

ADDIS ABABA UNIVERSITY
COLLEGE OF NATURAL AND COMPUTATIONAL SCIENCES
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**Influence of the school food environments on the knowledge, attitude, and
practice of adolescents in urban Ethiopia**

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Declaration

I, the under signed, declare that this is original work and has never been presented in this or other universities as well as research center previously and all the source of material used for this master thesis study have been fully acknowledged.

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Abstract

Food environments, which are integral components of food systems, have been changing dramatically due to globalization. Adolescents in urban areas of Ethiopia are facing an environment that is not conducive to the consumption of nutritious foods. Assessing the influence of the school food environment on the knowledge, attitude and practice of adolescents was the general objective of this study. A total of 233 adolescents between the age of 14-19 years from six private and six government schools which shared the same food environment were interviewed about their socio-demographic characteristics, diets and height and weight (anthropometric measurement) were measured. Food environment assessment were also assessed within a radius of 0.5 km measured from the school entrance. To calculate anthropometric indicators of adolescents, WHO Anthro plus software were used and for statistical analysis, SPSS version 20 were used. During the food environment assessment, 2611 different food outlets and 1474 food and drink advertisings were mapped. To assess the relationship between the nutritional status (BMI-for age) and diet (diet diversity score) or food choice (ultra-processed foods) of adolescents, One-way ANOVA were used to analyze and no relationships were found. In classifying the diets of adolescents by FAO ten food groups and level of processing the following result were found; all the adolescents ate grains, white roots and tubers and plantains, 98.7% other vegetables, 79.8% pulses, 23.2% dark green leafy vegetables, 23.2% other Vit A rich fruit and vegetables, 14.2 % other fruits, 12.9% meat, fish and poultry and 12.4% dairy from FAO ten food groups and from foods which was classified by level of processing (NOVA classification), they all ate unprocessed or minimally processed, processed culinary ingredients and processed foods while 31.8% of the adolescents ate ultra- processed foods (NOVA 4). Testing the correlation between nutrition knowledge, attitude and practice between private and government school students showed no significant difference. A significant difference was found between perceived and objective food environment. This study found that urban food environments are dense and composed of different types of food outlets. This density does not seem to translate into a consumption of diverse foods by the adolescents of this study. Perceptions of adolescent of their food environment do not necessarily reflect the reality. Further studies, particularly applying qualitative methods could help explain these perceptions and interactions with the food environment.

List of abbreviations

BAZ	BMI for age z- score
BMI	Body Mass Index
CSA	Central statistical agency
DHS	Demographic and health survey
EDHS	Ethiopian demographic and health survey
FAO	Food and agriculture organization
GDP	Gross Domestic Product
HICs	High income countries
KAP	Knowledge Attitude Practice
LMIC	Low- middle income countries
NCDs	Non-communicable disease
NEMS-S	Nutrition Environment Measures Survey in Stores
UNICEF	United National Children's Fund
WHO	World health organization

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CHAPTER ONE

1. Introduction

1.1 Background

Globalization is fast affecting the food system. Modern food technologies have increased the range of foods available, shortened food preparation time, and improved the shelf life and the safety of products. At the same time, traditional food production systems, where foods are generally processed at household level, are rapidly being ousted by systems where processed foods are largely from commercial entities. The over-reliance on processed foods, especially energy-dense food high in sugar, fat and salt, is gradually displacing home-prepared meals and the consumption of fresh fruit and vegetables in typical diets. The rising trends of overweight and obesity prevalence globally, and especially in countries undergoing economic and nutritional transition are reported to be linked to the increased production and consumption of high-energy-dense processed foods and beverages that are high in fat and sugar (FAO. 2015).

Food environments, which are an integral component of food systems, have also been changing dramatically due to globalization. The complex relationships among nutrition food environments, diet, and health outcomes have been conceptualized and widely studied (Glanz *et al.*, 2005; Story *et al.*, 2008 and Caspi *et al.*, 2012). There has been a substantial increase in research to better document, measure, and explain these relationships using a range of methods, including observations, surveys, and geographic analyses (National Collaborative on Childhood Obesity Research Measures Registry. 2011; National Cancer Institute. 2005 and National Cancer Institute. 2000). Objective measures of the nutrition environment are useful for assessing the availability of healthy and unhealthy foods, which is believed to be an important influence on food choice and dietary intake (Glanz 2009). Several well-designed studies have shown that nutrition environments and proximity of healthy foods are correlated with food intake (Laraia *et al.*, 2004 and Moore 2008) and BMI (Morland *et al.*, 2002 and Powell *et al.*, 2007). Less studied are people's perceptions of their nutrition environment, which are likely as important to the relationship between nutrition environments and obesity (Cummins *et al.*, 2014).

Studies have shown that the health and behavior of individuals are influenced by the physical and social environment, they live in. Many studies have focused on the characteristics of the neighborhood environment as determinants of socio-economic differences in individuals' diet and physical activity. (Winkler *et al.*, 2006 and Timperio *et al.*, 2004) The prevalence rates of obesity and NCD associated with diet have been rising at an accelerated pace. This epidemiological picture is marked by a contemporary urban environment that leads to an increased intake of energy, (Claro *et al.*, 2007) while physical activity is limited due to, among other factors, the environmental characteristics of neighborhoods that often have no place (bike lanes, parks and sports courts) where these activities can be performed. (Moore *et al.*,2008) processed foods have a high energy density, an excess of fats (especially saturated fats), sugar and additives (colorants, preservatives) and lack or have a shortage of fibers and micronutrients. (WHO 2003). In addition to the actions of parents to provide food for their children, the school environment is an especially suitable space for the development of actions to improve the health condition and nutritional status of children (Schmitz *et al.*,2008).

In Ethiopia, food environments are changing with increasing urbanization and fewer people working in the agricultural sector, reducing individual energy requirements while increasing demands for processed and convenience foods, while fresh markets are disappearing. This could lead to processed foods replacing traditional diets (Monteiro *et al.*, 2010). Furthermore, the government intervenes in food retail through price controls and subsidies for specific foods such as sugar and palm oil. At the same time prices of nutrient-rich foods, like dairy, eggs and meat, have been increasing over the last ten years, while sugar and oil prices have decreased (Assefa *et al.*, 2016; Bachewe *et al.*, 2017). Urban populations in Ethiopia spend more of their income on non-food items a higher share of their budget on animal products, oils and fats as well as fruits and vegetables (Worku *et al.*,2017).

Adolescents in urban areas of Ethiopia are therefore faced with an environment that is not conducive to the consumption of nutritional foods. Considering that malnutrition affects a large portion of the adolescent population in Ethiopia, little research has been conducted on influencing factors of adolescents' diets, particularly in urban areas. Overweight and obesity in Ethiopia is a concern in urban populations of higher wealth quintiles (CSA 2016), but trends from other developing countries show that this could quickly shift to also poorer people (Monteiro *et al.*,2000).

Therefore, in our study we assessed how the school food environment influence the knowledge, attitude and practice of adolescent boys and girls between the ages of 14-19 years old in selected private and government schools of Addis Ababa.

1.2 Statement of the problem

Adolescents' food choices seem to be based on sensory quality, availability, convenience, and could be influenced by school environment and family preference without considering the health consequence and nutritional quality of it. In Ethiopia, there is an increased consumption of processed foods as well as an increase in diet related diseases. Studies from other countries are increasingly showing that consumption of highly processed foods are linked with poorer diets, increased overweight, obesity and related chronic diseases (Monteiro *et al.*,1995; Cornwell *et al.*, 2018). To our knowledge, there was no study conducted on the influence of school food environments on the knowledge, attitude, and practice of adolescents in Ethiopia.

2 Objectives

General objective

- To assess the influencing factors in the school food environments on the knowledge, attitude, and practice (KAP) of adolescents.

Specific objectives

- ✓ Characterize the diets of adolescents in urban areas and classify diets by FAO food groups and levels of processing;
- ✓ Investigate relationships between the nutritional status and diets or food choices of adolescents;
- ✓ Assess the availability of different foods in the school food environment;
- ✓ To assess potential differences in KAP of students in public and private schools sharing the same food environment and
- ✓ Assess potential differences between perceived and objective food environment.

CHAPTER TWO

3. Literature review

3.1 Global burden of malnutrition

The double burden of malnutrition is the coexistence of under nutrition (including macronutrient and micronutrient deficiencies) and over nutrition in the same population across the life-course (Shrimpton & Rokx 2012). Under nutrition is the result of insufficient intake, poor absorption, and/or poor biological use of the nutrients. Over nutrition is the result of excess or imbalanced nutrient intakes, which can result in impaired body functions as well as overweight and/or obesity. There is a complex interplay between early under nutrition (in mothers before and during pregnancy, and in early childhood) and later over nutrition that exacerbates the risk of non-communicable diseases, the prevalence of which is rising rapidly in low- and middle-income countries. (Darnton-Hill *et al.*, 2004; James *et al.*, 2000).

Malnutrition affects all countries and one third of people worldwide. Almost 1 billion people continue to be undernourished, with an insufficient intake of calories, protein, and micronutrients (McGuire 2015) and currently about 2 billion people are overweight. Nearly half of all countries face multiple serious burdens of malnutrition, such as poor child growth, micronutrient deficiency, and adult overweight. The cost of treating NCDs, of which nutrition-related NCDs are the major share, is likely to be US\$ 30 trillion globally over the next 20 years (Bloom 2011). Of the top 20 determinants of global deaths, 14 are related to diet and nutrition. Obesity now has the third highest global social burden (US\$ 2.0 trillion or 2.8% of GDP) (Dobbs *et al.*, 2014).

Globally, the prevalence of stunting and wasting in preschool children in LMICs has declined during the past two to three decades, whereas rates of overweight/obesity have been rising at a faster rate than the declines in the rates of stunting and wasting (De Onis *et al.*, 2010; Stevens *et al.*, 2012; Ng *et al.*, 2014). Using nationally representative data for 141 developing countries for the period 1985–2011 from the World Health Organization and other sources, showed that in 2011, the average prevalence of moderate and severe stunting (height-for-age < -2 standard deviations from the median) was 29.9%. The number of children with moderate and severe stunting was highest in South Asia, followed by sub-Saharan Africa and South-East Asia, and much lower in Latin America, the Middle East, and North Africa. The differences in the prevalence of stunting

among preschool children in LMICs were greater between income groups than between urban and rural areas of residence (Black *et al.*, 2013).

3.2 Adolescent nutrition globally

According to the World Health Organization adolescence is defined as 10-19 years of age (WHO 2001). Adolescents represent approximately 20 % of the world's population and most (~84 %) are living in developing or emerging countries (Ghai *et al.*,2006). In Ethiopia, 20-26 % of the population was represented by adolescents (UNICEF 2012). Adolescence is a period characterized by important biological, physical, psychological and social changes (Campagna & Souza 2006) and an active growth phase (Larson 2002). Throughout this period, risk of nutrition inadequacies and other health issues are of concern due to rapid growth in stature, muscle mass and fat mass. During the peak of the adolescent growth spurt, some dietary requirements are also as high as or higher than in other age groups (Ogechi *et al.*, 2007) Adequate nutrition is essential as adolescents gain up to 50 % of their adult weight, more than 20 % of their adult height, and 50 % of their adult skeletal mass during these years.(Shahid *et al.*,2009)

Overweight and obesity in adolescents have increased substantially in recent decades and affect a third of the adolescent population in some developed countries.(Baker & Friel 2014) Obesity early in life is considered to be a risk factor for death from cardiovascular disease and from all causes in adulthood, (Monteiro *et al.*,2010; Moubarac *et al.*,2013; Hawkes and Murphy 2010) such obesity may limit the increase in life expectancy that otherwise would be achieved. (Friel & Ford 2015 and Hawkes *et al.*,2012) Some studies suggest that a body-mass index that falls within the upper-normal range in adolescence is associated with an increased risk of death from cardiovascular causes, although a determination of the BMI threshold that is associated with such an increased risk remains uncertain (Monteiro *et al.*,2010; Moubarac *et al.*,2013; and WHO 2010).

Poor nutrition status among adolescents is an important determinant of poor health outcomes. Under nutrition has far reaching consequences, especially in girls. If their nutritional needs are not met, they have high risk of mortality as a result of pregnancy and childbirth and they are more likely to give birth to low birth weight infants (Naeya 1981; Harrison *et al.*, 1985 and Brabin & Brabin 1992). Furthermore, in all adolescents, short stature resulting from chronic under nutrition is associated with reduced lean body mass and deficiencies in muscular strength and working capacity (Deshmukh *et al.*, 2006). Thus, one approach to break the intergenerational cycle of malnutrition and poor health is to improve the nutrition of adolescents; otherwise, the vicious cycle will continue.

