ADDIS ABABA UNIVERSITY
COLLEGE OF HEALTH SCIENCE
SCHOOL OF PUBLIC HEALTH

ASSESSMENT OF ASSOCIATION BETWEEN PARENTAL FEEDING PRACTICE AND CHILDREN EATING BEHAVIOR AMONG PRESCHOOL CHILDREN IN ADDIS ABABA.

BY: NARDOS WONDAFRASH (BSC.)

A THESIS TO BE SUBMITTED TO SCHOOL OF PUBLIC HEALTH, COLLEGE OF HEALTH SCIENCE, ADDIS ABABA UNIVERSITY FOR THE PARTIAL FULFILLMENT OF MASTER'S DEGREE IN PUBLIC HEALTH NUTRITION

OCTOBER 31 ,2019

ADDIS ABABA, ETHIOPIA

ADDIS ABABA UNIVERSITY

COLLEGE OF HEALTH SCIENCES

SCHOOL OF PUBLIC HEALTH

ASSESSMENT OF ASSOCIATION BETWEEN PARENTAL FEEDING PRACTICE AND CHILDREN EATING BEHAVIOR AMONG PRESCHOOL CHILDREN IN ADDIS ABABA.

By: Nardos Wondafrash (BSc.)

Name of Advisors: Mr. Robel Yirgu (BSc., MPH., PhD candidate)

Ms. Esete Habtemariam (BSc., MPH)

Dr. Seifu Hagos (BSc., MPH, MSc., Ph.D., Ass. Professor)

Dr. Dawit Shawel (BSc., MSc., PhD, Ass. Professor)

October 31, 2019

Addis Ababa, Ethiopia

APPROVED BY THE BOARD OF EXAMINERS

This thesis, by Nardos Wondafrash is accepted in its present form by the board of examiners as fulfilling for the degree of master's in public health nutrition.

Advisor

Full name	Rank	Signature	Date

External Examiner

Full name	Rank	Signature	Date

Internal Examiner

Full name	Rank	Signature	Date

Chairman, Department Graduate committee

Full name	Rank	Signature	Date

ACKNOWLEDGMENTS

My deepest gratitude goes to my advisors Mr. Robel Yirgu , Ms. Esete Habtemariam, Dr. Seifu Hagos and Dr. Dawit Shawel for their constructive advice and valuable comments Without their support and guidance, this thesis would not have been possible.

I would also like to thank Addis Ababa City Administration Education Bureau, the preschools in each sub city and the parents of the children for their assistance throughout this process.

Finally, I would like to thank my family and friends for their support and guidance.

Table of Contents

LIST OF TABLES

LIST OF FIGURES

LIST OF ABBREVIATION

AACAEB	Addis Ababa City Administration Education Bureau
ANOVA	Analysis of variance
BMI	Body Mass Index
CEBQ	Children Eating Behavior Questionnaire
CFQ	Child Feeding Questionnaire
DALY	Disablity Adjusted Life Years
DD	Desire to Drink
EDHS	Ethiopian Demographic Health Survey
EF	Enjoyment of Food
EOE	Emotional Over Eating
EUE	Emotional Under Eating
FF	Food Fussiness
FR	Food Responsiveness
NRF	Non-Responsive Feeding
SE	Slowness in Eating
SR	Satiety Responsiveness
TEM	Technical Error Measurmet
WHO	World Health Organization

ABSTRACT

Background: Low and middle-income countries are facing both extremes of public health nutrition problems. Despite the well-established risk factors of mal-nutrition, individual differences in eating behaviors may contribute to the existing variation in nutritional status. Eating behaviors are biological and behavioral processes directed towards meeting bodily requirements; and these behaviors develop during the first years of life. Eating behaviors can be categorized as food approach and food avoidant. Some of the food approach behaviors are enjoyment of food (EF), food responsiveness (FR), emotional overeating (EOE), desire to drink (DD), and food avoidant behaviors are satiety responsiveness (SR), slowness in eating (SE), emotional under eating (EUE) and food fussiness (FF). Parents and caregivers influence their children's eating behavior through communicating their attitudes and beliefs about food and feeding.

