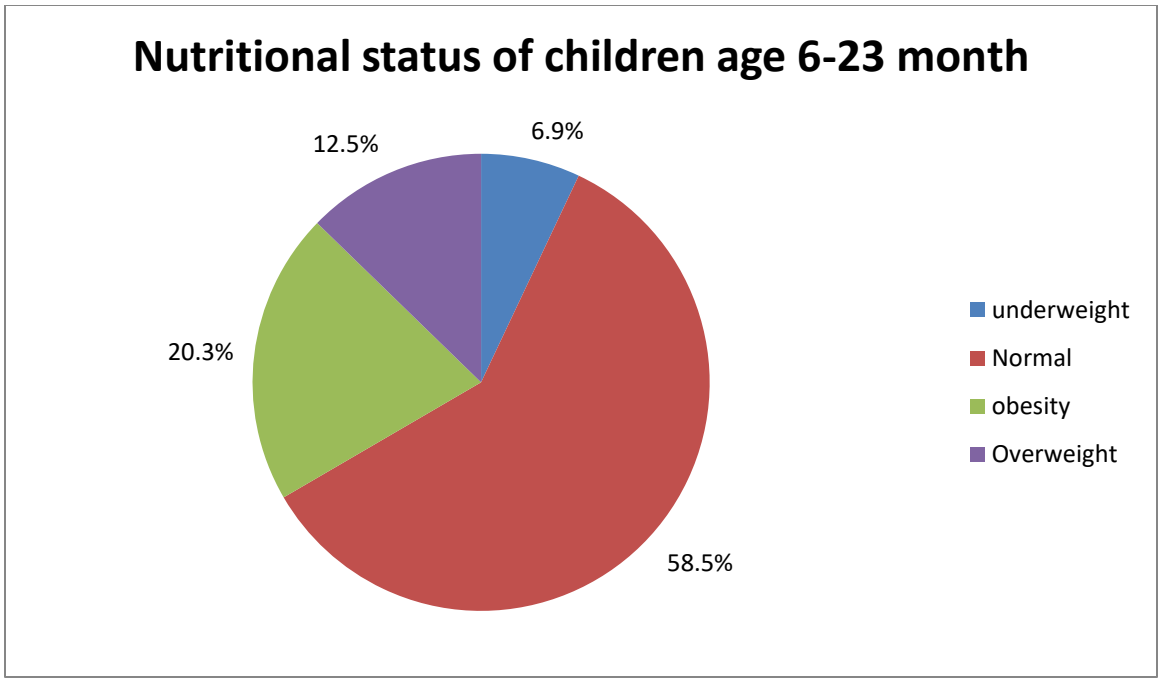

Figure 5 Nutritional status of children age 6-23month in 3 sub cities of Addis Ababa, Ethiopia

6.4 SwB, ZVF and UFC consumption and factors affecting overweight and obesity

First run each independent variable with the dependent variable which is overweight/obesity and variable with p value of $p \leq 0.25$ where selected. Then multivariate analysis of the independent variable such as maternal age, education level, marital status, sex of the child, age of the child, occupation of the mother, household size and household income with the outcome overweight and obesity. Only 3 variables resulted in p value less than 0.25. Then further bivariate regressions were done using 3 variables with each of SWB, UFC and ZVF.

Children who consumed more SWB (AOR: 1.958, 95%CI: 1.263, 3.034) and ZVF (AOR: 1.341, 95%CI: 0.770, 2.337) were more overweight and obese than those who consumed less sugar and ate fruit and vegetable.

Table 4 Multivariate analysis showing association between New IYCF indicators and overweight and obesity

		Overweight/obesity		COR	AOR*
		Yes	No		
SWB	Yes	305	129	1.797(1.203,2.684)	1.958(1.263,3.034)
	No	75	57	1	
UFC	Yes	204	176	0.934(0.657,1.329)	
	No	103	83	1	1
ZVF	Yes	66	314	1.418(0.857,2.349)	1.341(0.770,2.337)
	No	24	162	1	1
* adjusted for caregivers educational status, sex of the child, household income, caregivers age					

7. Discussion

The present study aimed to assess the consumption of sweet beverages, unhealthy foods and zero vegetable and fruit consumption among children aged 6 to 23 months and their association with overweight and obesity. Using the new IYCF indicators to assess complementary feeding practice. The study was descriptive cross-sectional study, and further inferential statistics was done. The findings provide critical insights into the dietary patterns of young children and underscore the urgent need for targeted nutritional interventions.

A significant proportion of children in the study consumed sweet beverages (76.7%; 95% CI: 73%–80.1%), which is higher compared to the finding from a food and nutrition survey (69%) (44). This relative increase may be attributed to high sugar consumption in urban settings such as Addis Ababa. Between 2010 and 2016, the percentage of households consuming sugar-sweetened beverages (SSB) increased in urban areas (33,43). Even though household consumption trend of sugar has decreased in Addis Ababa(34). Contrary to this finding the study done in Bangladesh showed 2.5% of the children 6–23 months of age consumed a sweet beverage during the previous day(2).

This high prevalence of sweet beverage consumption among children age 6-23 month is concerning since sugary drinks, such as soft drinks, should be avoided because they contribute little other than energy, and thereby decrease the child's appetite for more nutritious foods(35). And public health interventions to tackle excessive sugar consumption and its harmful health consequences, such as obesity and non-communicable diseases should be strategized(36).

Unhealthy food consumption is defined as consuming often energy-dense, nutrient-poor and high in salt, sugar, saturated and/or trans fatty acids(5). This study also revealed a notable high consumption of unhealthy foods of 45.8% (95%CI:41.6%,50%) compared to food and nutritional survey the national report showed 35% (45) which can be explained by access to sentinel food.

Other studies have reported a high prevalence of unhealthy food consumption in various parts of Ethiopia. For instance, a study conducted in Gondar town found that 63.7% (95% CI: 60.4%–67.2%) of children consumed at least one item from a list of unhealthy foods, including juices, soda, coffee or tea with sugar, candies, chocolate, cakes, sweet biscuits, ice cream, potato chips,

and instant noodles. Children who consumed any of these items were classified as meeting the criteria for unhealthy food consumption.

Similarly, a study conducted in Addis Ababa reported that 54% of adolescents consumed unhealthy foods, particularly fried items. Another study, focusing on rural areas of North Wollo, found that 37.4% of individuals consumed ultra-processed foods (36–38).
Fruits and vegetables are important components of a healthy diet and reduce the risk of obesity, an independent risk-factor for NCDs(40).The infant and toddler period is an opportune time to promote the acceptance of foods that are characteristic of healthy diets, such as fruit and vegetables(41).

This study showed zero vegetable and fruit consumption the prevalence of 15.9% (95%CI:13%,19.2%) compared to national food and nutrition survey of 44%(45) the difference can be explained by geography. Other studies which was done in Ethiopia showed low consumption of vegetable and fruit, particularly one that analyzed the EDHS showed children aged 6–23 months, 69.3% did not consume any vegetables or fruits a day preceding the survey (42) and the other studied in relation to vitamin A found 38.1% and 36.5% of the children studies did not eat vegetable and fruit in the week preceding the survey, respectively(43).

The other finding of the other new IYCF indictor Egg and/or flesh consumption was 76.9% as compared to finding in Bangladesh study which 23.3% it's higher. And from previous indicators Introduction of solid and semi-sold or soft food at 6-8 month was 16% and minimum dietary diversity was 51%,compared to 63.5% and 18.3% respectively(2).

This study also examined breastfeeding indicators such as ever breast feed (EVBF) 94.2 %, early initiation of breastfeeding of 91.5% and Exclusive breastfeeding for the first 2 days was 60.2%.The study showed a high rate of breastfeeding and early initiation, with the majority of mothers starting to breastfeed within the first hour of birth and with good practice of providing of colostrum of 92.4%. This is encouraging and aligns with global health recommendations that emphasize the importance of early initiation to promote bonding and stimulate milk production.

The nutritional status of the children age 6-23 month Z score was done using WHO anthro weight-for-length and showed 6.9% of under nutrition and overweight and obesity was 20.3% and 12.5% respectively. The finding was comparable with the study done in Addis Ababa with the overall,

prevalence of overweight/obesity among the sample based on WHO reference was 28.8% (95% CI: 25.29, 32.50) (17).This percent of burden of under and over nutrition is alarming need to be addressed with by policy makers.