3.3 Adolescent nutrition in Ethiopia

Malnutrition affects a large portion of the adolescent and youth population in Ethiopia. The EDHS 2011 revealed that the proportion of non-pregnant adolescent girls aged 15-19 years with acute malnutrition/thinness (BMI <18.5) was 36% and boys with the same age was 66%. (Tarekegn, *et al.*, 2014). Adolescents (age 15-19) are more likely to be thin (36 percent) than older women (21-29% in 20-49-years old). At the same time, 2.4% of the girls and 0.4% of the boys in this age group were reported to be overweight or obese. Younger women are less likely than older women to be overweight or obese. For example, 2 percent of women age 15-19 are overweight or obese compared with 9 percent of women age 40-49.9 (see Fig. 1 below) overweight and obesity in Ethiopia is currently still mostly a concern in urban populations of higher income (CSA 2016).

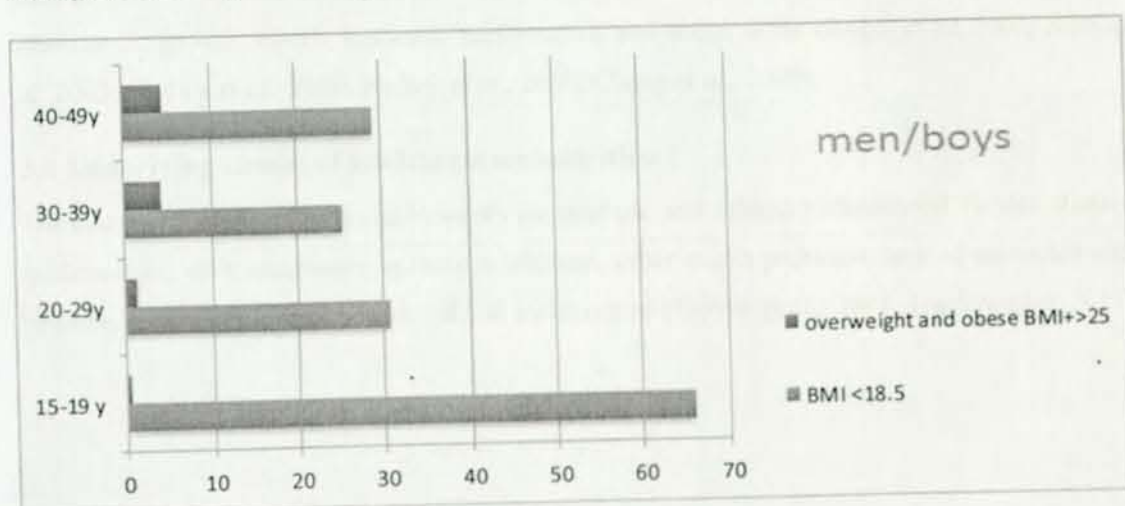


Figure 1: Nutritional status of men/boys in Ethiopia (DHS, CSA 2012)

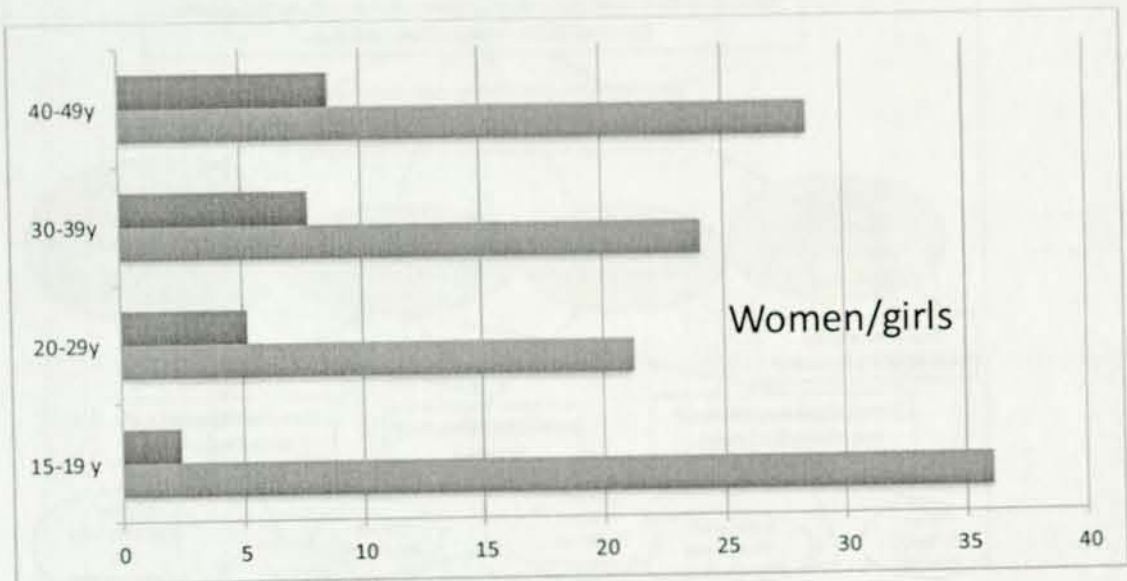


Figure 2: Nutritional status of women/girls in Ethiopia (DHS, CSA 2012)

A study in northern Ethiopia reported high levels of stunting (26.5 %) and thinness (58.3 %) (Mulugeta *et al.*, 2009). On the other hand, increased prevalence (8.5 %) of overweight/obesity was reported among adolescents in urban areas (Gebreyohannes *et al.*, 2014). This double-burden of malnutrition in children and adolescents adversely affects their intellectual development, school attendance, growth, health, academic performance and social skills (Rogol *et al.*, 2002; Biro *et al.*, 2003; Hadley *et al.*, 2008; Berkey *et al.*, 2009; Cheng *et al.*, 2009).

3.4 Underlying causes of adolescent malnutrition

The causes of malnutrition in adolescents are multiple and related to livelihood factors, dietary inadequacies, early pregnancy, infectious diseases, other health problems, lack of sanitation and hygiene, education, as well as cultural and social norms (Delisle *et al.*, 2001; Truebswasser 2017)

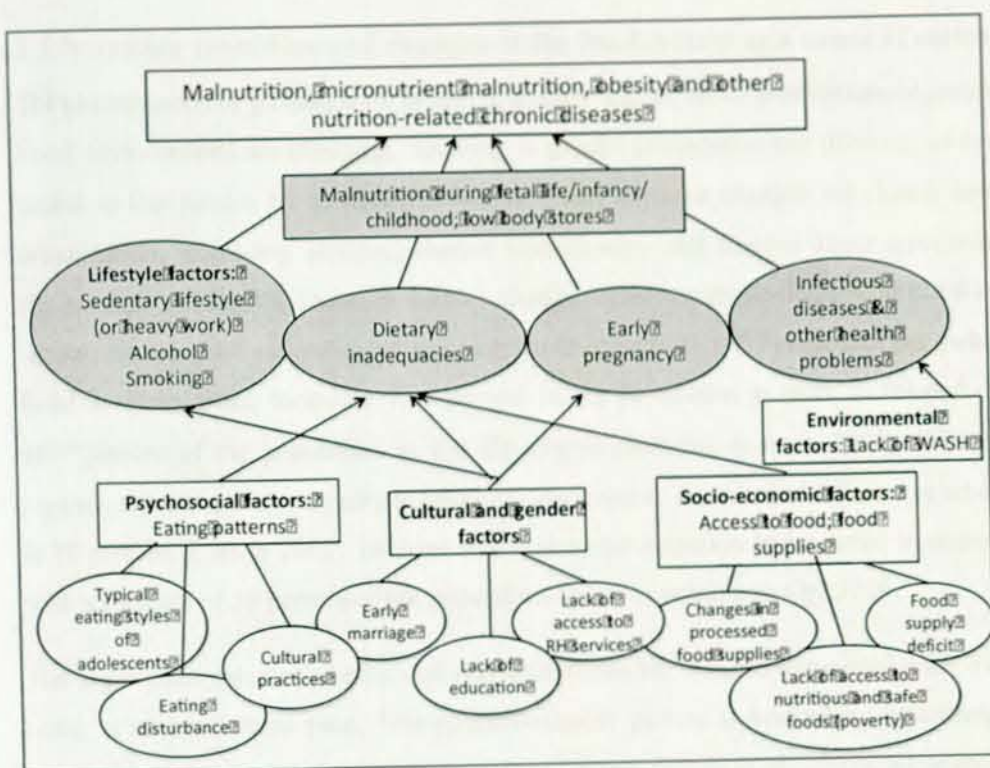


Figure 3: Framework of causes of malnutrition in adolescence (Delisle *et al.*, 2001; Truebswasser 2017)

Studies from Ethiopia found many different factors associated with malnutrition in adolescents. However most frequently found associations with thinness were dietary factors such as meal frequency, meal skipping as well as poor dietary diversity (Mohammed & Tefera 2015; Roba *et al.*, 2015; Tegegne *et al.*, 2016; Wolde *et al.* 2014). Factors most frequently mentioned in association with stunting were lack of hand washing, latrines as well as poor source of drinking water (Alealign *et al.*, 2015; Awel *et al.*, 2016; Mulugeta *et al.*, 2009). Living in rural areas, poor education of parents, food insecurity, big family size as well as poverty was associated with both stunting and thinness (Assefa *et al.*, 2013, Awel *et al.*, 2016, Damie *et al.*, 2015, Melaku *et al.*, 2015, Tegegne *et al.*, 2016, Teji *et al.*, 2016, Wassie *et al.*, 2015). With regard to overweight and obesity, studies found associations with physical activity, wealth, consumption frequency of meat and fast food as well as time watching TV or using a computer (Gali *et al.*, 2017, Hassen *et al.*, 2017, Teshome *et al.*, 2013, Wakayo *et al.*, 2016).

3.5 Nutrition transition and changes in the food system as a cause of malnutrition

The phenomenon of globalization is having a major impact on food environment around the world. Food environments are changing, resulting in greater availability and diversity of food, although access to this food is by no means universal. Many of these changes are closely associated with urbanization, increasing incomes, market liberalization and foreign direct investment. Probably the greatest influencing factor in dietary change and subsequent changes in nutritional status is urbanization and lifestyle changes associated with it. In 2001, 47.7 percent of the global population lived in urban areas, including 75.5 percent of the population in more developed countries and 40.9 percent of the population in less developed countries (Larson 2002). Within developing regions, there is a wide disparity in terms of urbanization. In Asia and Africa, the urban population is 38 percent (Larson 2002). In these two regions urbanization is projected to increase the most, with a forecast of 50 percent of the population living in urban areas by 2020.

The prevalence rates of obesity and non-communicable disease associated with diet have been rising at an accelerated pace. This epidemiological picture is marked by a contemporary urban environment that leads to an increased intake of energy (Claro *et al.*, 2007), while physical activity is limited due to, among other factors, the environmental characteristics of neighborhoods that often have no place (bike lanes, parks and sports courts) where these activities can be performed (Moore 2008). The phenomenon has been defined as the nutrition transition. Over the past 15 years, there has been increasing evidence that the structure of dietary intakes and the prevalence of obesity around the developing world have been changing at an increasingly rapid pace (Popkin 2002). Modern societies seem to be converging on a diet high in saturated fats, sugar, and refined foods but low in fiber often termed the 'Western diet' and on lifestyles characterized by lower levels of activity. These changes are reflected in nutritional outcomes, such as changes in average stature, body composition, and morbidity (Popkin & P Gordon-Larsen 2004).

The nutrition transition has been described in different stages (see Fig 3 below). In stage 3, famine begins to recede as income rises. In Stage 4, changes in diet and activity pattern lead to the emergence of new disease problems and increased disability. In Stage 5, behavioral change begins to reverse the negative tendencies. The changes are all driven by a range of factors, including urbanization, economic growth, technical change, and culture.