Objective: To assess the different eating behaviors of preschool children and to determine its association with parental feeding practice in Addis Ababa.

Method: A school based cross-sectional study was conducted among preschool children in randomly selected schools. A stratified multi-stage sampling procedure was followed. Eating behavior was measured using a children eating behavior questionnaire and for the parental feeding practice together with parents perception and concern about child weight and perceived feeding responsibility the child feeding questionnaire was used. For parent depression status and child psychological status patient health questionnaire and strength and difficulties questionnaire were used respectively. All the questionnaires were pre-tested interview-based tools that have been translated to the local language and tested for face validity. Internal consistency was estimated using Cronbach's alpha. We used EpiData version 4.4.1.0 for data entry and the statistical software package Stata version 15.0 for data cleaning and analysis. A separate multiple linear regression was run for each scale of children eating behavior and the association with parental feeding practice was explored.

Result: Most of mean scores of the children eating behaviors scales. were close to the scale midpoint (2.5). Parental feeding practice monitoring practice had the highest mean score 4.13(SD:1.02) while restriction had the lowest score 3.47(SD:0.91). The internal reliability (Cronbach's alpha) for both questionnaires ranged from 0.50 to 0.89. There was a significant relationship between children eating behavior and parental feeding practice. Parents food restriction practice had positive association with food approach behaviors which are enjoyment of food(*b= 0.23, p=* 0.000) , food responsiveness (*b=0.23, p=0.000*), emotional overeating(*b=0.09, p= 0.001*) and desire to drink(*b=0.24, p=0.000*) while parents practice of pressure to eat had a negative association with enjoyment of food (*b= -0.11, p=<0.001),* food responsiveness (*b= -0.08, p= <0.001*) and emotional overeating (*b=-0.11, p=<.001*) .Meanwhile, of the food avoidant behaviors such as food fussiness(*b=0.09,p<0.001*), satiety responsiveness(*b=0.13,p<0.001*) and slowness in eating (*b=0.10,p=0.005*) had a positive association

with parents practice of pressure to eat. After adjusting for factors such as socio demographic characteristics, parent's perception and concern about child weight, parental depression status and child psychological status.

Conclusion: Parents that practiced food restriction had children that were more food responsive, tend to emotionally overeat, tend to enjoy food more and had more desire to drink. While Parents that practice pressure to eat had children that were more food fussier, satiety responsive and tend to eat slower. The above findings might help parents to understand eating behaviors in young children and to practice appropriate feeding practice to overcome eating problems. Health care providers should provide better support for parents in managing eating behaviors in young children and it is better incorporate appropriate eating behavior and feeding practice as an important component of child feeding strategies.

1.INTRODUCTION

1.1 Background

Eating behaviors is defined as biological and behavioral processes directed towards meeting requirements for health and growth, and they evolve during the first years of life (1). Eating behaviors include both food preferences and eating style. Food preferences represent children's food likes and dislikes, whereas eating style often is viewed as specific aspects of how a child eats and eating styles may be more important in determining weight outcomes than food preferences (2).

According to well-known children eating behavior questionnaire children eating style can be categorized as food approach and food avoidant (3). The food approach consists of the enjoyment of food scale that represents a general interest in food and the food responsiveness scale is intended to measure eating in response to external food cues (4, 5). The scale desire to drink was developed in order to detect increased desire to have drinks, particularly sugar-sweetened drinks (4, 5). While ,the food avoidant behaviors consists of the Satiety responsiveness scale which reflects the ability to regulate the amount of food that is eaten according to internal satiety cues (4, 5). The scale slowness in eating measures the speed of eating during the course of a meal and reflects a gradually reduced interest in a meal (4). Food fussiness reflects a lack of interest in food and unwillingness to try new foods (food neophobia) leading to an inadequate variety of foods (6) and Finally, the scales emotional overeating and emotional under eating are characterized by either increased or decreased eating in response to negative emotions, such as anger and anxiety (7). Food approach behaviors have been positively associated while, the food avoidant scales negatively associated with children's relative weight (8, 9).