In summary this study showed high consumption of sweet beverage, unhealthy food consumption among children age 6-23 month and significant associations between high consumption of sweet beverages and zero vegetable and fruit consumption and the prevalence of overweight and obesity. Additionally, the zero vegetable and fruit consumption was relatively low compared to national survey. These findings underscore the critical role of dietary patterns in early childhood and their long-term health implications.

One of the strengths of this study is comprehensive data collection which utilized the newly developed IYCF indicators, providing a comprehensive assessment of dietary patterns in young children and unhealthy consumption pattern. The other is large Sample Size enhances the generalizability of the findings. The survey questions are standard IYCF question and anthropometric measurement was taken. Then Sweet beverage consumption, zero vegetable and fruit consumption and unhealthy food consumption was computed as per the guideline and prevalence was obtained. The other is providing clear and alarming evidence that will lead to actionable recommendations. By converting research insights into practical guidance, this study can directly influence decision-making processes in healthcare policy and practice to teach mother on good dietary practice such as limiting sweet beverage consumption and unhealthy food and stress on increasing the consumption of vegetable and fruit. Though paradoxical this paper is the first which will lay foundation for other paper but the limitation is that lack of paper to cross reference it.

One of the limitation is the cross-sectional nature of the study limits the ability to infer causality between dietary behaviors and health outcomes and Potential biases may exist due to self-reported data, including recall bias leading to over reporting or underreporting as well as social desirability bias. Despite the question being the standard adaptation and contextualization needs to be done which was not done in this study and local food which were not included in the questionnaire were not incorporated. The other limitation is measurement error during anthropometric measurement of weight, height and MUAC of children age 6-23 month although the coding was set to reject numbers out of context.

8. Conclusion and recommendation

In conclusion there is a high consumption of sweet beverages and unhealthy foods, along with the low intake of vegetables and fruits among children age 6-23 month. The overall evidence suggest high pattern of unhealthy food consumption which later into adulthood and development of chronic illness the urgent need to improve the dietary habits of young children. To foster healthier future for the generations, action needs to take through a combination of education, policy, and community-based strategies.

My recommendations are longitudinal Studies to better understand the causal relationships between unhealthy food consumption and it's frequency of consumption and overweight/obesity in children. After causal relationship establish its good to do interventional Studies evaluating the effectiveness of specific dietary interventions and policies in reducing sweet beverage and unhealthy food consumption and promoting vegetable and fruit intake are needed.

The other recommendation is to expand dietary assessments question to include cultural food and to include other potential factors such as physical activity, and genetic makeup to provide a more comprehensive understanding of the determinants of childhood obesity.

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ANNEX

Annex I. Information Sheet

Title of the study: NCD related IYCF indicator assessment among children age 6-23 months old in Addis Ababa, Ethiopia.

Name of Investigator: Mesgana Yohannes (MD)

Name of the Organization: AAU

Name of the Sponsor: AAU

Introduction:-This information sheet is prepared for Addis Ababa health bureau. The aim of the form is to make purpose of research, data collection procedures clear to the above concerned offices and get permission to conduct the research.

Purpose of the Research Project: To assess the prevalence of Sweet beverage, Unhealthy food and zero vegetable and fruit consumption among children age 6-23 months and its association with obesity in Addis Ababa, Ethiopia.

Procedure: In order to conduct the study and achieve the above objective, necessary information will be obtained from standard IYCF questionnaire and after informed consent taken it will be filled out.

Risk and/or Discomfort: the information that will be obtained will not cause any harm to the participant. Any identification of the participant including the name will not be recorded on the questionnaire. And all information obtained will be kept secretly. Moreover, the information will only be used for the purpose of the study.

Benefit: The study will not have direct benefit for the participants. But identifying Prevalence of the new IYCF complementary feeding will benefit where the country status is. Most of all, the result of this study has direct benefit for Policy makers to pick new strategy or reform the existing one.

Confidentiality: To assure the confidentiality of the information, data will be collected by data collectors without the name of the participants. The information obtained from this study will only be revealed to principal investigator and will be stored in a computer locked by password.

Person to contact: the following contact addresses will be given to contact investigators at any time

Mesgana Yohannes, AAU University, College of Health Sciences, Department of Nutrition and Dietetics: principal investigator

Phone: 0911486515

Email: Mesganayk@gmail.com

Curriculum Vitae (CV) of the investigator

1. PERSONAL INFORMATION

- Name Dr. Mesgana Yohannes Kebede
- Age 31
- Sex Female
- Date of Birth 01/01/1993
- Place of Birth Addis Ababa
- Nationality Ethiopian
- Address E-mail : mesganayk@gmail.com

Mobile: +251911486515

2. EDUCATIONAL BACKGROUND

- Elementary and secondary : Kidane Mihret School
- Preparatory : Ethio-Parents' School
- Higher education: University of Gondar, College of Medicine and Health Sciences
- MPH in Nutrition candidate.

3. QUALIFICATION

 Medical Doctor

4. LANGUAGE

Amharic and English: speak fluently, read, write, listen and understand both language.

5. TRAINING

- Comprehensive ART training for physician organized by the university of Gondar in collaboration with CDC (center for Disease control) office
- Infection prevention and patient safety organized by university of Gondar in collaboration with CDC
- Updates on Hepatitis organized by GI specialist association in collaboration with MOH(ministry of Health)
- On site Oxygen Therapy at Butajira General Hospital in collaboration with Carter Center
- Leadership Training organized by Center for Creative Leadership (CCL) in August 26-27/2010
- Quality Improvement Training organized by St. peter's hospital

6. WORK EXPSERIENCE

- Worked at university of Gondar as an Intern for a year.
- As a GP (General Practitioner) at Butajira General Hospital for one year and ten months.
- As a GP (General Practitioner) at St. Peter's Specialized Referral Hospital for two years.

7. PERSONAL QUALITY

- Ability to work under pressure, extra time and in dynamic environment
- Great interpersonal communication skills, sociable, cooperative and great team player
- Great time management skills, punctual, great ability to prioritize tasks
- Strong leadership skills

- Solid project management skills

8. REFERENCE

- Dr. Enyew Debash (Assistant professor of Forensic Medicine and Toxicology), Menelik specialized hospital, Addis Ababa…. 0911904358
- Dr. Neseha Yohannes (Assistant professor of internal medicine) Black Lion Hospital, Addis Ababa… 0912106564

CURRICULUM VITAE of Advisor

Samson Gebremedhin Gebreselassie, MPH, Ph.D.

Associate Professor of Public Health

School of Public Health | Addis Ababa University | Addis Ababa, Ethiopia

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12485, Addis Ababa, Ethiopia

ORCID 0000-0002-7838-2470

Short Biography

I hold PhD and Master's degrees in Public Health from School of Public Health (SPH), Addis Ababa University (AAU). I've served in the academia for nearly 20 years. Currently I'm an Associate Professor of Public Health at SPH, AAU. My area of research is in Maternal and Child Nutrition, diet-related NCDs and food systems. I've extensively published in those areas as well. I also have rich experience in consulting international and national organizations. I've served as editorial board members of multiple national and international journals including PLOS ONE, BMC Public Health, BMC Paediatrics, and Ethiopian Journal of Health Development. I'm also a member of the FAO/WHO expert group on nutrient requirements for children, and Ethiopian Public Health Association's Food Security, Food Safety and Nutrition Technical Working Group (FFN TWG).

PERSONAL INFORMATION

- Date of birth March 03, 1980
- Place of birth Addis Ababa, Ethiopia
- Gender Male
- Marital status Married, 1 daughter

EDUCATIONAL BACKGROUND

- Nov 2008 – May 2012 Ph.D. in Public Health, School of Public Health, Addis Ababa University (AAU). Dissertation: "*Epidemiology and effect on birthweight of prenatal zinc and vitamin A deficiencies in rural Sidama, Southern Ethiopia*"
- Sep 2004 – Aug 2006 Master in Public Health (Reproductive Health track), Department of Community Health, AAU. Dissertation: "*Level and differentials of fertility in Awassa town, Southern Ethiopia*".
- Sep 1998 – Jun 2002 B.Sc. in Public Health, Department of Health Officer, Dilla College of Teachers Education and Health Sciences, Debub (Hawassa) University.
- Sep 1994 - Mar 1998 Bole Senior Secondary School, Addis Ababa, Ethiopia.
- Sep 1986 - Jun 1994 Misrak Dil Elementary and Junior Secondary School, Addis Ababa.