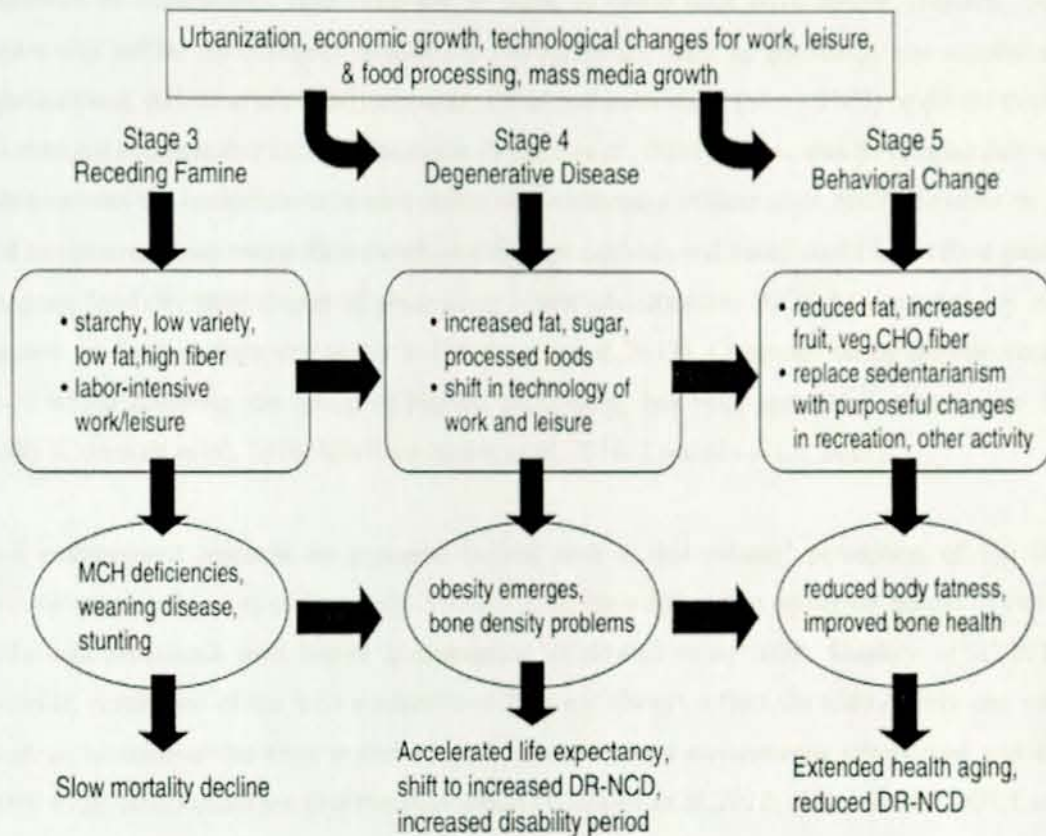


Figure 4: Stages of the nutrition transition. (Popkin & P Gordon-Larsen 2004)

3.6 Impact of food environments on nutrition

Initial studies on food environment looked at the availability and physical access in terms of location and density of supermarkets. These studies found associations between access to specific food outlets (such as supermarkets) and diet quality as well as obesity (Morland *et al.*, 2002; Inagami *et al.*, 2006; Laraia *et al.*, 2004) as well as with poorer diet quality. (Moore *et al.*, 2009; Fraser and Edwards 2010; Sturm & Datar 2008; Davis and Carpenter 2009, Jilcott *et al.*, 2011) The associations found in the studies particularly on supermarkets mostly in North American settings have not been supported by studies in European or Australian settings (Giskes *et al.*, 2009, Cummins 2005, Pearce *et al.*, 2008).

A number of frameworks have been put in place to guide food environment research. Such frameworks define the different influencing environments, such as consumer, community and organizational; (Glanz *et al.*, 2005) physical, social and individual; (Story 2008) or divide them into external and personal food environment (Turner *et al.*, 2018). Glanz also developed different tools to assess the healthfulness within stores and restaurants (Glanz *et al.*, 2007). Studies on the food environment also assess diets based on different methods and based on different food groups. Grouping foods by their degree of processing, a new classification (NOVA) is a relatively new approach in food environment research (Monteiro *et al.*, 2013). Consumption of ultra-processed foods, which comprise the group of highest processing, has been associated with poorer diet quality (Cornwell *et al.*, 2018; Martinez Steele *et al.*, 2016; Louzada *et al.*, 2015).

Food environment research on personal factors such as individuals' perception of the food environment is only in its early stages. A few studies have found that perceived access of certain foods was associated with higher consumption (Caldwell *et al.*, 2009; Sharkey *et al.*, 2010). However, perception of the food environment does not always reflect the reality: only one study found an association between perceived and objective food environment (Freedman and Bell 2009), while others could not find this association (Williams *et al.*, 2012; Giskes *et al.*, 2007; Lucan *et al.*, 2014).

For adolescents, the personal food environment might be particularly relevant given their limited decision-making power. Systematic reviews of environmental factors and adolescents' dietary behaviors found the most consistent associations with parental influences such as intake and education (van der Horst *et al.*, 2007; Madjdian *et al.*, 2018) or peer influences (Stok *et al.*, 2016). However, when adolescents are exposed to fast food close to their school environment, they consume fewer fruits and vegetables, more soda and are more likely to be obese (Davis & Carpenter 2009). With regard to adolescents' movement, adolescents' exposure to unhealthy food environments could be mischaracterized by traditional methods that only look at the residential neighborhoods since adolescent travel to different areas a lot (Shearer *et al.*, 2015) and they also seem to consume a lot of their energy outside of the house (Nielsen *et al.*, 2002). Adolescents' food choices are also sensitive to prices of fast food, (Beydoun *et al.*, 2010) but less so of sugar-sweetened beverage prices (Muhammad *et al.*, 2009).

3.7 Food environments in Ethiopia

Ethiopia has quite a unique situation in terms of retail development. Given that foreign direct investments are not allowed in Ethiopia, there are no multinational retail chains yet in the country. Furthermore, the government intervenes in food retail through price controls and subsidies for specific foods such as sugar and palm oil (Assefa *et al.*, 2016). A recent study found increasing prices of nutrient-rich food groups, like dairy, eggs and meat, have been increasing over the last ten years, while sugar and oil prices have decreased (Bachewe *et al.*, 2017).

Ethiopia has also one of the fastest growing economies in East Africa (World Bank 2018), with rapidly growing urbanization: In 2014, 19 % of Ethiopians were living in urban areas (UN 2014) and it is estimated that the urban population will triple by 2034 (Chignell & Laituri 2016). Urban populations in Ethiopia spend more of their income on non-food items a higher share of their budget on animal products, oils and fats as well as fruits and vegetables (Muhammad *et al.*, 2017), which is a trend that has been observed previously (Penney 2014). While this implies an improvement in diet diversity, the household fruit and vegetables consumption are however still below the recommended amount (Ruel & Marie 2005). Furthermore, this relatively high diet diversity in urban areas could be due to processed foods that could turn into a problem of eating more of different types of foods instead of improving the quality (Charreire *et al.*, 2010).

CHAPTER THREE

4. Methodology

Study area

The study was conducted in twelve selected secondary and preparatory public and private schools in Addis Ababa. The school selection was conducted in collaboration with Addis Ababa Bureau of Education and sub-city administration. The schools were selected based on their distance. The public and private school are part of the same neighborhood, less than 0.5km apart to ensure that students from both schools share the same food environment.



Figure 5: maps of selected private and government schools of Addis Ababa

Sample size

A total of 233 adolescent boys and girls was randomly selected using Excel to avoid bias from 12 private and government secondary and preparatory schools in Addis Ababa between the ages of 14-19 years. Sample size calculation was made using G-power software. Since the objective of the study is to detect a difference between public and private school children on various variables, for which prevalence data does not exist, the sample size was calculated to detect a difference of a medium effect size (Cohen's d ; 0.5 SD) between two groups with an α of 0.05 and a power of 0.95.

Inclusion criteria: adolescents between the age of 14-19 and who are willing (both their parents and the adolescents) to participate in the study

Ethical Approval for the Study

Study protocols and consent forms was sent to the internal review board of Addis Ababa University to apply for Ethical approval for the study. And Ethical approval was obtained from Addis Ababa University Ethical Board (CNS-IRB) in its meeting held on 25/11/2018 Minute No. IRB/035/2018. And consent was obtained from Addis Ababa University center for food science and nutrition and administrators of the selected schools prior to start the data collection. Parents or legal caretakers of the adolescents Was signed a written informed consent form to allow adolescents to participate in the study. In addition, adolescents also signed an informed assent letter. We didn't start the study until we get the Ethical approval from IRB

Data collection

In twelve selected secondary and preparatory public and private schools in Addis Ababa, a total of 233 adolescents were interviewed to collect information on demographics, socio-economic status, dietary intake, knowledge and perceptions of their food environment. Anthropometric measures were also taken. In parallel, school food environments within a radius of 0.5km was assessed for availability of different food outlets and advertising of foods and drinks. All the tools developed for this study have been tested as part of a pilot study between October and December 2018.

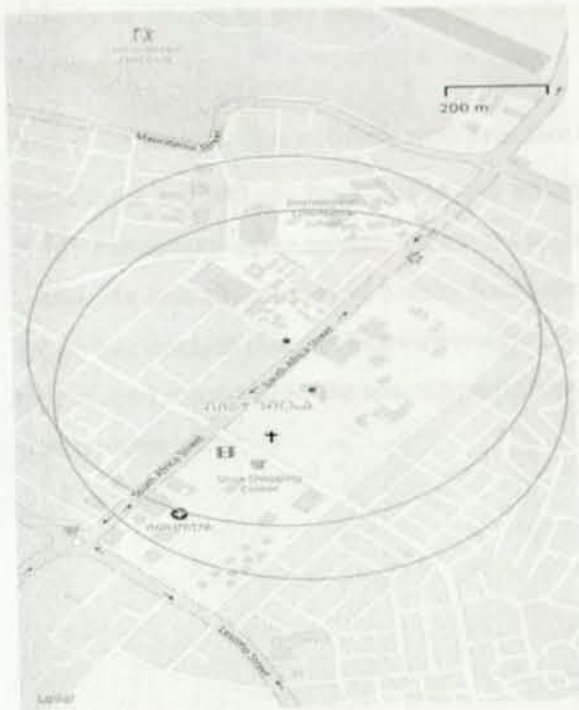


Figure 6: An example of two schools (private and government) which shared the same food environment

Anthropometric assessment

Weight and height of adolescents was measured using standardized techniques and calibrated equipment in duplicate or triplicate by the trained enumerators in order to calculate different anthropometric indices: (height-for-age, BMI-for-age) in order to identify different forms of malnutrition (underweight and overweight). Validated wall height measurements using stadiometer type SECA 213 were performed on standing positions without shoes, and recorded to the nearest 0.1 cm (Gordon 2013). Electronic weighing scale type SECA 872 with a weighing capacity of 10-140 kg was used to assess weight of all adolescents and results were measured to the nearest 0.1 kg.

Nutrition knowledge, attitude and practice (KAP)

Knowledge and attitude towards diet and processed foods in particular was assessed (Fautsch 2014). Perceptions of the food environment was assessed with a tool adapted from Glanz including availability and affordability of healthy foods and food promotion (Green & Glanz 2015) Dietary intake was assessed using an interviewer-administered, 24-h recall, using this method, the specific type of food consumed by the selected participants during the previous full day prior to the survey was captured.

Food environment assessment

The objective food environment was assessed using existing methods such as INFORMAS (food retail module and promotion –outdoor advertising protocol) and NEMS-S (Nutrition Environment Measures Survey in Stores) and adapting them to the Ethiopian setting. (Glanz et al. 2007 and L'Abbe et al.2013) School food environments was defined as the area covering a radius of 0.5 km around the school, measured from the school entrance. In this radius, food outlets were geocoded and categorized in the following groups: modern retail shops; regular shops; kebele shops; consumer cooperatives; fruit and vegetable stalls; local markets; and informal street sellers. Within the food outlets availability of healthy (fruit and vegetables) as well as processed foods was assessed. Processed foods were characterized based on their level of processing, using the NOVA classification (Monteiro et al. 2018).

The environment within the school was also assessed in terms of availability of healthy (fruit and vegetables) and processed foods and food and drink advertisings (healthy and processed). Additionally, the head of the school were interviewed about his/her knowledge and perception of nutrition, education curriculum, teachers training on nutrition, physical activity program /services of their school, the school Collaboration with private sectors and potential guidelines or policies for food services at the school.

Data collection plan

A team of enumerators was selected and trained on basic interviewing skills, 24 hr. recall, anthropometry and food environment assessment methods. The data collection tools developed for the above –mentioned pilot was adapted and tools for the 24-hr. recall was developed, the following steps were part the data collection:

- Developing and/or adapting data collection tools
- Selection of twelve secondary and preparatory schools in collaboration with Addis Ababa Bureau of Education, with two school per sub city which was found in the same food environment
- Random selection of students was done with lists of all students attending the school
- Selection of six enumerators with prior experience in conducting nutrition service
- Training of the enumerators on basic interviewing skills, 24 hr. recall, anthropometry and food environment assessment methods
- Data collection: student interview. After interviewing the students, the enumerators were conduct the food environment assessment.

Statistical data analysis

This study produced quantitative data on adolescents' nutritional status, diets and qualitative data on their perceptions of the food environment. Statistical analysis included descriptive analysis; frequency, mean, standard deviation and prisms chi square test as well as one-way ANOVA were used. SPSS version 20 was used to conduct the statistical analysis and WHO anthro plus to assess anthropometric indicators of adolescents. Z-score cutoffs were calculated with WHO Anthro Plus software to define malnutrition according to anthropometric indices.