The preschool age is a time when distinct eating behaviors are formed since they go through remarkable transitions in eating behavior (4). Children also start developing more autonomy through preschool and social interactions with other children, under the supervision of other adults (10). But they are still highly dependent on their parents for the structuring of food intake and the communication between children and their parents becomes more developed than in earlier ages (10). This makes preschool children a particularly important target group for interventions aimed at enhancing healthy eating behaviors and a healthy weight (11).

There many factors that influence children eating behaviors starting from early development of intrauterine fetal development ,early feeding mode (breast feeding or formula fed infants)

and complementary feeding, genetic predisposition , gender, birth weight, childhood psychopathology issues ,child BMI (12-18) .There are also factors that affected children eating behavior through parent child interaction and family characteristics including parental feeding style, parental feeding practice, parental eating behavior (modeling) , parental education socioeconomic status, family environment family meal time, socio cultural and ethnicity (17, 19-25).

Feeding is a primary event in the life of an infant and young child. It is the focus of attention for parents and other caregivers, and a source of social interaction through verbal and nonverbal communication (26). It affects not only children's physical growth and health but also their psychosocial and emotional development (26). Parents and caregivers influence their children's eating behavior through communicating their attitudes and beliefs about food and feeding (27). Strategies used by parents might include direct attempts to control children's food intake, such as pressuring children to eat more, or restricting their intake of "unhealthy foods". Control may also be exerted indirectly by monitoring the child's intake of unhealthy foods, or by modeling healthy eating in front of the child (28).

1.2 Statement of the problem

These days, there is growing interest in the eating patterns of children. Although a wide range of prevalence rates have been reported because of variability in definition, it is estimated that around 25% of normally developing children, and up to 80% of children with developmental delays, display some type of feeding problem (29, 30). Eating behaviors may vary on a continuum ranging from picky eating, irregular eating, overeating, and disinhibited or binge eating (31, 32).

Low and middle-income countries are currently facing a double burden of public health nutritional problems. While they are continuing to deal with under nutrition they are also experiencing a rapid upsurge of overweight and obesity (33).

Malnutrition is ultimately derived from excess or inadequate energy intake. This energy intake is in turn influenced by eating behaviors in several different ways. since, people make decisions all the time about when and where to eat, how much to eat and when to start and stop eating (34). Despite the well-established risk factors of mal-nutrition, individual differences in eating behaviors may contribute to the existing nutritional status (35). Eating behavior problems have been linked to underweight and poor growth, as well as to overweight and obesity (36, 37) .

Psychological problems have also been shown to predict children eating problems. Children with higher degree of psychiatric symptoms, including depression and Attention-Deficit/Hyperactivity Disorder (ADHD) has shown to be associated with moderate or severe picky eating (17). It was also seen that children with more emotional temperaments have been reported to display more food avoidant eating behaviors (38).

There is also increasing recognition that problematic eating behaviors that manifest in early childhood may be a precursor to maladaptive eating later in life. For example, A study on picky eating found that it is associated with anorexia nervosa in adolescence (39). Another study found that prolonged feeding difficulties in children can lead to weight loss or failure to gain weight (40). On the other hand, overeating was also linked to overweight and the development of binge eating in adolescents (41).

Child eating difficulties affect more than just the child and have a wider impact on the family. In addition to that child feeding problems are often associated with decreased parental emotional and psychological wellbeing (42). However, since many families are experiencing

non-clinical feeding problems they do not receive professional help and issues like this are less likely to be identified and treated. Thus, common feeding problems can leave both the parent and the child vulnerable to further negative health-related outcomes (43).

Although eating behaviors are difficult to modify directly, parental feeding practices are potentially a good target for interventions to prevent unhealthy eating behaviors (44). Since, parents are the chief providers and the main "gatekeepers" of food. They model eating behavior and affect their children's eating through parenting and feeding styles (45). Mothers particularly have more interest in their children's eating behavior, as they have been shown to spend significantly more time than fathers in direct interactions with their children (46).