WORK EXPERIENCE

- Dec 2020 till date	PhD Program Coordinator, School of Public Health, AAU
- April 2019 till date	Associate Professor, School of Public Health, AAU
- Mar-May 2019	Associate Professor, Department of Public Health, St. Paul Hospital Millennium Medical College, Addis Ababa, Ethiopia
- Jan 2016 – Feb 2019	Associate Professor, School of Public Health, Hawassa University
- Jun 2012 – Dec 2016	Assistant Professor, School of Public Health, Hawassa University.
- Oct 2014 – Oct 2016	MPH Program Coordinator, Hawassa University
- Sep 2006 – Jul 2012	Lecturer, Department of Rural Development and Family Sciences (RDFS), Hawassa University
- Nov 2007 – Nov 2008	Head of Department, Department of RDFS, Hawassa University
- Dec 2006 – Jun 2007	Applied Human Nutrition Graduate Program Coordinator, Hawassa University
- Sep 2002 – Aug 2004	Assistant Lecturer, Department of RDFS, Hawassa University

TEACHING AND SUPERVISION OF GRADUATE STUDENTS

Offered the following courses to master's and PhD students in Ethiopian public higher learning institutions.

- Nutrition, Health and Chronic Diseases
- Lifecycle Nutrition/Maternal-Child Nutrition
- Public Health Nutrition
- Nutritional Epidemiology
- Principles and Practices of Epidemiology
- Advanced Epidemiology
- Research Methods
- Advanced Biostatistics
- Public Health Surveillance
- Gender and Health

- Supervised more than 100 MPH/M.Sc students and 10 PhD students.
- Examined nearly 100 MPH/M.Sc students and 10 PhD students.

SHORT COURSE TRAININGS

- Nov 2019 – Feb 2020 — Higher Diploma Program training on pedagogical skills for teachers of higher learning education; Addis Ababa University, Addis Ababa.
- May 23-26, 2016 — Essential grant writing skills workshop. African Research Excellence Fund; Dakar, Senegal.
- Nov 30-Dec 4, 2010 — Regional training course on methodology of clinical research in radiation oncology. IAEA and AFAR; Addis Ababa, Ethiopia.
- Sept 21-25, 2009 — Critiquing research literature in maternal, neonatal, reproductive health. Johns Hopkins University, Addis Ababa, Ethiopia.

CONSULTANCY EXPERIENCE

- Nov 2023 till date

  Employer: Project HOPE - People-to-People Foundation
  Position: Principal Investigator
  Role and responsibilities: Leading the implementation of a research project "Pathways for Ethiopia: Understanding Multidimensional Vulnerabilities to RMNCH+N Outcomes, and Generating Evidence for Action" funded by Bill and Melinda Gates Foundation

- Aug 2022 till date

  Employer: World Food Program
  Position: Member of a consulting team
  Role and responsibilities: Designing and implementing and implementation research "Integration of community-based management of acute malnutrition with health extension program"

- Aug – Nov 2022

  Employer: Eureka Consulting, Save the Children International, Ministry of Agriculture
  Position: Lead Consultant
  Role and responsibilities: Evaluation of the Ethiopian National Nutrition Sensitive Agriculture Strategy through desk review and qualitative research
  Employer: Project HOPE - People-to-People Foundation

- Nov 2021 –Nov 2022

Position: Principal Investigator

Role and responsibilities: Leading the designing and implementation of an evaluation research "Reaching zero-dose children in remote areas of Ethiopia, Evaluation" funded by Bill and Melinda Gates Foundation

- Oct 2019 – March 2020

Employer: Nutrition International

Position: Lead Consultant

Role and responsibilities: Designed and implemented a large-scale survey (baseline and endline) intended to evaluate four programs (maternal and newborn health and nutrition (MNHN), infant and young child nutrition (IYCN), combined use of zinc and ORS for diarrhoea treatment, and use of intermittent weekly iron folic acid supplementation (WIFA) for adolescent girls) of Nutrition International (NI) in 116 woredas of Tigray, Afar, Amhara, Oromiya and SNNP regions, Ethiopia.

- Nov 2018 – Mar 2019 Employer: Alive and Thrive- FHI 360
  Position: Quality Assurance Personnel
  Role and responsibilities: Worked as quality assurance personnel for the qualitative study designed to evaluate the implementation Nutrition Sensitive Agriculture program of Alive and Thrive in Tigray and SNNP regions, Ethiopia.

- Nov 2018 – April 2019 Employer: Nutrition International
  Position: Lead Consultant
  Role and responsibilities: Designed and implemented a large-scale midline survey designed to assess the implementation of three national programs of NI in Ethiopia namely: (*i*) MNHN, (*ii*) IYCN, and (*iii*) Combined use of zinc and ORS for diarrhoea treatment in the four regions of Ethiopia.

- Sept 2017 – Jan 2018 Employer: Micronutrient Initiative
  Position: Lead Consultant
  Role and responsibilities: Designed and implemented a formative assessment in five regions of Ethiopia (Tigray, Benishangul Gumuz, Amhara, Oromiya and SNNPR) and developed social and behavioural change communication (SBCC) strategy and SBCC materials for Maternal Newborn Health and Nutrition.
- Nov 2016 – Nov 2018 Employer: Emory University - Ethiopia
  Position: Lead Consultant/Principal Investigator
  Role and responsibilities: Designed and implemented three different baseline, midline and endline community-based surveys intended to evaluate the UNICEF-funded ICCM and CBNC programs of Emory University in Benishangul Gumuz region, Ethiopia.
- Sep 2014 – Nov 2016 Employer: Alive and Thrive- FHI 360
  Position: Consultant

Role and responsibilities: Designed and implemented two rounds of sentinel surveys in South Wollo Zone, Amhara region, Ethiopia, intended to evaluate a program entitled “Integrating IYCF messages into Productive SafetyNet Program (PSNP) activities”.

- Jun 2013 – May 2016 Employer: Unicef
  Position: Consultant
  Role and responsibilities: Providing technical support to UNICEF in implementing community-based production of complementary foods in 20 districts of Ethiopia”

- Jan – May 2014 Employer: Micronutrient Initiative
  Position: Lead Consultant/Principal Investigator
  Role and responsibilities: Designed and implemented operational research entitled "Does bundling zinc and ORS improves adherence to acute diarrhoea treatment in Ethiopia?"
- Aug 2012 – May 2013 Employer: Unicef
  Position: Consultant
  Role and responsibilities: Designed and implemented a survey entitled "Post-screening surveys of Community Health Days in Amhara, Benishangul Gumuz, Oromia, Southern and Tigray regions".

- Dec 2011 – Nov 2013 Employer: Alive and Thrive- FHI 360
  Position: Consultant
  Role and responsibilities: Designed and implemented three large scale surveys entitled "Sentinel-site surveillance for Ethiopia IYCF program in Oromiya, Amhara, SNNP and Tigray Regions, Ethiopia"

- Jan – Aug 2012 Employer: Micronutrient Initiative
  Position: Lead Consultant
  Role and responsibilities: Designed and implemented formative research "*Effective modalities to improve pregnant women's compliance to daily iron folic acid supplementation*" and developed BCC materials and training manuals for frontline health workers.

- Jun 2010 – Jan 2011 Employer: Unicef and FAO
  Position: Consultant
  Role and responsibilities: Designed and implemented large-scale formative research entitled "Assessment of community-based production of complementary food in Oromia, Amhara, SNNP and Tigray Regions, Ethiopia".

- Feb – Apr 2008 — Employer: John Snow Inc-ESHE
  Position: Consultant
  Role and responsibilities: Designed and implemented evaluation research "Evaluation of Community Therapeutic Care (CTC) program in Boloso Sore Woreda, Wolayta Zone, Ethiopia".