Table 1. Socio-demographic characteristics of adolescents

Socio-demographic variable	Mean (SD) Percentage
Gender	
Male	
Female	
Level	
Grade 7	
Grade 8	
Grade 9	
Grade 10	
Grade 11	
Grade 12	
Age	
13-14 years	
15-16 years	
17-18 years	
19-20 years	

CHAPTER FOUR

5. RESULTS AND DISCUSSION

5.1 Results

At the beginning of the data collection, a total of 240 adolescents were selected for the interview but during the analysis seven adolescents were excluded as a result of exclusion criteria (adolescents >19 years old) so adolescents between the age of (14-19) were only considered in the result. During the interview adolescents were asked and assessed about their socio demographic characteristics like their gender; 58.8% were females and 41.2% were male, Religion; 71.7% of the adolescents were Christian orthodox followers, 13.3% Muslims and 13.3% protestants and the remaining follow other religions. The table below shows the socio-demographic characteristics of 233 adolescents from six private and six government schools from six clusters.

Table 1: Socio-demographic characteristics of adolescents

Socio demographic info	Mean ± SD or Percentage
Gender Female	58.8
Male	41.2
Grade	
Grade 9	24
Grade 10	26.6
Grade 11	19.3
Grade 12	29.2
Age	17.35±1.13
Religion	
Christian orthodox	71.7
Muslim	13.3
Protestant	13.3
Other	0.9

The nutritional status (BMI and BMI-for age z-score) of adolescents were also assessed. The following table and figure shows the nutritional status of private and government school adolescent between the ages of (14-19)

Table 2: Nutritional status of adolescents between the ages of (14-19)

Nutritional status	Mean \pmSD
BMI (Kg/m ²)	19.75 \pm 3.31
BFA (z-score)	0.63 \pm 1.14

Table 3: Percentage of students with underweight, normal weight and overweight

Nutritional status categories	Percentage
Underweight	12.0
Normal weight	79.4
Overweight	8.6

¹ Underweight when BFA z-score is ≤ -2 ; Normal weight when WFL z-score is between -2 and 1; Overweight when WFL z-score is ≥ 1 (WHO 2007)

In order to characterize the diets of adolescents and classify by the FAO ten food groups and level of processing (NOVA classification) adolescents were asked what they eat for the last 24 hrs. Which was qualitative 24 hr. dietary recall. All of the adolescents ate grains, white roots & tubers from FAO food groups and also all of them ate NOVA 1(unprocessed foods), NOVA2 (processed culinary) and NOVA3 (processed foods) and only 31.8% of the adolescent ate NOVA 4 (ultra-processed) foods. The table and chart below show the qualitative 24 hr. dietary recall results of adolescents.

Table 4: Qualitative 24 hr. dietary recall

Dietary intake	Percentage
Yesterday special	11.2
Change appetite	
Decrease	9.9
Increase	3.0
Don't change	10.3
Intake unusual	6.4
Diet diversity score	3.81

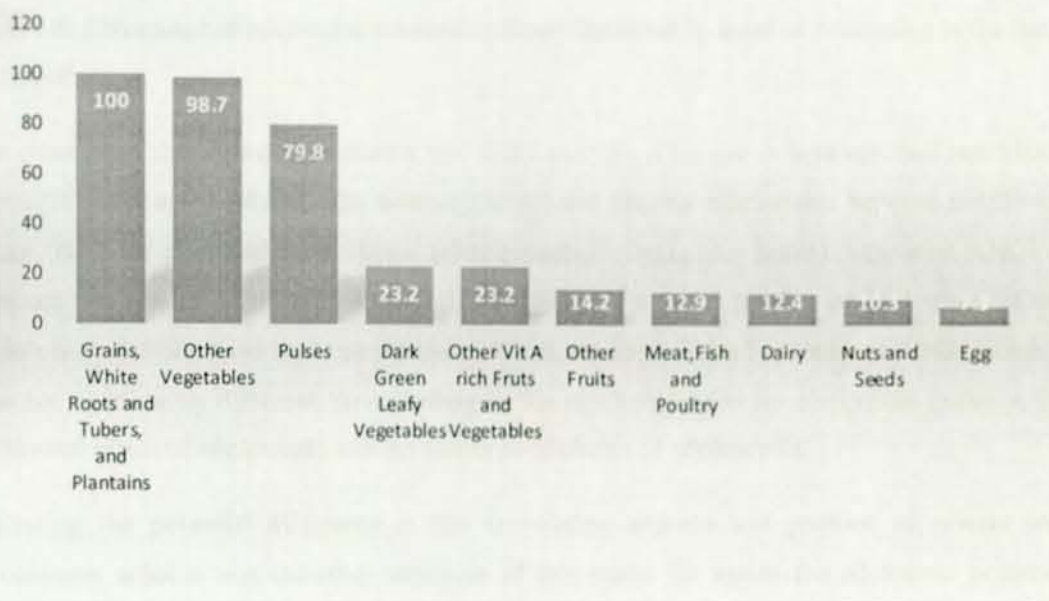


Figure 7: Percentage of adolescents consuming different food groups from qualitative 24hr dietary recall presented as categories of the ten MDD-W food groups

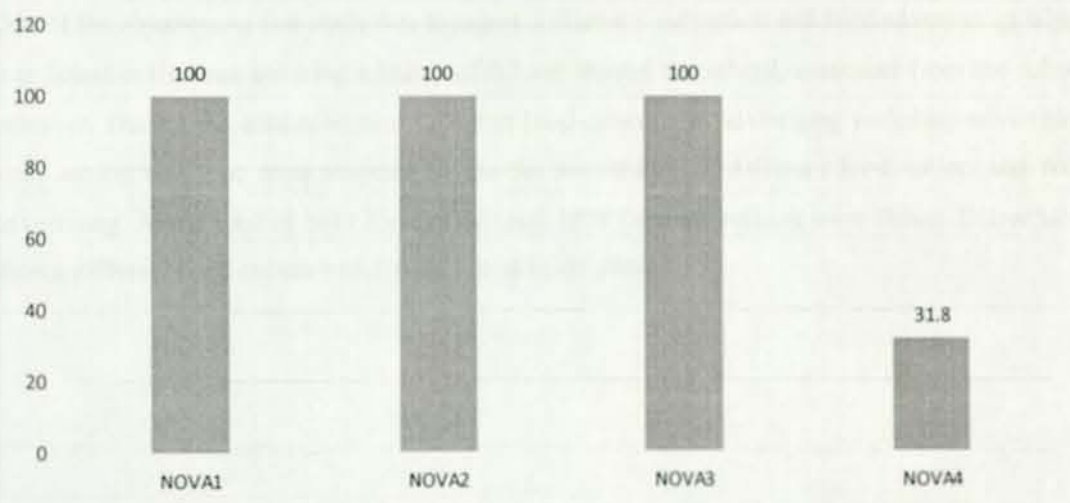


Figure 8: Percentage of adolescent consuming foods classified by level of processing in the last 24 hours²

The other issue that we assessed during this study was; the relationship between their nutritional status (BMI-for age) and diet (diet diversity score) and also the relationship between nutritional status (BMI-for age) and food choice (ultra-processed foods like sodas). One-way ANOVA between two groups (nutritional status and diet diversity score is p-value of 0.53 which is not significantly different and between nutritional status and food choice is p-value of 0.088) which is also not significantly different. So according to this result there was no relationship between the nutritional status of adolescents and the diet or food choice of adolescents.

Assessing the potential difference in the knowledge, attitude and practice of private and government schools was the other objective of this study. To assess the adolescent potential difference of knowledge, attitude and practice, knowledge related questions were asked and the knowledge score was calculated. The Pearson chi square result is 0.311 which indicates that knowledge between the two types of schools is not significantly different.

One of the objective of this study was to assess different food outlets and food advertisings which was found in the area covering a radius of 0.5 km around the school, measured from the school entrance. During the data collection different food outlets and advertising including advertising size, setting and type were assessed to see the availability of different food outlets and food advertising. And a total of 2611 food outlets and 1474 food advertising were found. Below table shows different food outlets which were found in six cluster.

² NOVA1= unprocessed or minimally processed food, NOVA2= processed culinary ingredients, NOVA3= processed foods and NOVA4= ultra-processed foods

Table 5: Different food outlet categories in six clusters.

Cluster	Food outlet category					
	Supermarket	Bakery	Restaurant	FV stall	Open market	Street food
Arada	9	8	78	34	5	50
Bole	3	5	27	7	3	0
Kality	4	23	86	156	72	16
Kirkos	0	5	28	8	0	3
Kolfe	4	20	34	23	0	39
Laphto	9	1	18	4	0	4
Total	29	62	271	232	80	112

Food advertisings were found in different settings like in food outlets, entire shop (an advertising which is painted on the entire shop), on bus stops and also other settings were found. There were also different types of advertising from the largest billboard to the smallest poster. This advertising was found in three different sizes i.e. small, medium and large size.

Table 6: Food advertising setting in six clusters.

Cluster	Food advertising setting					
	Food outlet	Other outlets	Building/ wall	Bus stop	Tree/ pillar	Street
Arada	275	17	7	8	1	2
Bole	117	8	4	2	0	2
Kality	290	23	6	7	0	2
Kirkos	141	5	3	0	0	4
Kolfe	391	19	12	9	1	6
Laphto	102	5	3	1	0	1
Total	1316	77	35	27	2	17

Table 7: Food advertising type in six clusters.

Cluster	Food advert type				
	Billboard, board,	Poster, umbrella, furniture and table cloth	Entire shop, banner on shop	Fence, board on sidewalk	Refrigerator and Other
Arada	50	179	50	7	24
Bole	31	64	16	3	19
Kality	50	197	55	7	19
Kirkos	36	78	20	1	18
Kolfe	75	238	70	11	44
Laphto	31	50	19	1	11
Total	273	806	230	30	135

Table 8: Number and size of food advertising in six cluster.

Cluster	Number of food advertising	Small	Medium	Large
Arada	310	125	105	80
Bole	133	33	54	46
Kality	328	146	116	66
Kirkos	153	48	63	42
Kolfe	438	161	152	125
Laphto	112	28	45	39
Total	1474	541	535	398

During the food environment assessment different food advertising brands excluding alcoholic beverages advertising were assessed. Below table shows food advertising brands by its level of processing.

Table 9: Brands of food advertising classification by level of processing

Cluster	Food advertising brands	
	Ultra-processed foods	Other
Arada	661	97
Bole	122	11
Kality	660	111
Kirkos	146	7
Kolfe	406	54
Laphto	102	10
Total	2097	290

Another objective of the study was to assess potential differences between perceived and objective food environment. Perceived food environment is what the adolescents are aware of about their school surrounding and the objective food environment is what the data collectors found during the food environment assessment. To assess perceived food environment; adolescents were asked if they were aware of the food and drink advertising in the school neighborhood. Out of 233 adolescents interviewed, twenty-five of them agreed that there were a lot of food and drink advertising around their school environment and thirty-six of the adolescents disagreed that there were a lot of food and drink advertising. However, the data collectors found 1474 food advertisings in six clusters. The Pearson chi square test to assess the potential difference between perceived and objective food environment showed a significant value of 0.000. So, there was a potential difference between perceived and objective food environment.

In this study, internal food environment assessment and an interview with the head of all schools were held. The head of the schools were interviewed how nutrition is important in their school. 83.3 percent of the head of the schools were said nutrition was most important and 16.7 percent were said nutrition was less important to their students. And in all school physical exercise sessions is compulsory for all students except for students with special case like physically disable. All private and government schools thought the subjects of biology (except grade 11 and 12 social science students) and health and physical education from grade 9-12. The head of the schools were also asked how they encourage the students to eat healthy foods, 41.7 percent of the head of the schools were said they give oral advice for their students to eat healthy foods, 8.3 percent of the head of the schools encourage their student in different clubs, 8.3 of the schools were not allow the students to eat unhealthy foods like sodas inside the school and some schools, 33.3 percent they were not encourage the students to eat healthy foods. All the schools had sport equipment and 91.7 percent of the schools had sport facilities and they all allow the students to use the sport equipment and facilities during break time in addition to health and physical education class. 50 percent of the schools had walking area. During the internal food environment assessment availability of different food outlets and food and drink advertisings in 12 private and government schools were mapped and found the following result. 66.7 percent of the schools sold ultra-processed foods, 8.3 percent of the schools sold other foods, 8.3 percent of the schools sold ultra-processed foods and other foods, 8.3 percent of the schools sold ultra-processed foods, other foods, fried foods and water and 8.3 percent of the schools they were not sold any foods for their students.

5.2 Discussion

To assess influence of school food environment on the knowledge attitude and practices of adolescents, semi-structured interview-administered questionnaire and an assessment of the school food environment were conducted. Under these five major findings were assessed. Most of the adolescents from private and government schools of Addis Ababa they both ate grains, white roots and tubers, other vegetables and pulses. And few adolescents ate dark green vegetables, other vitamin A rich fruits and vegetables, other fruits, meat, fish and poultry, dairy, nuts and seed and eggs. From foods, which were classified by level of processing; they all ate unprocessed or minimally processed, processed culinary and processed food products while least of them ate ultra-processed food products. In the assessment of the relationship between the nutritional status, diet and food choice of adolescents; the nutritional status (BMI- for age) of the adolescents were not related with the diet (diet diversity score) and also their nutritional status (BMI-for age) were not related with their food choice (ultra-processed foods). Pearson chi square test to assess the potential difference in the knowledge, attitude and practice of adolescents showed that there is no potential difference in the knowledge, attitude and practice between private and government school adolescents. The assessment to assess the availability of different food outlets and food and drink advertisings showed that; a total of 2611 food outlets and 1474 food and drink advertisings were found in six clusters. The other objective of the study was to assess the potential difference between perceived and objective food environment; Adolescents were asked if they perceive different food and drink advertising around the school neighborhood. According to Pearson chi square significant test, there is a potential difference between perceived and objective food environment.