Majority of studies on this area are done in developed countries as a way of understanding eating behavior with feeding practice on etiology of overweight and obesity. Since, there are only few studies done it remains poorly understood in developing countries. The influence of cultural background on children eating behavior, parents perceptions of children's weight and on their feeding practices cannot be ignored (47). A generalization of findings from one ethnic(race) group to another is unclear, and it is inappropriate to assume that previously observed relationship between parental feeding practices and children eating behavior will apply in all contexts (82). Furthermore, these studies have some drawbacks such as, not incorporating all dimension of eating styles and failing to account factors that affects parent-child interaction like parental depressive symptoms and child's psychological status. In Ethiopia few studies tried to assess parental feeding styles (26, 48) .But there are no published studies on the association between children eating behavior and parental feeding practice. Hence, this study aims to fill the gaps on the existing literature and to evaluate the association between children eating behavior and parental feeding practice in a population sample of preschool children.

1.3 Rationale and Significant of the study

Currently in Ethiopia and in many developing countries, interventions mainly address the issue of what to feed infants and young children. And less attention has been given to children eating behavior and how they are fed. Developing normal eating behavior is not only important to obtain and maintain a healthy weight but might also decrease the risk for eating disorders. Additionally, changes in behavior with advancing age tend to be more difficult to be achieved. These situations demonstrate the importance of investigating eating behaviors at early ages and suggest that actions aimed at behavioral modification should focus with greater emphasis on children.

The findings from this study might give new insight on children eating behaviors and its association with parental feeding practice It can help parents (caregivers) to understand appropriate child feeding interaction through encouraging their children about healthy eating behaviors and feeding practices. It can also help to develop targeted public health interventions that can alter the specific eating behaviors and in turn to prevent their impact on nutritional status.

Research question

Is there an association between children eating behavior and parental feeding practice?

Hypothesis

Parental practice of restriction is associated with increased child's food approach behaviors.

Parental practice of pressure to eat is associated with increased child's food avoidant behaviors.

2. LITERATURE REVIEW

2.1 Children eating behavior

Eating is one of the fundamental human needs throughout one's life; and, as a result, it has a vital effect on people's health (49). The development of eating behaviors is a complex process, and involves an interplay among genetic factors, neural mechanisms, individual child characteristics, parent-child-interactions and social influences (50).

There are different dimensions of children's eating behavior. Eating style represents specific aspects of how a child eats, for example a child's tendency to eat in the absence of hunger or to exhibit pickiness. Food preferences represent children's likes and dislikes or the type of food chosen (28).

Children's Eating Behavior Questionnaire (CEBQ), is one of the most widely used multi-dimensional measures of eating behaviors in children, according to the original validated Questionnaire it is founded on an 8-scale conceptualization of eating styles. However, few factor-analytic studies of the 35-item CEBQ have caused controversy over the underlying factor structure and have raised concerns regarding the validity of the scale. But , many studies support the use of the instrument as a measure of 8 distinct eating style dimensions in the population of children (51).

A study done in Portugal tried to assess the association between dietary patterns established at 4 years old and eating behaviors related to appetite identified at 7 years. Children belonging to the energy dense foods and to the Lower in Healthy Foods pattern at 4 years scored higher on Appetite Restraint (more related with sub-domains measuring internal cues of satiety and food fussiness) and Appetite Disinhibition(more related with sub-domains measuring external food cues and emotional responses towards foods) dimension at 7 years old, compared with children in the Healthier dietary pattern (52).

Factors that affect children eating behavior

2.2 Parental feeding practice

The most important influence on children's eating behaviors is their parents' feeding practices (14). Optimal infant and young child feeding (IYCF) practices are crucial for growth, development, health, and ultimately the survival of infants and young children. Infant and child feeding is guided by parenting practices and parenting styles, both of which are aspects of

parental care and are usually studied in relation to children eating behavior (27). Parental feeding practices are more specific than parenting styles, and are often conceptualized as deliberate strategies parents use to influence their children's eating behavior (53). These practices determine what, when and how a child should eat through what is made available and by the effect of modeling eating behavior(27). parenting practices are less trait-like and more responsive to contexts; within a parent, parenting style is consistent but parenting practices may differ across children within the same family depending on child age, gender, eating behavior, and weight status (28). Common child feeding practices used to control children's eating are restricting access to certain foods, monitoring food intake and pressuring the child to eat (54, 55).