- Jan – Apr 2008 — Employer: RiPPLE Ethiopia
  Position: Consultant
  Role and responsibilities: Designed and implemented a case study "Assessment of the implementation of Universal Access Plan (UAP) program for water and sanitation in SNNP Region, Ethiopia"

- Mar – Apr 2007 Employer: GTZ-University Capacity Building Program
  Position: Consultant
  Role and responsibilities: Provided training and conducted baseline survey on "Workplace HIV/AIDS mainstreaming and policy development".

- Aug 2005 – Sep 2006 Employer: ABT Associates
  Position: Consultant
  Role and responsibilities: Designed and implemented baseline and endline surveys "Knowledge, attitude and practice towards HIV/AIDS and TB in manufacturing and service providing organizations in Amhara, SNNPR, Dire Dawa and Oromiya Regions, Ethiopia".

- Apr 2006 – May 2006 Employer: Health Communication Partnership
  Position: Consultant
  Role and responsibilities: Designed and implemented a baseline survey for Kokeb Kebele Program (KKP) in Southern Region.

Annex II Informed Consent Form

Addis Ababa University, School of public health

Subject Information Sheet

Hello, my name is ———————————————— I am here on behalf of Mesgana Yohannes, a student in Addis Ababa University School of public health nutrition unit. She is conducting research on "Non-communicable disease related Infant and young children feeding indicator assessment among children age 6-23 months old in Addis Ababa, Ethiopia". She has received permission from Addis Ababa university school of public health. Your participation on this study will only be based on your willingness. You have the right to choose not to take part in this study. If you choose to take part, you have the right to stop at any time. If you are willing to participate or refuse or decide to withdraw later, you will not be subjected to any ill-treatment.

If you agree to participate in the study, there be no risk from participating from this study neither directly benefit from the study but the collected data will help learn new things. You will not be paid for any participating in this study. And your answers will be kept confidentially. You will be interviewed about socio demographic status, Exclusive breastfeeding and complementary feeding questions. You can stop at any time if you don't feel comfortable during an interview process, filling the questionnaire will take about 15 minutes.

This study will help in generating evidence for the prevalence of new IYCF complementary feeding indicators and it's association with obesity. The information that you provide will be kept confidential by using only code numbers and locking the data. Your name will not be written on the questionnaire. No one will have access to the non-coded data except the principal investigator and the data will not be used for purposes other than the study. Your willingness and active participation is very important for the success of this study

Based on the understanding of the above information, are you willing to participate in this study?

A) Yes

B) No

If yes, I will continue and

If no, I will skip to next participant after writing the reasons of refusal ——

Complete Response	
Incomplete Response	
Refuse	

Result of data collected (Tick in the box)

Annex III Questionnaire in English

Section one- Entry question			
No.	**Question**	**Coding category**	**Skip pattern**
001	Questionnaire number include the sub city, kebele number and household number	Questionnaire # Sub city -- Woreda number-- House hold number--	
002	Respondent Screening Are you a mother or primary care giver of a child who is less than 24 months?	Yes No	If no end survey
003	Date of Interview	Start date /DD/MM/YYYY	

	IN GREGORIAN CALENDER	End date /DD/MM/YYYY	
004	Time of Interview	Starting time:	
005	Team number	/-/	
006	Supervisors' name	--	
007	Interviewer's' name	--	
008	Date of birth	/DD/MM/YYYY/	
009	Type of household	Primary selection Replacement	
Section two- Socio-demographic and economic			
No.	**Question**	**Coding category**	**Skip pattern**
010	How old are you? (age in completed years) Probe: HOW OLD WERE YOU AT YOUR LAST BIRTHDAY?REGISTER AGE IN COMPLETED YEARS	-- Years	
011	Types of relationship of respondent to index child	Mother(Primary caregiver) Father(primary caregive) Other specify	
012	What is the highest level of education you have completed?	No formal schooling Primary school Secondary school College/University education	
013	Total years of formal education	--Years	
014	What is your current marital status?	Not ever married Married/Cohabiting Widowed/widower Separated/Divorced	

015	What is your occupation? That is, what Kind of work do you mainly do?	Not working Household or domestic Unskilled manual Skilled manual Driver Petty trade Trade Sales Professional/technical/Managerial Student Other(specify)	
016	What is your husband's profession?	Not working Household or domestic Unskilled manual Skilled manual Driver Petty trade Trade Sales Professional/technical/Managerial Student Other(specify)	
017	How much do you earn in a typical month?	/-/ Don't know	
018	How much does your household earn in a typical months?	/-/ Don't know	
019	Total number of household members	/-/	
020	Total number of children ever born(Only for female respondents)	/-/	

Section three- Basic information of the child			
No.	**Question**	**Coding category**	**Skip pattern**
022	Look at the age sheet and enter the child's age in months	/-/ Months	
023	How many children under the age of 24 months?	--	
024	Sex of the first child?	Boy Girl	
025	Date of birth In Gregorian calendar	/DD/MM/YYYY/	
026	Sex of the second child?* optional	Boy Girl	
027	Date of birth? In Gregorian calendar	/DD/MM/YYYY	
Section 4- Breastfeeding			
No.	**Question**	**Coding category**	**Skip pattern**
028	Was [Name of child] ever breastfeed?	Yes No	
029	Are you still breastfeeding [Name of child]?	Yes No	
030	If no at what age did you stop breastfeeding [Name of child]?	/-/months	
031	How soon after birth did you put the child to the breast for the first time?	Immediately Hours days	
032	Did you give the child colostrum?	Yes No	

033	In the first two days after delivery, was the child given anything other than breast milk to eat or drink – anything at all like water, infant formula	Yes No	
034	If the child was not breastfeed immediately what was he put on?	Butter Fenugreek Herbal tea Tena adam Cow's Milk Other (specify)	
035	Was the [Name of child] breastfed yesterday during the day or at night?	Yes No	
036	Did the [Name of child] drink anything from a bottle with a nipple yesterday during the day or at night?	Yes No	

Section 5-Pattern of fluid consumption			
No.	**Question**	**Coding category**	**Skip pattern**
101	Now I would like to ask you about liquids that the child had yesterday during the day or at night. Please tell me about all drinks, whether the child had them at home, or somewhere else. Yesterday during the day or at night, did the child have?		

101_01	Plain water?	Yes No Don't know	
101_02	Infant formula, (e.g. NAN, S-26, Liptomill etc...)	Yes No Don't know	
101_02 number	If "yes": How many times did the child drink formula?	/-/ Don't know	
101_03	Milk from animals, such as fresh, tinned or powdered milk (e.g. NIDO, Anchor and Hilwa)?	Yes No Don't know	
101_03 Number	If "yes": How many times did the child drink formula?	/-/ Don't know	
101_03 SwB	If "yes": Was the milk or were any of the milk drinks a sweet or flavored type of milk?	Yes No Don't know	
101_04	Chocolate-flavored drinks including those made from syrups or powders? (e.g. CoCo drinks)	Yes No Don't know	
101_05	Homemade 100% fresh fruit juice?	Yes No Don't know	
101_05 SwB	If "yes": Was the fruit drink sweetened?	Yes No Don't know	
101_06 SwB	Fruit-flavored drinks including powders, packed or bottled?	Yes No Don't know	
101_07	Sodas, malt drinks, sports drinks or energy drinks?	Yes No Don't know	

101_08	Tea, coffee, or herbal drinks?	Yes No Don't know	
101_08 SwB	If "yes": Was the drink/ Were any of these drinks sweetened?	Yes No Don't know	
101_09	Clear broth ("mereq) or clear soup?	Yes No Don't know	
101_10	Any other liquids? If "yes": what was the liquid or what were the liquids?	Yes ----	
101_10 SwB	If "yes": Was the drink or were any of these drinks sweetened?	Yes No Don't know	
Section 6- Pattern of solid, semi- solid and soft food consumption			
No.	**Question**	**Coding category**	**Skip pattern**
102	Did [Name of the child] eat any of the following foods yesterday (during the day or night)?		
102_01	Yogurt drinks	Yes No Don't know	
102_01 SwB	If "yes": Was sugar added on the yogurt or was it flavored type of yogurt drink?	Yes No Don't know	
102_02	Any Porridge?	Yes No Don't know	
102_03	Any gruel(e.g. Atmit or beso shake)	Yes	