A study from SNNP of Ethiopia showed that; cereals, root and tubers and vegetables were the most consumed food groups which we found similar with our study while dairy was the least consumed food group (Yilma 2017) which were not similar with our study that eggs were the least consumed food groups. The difference between the study from SNNP and our study may be due to socio-demographic difference; participants from the study of SNNP were younger than ours and the participants of both studies had different religion and the data collection period of the study of SSNP was in April which could be after Easter fasting and the data collection period of our study was in March (Easter fasting) which almost all Christian orthodox adolescents were fasting but not the other religions.

Another study from Jimma zone of Ethiopia in the Consumption of sugary soft drinks (ultra-processed foods) was reported as 22.7% of adolescents between the ages of 13-17 consumed ultra-processed food products, (Belachew *et al.*, 2013) which was relatively similar with our study.

In the investigation of relationship between nutritional status of adolescents and their diets, a study, which was conducted in private and government schools of Addis Ababa Ethiopia showed that there is a relationship between the nutritional status (BMI- for age and height for age) and diets of adolescents. (Yosef *et al.*, 2014). Another study which was conducted in Oromia Region, south east Ethiopia showed associations between thinness and dietary factors such as meal frequency, meal skipping as well as poor dietary diversity. (Mohammed & Tefera 2015). Another study also found association between overweight and obesity and consumption frequency of meat and fast food. (Gali *et al.*, 2017). But according to our study there is no relationship between the nutritional status and the diets of adolescents. This difference may be because the method used for diet assessment and data collection period (our study was conducted during fasting season).

In assessing the potential difference of knowledge, attitude and practice between private and government school students; our study found no significant difference between the knowledge, attitude and practice of adolescents of private and government schools. However, a study from Turkey on nutrition knowledge and attitude changes of students studying in state and private secondary schools found that nutrition knowledge of students in state school was lower than that of private school students. (Kivrak & Altın, 2018). The difference between our study and the study from Turkey could be that Ethiopian private and government schools follow the same education curriculum.

In assessing the potential difference between perceived and objective food environment, our study found a significant difference between perceived and objective food environment which was adolescents from the six clusters were not aware of their school food environment while there were a lot of food and drink advertisings around the school food environment. A study which was conducted in Australia also found overall poor match between perceived and objective food environment. (Williams *et al.*, 2012). But another study from Cambridge University on the assessment of perceived and objective food environment shows an association between fast food intake and perceived and objective fast food outlet exposure. (Svastisalee *et al.*, 2016).

The different finding compared to our study could be that adolescents because of limited financial means, their interaction with the food environment might be less than that of participants of the study from Cambridge University who were adults.

Study strength: To see the influence of school food environment on the knowledge attitude and practice of adolescents, two schools (private and government schools) per sub city or cluster (six clusters) were involved which share the same food environment and this can minimize the effect comes from the adolescent economic status.

Study limitation: The limitation of this study is the adolescent interview and food environment assessment was conducted during fasting season of Christian orthodox followers and 71.1 % of adolescents were Christian orthodox followers and most of them fast which may completely change their diet and could affect their nutritional status. The same is true for food environment assessment; the food environment also changed during Christian orthodox fasting season. And because of the budget and time limitation, our sample size was small 210 with 10% non-response rate but with large sample size and enough time to collect data, more reliable result will be found.

CHAPTER FIVE

6. CONCLUSION AND RECOMMENDATION

6.1 Conclusion

This study assessed the influence of school food environment on the knowledge attitude and practice of adolescent. Several methods were used and different variables were tested to see the influence of food environment. There were many outlets and despite this high density and diversity of outlets, the diet of the adolescents was not diverse. Even though in our study we didn't find any relationship between the food environment and the knowledge attitude and practice of adolescent, this could be due to the fasting seasons, but also to their social/home environment that might have a stronger influence than the physical environment around the school.

6.2 Recommendation

- ❖ Finally, I would like to recommend that;
 - ✓ To assess the influence of school food environment on the nutritional status and knowledge attitude and practice of adolescents; a follow up study at different season is needed to minimize the effect which comes from changes in diet and availability of different foods and food and drink advertising because of seasonal change.
 - ✓ Using large sample size could also give more reliable result.
 - ✓ Conducting qualitative research like photovoice method to better understand adolescent perception and interaction with the food environment could give also a better finding.

7. Significance of the study

The nutrition transition is only slowly starting in Ethiopia, which would be an important timing to look at influencing factors in the environment and identify potential entry points for interventions before the situation worsens. Most studies on food environments are conducted when the rates of obesity or non-communicable diseases are already posing a serious concern. This was also highlighted by Herforth that it is easier to promote healthy food environments before norms have shifted and the nutrition transition has taken place already (Herforth & Ahmed 2015). Given that no country in the world has achieved to reverse the trend in obesity rates, it would be even more important to find solutions before it obesity becomes a societal problem in Ethiopia. On top of that, Ethiopia is still struggling with a high burden of under nutrition. As suggested elsewhere, research on food environments would therefore have to address all forms of malnutrition (Turner *et al.*, 2017). Adolescents as the future generation as well as parents of yet another generation should be a natural target for nutrition interventions. While the industry is already targeting them as the future consumers, the public sector and civil society have widely neglected adolescents.

This research shed light on two under-researched areas in Ethiopia: adolescent nutrition as well as the urban food environments. This research provided the evidence for the urgency of the situation and identified potential entry points and tools to empower adolescents within their food environment.

The collected information provided baseline information that can inform the design of interventions and programs to make school food environments nutrition sensitive. Findings of this study will be shared with relevant government partners in the health, education and youth sectors.

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Annex

Questionnaires to assess demographics, anthropometry, diet, nutritional knowledge, habits, and perceptions

CONSENT

The overall objective of this interview is to gather information and to develop a methodology to help understand the nutritional knowledge, habits, and perceptions as potential influencing factors of an adolescent about food choices. The intention of the interview is not to evaluate or criticize you, so please do not feel pressured to give a specific response and do not feel shy if you do not know the answer to a question. We/I am not expecting you to give a specific answer; there are no good or bad answers. We/I would like you to answer the questions honestly, telling us/me about what you know, how you feel, the way you live and how you shop for food. Feel free to answer questions at your own pace.

The interview will take about 40 minutes. All the information we obtain from you will remain strictly confidential and your name and answers will never be revealed. Participation in this interview is voluntary and you may refuse to participate, discontinue the interview at any time, or skip any question you do not want to answer.

Do you agree to participate in this interview?

Name: _____ Sig. _____

Any questions before we start?

1. Demographics		
No	Question (and skips)	Answer categories
101	Date of the interview	[] [] / [] [] / [] [] [] []
102	Cluster	Laphto.....1 Kolfe-Keranio.....2 Bole.....3 Kirkos.....4 Arada.....5 Kality.....6
103	School	Bisrate Gabriel.....1 Higher 23.....2 Ayer Tena.....3 Time International.....4 Deborah.....5 Beshale.....6 Future Talent.....7 Yetebaberud.....8 Radical.....9 Dagmawi Menelik.....10 School of Aygoda.....11 Bulbula.....12
104	Participant ID	[] []
105	Gender – Fill in the gender of the respondent	Female..... 1 Male..... 2
106	Grade	9 Grade.....9 10 Grade.....10 11 Grade..... 11 12 Grade.....12
107	Where do you live? Sub-city	_____
108	Kebele	_____
109	What is your Date of birth? (dd/mm/yyyy)	

	<i>ask for ID or double-check with school list!!</i>	[][]/[][]/[][][][]
110 110.1	How old are you?	[][] (completed years) [][] (completed months)
111	Do you have parents? <i>If answer is "no parents", go to 116</i>	Father and mother.....1 Only father.....2 Only mother.....3 No parents.....4 Other.....5 Specify: _____
112	What is the education of your mother?	Primary school.....1 Secondary school.....2 TVET.....3 Preparatory school.....4 University.....5 No education.....6 Don't know.....99
113	What is the education of your father?	Primary school.....1 Secondary school.....2 TVET.....3 Preparatory school.....4 University.....5 No education.....6 Don't know.....99
114	What is your mother's occupation?	House wife.....1 Farmer.....2 Merchant.....3 Daily labourer.....4 Employed.....5 No job.....6 Other.....7 Specify: _____

115	What is your father's occupation?	Farmer.....1 Merchant.....2 Daily labourer.....3 Employed.....4 No job.....5 Other.....6 Specify: _____
116	What is your religion?	Muslim.....1 Christian Orthodox.....2 Protestant.....3 Catholic.....4 No religion.....5 Other.....6 Specify: _____
117	Do you work? <i>If no, go to question 201</i>	Yes.....1 No.....2
118	What is your occupation?	Helping in the household.....1 Farming.....2 Working in a shop.....3 Working in a restaurant/café.....4 Domestic work (cleaning/cooking).....5 Working in an office.....6 Other.....7 Specify: _____
119	How many days per week do you work?	[] days

2. Dietary intake

No	Question (and skips)	Answer categories
201	Was yesterday a special day for you (e.g. fasting, feast, market day, on a diet)?	Yes..... 1..... No..... 2.....

202	Are you ever observing fasting? <i>If no, go to 205</i>	Yes..... 1 No..... 2
203	How many days in the past seven days did you fast?	[]
204	When you fast, what practices do you include? <i>More than one answer possible</i>	Do not eat meat.....1 Do not eat eggs.....2 Do not eat dairy products.....3 Eat fasting/special food.....4 I don't eat food in the morning.....5
205	Were you ill yesterday during the previous 24 hours? <i>If no, move to Question 207</i>	Yes..... 1 No..... 2
206	If yes, did your illness increase/decrease your appetite?	Increase..... 1 Decrease.....2 Did not change.....3
207	Did you have any alcoholic drinks yesterday?	Yes..... 1 No..... 2
208	Was your food and beverage intake unusual yesterday? <i>If no, move to Question 210</i>	Yes..... 1 No..... 2
209	If yes, how was your food and beverage intake unusual yesterday?	_____ _____ _____
210	Did you consume any of these supplements or medicine yesterday?	Iron..... .1

<i>More answers possible</i>	Vitamins2 Other supplements.....3 No tablets/supplements.....4
------------------------------	----------------------------------------------------------------------------------

Please describe all foods and beverages you took yesterday during 24 hours at home and outside of the home. Please start with the first food eaten after you woke up yesterday morning.

1. Time	2. Food or drink (including ingredients and description of unknown foods, and cooking method in case of unknown cooked/prepared meals)	4. Place of consumption 1=home, 2=school, 3=friends' house, 4=restaurant/café	5. With whom? (friend, family...) Alone=1 Friend(s)=2 Family=3 Sibling(s)=4 Mother=5
Snack before breakfast			
Breakfast			
Snack before lunch			

Lunch			
Snack before dinner			
Dinner			
Snack after dinner			

3. Household information

No	Question (and skips)	Answer categories
301	What is the main source of water for cooking or handwashing for members of your household?	Piped water Piped into dwelling.....1 Piped into yard or plot.....2 Public tap/standpipe.....3

No	Question (and skips)	Answer categories
		Borehole.....4 Dug well.....5 Water from spring.....6 Rainwater collection.....7 Tanker-truck.....8 Cart with small tank/drum.....9 Surface water.....10 Bottled water.....11 Other.....12 Specify: _____ Don't know.....99
302	What is the main source of water for drinking for members of your household?	Piped water Piped into dwelling.....1 Piped into yard or plot.....2 Public tap/standpipe.....3 Borehole.....4 Dug well.....5 Water from spring.....6 Rainwater collection.....7 Tanker-truck.....8 Cart with small tank/drum.....9 Surface water.....10 Bottled water.....11 Other.....12 Specify: _____ Don't know.....99
303	Does your household have ... a. Electricity b. A radio c. A television d. A non-mobile phone e. A computer f. A refrigerator g. A table h. A chair	Electricity.....1 A radio.....2 A television.....3 A non-mobile phone.....4 A computer.....5 A refrigerator.....6 A table.....7 A chair.....8

No	Question (and skips)	Answer categories
	i. A bed	A bed.....9
	j. A car	A car.....10
	k. A mobile phone	A mobile phone.....11
	l. A bicycle	A bicycle.....12
	m. A stove	A stove.....13
	<i>More than one answer possible</i>	
304	How many people live in your house?	[] []
305	Do you have your own bedroom	Yes.....1 No.....2
315	Do you know where your household buys/gets <u>most</u> of the fruits and vegetables?	Supermarket.....1 Kiosk.....2 Fruit and vegetable stall.....3 Open market.....4 Informal street sellers.....5 Bakery.....6 Butcher.....7 Kebele shop/cooperative.....8 Own garden.....9 Neighbour.....10 Relatives from country side.....11 Other.....12 Specify: _____
316	Do you know where your household buys/gets <u>most</u> of the meat?	Supermarket.....1 Kiosk.....2 Fruit and vegetable stall.....3 Open market.....4 Informal street sellers.....5 Bakery.....6 Butcher.....7 Kebele shop/cooperative.....8 Own garden.....9 Neighbour.....10 Relatives from country side.....11 Other.....12

No	Question (and skips)	Answer categories
317	Do you know where your household buys/gets most of the milk and milk products?	Specify: _____ Supermarket.....1 Kiosk.....2 Fruit and vegetable stall.....3 Open market.....4 Informal street sellers.....5 Bakery.....6 Butcher.....7 Kebele shop/cooperative.....8 Own garden.....9 Neighbour.....10 Relatives from country side.....11 Other.....12 Specify: _____
318	Do you know where your household buys/gets <u>most</u> of the injera?	Supermarket.....1 Kiosk.....2 Fruit and vegetable stall.....3 Open market.....4 Informal street sellers.....5 Bakery.....6 Butcher.....7 Kebele shop/cooperative.....8 Own garden.....9 Neighbour.....10 Relatives from country side.....11 Home-made.....12 Other.....13 Specify: _____
319	Do you know where your household buys/gets <u>most</u> of the lentils and cereal?	Supermarket.....1 Kiosk.....2 Fruit and vegetable stall.....3 Open market.....4 Informal street sellers.....5 Bakery.....6 Butcher.....7

No	Question (and skips)	Answer categories
		Kebele shop/cooperative.....8 Own garden.....9 Neighbour.....10 Relatives from country side.....11 Other.....12 Specify: _____
320	Do you know where your household buys/gets <u>most</u> of the snack foods (cookies, chips) or juice? <i>More than one answer possible</i>	Supermarket.....1 Kiosk.....2 Fruit and vegetable stall.....3 Open market.....4 Informal street sellers.....5 Bakery.....6 Butcher.....7 Kebele shop/cooperative.....8 Own garden.....9 Neighbour.....10 Relatives from country side.....11 Other.....12 Specify: _____
321	Do you know where your household buys/gets <u>most</u> of the eggs?	Supermarket.....1 Kiosk.....2 Fruit and vegetable stall.....3 Open market.....4 Informal street sellers.....5 Bakery.....6 Butcher.....7 Kebele shop/cooperative.....8 Own garden.....9 Neighbour.....10 Relatives from country side.....11 Other.....12 Specify: _____
322	Do you know where your household buys/gets <u>most</u> of the oil, butter or sugar?	Supermarket.....1 Kiosk.....2 Fruit and vegetable stall.....3

No	Question (and skips)	Answer categories
	<i>More than one answer possible</i>	Open market.....4 Informal street sellers.....5 Bakery.....6 Butcher.....7 Kebele shop/cooperative.....8 Own garden.....9 Neighbour.....10 Relatives from country side.....11 Other.....12 Specify: _____
323	Who does most of the cooking in your family?	The respondent.....1 Mother.....2 Father.....3 Siblings.....4 Maid/Cook.....5 Other.....6 Specify: _____
324	In the last three months, have you... <i>More than one answer possible</i>	Ever worried about having enough food?.....1 Ever had to reduce food intake because of shortages of food or money to buy food?.....2 Ever had to go without eating because of shortages of food or money to buy food?.....3 Ever had to ask outside the home for food because of shortages of food or money to buy food?.....4
325	How many bedrooms does your house have?	[] []
327	How do you get to school?	Taxi.....1 Walking.....2 Bus.....3 Bicycle.....4 School bus.....5 Parents' car.....6 Other:7 Specify

No	Question (and skips)	Answer categories
328	If you walk to school or take the bus, or taxi, how long do you walk to school?	5 min.....1 10 min.....2 30 min.....3 More than 30 min.....4

4. Health information

No	Question (and skips)	Answer categories
401	Do you smoke?	Yes.....1 No.....2 If yes, how many cigarettes per day [] []
402	Where do you go when you seek general health services? <i>More answers possible</i>	Health post/centre.....1 Reproductive health clinic/service.....2 School/Teacher.....3 Parent(s).....4 Friend(s).....5 Traditional services.....6 Other:.....7 Specify: _____
403	What do your breasts and pubic hair OR genitals and pubic hair look like? <i>Show pubertal stage chart (Handout 1a)</i>	Stage 1.....1 Stage 2.....2 Stage 3.....3 Stage 4.....4 Stage 5.....5
404	What was the age of your first menstrual period? <i>Only ask for girls</i>	[] [] Years [] [] Month Not menstruated yet.....99

5. Nutritional knowledge

Body image perceptions

Show the Body image charts (Handout 1b) and ask the following questions:

No	Question	1	2	3	4	5	6	7	8	9
501	Which of these pictures illustrates the most ideal <u>female</u> body size according to you?	1	2	3	4	5	6	7	8	9
502	Which of these pictures illustrates the most ideal <u>male</u> body size according to you?	1	2	3	4	5	6	7	8	9

503	Which of these body sizes do you think is the <u>healthiest for women</u> ?	1	2	3	4	5	6	7	8	9
504	Which of these body sizes do you think is the <u>healthiest for men</u> ?	1	2	3	4	5	6	7	8	9
505	Which of the pictures resembles <u>your body size</u> the most?	1	2	3	4	5	6	7	8	9
506	Which of these body sizes do you think could be <u>problematic for women</u> ? <i>More than one answer possible</i>	1	2	3	4	5	6	7	8	9
507	Which of these body sizes do you think could be <u>problematic for men</u> ? <i>More than one answer possible</i>	1	2	3	4	5	6	7	8	9
508	Which of these body sizes do you see most often among female <u>students in your school</u> ?	1	2	3	4	5	6	7	8	9
509	Which of these body sizes do you see most often among male <u>students in your school</u> ?	1	2	3	4	5	6	7	8	9

Understanding of underweight

510. What are the health problems that can occur when a person is underweight?

511. What do you think are the reasons why people are underweight?

512. What should we do to prevent underweight?

Understanding of overweight

513. What are the health problems that can occur when a person is overweight or obese?

514. Can you tell me the reasons why people are overweight or obese?

515. How can people prevent overweight and obesity?

Definition of healthy foods

516. What do you think is a healthy food?

517. What do you think is an unhealthy food?

No	Question	Answer categories
518	Which of those two food items contain more iodine?	Egg..... .1 Banana..... 2 They are the same.....3

No	Question	Answer categories
		Don't know.....99
519	Which of those two food items contain more iron?	Tomato.....1 Lentil.....2 Both have the same amount of iron.....3 Don't know.....99
520	Which of these two food items contain more Vitamin A?	Indomi (noodles).....1 Kale.....2 Both have the same amount of Vitamin A.....3 Don't know.....99
521	Which one of these two food products are more likely to contribute to your energy for work?	Egg.....1 Onion.....2 Both give the same amount of energy.....3 Don't know.....99
522	Which one of these two drinks are more likely to contribute to your energy for work?	Milk.....1 Water.....2 Both provide the same energy for work?.....3 Don't know.....99

No	Question	Answer categories
523	Which of these two food products is more likely to contribute to your future health?	Orange.....1 Mirinda.....2 Both contribute equally to my future health.....3 Don't know.....99
524	Which of these two food products is more likely to contribute to your future health?	Papaya.....1 Cookie.....2 Both contribute equally to my future health.....3 Don't know.....99
525	Which of these two foods has more sugar?	Banana.....1 Mirinda.....2 Both have the same amount of sugar.....3 Don't know.....99
526	Eating a lot of salt can contribute to ... <i>More answers possible</i>	Underweight.....1 Overweight.....2 Heart disease/High blood pressure.....3 Diabetes.....4 Diarrhoea.....5

No	Question	Answer categories
		None of the above.....6 Don't know.....99
527	Eating a lot of sugar can contribute to ... <i>More answers possible</i>	Underweight.....1 Overweight.....2 Heart disease/High blood pressure.....3 Diabetes.....4 Diarrhoea.....5 None of the above.....6 Don't know.....99
528	Eating a lot of animal fat can contribute to ... <i>More answers possible</i>	Underweight.....1 Overweight.....2 Heart disease/High blood pressure.....3 Diabetes.....4 Diarrhoea.....5 None of the above.....6 Don't know.....99
529	Not washing hands can contribute to.... <i>More answers possible</i>	Underweight.....1

No	Question	Answer categories
		Overweight.....2 Heart disease/High blood pressure.....3 Diabetes.....4 Diarrhoea.....5 None of the above.....6 Don't know.....99
530	Drinking unbottled water can contribute to.... <i>More answers possible</i>	Underweight.....1 Overweight.....2 Heart disease/High blood pressure.....3 Diabetes.....4 Diarrhoea.....5 None of the above.....6 Don't know.....99
531	Being overweight or obese can contribute to ... <i>More answers possible</i>	Heart disease/High blood pressure.....1 Diabetes.....2 Diarrhoea.....3 None of the above.....4

No	Question	Answer categories
		Don't know.....99
532	What are key moments to wash your hands to prevent germs from reaching food? <i>More answers possible</i>	After going to the toilet/latrine.....1 After cleaning a baby's bottom/changing a baby's nappy.....2 Before preparing/handling food.....3 Before feeding a child/eating.....4 After handling raw food.....5 After handling garbage.....6 Don't know.....99

6. Information sources

No	Question	Answer categories
601	Where or from whom did you learn about nutrition? <i>More than one answer possible</i>	Mother.....1 Father.....2 Other family members.....3 School/teachers.....4 Friends and neighbours.....5 TV and radio.....6 Newspaper/magazine/book.....7 Internet.....8 Health professional.....9 Food industry.....10 NGOs.....11 Shop vendor.....12 Food advertising.....13
602	Which of these sources do you trust?	Mother.....1 Father.....2 Other family members.....3

No	Question	Answer categories
	<i>More than one answer possible</i>	School/teachers.....4 Friends and neighbours.....5 TV and radio.....6 Newspaper/magazine/book.....7 Internet.....8 Health professional.....9 Food industry.....10 NGOs.....11 Shop vendor.....12 Food advertising.....13
603	The goal of advertising is to inform the buyer about the health of the product	Agree.....1 Neither agree nor disagree.....2 Disagree.....3
604	The goal of advertising is to inform the buyer about the coolness of a product	Agree.....1 Neither agree nor disagree.....2 Disagree.....3
605	I believe advertising offers valuable information	Agree.....1 Neither agree nor disagree.....2 Disagree.....3
606	Advertising is truth well told	Agree.....1 Neither agree nor disagree.....2 Disagree.....3
607	The goal of labels on food products is to inform the buyer	Agree.....1 Neither agree nor disagree.....2 Disagree.....3

7. Influencing factors in individual, social and physical environment

I will read out some statements related to nutrition and want you to tell me if you agree or disagree.