		No Don't know	
102_03 SwB	If "yes": Was the gruel sweetened?	Yes No Don't know	
102_04	Any commercially fortified food (cerifam, fafa, Berta, Mothers choice)?	Yes No Don't know	
102_05	Bread, Pasta, macaroni or any other foods made from oats, Maize, barley wheat, sorghum, millet or other grain?	Yes No Don't know	
102_06	Injera, Kita, bread, Ambasha or defo made from teff, wheat, barley, maize, sorghum, millet, or other grain?	Yes No Don't know	
102_07	Breakfast cereal like corn flakes made from maize, wheat, barley or other grain?	Yes No Don't know	
102_07 SwB	If "yes" was sugar added on the breakfast?	Yes No Don't know	
102_08	Any white potatoes, white yams, Bulla, Kocho, Cassava or any other food made from roots?	Yes No Don't know	
102_09 ZVF	Any Pumpkin, carrot, squash, or sweet potatoes that are yellow or orange inside?	Yes No Don't know	
102_10 ZVF	Dark green leafy vegetable(ex-kale, spinach or amaranth leaves)	Yes No Don't know	

102_11 ZVF	Ripe mangoes, ripe papayas or other fruits that are yellow or orange?	Yes No Don't know	
102_12 ZVF	Any other fruit? (E.g. banana, orange, watermelon, apple…)	Yes No Don't know	
102_13 ZVF	Any other vegetable? (E.g. beetroot, cauliflower, broccoli…)	Yes No Don't know	
102_14	Any liver, Kidney, heart or organ meats?	Yes No Don't know	
102_15	Any meat or dry meat? (E.g. beef, lamb, chicken…)	Yes No Don't know	
102_16	Eggs?	Yes No Don't know	
102_17	Any fresh or dried fish or shell fish	Yes No Don't know	
102_18	Any foods made from beans, peas, lentil or pulses	Yes No Don't know	
102_19	Any nuts or seeds such as peanuts, sesame, sunflowers seeds	Yes No Don't know	
102_20	Any milk products like cheese, mozzarella or cottage cheese	Yes No Don't know	
102_21	Any oil, fats. Or butter	Yes	

		No Don’t know	
102_22	Any ready to use therapeutic foods(like plumpy nut)	Yes No Don’t know	
102_23	Any other solid or semi-solid food(not on the list) If yes----	Yes No Don’t know	
Section 7- Unhealthy food consumption			
No.	**Question**	**Coding category**	**Skip pattern**
103_01 UFC	Candies, chocolate and other sugar confections like lollipop	Yes No Don’t know	
	If “yes” consumption within the last one month	Never or < once/month 1/month 2-3/month 1/week 2/week 3-4/week 5-6/week Everyday 2-3/day 4 or more/day	
103_02 UFC	Frozen treats like ice cream, gelato, sherbet, sorbet, popsicles or similar confections?	Yes No Don’t know	
	If “yes” consumption within the last one month	Never or < once/month 1/month 2-3/month 1/week	

		2/week 3-4/week 5-6/week Everyday 2-3/day 4 or more/day	
103_03 UFC	Cakes, pastries, sweet biscuits and other baked or fried confections	Yes No Don't know	
	If "yes" consumption within the last one month	Never or < once/month 1/month 2-3/month 1/week 2/week 3-4/week 5-6/week Everyday 2-3/day 4 or more/day	
103_04 UFC	Chips, crisps, puffs, French fries, fried dough, instant noodles	Yes No Don't know	
	If "yes" consumption within the last one month	Never or < once/month 1/month 2-3/month 1/week 2/week 3-4/week 5-6/week	

		Everyday 2-3/day 4 or more/day	
Section 8- Exposure to IYCF Message			
No.	**Question**	**Coding category**	**Skip pattern**
104_01	Do you have any exposure to IYCF message from any source in the past 6 months	Yes No	
104_02	If "Yes" what was the source	Health worker Mass media(TV) Print media (leaflet, brochure) Social media Friend, family or Neighbors Volunteers	
104_03	What kind of message did you receive?	About under-nutrition About over-nutrition	
104_04	If under-nutrition From which source--- and thick multiple answer	Early initiation of breastfeeding Exclusive breastfeeding for 6 months Initiation of complementary feeding at 6 months Dietary diversity Feeding frequency Feeding hygiene Responsive feeding	

		Continue breastfeeding until 24 months	
104_05	If over-nutrition From which source— and thick multiple answer	Early introduction of complementary feeding Sweet beverage consumption Unhealthy food consumption Zero vegetable and fruit consumption Commercially prepared food with high energy and poor nutrient consumption	
Section 9- Knowledge of care giver on IYCF			
No.	**Question**	**Coding category**	**Skip pattern**
105_01	Initiation of complementary feeding is important	Yes No Don't know	
105_02	Complementary feeding should be started at 6 months or 180 days	Yes No Don't know	
105_03	Breastfeeding should continue until 2 years of age	Yes No Don't know	
105_04	Dietary diversity and food feeding frequency which is appropriate for age is important	Yes No Don't know	

105_05	Sweetened beverage consumption should be limited in children age less than 24 months	Yes No Don’t know	
105_06	Consumption of different fruit and vegetable is important for children age less than 24 months	Yes No Don’t know	
105_07	Unhealthy food like Candice, chocolate, cake, ice-cream consumption should be limited in children age less than 24 months	Yes No Don’t know	
Section 10-Anthropometric data			
No	Scale	Result	
1	Weight		
2	Length		
3	MUAC		

Annex IV Consent in amharic

በመረጃ የተደገፈ የስምምነት ቅጽ

አዲስ አበባ ዩኒቨርሲቲ የህዝብ ጤና ትምህርት ቤት

የርዕሰ ጉዳይ መረጃ ሉህ

ጤና ይስጥልኝ ስሜ ———————————— እዚህ የመጣሁት በአዲስ አበባ ከተማ ተማሪ የሆነችውን መስጋና ዮሐንስን ወክዬ ነው። አበባ ዩኒቨርሲቲ የህብረተሰብ ጤና አመጋገብ ክፍል. በአዲስ አበባ ኢትዮጵያ ከ6-23 ወር እድሜ ክልል ውስጥ የሚገኙ ህጻናት እና ህጻናት አመጋገብ አመልካች ምዘና ላይ ተላላፊ ባልሆኑ በሽታዎች ላይ ጥናት በማድረግ ላይ ትገኛለች። ከአዲስ አበባ ዩኒቨርሲቲ የህዝብ ጤና ትምህርት ቤት ፈቃድ አግኝታለች። በዚህ ጥናት ላይ ያለዎት ተሳትፎ በእርስዎ ፍላጎት ላይ ብቻ የተመሰረተ ይሆናል። በዚህ ጥናት ውስጥ ላለመሳተፍ የመምረጥ መብት አልዎት። ለመሳተፍ ከመረጡ በማንኛውም ጊዜ ለማቆም መብት አልዎት። ለመሳተፍ ፈቃደኛ ከሆኑ ወይም እምቢ ካሉ ወይም በኋላ ለመውጣት ከወሰኑ ምንም አይነት በደል አይደርስብዎትም።

በጥናቱ ለመሳተፍ ከተስማሙ፣ በዚህ ጥናት ውስጥ መሳተፍ ምንም አይነት ስጋት የለም, ከጥናቱ በቀጥታ ጥቅም የለውም, ነገር ግን የተሰበሰበው መረጃ አዳዲስ ነገሮችን ለመማር ይረዳል. በዚህ ጥናት ውስጥ ለመሳተፍ ምንም አይነት ክፍያ አይከፈልዎትም. እና መልሶችዎ በሚስጥር ይቀመጣሉ።ስለ ሶሺዮ የስነ ሕዝብ አወቃቀር ሁኔታ፣ ልዩ ጡት ማጥባት እና ተጨማሪ የአመጋገብ ጥያቄዎች ቃለ መጠይቅ ይደረግልዎታል። በቃለ መጠይቅ ሂደት ውስጥ ምቾት የማይሰማዎት ከሆነ በማንኛውም ጊዜ ማቆም ይችላሉ, መጠይቁን መሙላት 15 ደቂቃ ያህል ይወስዳል.

ይህ ጥናት ለአዲሱ IYCF ተጨማሪ የአመጋገብ አመላካቾች መስፋፋት እና ከውፍረት ጋር የተቆራኘ መሆኑን ማስረጃ ለማመንጨት ይረዳል። ያቀረቡት መረጃ ኮድ ቁጥሮችን ብቻ በመጠቀም እና ውሂቡን በመቆለፍ በሚስጥር ይጠበቃል። ስምህ በመጠይቁ ላይ አይጻፍም። ከዋናው መርማሪ በስተቀር ማንም ሰው ኮድ ያልሆነውን መረጃ ማግኘት አይችልም እና ውሂቡ ከጥናቱ ውጭ ለሌላ ዓላማዎች ጥቅም ላይ አይውልም። ለዚህ ጥናት ስኬት የእርስዎ ፍላጎት እና ንቁ ተሳትፎ በጣም አስፈላጊ ነው።

ከላይ ባለው መረጃ መረዳት ላይ በመመስረት፣ በዚህ ጥናት ውስጥ ለመሳተፍ ፈቃደኛ ነዎት?

ሀ) አዎ

ለ) አይ

አዎ ከሆነ እቀጥላለሁ እና

አይደለም ከሆነ፣የእምቢታ ምክንያቶችን ከፃፍኩ በኋላ ወደ ቀጣዩ ተሳታፊ እዘልላለሁ ——— ———————— ———————————————————— ———

የተሟላ ምላሽ	
ያልተሟላ ምላሽ	
እምቢ	

Annex V Questionnaire in Amharic

የተሰበሰበ መረጃ ውጤት (በሳጥኑ ውስጥ ምልክት ያድርጉ)

ክፍል አንድ - የመግቢያ ጥያቄ			
አይ.	**ጥያቄ**	**ኮድ መስጠት ምድብ**	**ስርዓተ ጥለት ዝለል**
001	መጠይቅ ቁጥሩ የክፍለ ከተማውን የቀበሌ ቁጥር እና የቤተሰብ ቁጥርን ያጠቃልላል	መጠይቅ # ክፍለ ከተማ -- የወረዳ ቁጥር -- የቤት ቁጥር -	
002	ምላሽ ሰጪ ማጣራት። ከ24 ወር በታች የሆነ ልጅ እናት ወይም የመጀመሪያ ደረጃ ተንከባካቢ ነሽ?	አዎ አይ	የመጨረሻ ዳሰሳ ከሌለ
003	የቃለ መጠይቁ ቀን በግሪጎሪያን የቀን መቁጠሪያ	የመጀመሪያ ቀን /ቀ/ወ/ዓ.ም የመጨረሻ ቀን	

		/ቀ/ወ/ዓ.ም	
004	የቃለ መጠይቅ ጊዜ	መነሻ ጊዜ፡-	
005	የቡድን ቁጥር	/-/	
006	የተቆጣጣሪዎች ስም	--	
007	የጠያቂው ስም	--	
008	የተወለደበት ቀን	/ቀ/ወ/ዓ.ም/	
009	የቤተሰብ ዓይነት	ቀዳሚ ምርጫ መተካት	
ክፍል ሁለት-ማህበራዊ-ሕዝብ እና ኢኮኖሚያዊ			
አይ.	**ጥያቄ**	**ኮድ መስጠት ምድብ**	**ስርዓተ ጥለት ዝለል**
010	ስንት አመት ነው? (እድሜ በተጠናቀቁ ዓመታት) ምርመራ፡ በመጨረሻው ልደትህ ስንት አመት ነበርክ? በተሟሉ አመታት ውስጥ መመዝገብ	-- ዓመታት	
011	ምላሽ ሰጪ እና ጠቋሚ ልጅ የግንኙነት ዓይነቶች	እናት (ዋና ተንከባካቢ) አባት (ዋና ተንከባካቢ) ሌላ ይግለጹ	
012	ያጠናቀቁት ከፍተኛ የትምህርት ደረጃ ምንድነው?	መደበኛ ትምህርት የለም። የመጀመሪያ ደረጃ ትምህርት ቤት ሁለተኛ ደረጃ ትምህርት ቤት ኮሌጅ / ዩኒቨርሲቲ ትምህርት	
013	አጠቃላይ የመደበኛ ትምህርት ዓመታት	--ዓመታት	

014	አሁን ያለህበት የትዳር ሁኔታ ምን ያህል ነው?	በጭራሽ አላገባም። ባለትዳር/ አብሮ መኖር ባል የሞተባት/የሞተባት ተለያይተዋል/የተፋቱ	
015	ሥራህ ምንድን ነው? ማለትም፡ በዋናነት የምትሰራው ምን አይነት ስራ ነው?	እየሰራ አይደለም የቤት ወይም የቤት ውስጥ ያልሰለጠነ መመሪያ ችሎታ ያለው መመሪያ ሹፌር ጥቃቅን ንግድ ንግድ ሽያጭ ሙያዊ / ቴክኒካዊ / ማኔጅመንት ተማሪ ሌላ (ይግለጹ)	
016	የባልሽ ሙያ ምንድነው?	እየሰራ አይደለም የቤት ወይም የቤት ውስጥ ያልሰለጠነ መመሪያ ችሎታ ያለው መመሪያ ሹፌር ጥቃቅን ንግድ ንግድ ሽያጭ ሙያዊ / ቴክኒካዊ / ማኔጅመንት ተማሪ ሌላ (ይግለጹ)	

017	በተለመደው ወር ምን ያህል ያገኛሉ?	/-/ አላውቅም	
018	የእርስዎ ቤተሰብ በተለመደው ወራት ምን ያህል ያገኛል?	/-/ አላውቅም	
019	ጠቅላላ የቤተሰብ አባላት ብዛት	/-/	
020	እስካሁን የተወለዱ ልጆች ጠቅላላ ቁጥር (ለሴት ምላሽ ሰጪዎች ብቻ)	/-/	
021	ሃይማኖት?	ኦርቶዶክስ ክርስቲያን ፕሮቴስታንት ክርስቲያን ሙስሊም ካቶሊክ ሃይማኖት የለም። ሌሎች (ይጥቀሱ)	
ክፍል ሶስት - የልጁ መሰረታዊ መረጃ			
አይ.	**ጥያቄ**	**ኮድ መስጠት ምድብ**	**ስርዓተ ጥለት ዝለል**
022	የዕድሜ ወረቀቱን ይመልከቱ እና የልጁን ዕድሜ በወራት ውስጥ ያስገቡ	/-/ ወራት	
023	ከ 24 ወር በታች የሆኑ ልጆች ስንት ናቸው?	--	
024	የመጀመሪያ ልጅ ወሲብ?	ወንድ ልጅ ሴት ልጅ	
025	የተወለደበት ቀን በጎርጎርዮስ አቆጣጠር	/ቀ/ወ/ዓ.ም/	
026	የሁለተኛው ልጅ ወሲብ?* አማራጭ	ወንድ ልጅ	

		ሴት ልጅ	
027	የተወለደበት ቀን? በጎርጎርዮስ አቆጣጠር	/ቀ/ወ/ዓ.ም	
ክፍል 4 - ጡት ማጥባት			
አይ.	**ጥያቄ**	**ኮድ መስጠት ምድብ**	**ስርዓተ ጥለት ዝለል**
028	[የልጁ ስም] ጡት አጥቦ ያውቃል?	አዎ አይ	
029	አሁንም [የልጅ ስም] ጡት እያጠቡ ነው?	አዎ አይ	
030	ካልሆነ ጡት ማጥባት ያቆሙት በየትኛው ዕድሜ ላይ ነው (የልጁ ስም)?	/-/ ወራት	
031	ከተወለደ በኋላ ለመጀመሪያ ጊዜ ልጁን በጡት ላይ ምን ያህል አስቀምጠውታል?	ወድያው ሰዓታት ቀናት	
032	ለልጁ ኮሎስትረም ሰጥተውታል?	አዎ አይ	
033	ከወሊድ በኋላ ባሉት ሁለት ቀናት ውስጥ ህፃኑ እንዲበላ ወይም እንዲጠጣ ከእናት ጡት ወተት በስተቀር ሌላ ነገር ተሰጥቷል - እንደ ውሃ ፣ የሕፃን ድብልቅ።	አዎ አይ	
034	ልጁ ወዲያውኑ ጡት ካላጠባ ምን ለብሶ ነበር?	ቅቤ ፈንገስ የእፅዋት ሻይ	