No	Statement	Answer categories
Self-efficacy		
701	Suppose you want to eat healthy. How hard is it to eat healthy every day?	Not hard.....1 Neutral.....2 Hard.....3
702	Suppose you want to eat healthy. How hard is it to eat healthy at home?	Not hard.....1 Neutral.....2 Hard.....3

No	Statement	Answer categories
703	Suppose you want to eat healthy. How hard is it to eat healthy at school?	Not hard.....1 Neutral.....2 Hard.....3
704	I am interested in nutrition and health	Agree.....1 Neither agree nor disagree.....2 Disagree.....3
705	I know a lot about nutrition and health	Agree.....1 Neither agree nor disagree.....2 Disagree.....3
Perceived benefits		
706	If I eat healthy, it helps me to control my body weight	Agree.....1 Neither agree nor disagree.....2 Disagree.....3
707	If I eat healthy now, I will be healthier as an adult	Agree.....1 Neither agree nor disagree.....2 Disagree.....3
Perceived barriers		
708	Unhealthy food is cheaper	Agree.....1 Neither agree nor disagree.....2 Disagree.....3
709	Healthy foods are not available at school	Agree.....1 Neither agree nor disagree.....2 Disagree.....3
710	In my family, we do not have time to cook healthy food	Agree.....1 Neither agree nor disagree.....2 Disagree.....3
Habits		
711	I eat snacks like cookies, candy or chips, dabo kolo when I watch TV	Agree.....1 Neither agree nor disagree.....2 Disagree.....3
712	Most of the time I bring my own food to school	Agree.....1 Neither agree nor disagree.....2 Disagree.....3
713	Most of the times I buy food at school or around the school	Agree.....1 Neither agree nor disagree.....2

No	Statement	Answer categories
		Disagree.....3
714	I think I make good food choices	Agree.....1 Neither agree nor disagree.....2 Disagree.....3
715	I often eat fruits and vegetables	Agree.....1 Neither agree nor disagree.....2 Disagree.....3
716	I often drink soda (e.g. Coca-cola)	Agree.....1 Neither agree nor disagree.....2 Disagree.....3
717	Labels on packages of food products are an important factor when I choose foods	Agree.....1 Neither agree nor disagree.....2 Disagree.....3
718	Nutritional content is an important factor when I choose foods	Agree.....1 Neither agree nor disagree.....2 Disagree.....3
719	Taste is an important factor when I choose foods	Agree.....1 Neither agree nor disagree.....2 Disagree.....3
720	Price is an important factor when I choose foods	Agree.....1 Neither agree nor disagree.....2 Disagree.....3
721	Convenience is an important factor when I choose foods	Agree.....1 Neither agree nor disagree.....2 Disagree.....3
Social environment		
722	My parents let me eat food like French fries, Chornake or pasti, chips, candy, icecream, bombolino etc. whenever I want to	Agree.....1 Neither agree nor disagree.....2 Disagree.....3
723	My parents let me drink sodas whenever I want to	Agree.....1 Neither agree nor disagree.....2 Disagree.....3
724	My parents decide over most of what I eat	Agree.....1 Neither agree nor disagree.....2

No	Statement	Answer categories
		Disagree.....3
725	In my house we always have fruits and vegetables	Agree.....1 Neither agree nor disagree.....2 Disagree.....3
726	In my house we always have fast food, sodas, and snacks	Agree.....1 Neither agree nor disagree.....2 Disagree.....3
727	I often eat together with my family	Agree.....1 Neither agree nor disagree.....2 Disagree.....3
728	I eat unhealthy because I want to eat the same as my friends	Agree.....1 Neither agree nor disagree.....2 Disagree.....3
729	I eat snacks, fast food and drink sodas when I am with my friends	Agree.....1 Neither agree nor disagree.....2 Disagree.....3
730	My teacher/school regularly encourages me to eat healthy	Agree.....1 Neither agree nor disagree.....2 Disagree.....3
731	My teacher/school regularly teaches me about eating healthy	Agree.....1 Neither agree nor disagree.....2 Disagree.....3
Physical environment		
732	My family cannot afford to buy healthy food	Agree.....1 Neither agree nor disagree.....2 Disagree.....3
733	There are a lot of cafes and restaurants that sell chips, chornake, candy, snacks, bombolino in my neighbourhood	Agree.....1 Neither agree nor disagree.....2 Disagree.....3
734	Healthy foods are available in my neighbourhood	Agree.....1 Neither agree nor disagree.....2 Disagree.....3
735	Healthy food that is sold around my place is spoiled	Agree.....1 Neither agree nor disagree.....2 Disagree.....3

No	Statement	Answer categories
736	Shops and cafes in my neighbourhood are not clean	Agree.....1 Neither agree nor disagree.....2 Disagree.....3
737	There is a lot of food advertisement in my neighbourhood	Agree.....1 Neither agree nor disagree.....2 Disagree.....3
738	Advertising in my neighbourhood is mostly promoting unhealthy food or drink	Agree.....1 Neither agree nor disagree.....2 Disagree.....3
Social norms		
739	It is okay for parents to make decisions about food for their adolescent children	Agree.....1 Neither agree nor disagree.....2 Disagree.....3
740	Kids our age do not have any special nutrition needs	Agree.....1 Neither agree nor disagree.....2 Disagree.....3
741	Girls should look thin and beautiful	Agree.....1 Neither agree nor disagree.....2 Disagree.....3
742	Drinking sodas is a symbol of modern life	Agree.....1 Neither agree nor disagree.....2 Disagree.....3

743	Do you have any pocket money? <i>If no, jump to section 8.</i>	Yes No
744	How much pocket money do you usually have per week?	___ ___ Birr
745	What do you buy with the pocket money?	Food or Drinks Clothes Other Specify: other _____
746	Which food items do you usually buy with this pocket money?	Fruit.....1 Soda.....2

		Candy.....3 Snacks like chips or sambusa etc.....4
747	How many times per week do you drink sodas?	
748	How many times per week do you eat candy (chocolate, hard candy, chewing gum etc)?	
749	How many times per week do you eat fruits?	
750	How many times per week do you eat chips, sambusa or other fried snacks?	

8. Aspirations and expectations related to life domains

Read aloud: Dreams or life goals are things people hope to achieve in their lives at some point. I would like to know about your own dreams, or what you would like to wish for your own future. I am also interested to hear what you think your parents or caregivers, friends and teachers would wish for or expect from you.

S.N.	Questions	Responses	Go to
801	What is your biggest dream at this moment in your life?	Specify: _____	
802	Do you think you will be able to achieve this dream in your future?	Yes.....1 No.....2 Don't know.....98	
Skip 803 -803.2 if married adolescent			
803	Do you want to get married?	Yes No Don't know Married already If no, dnt or married already, skip to 803.1	
803.1	Imagine you could marry whenever you wanted, at what	Age in years:	

	age would you like to get married?		
803. 2	By what age is it most likely you will be married?	Age in years:	
Skip 804.1-804.3 if adolescent has children			
804	Do you want to have children?	Yes No Don't know Have child(rene) already If no, don't know or child already, skip to 804.2	
804. 1	at what age would you wish to have your first child?	Age in years:	
804. 2	At what age is it most likely you will have your first child?	Age in years:	
804. 3	How many children would there be in your ideal family, including sons and daughters	No (either son or daughter).....	

9. Anthropometry

No	Weight (kg)		No	Height (cm)	
901	Weight 1		904	Height 1	
902	Weight 2		905	Height 2	
903	Weight 3		906	Height 3	

Module 1 – Training of enumerators for interviews

Agenda

Time	Session
9-9.30	Session 1: Welcome and introduction of enumerators
9.30-10.00	Session 2: Information about the project
10.00-10.45	Session 3: Basic interviewing skills Session 4: How to fill in the questionnaires
10.45-11.00	Break
11.00-13.00	Session 5: Guide through the questionnaire
13.00-14.00	Lunch
14.00-14.30	Session 5: continued
15.00-16.00	Session 6: Practice with tablet and anthropometry
16.00-16.30	Session 7: Logistics

Module 2 – Training of enumerators for food environment assessment

Time	Session
9-9.15	Session 1
9.15-9.30	Session 2
9.30-10.30	Session 3
10.30-11.00	Break
11.-12.00	Session 4
12-12.30	Session 5
12.30-13.30	Lunch
13.30-15.00	Practice session
15-16.00	Feedback session

Session 1 - What is food environment and how can we assess them?

Duration: 15 min

Material: distribute copies of module, notebooks, pens, folders

Definition of food environment

Food environments are central components of food systems, entailing the physical, economic, political and socio-cultural context, in which people purchase, prepare and consume food. The food environment has been defined as the interface where people interact with the wider food system to acquire and consume foods. It consists of external dimensions, such as availability, prices, vendor and product properties, and marketing and promotion; and personal dimensions, including accessibility, affordability, convenience and desirability.

Session 2 - Where are we conducting the assessment?

Duration: 15 min

Material: powerpoint, handout of all maps (Handout 2a)

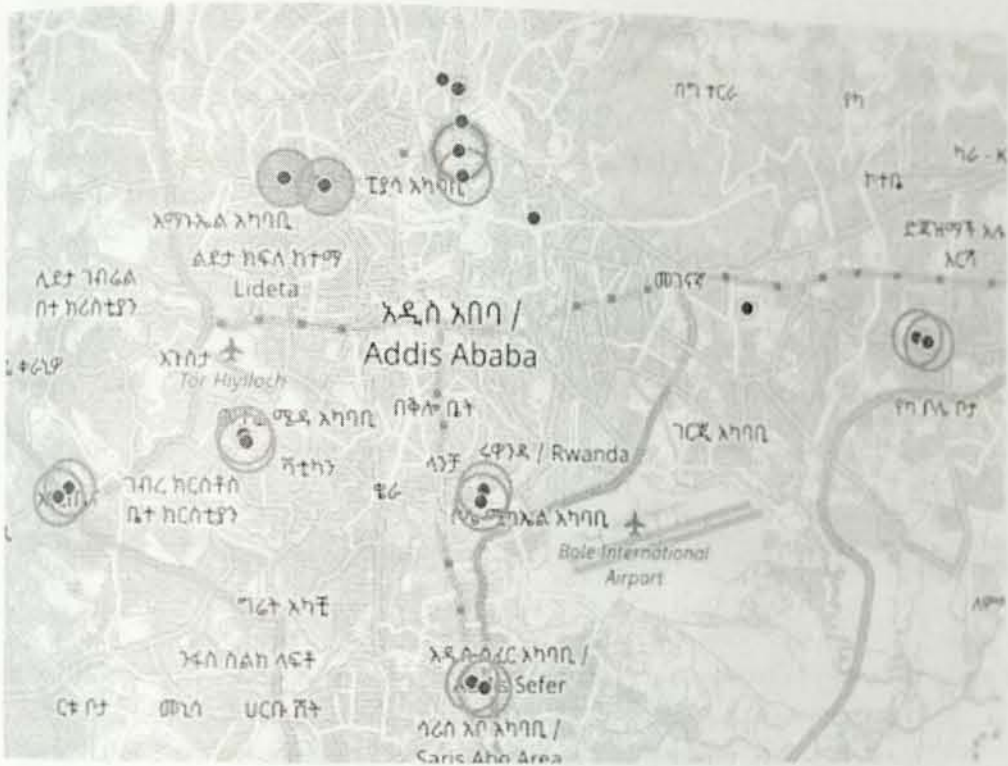
The area of 0.5km radius around two schools (one public, one private) measured from the entrance of the school (see Fig 1 below) will be assessed. Within this circle of the below map, every single street (no matter if big or small or if it is a side-road) has to be assessed.

In this area, we are going to assess every single food outlet and café, from formal big shops to small informal sellers on the street (see below for the exact definitions of the food outlet types). All visible advertising of foods will also be assessed in this area.

There are 12 schools in six different clusters:

1. Laphto
2. Kolfe Keranio
3. Bole
4. Kirkos
5. Arada
6. Kality

Fig 1: Map of all clusters in Addis



Session 3 - What are we going to assess?

Duration: 1 hour

Material: powerpoint

1. Food outlets

- Supermarket
- Kiosk
- Fruit and vegetable stall
- Open market
- Informal street sellers (mobile as well as stationary)
- Bakery
- Butcher
- Kebele shop/cooperative
- Street food
- Café (modern as well as traditional)
- Emamabet
- Restaurant

There will be outlets that are not as easy to categorize. For instance some fruit and vegetable stalls might offer coffee and fresh juices and have space to sit down. See below under "how to fill in the form" how to record such mixed categories.

For every food outlet, the GPS coordinates will be assessed and it will be recorded if an advertising is on the shop or food outlet.

Exercise: Assign outlets to different categories

Show selected photographs and let participants decide which of the 12 types of food outlets they should select.

2. Advertising

In the same areas, when walking down the streets, you need to pay attention to any advertising in the streets, on shops/food outlets, on walls, at bus stops, at a tree/pillar, or at another shop. Only advertising of foods and drinks (NOT alcoholic drinks) will be assessed.

Eligible signs/advertisements

Signs or advertisements that are included in the data collection are those signs with branded information, pictures or logos for branded food or non-alcoholic beverage products or companies that sell foods and (non-alcoholic) beverages. Some small restaurants or cafes advertise the food they are serving (such as Ethiopian food, spaghetti etc). Unless these posters or boards have branded food products (in most cases it is sodas), they would not count. Any store signage that also has a product logo and serves not just as a store identifier but also as a promotional material for a product, should be considered as an advertisement, e.g. a Coca-Cola logo on a kiosk.

Exercise – Define size and setting of advertising

Show selected photographs that participants have to put in the different size and setting categories.

Session 4 – How to fill in the form in ODK?

Duration: 1 hour

Material: tablets

General tips for filling in:

- Remember to follow the tips below to decrease the data cleaning time later:
 - Check the questionnaire entries after every shop
- Immediately upon finalizing data collection for the day (in the evening):
 - Check form(s) for completeness, accuracy
 - Check information for every food outlet:
 - Outlet ID is correct

Specific guidance for Food outlet

1. Date of interview is required
2. Cluster

1- Lafto
2- Kolfe
3- Bole
4- Kirkos
5- Arada
6 Kality

3. Food outlet ID

Enter the numbers that should start from 100 and should be continuous. In every new cluster you start with 100 and keep counting up.

Food outlet category

Click on the respective food outlet category. In cases, where an outlet is fulfilling two categories, select both applicable categories, e.g. a restaurant could also have a butcher.