		ጤና አደም የላም ወተት ሌላ (ይግለጹ)	
035	(የልጁ ስም) ትናንት በቀን ወይም በሌሊት ጡት ነበር?	አዎ አይ	
036	(የህፃን ስም) ትናንት በቀን ወይም በሌሊት ከጡት ጫፍ ጠርሙስ ምንም ነገር ጠጣ?	አዎ አይ	

ክፍል 5-የፈሳሽ ፍጆታ ንድፍ			
አይ.	**ጥያቄ**	**ኮድ መስጠት ምድብ**	**ስርዓተ ጥለት ዝለል**
101	አሁን ህጻኑ ትናንት በቀን ወይም በሌሊት ስለነበረው ፈሳሽ ልጠይቅዎት እፈልጋለሁ. እባኮትን ስለ ሁሉም መጠጦች ይንገሩኝ፣ ህፃኑ እቤት ውስጥ ይዛቸው እንደሆነ፣ ወይም ሌላ ቦታ። ትናንት በቀን ወይም በሌሊት, ልጁ ነበረው?		
101_01	ተራ ውሃ?	አዎ አይ አላውቅም	
101_02	የሕፃናት ቀመር፣ (ለምሳሌ NAN፣ S-26፣ Liptomill ወዘተ...)	አዎ አይ አላውቅም	

101_02 ቁጥር	"አዎ" ከሆነ: ህጻኑ ስንት ጊዜ ፎርሙላ ጠጣ?	/-/ አላውቅም	
101_03	እንደ ትኩስ፣ የታሸገ ወይም የዱቄት ወተት ያሉ የእንስሳት ወተት (ለምሳሌ NIDO፣ Anchor እና Hilwa)?	አዎ አይ አላውቅም	
101_03 ቁጥር	"አዎ" ከሆነ: ህጻኑ ስንት ጊዜ ፎርሙላ ጠጣ?	/-/ አላውቅም	
101_03 ኤስ.ቢ	“አዎ” ከሆነ፡ ወተቱ ነበር ወይንስ ከወተቶቹ ውስጥ የሚጠጡት ጣፋጭ ወይም ጣዕም ያለው የወተት ዓይነት ነበሩ?	አዎ አይ አላውቅም	
101_04	ከሲሮፕ ወይም ከዱቄት የተሠሩትን ጨምሮ የቸኮሌት ጣዕም ያላቸው መጠጦች? (ለምሳሌ የኮኮ መጠጦች)	አዎ አይ አላውቅም	
101_05	የቤት ውስጥ 100% ትኩስ የፍራፍሬ ጭማቂ?	አዎ አይ አላውቅም	
101_05 – ኤስ.ቢ	"አዎ" ከሆነ: የፍራፍሬው መጠጥ ጣፋጭ ነበር?	አዎ አይ አላውቅም	
101_06 ኤስ.ቢ	ጨምሮ የፍራፍሬ ጣዕም ያላቸው መጠጦች , የታሸጉ ወይም የታሸጉ?	አዎ አይ አላውቅም	
101_07	ሶዳስ፣ ብቅል መጠጦች፣ የስፖርት መጠጦች ወይስ የኃይል መጠጦች?	አዎ አይ አላውቅም	

101_08	ሻይ፣ ቡና ወይም የእፅዋት መጠጦች?	አዎ አይ አላውቅም	
101_08 ኤስ.ቢ	“አዎ” ከሆነ፡ መጠጡ ነበር/ከነዚህ መጠጦች ውስጥ የትኛውም ጣፋጭ ነበር?	አዎ አይ አላውቅም	
101_09	የተጣራ መረቅ (" mereq) ወይስ የተጣራ ሾርባ?	አዎ አይ አላውቅም	
101_10	ሌላ ፈሳሽ አለ? “አዎ” ከሆነ፡ ፈሳሹ ምን ነበር ወይም ፈሳሾቹ ምን ነበሩ?	አዎ ----	
101_10 ኤስ.ቢ	“አዎ” ከሆነ፡ መጠጡ ነበር ወይንስ ከእነዚህ መጠጦች ውስጥ የትኛውም ጣፋጭ ነበር?	አዎ አይ አላውቅም	
ክፍል 6- የጠንካራ, ከፊል-ጠንካራ እና ለስላሳ የምግብ ፍጆታ ንድፍ			
አይ.	**ጥያቄ**	**ኮድ መስጠት ምድብ**	**ስርዓተ ጥለት ዝለል**
102	(የልጁ ስም) ትናንት (በቀንም ሆነ በማታ) ከሚከተሉት ምግቦች አንዱን በልቷል?		
102_01	እርጎ መጠጦች	አዎ አይ አላውቅም	
102_01 ኤስ.ቢ	“አዎ” ከሆነ፡ በዩጎት ላይ ስኳር ተጨምሯል ወይንስ ጣዕም ያለው የእርጎ መጠጥ አይነት ነበር?	አዎ አይ አላውቅም	
102_02	ማንኛውም ገንፎ?	አዎ አይ	

		አላውቅም	
102_03	ማንኛውም ጨካኝ (ለምሳሌ Atmit ወይም beso መንቀጥቀጥ)	አዎ አይ አላውቅም	
102_03 ኤስ.ቢ	“አዎ” ከሆነ፡ ጨካኙ ጣፋጭ ነበር?	አዎ አይ አላውቅም	
102_04	ማንኛውም በንግድ የተጠናከረ ምግብ (cerifam ፣ ፋፋ ፣ በርታ፣ የእናቶች ምርጫ)?	አዎ አይ አላውቅም	
102_05	ዳቦ፣ ፓስታ፣ ማካሮኒ ወይንስ ከአጃ፣ ከበቆሎ፣ ገብስ ስንዴ፣ ማሽላ፣ ማሽላ ወይም ሌላ እህል የተሰሩ ምግቦች?	አዎ አይ አላውቅም	
102_06	እንጀራ ፣ ኪታ፣ ዳቦ፣ አምባሻ ወይስ ዴፎ ከጤፍ ፣ ስንዴ ፣ ገብስ ፣ በቆሎ፣ ማሽላ፣ ማሽላ ወይም ሌላ እህል?	አዎ አይ አላውቅም	
102_07	የቁርስ እህል እንደ በቆሎ፣ ስንዴ፣ ገብስ ወይም ሌላ እህል የተሰራ?	አዎ አይ አላውቅም	
102_07 ኤስ.ቢ	"አዎ" ከሆነ በቁርስ ላይ ስኳር ተጨምሯል?	አዎ አይ አላውቅም	
102_08	ነጭ ድንች፣ ነጭ ያምስ፣ ቡላ፣ ኮኾ ፣ ካሳቫ ወይም ሌላ ከስር የተሰራ ምግብ?	አዎ አይ አላውቅም	

102_09 ZVF	ከውስጥ ቢጫ ወይም ብርቱካንማ የሆነ ዱባ፣ ካሮት፣ ዱባ ወይም ስኪር ድንች አለ?	አዎ አይ አላውቅም	
102_10 ZVF	ጥቁር አረንጓዴ ቅጠላማ አትክልት (የቀድሞ ካሌ፣ ስፒናች ወይም የአማርንት ቅጠሎች)	አዎ አይ አላውቅም	
102_11 ZVF	የበሰለ ማንጎ፣ የበሰለ ፓፓያ ወይስ ሌሎች ቢጫ ወይም ብርቱካንማ ፍራፍሬዎች?	አዎ አይ አላውቅም	
102_12 ZVF	ሌላ ፍሬ አለ? (ለምሳሌ ሙዝ፣ ብርቱካንማ፣ ሐብሐብ፣ አፕል…)	አዎ አይ አላውቅም	
102_13 ZVF	ሌላ ማንኛውም አትክልት? (ለምሳሌ ባቄላ፣ አበባ ጎመን፣ ብሮኮሊ…)	አዎ አይ አላውቅም	
102_14	ጉበት፣ ኩላሊት፣ ልብ ወይም የአካል ሥጋ?	አዎ አይ አላውቅም	
102_15	ማንኛውም ስጋ ወይም ደረቅ ስጋ? (ለምሳሌ ሥጋ፣ በግ፣ ዶሮ…)	አዎ አይ አላውቅም	
102_16	እንቁላል?	አዎ አይ አላውቅም	
102_17	ማንኛውም ትኩስ ወይም የደረቀ ዓሳ ወይም ሼል ዓሳ	አዎ አይ	