- Supermarket
- Kiosk

- Fruit and vegetable stall
- Open market
- Informal street sellers - mobile (carts)
- Informal - immobile – fruit or vegetables
- Informal – immobile - candy
- Bakery
- Butcher
- Kebele shop/cooperative
- Street food
- Café local-Shybet
- Café modern-Kekbet
- Emamambet
- Restaurant
- Other

4. GPS coordinates

Take the GPS coordinates of the food outlet standing right in front of it and wait for them to load. It might take some minutes

5. Advertising

If there is any advertising, painting on the food outlet, board on top of the shop, a banner or a small poster on the wall of the shop, you need to select “yes”

6. Fruit and vegetables visible in the food outlet?

If you can see any FRESH fruits and vegetables (not juices, not canned!), select “yes”.

7. Any sodas visible in the shop?

If you see any sodas such as Sprite, Mirinda, Coca Cola, you select “yes”. Remember, Ambo does NOT count as soda!

Specific guidance for Advertising Form

1. Advert ID

Enter the ID that should start from 100 and should be continuous. In every new cluster you start with 100 and keep counting up.

2. GPS coordinates

Take the GPS coordinates of the food advertising standing right in front of it and wait for them to load. It might take some minutes

3. Size

Advertisements can come in different sizes. For the purpose of this study we categorize them into three sizes:

- Small: A4 or smaller
- Medium: bigger than A4 (would also include banners)
- Big: billboard, umbrella or a painted kiosk or board on top of kiosk

Select the relevant size in the ODK.

4. Setting

- Advertisements can be found in different places. We need to record where we found the advertisement with the respective number of the setting.
- On shop/food outlet itself (e.g. painted on the wall of the kiosk, banners at kiosk, paper taped to kiosk or umbrella, board at restaurant)
- Other shop (e.g. shoe shiners that have umbrellas or chairs with advertising)
- Building (could be any house or wall)
- Bus stop
- Pillars/Trees
- Street

Click on the relevant setting in ODK.

5. Type

Advertisements can come in different shapes and types. We need to record what type of advertisement it is, writing the respective number in the form.

- Billboard
- Poster (any size that is smaller than a billboard)
- Umbrella
- Furniture/chair
- Entire shop (painted)
- Board
- Banner on shop/food outlet
- Fence painting
- Flag

- Board on sidewalk
- Click on the relevant type in ODK.

6. Number of food products shown

There could be only one product or multiple ones in one add. We are only counting the number of different brands though. If there are three Coca Cola bottles in one photograph, we only count ONE product. If there is a photo of Coca Cola, Sprite and Mirinda, it would count as THREE products. Then enter the number "3".

7. Brand name/product name

The brand names of all products visible on the advertisement should be listed. Coca Cola, Sprite and Mirinda. Type them in the form.

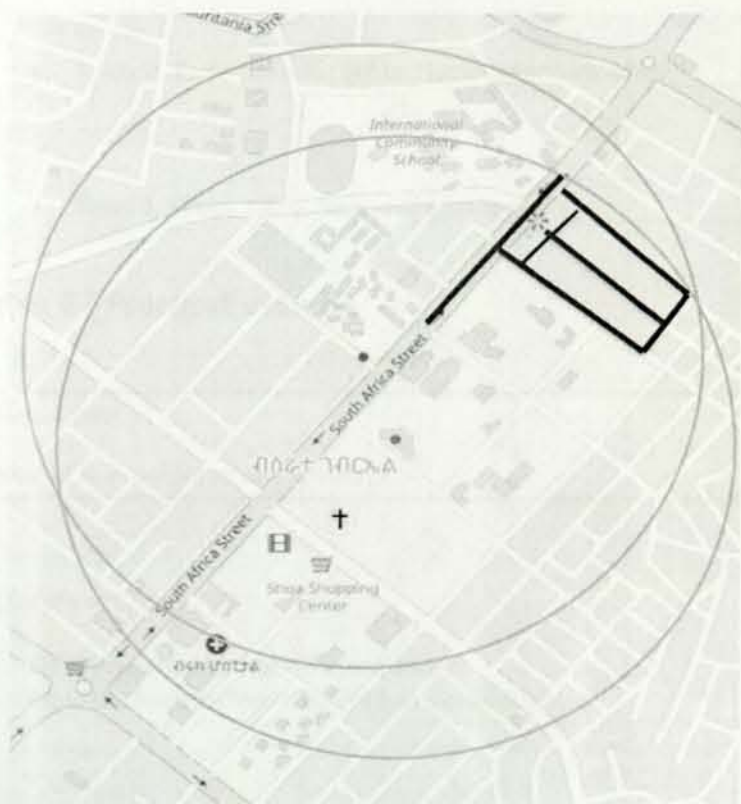
Map for FE assessment

Draw the roads that you walked and assessed that day on the map. Add the team number, the date, which you give to the supervisors every day.

Below is an example of a map for team 2 for the area they assessed on 20 March 2019 with the blue line showing the roads that had been assessed on that day.

Team: [2]

Date: [2] [0] / [0] [3] / [2] [0] [1] [9]



Session 5 - Logistics

Duration: 30 min

Material: Handout 2a

What to bring to the field assessment

- Pen and Notebook
- Printed map Handout 2a (every day a new one to mark the movement for every day)
- Copy of letter from AAU
- Code guidebook and training manual
- ID

Teams

- Team 1: Bole and Arada, Names of enumerators: _____

- Team 2: Kolfe-Keranio Laphto, Names of enumerators: _____

- Team 3: Kirkos, Kality, Names of enumerators: _____

Session 6 – Practical exercise

Duration: 1 hour

Material: all relevant forms and letters

Tasks for the exercise:

- Fill in the forms for five different outlets
- Fill in the form for five different types of advertising

Annex - Important codes

Staff

Ursula	UT
Selamawit	SE
Rediet	RE
Meron	ME
Wonde	WE
Kidist	KE

Food outlets abbreviations

Supermarket	SM
Kiosk	KK
Fruit and vegetable stall	FV
Open market	OM
Informal street sellers	IS
Bakery	BA
Butcher	BU
Kebele shop/cooperative	KS
Street food	SF
Café	CA
Restaurant	RT

Food outlet ID:

100, 101, 102...

GPS coordinates

Latitude: N 9.25635

Longitude: E 38.455179

Advertisement ID:

100, 101, 102...

Cluster numbers, School IDs

Cluster	School ID	Name of school	Team
1- Lafto	1	Bisrate Gabriel	Team 2
1- Lafto	2	Higher 23	Team 2
2- Kolfe	3	Ayer Tena	Team 2
2- Kolfe	4	Time Int	Team 2
3 - Bole	5	Deborah school	Team 1
3 - Bole	6	Beshale Sec and Prep	Team 1
4 - Kirkos	7	Future Talent secschool	Team 3
4 - Kirkos	8	Yetebaberud	Team 3
5 - Arada	9	Radical sec	Team 1
5 - Arada	10	Dagmawi Menelik	Team 1
6 Kality	11	School of Aygoda	Team 3
6 - Kality	12	Bulbula sec and prep	Team 3

በመረጃ የታጋዘ ስምምነት እና የቃለ መጠይቅ ሚስጥራዊነት

እኛ/እኔ _____ ከአዲስ አበባ ዩኒቨርሲቲ ነው የመጣነው። በእዘርላንድ ከሚገኘው Wageningen University & Research ጋር በመተባበር የጉርምስና ዕድሜ ላይ ያሉ ሰዎችን ስነ ምግብ የሚመለከት ጥናት እየሰራን ነው። በዚህም ጥናት ውስጥ ልጅዎ (ከ15 እስከ 19 ዓመት ዕድሜ ያለው) መሳተፍ ይችላል።

የዚህ ጥናት ዓላማ በጉርምስና ዕድሜ ላይ ያሉ ልጆችን አመጋገብና ስነ ምግባዊ ሁኔታ፣ እንደዚሁም ስለሚኖሩበት የምግብ አካባቢ ያላቸውን አተያይ መመዘን ነው። ለዚህም ዓላማ፣ የእነርሱን አመጋገብ፣ ምርመራ፣ የስነ ምግብ እውቀት በተመለከተ ጥያቄዎችን የምንጠይቅ ሲሆን ከብደትና ቁመታቸውንም እንመዘናለን።

ባጠቃላይ፣ ቃለ መጠይቁ 40 ደቂቃ አካባቢ የሚፈጅ ይሆናል። ከልጅዎ የምናገኛቸው ሁሉም መረጃዎች ፍጹም ሚስጥራዊ በሆነ መንገድ የሚያዙ ሲሆን የእርሱ/የእርሷ ምላሽም ሆነ ስም አይገለጽም።

በምርምሩ ውስጥ ለእኛ ለሚያደርጉት ድጋፍ ምስጋናችንን እየገለጹን ፣ በዚህ ቃለ መጠይቅ ውስጥ የሚኖር ተሳትፎ በፈቃደኝነት ላይ የተመሰረተ ሲሆን ልጅዎም አልሳተፍም ማለት፣ ቃለ መጠይቁን በማንኛውም ጊዜ ማቋረጥ ወይም መመለስ የማይፈልገውን ጥያቄ መዝለል የሚችል ሲሆን ይህን በማድረግም ቅጣት አይጣልቡትም ።

ጥናቱንና የጥናቱ ተሳታፊ በመሆንዎ ስለሚኖሩ መብቶች ጥያቄ ሲኖርዎት እባክዎ ለ ቃለ አብ ባዬ ወይም ለ ሰላማዊት አቀላባይ (አድራሻ፡ አዲስ አበባ ዩኒቨርሲቲ፣ የምግብ ሳይንስና ስነ ምግብ ማዕከል) በኢ.ሜይል፡ selamawit0303@gmail.com, +251913932441 ያሳውቁ።

በጉርምስና ዕድሜ ላይ የደረሰ/ች ልጅዎ በዚህ ቃለ መጠይቅ ላይ እንዲሳተፍ/እንደትሳተፍ ይሰማማሉ?

1. የለም
2. አዎ

ፈርማና ስምምነት ከታች ያስፍሩ

የቤተሰብ ሃላፊ/ወላጅ፡

ስም፡ _____ ፈርማ፡ _____

በጉርምስና ዕድሜ ላይ የደረሱ ልጆች ስምምነት

ዓላማው እርስዎን ለመገምገም ወይም ለመተቸት አይደለም፤ ስለዚህ፣ የሆነ መልስ የመስጠት ግዴታ አለብኝ የሚል ስሜት አይደርግዎት፤ የአንድን ጥያቄ መልስ ካላወቁም እፍረት አይሰማዎት። አንድ የተወሰነ መልስ ይሰጣሉ ብለን አንጠብቅም፤ ጥሩ ወይም መጥፎ የሚባል መልስ የለም። ለጥያቄዎቹ የሚሰጡን ምላሽ በታማኝነት እንዲሆን፣ የሚያውቁትን ነገር እንዲነግሩን፣ ምን እንደሚሰማዎት፣ የሚኖሩበት መንገድና ምግብ የሚገዙበትን መንገድ እንዲነግሩን እንፈልጋለን። ለጥያቄዎች መልስ ሲሰጡ በራስዎት ፍጥነት ይሁን።

ቃለ መጠይቁ 40 ደቂቃ አካባቢ የሚፈጅ ይሆናል። ከእርስዎ የምናገኛቸው ሁሉም መረጃዎች ፍጹም ሚስጥራዊ በሆነ መንገድ የሚያዙ ሲሆን የእርስዎ ምላሽም ሆነ ስም አይገለጽም። በጥናቱ ውስጥ ለእኛ ለሚያደርጉት ድጋፍ ምስጋናችንን እንገልጻለን። በዚህ ቃለ መጠይቅ ውስጥ የሚኖር ተሳትፎ በፈቃደኝነት ላይ የተመሰረተ ሲሆን አልሳተፍም ማለት፣ ቃለ መጠይቁን በማንኛውም ጊዜ ማቋረጥ ወይም መመለስ የማይፈልጉትን ጥያቄ መዘለል የሚችሉ ሲሆን ይህን በማድረግዎም ቅጣት አይጣልብዎትም ።

በዚህ ቃለ መጠይቅ ላይ ለመሳተፍ ይስማማሉ?

1. የለም
2. አዎ

ፊርማና ስምምነት ከታች ያስፍሩ

በጉርምስና ዕድሜ ላይ የደረሱ ልጆች:

ስም: _____

ፊርማ: _____



OFFICE OF THE DEAN
የዲን ጽ/ቤት

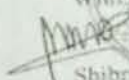
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ቁጥር CNSDO/205/11/2018
Date
ቀን December 20, 2018

To Whom It may Concern

The College of Natural & Computational Science Institutional Review Board (CNS-IRB) Committee in its meeting held on 25/11/2018 Minute No. IRB/035/2018 has examined the project proposal entitled "Influence of the school fook environment" on the knowledge, attitude, and practice of adolescents", by Selamawit Ekubay from the Addis Ababa University.

The proposal is approved for implementation.

With regards,


Shibru Temesgen /Dr./
Dean, College of Natural & Computational Science