		አላውቅም	
102_18	ከባቄላ፣ አተር፣ ምስር ወይም ጥራጥሬ የተሰሩ ማንኛውም ምግቦች	አዎ አይ አላውቅም	
102_19	እንደ ኦቾሎኒ ፣ ሰሊጥ ፣ የሱፍ አበባ ዘሮች ያሉ ማንኛውም ፍሬዎች ወይም ዘሮች	አዎ አይ አላውቅም	
102_20	እንደ አይብ ፣ ሞዛሬላ ወይም የጎጆ ጥብስ ያሉ ማንኛውም የወተት ተዋጽኦዎች	አዎ አይ አላውቅም	
102_21	ማንኛውም ዘይት, ስብ. ወይ ቅቤ	አዎ አይ አላውቅም	
102_22	ወፍራም ነት) ለመጠቀም ዝግጁ ነው ።	አዎ አይ አላውቅም	
102_23	ሌላ ማንኛውም ጠንካራ ወይም ከፊል-ጠንካራ ምግብ (በዝርዝሩ ውስጥ የለም) እሺ ከሆነ----	አዎ አይ አላውቅም	
ክፍል 7- ጤናማ ያልሆነ የምግብ ፍጆታ			
አይ.	**ጥያቄ**	**ኮድ መስጠት ምድብ**	**ስርዓተ ጥለት ዝለል**
103_01 ዩኤፍሲ	ከረሜላ፣ ቸኮሌት እና ሌሎች እንደ ሎሊፖፕ ያሉ የስኳር ጣፋጮች	አዎ አይ አላውቅም	
	ባለፈው አንድ ወር ውስጥ “አዎ” ከሆነ ፍጆታ	በጭራሽ ወይም <አንድ ጊዜ/በወር	

		1 ወር 2-3 / በወር 1 ሳምንት 2/ሳምንት 3-4 / ሳምንት 5-6 / ሳምንት በየቀኑ 2-3 / ቀን 4 ወይም ከዚያ በላይ / ቀን	
103_02 ዩኤፍሲ	የቀዘቀዙ ምግቦች እንደ አይስ ክሬም፣ ጄላቶ፣ ሸርቤት፣ sorbet፣ popsicles ወይም ተመሳሳይ ጣፋጮች?	አዎ አይ አላውቅም	
	ባለፈው አንድ ወር ውስጥ “አዎ” ከሆነ ፍጆታ	በጭራሽ ወይም <አንድ ጊዜ/በወር 1 ወር 2-3 / በወር 1 ሳምንት 2/ሳምንት 3-4 / ሳምንት 5-6 / ሳምንት በየቀኑ 2-3 / ቀን 4 ወይም ከዚያ በላይ / ቀን	

103_03 ዩኤፍሲ	ኬኮች, መጋገሪያዎች, ጣፋጭ ብስኩት እና ሌሎች የተጋገሩ ወይም የተጠበሰ ጣፋጭ ምግቦች	አዎ አይ አላውቅም	
	ባለፈው አንድ ወር ውስጥ “አዎ” ከሆነ ፍጆታ	በጭራሽ ወይም <አንድ ጊዜ/በወር 1 ወር 2-3 / በወር 1 ሳምንት 2/ሳምንት 3-4 / ሳምንት 5-6 / ሳምንት በየቀኑ 2-3 / ቀን 4 ወይም ከዚያ በላይ / ቀን	
103_04 ዩኤፍሲ	ቺፕስ፣ ጥብስ፣ ፖፍ፣ የፈረንሳይ ጥብስ፣ የተጠበሰ ሊጥ፣ ፈጣን ኑድል	አዎ አይ አላውቅም	
	ባለፈው አንድ ወር ውስጥ “አዎ” ከሆነ ፍጆታ	በጭራሽ ወይም <አንድ ጊዜ/በወር 1 ወር 2-3 / በወር 1 ሳምንት 2/ሳምንት	

		3-4 / ሳምንት 5-6 / ሳምንት በየቀኑ 2-3 / ቀን 4 ወይም ከዚያ በላይ / ቀን	
ክፍል 8- ለIYCF መልእክት መጋለጥ			
አይ.	**ጥያቄ**	**ኮድ መስጠት ምድብ**	**ስርዓተ ጥለት ዝለል**
104_01	ባለፉት 6 ወራት ውስጥ ከየትኛውም ምንጭ ለ IYCF መልእክት መጋለጥ አለህ	አዎ አይ	
104_02	“አዎ” ከሆነ ምንጩ ምን ነበር።	የጤና ሰራተኛ ሚዲያ (ቲቪ) የህትመት ሚዲያ (በራሪ ወረቀት፣ ብሮሹር) ማህበራዊ ሚዲያ ጓደኛ, ቤተሰብ ወይም ጎረቤቶች በጎ ፈቃደኞች	
104_03	ምን አይነት መልእክት ደረሰህ?	ስለ ምግብ እጥረት ከመጠን በላይ ስለመመገብ	
104_04	የተመጣጠነ ምግብ እጥረት ካለ ከየትኛው ምንጭ ---	ጡት ማጥባት ቀደም ብሎ መጀመር	

	እና ጥቅጥቅ ባለ ብዙ መልስ	ለ 6 ወራት ልዩ ጡት ማጥባት በ 6 ወራት ውስጥ ተጨማሪ አመጋገብ መጀመር የአመጋገብ ልዩነት የመመገቢያ ድግግሞሽ የንጽህና አጠባበቅ አመጋገብ ምላሽ ሰጪ አመጋገብ እስከ 24 ወራት ድረስ ጡት ማጥባትዎን ይቀጥሉ	
104_05	ከመጠን በላይ የተመጣጠነ ምግብ ካለ ከየትኛው ምንጭ፡- እና ጥቅጥቅ ባለ ብዙ መልስ	የተጨማሪ ምግብን ቀደም ብሎ ማስተዋወቅ ጣፋጭ መጠጥ ፍጆታ ጤናማ ያልሆነ የምግብ ፍጆታ ዜሮ የአትክልት እና የፍራፍሬ ፍጆታ በከፍተኛ ጉልበት እና ደካማ የተመጣጠነ ምግብ ፍጆታ ያለው ለንግድ የተዘጋጀ ምግብ	
ክፍል 9-በ IYCF ላይ የእንክብካቤ ሰጪ እውቀት			

አይ.	ጥያቄ	ኮድ መስጠት ምድብ	ስርዓተ ጥለት ዝለል
105_01	ተጨማሪ ምግብን መጀመር አስፈላጊ ነው	አዎ አይ አላውቅም	
105_02	ተጨማሪ ምግብ በ 6 ወር ወይም በ 180 ቀናት ውስጥ መጀመር አለበት	አዎ አይ አላውቅም	
105_03	ጡት ማጥባት እስከ 2 ዓመት እድሜ ድረስ መቀጠል አለበት	አዎ አይ አላውቅም	
105_04	ለዕድሜ ተስማሚ የሆነ የአመጋገብ ልዩነት እና የምግብ መመገብ ድግግሞሽ አስፈላጊ ነው	አዎ አይ አላውቅም	
105_05	ከ 24 ወር በታች ለሆኑ ህጻናት ጣፋጭ መጠጥ መጠጣት መገደብ አለበት	አዎ አይ አላውቅም	
105_06	ከ 24 ወር በታች ለሆኑ ህጻናት የተለያዩ ፍራፍሬዎችን እና አትክልቶችን መጠቀም አስፈላጊ ነው	አዎ አይ አላውቅም	
105_07	እንደ Candice፣ቸኮሌት፣ኬክ፣አይስክሬም ያሉ ጤናማ ያልሆኑ ምግቦች እድሜያቸው ከ24 ወር በታች ለሆኑ ህጻናት መገደብ አለበት።	አዎ አይ አላውቅም	
ክፍል 10-የአንትሮፖሜትሪክ መረጃ			

አይ	ልኬት	ውጤት	
1	ክብደት		
2	ርዝመት		
3	MUAC		