Parent feeding style refers to the interactive pattern of behavior between caregivers and children which occurs during feeding (28). Based on their use of demanding and responsiveness there are four relevant parent feeding styles, namely authoritative, authoritarian, indulgent and uninvolved (27). Authoritative parenting which is associated with a high level of demandingness and rules with high responsiveness to the child (56). Responsive feeding is when the parent or caregiver engages in positive behavior with the child, while encouraging and bearing in mind the interests of the child during mealtimes (27). Authoritarian parenting linked to high demandingness but low responsiveness where the caregiver takes excessive control and dominates the feeding situation (56). Indulgent parenting combining low demandingness and high responsiveness with few rules the child controls the feeding situation; and uninvolved parenting which is associated with both low demandingness and low responsiveness, where the caregiver ignores the child during meals (56). Parenting styles often have a secondary effect on children's outcomes. The styles parents employ often times regulate their parenting practices (57).

2.2.1 Children eating behavior and parental feeding practice

More recent studies indicate associations between children eating behavior and parental child-feeding practices may be bidirectional. This means that the feeding practices could have a negative influence on child's eating behavior, but they also could be a reaction to the child's eating behavior which affects child weight status over time.

Studies have found out that parents practice of pressure to eat more during their children's feeding had children that were fussy, picky, slow in eating, having less food enjoyment or any kinds of problematic eating behavior (20, 58). Furthermore, studies have shown that children,

who were more food responsive, had mothers who were more likely to restrict their intake of unhealthy foods (20).

2.2.1.1 Children eating behavior and Parental practice of Pressure to eat

Parents exert pressure to ensure their children eat healthy food or maintain an adequate food intake (59) .One of the harmful consequences of this feeding practice is teaching children to ignore their internal cues and eat beyond satiety (20) . Pressure to eat is commonly related to food avoidance eating behavior. parents that practice pressure to eat might be having picky eater children (28) which can manifest itself in poorer dietary quality during childhood and less healthy food preferences (60). In longitudinal experiment, 7 years old girls whose mothers regularly used pressure to make them eat as a feeding strategy became more picky at the age of 9 (61). Pressuring children to eat would decrease their preferences and the amount of food taken during a meal time; they might also make negative comments about the target food (62). In another study, parental pressure to eat was positively related to fussy eating and food neo-phobia. Similarly , children who were less under pressure showed greater food enjoyment or responsiveness to external cues than their siblings who were pressured more (63).On the contrary in one of prospective study , it was found that there was no relationship between parents practice of pressure to eat and child food fussiness scale (64).

2.2.1.2 Children eating behavior and Parental practice of restriction and monitoring

Control is generally thought of as controlling a child's food intake both overtly and covertly. Overt control (Restriction) is considered to be controlling a child's food intake in a way that can be detected by the child and covert control (Monitoring) is defined as controlling a child's intake in a way that cannot be detected by the child (65). Restriction is an attempt to restrict children's intake of the type and amount of food, in particular foods that are usually high in sugar, salt and fat (66). Restriction as a direct feeding strategy is very popular among parents; although parents apply this feeding practice to control their children's eating, but it might backfire. Enhancing restriction would increase the child's passion and preference toward some limited types of food (67).

Higher levels of maternal restriction during early childhood are also associated with higher initial child weight, and are predictive of higher levels of and greater increases in overeating of palatable foods (68, 69).In longitudinal studies, a sample of 9-year-old girls found that girls were more likely to eat in the absence of hunger at 9 years when their mothers used high levels of restriction at 5 years, compared with those whose mothers used low levels of restriction (69).

In contrast to these studies also controlling for baseline values, study found that no association between the maternal use of restrictive feeding practices assessed at 2-4 years of age and food responsiveness 12 months later (21). It also seems parents use greater restriction for their overweight girls compare with the overweight boys (70).

Parents use of monitoring commonly is not associated with food avoidant or approach behaviors. However, in one of the studies, monitoring in response to a high child BMI was found to be related to the child's tendency to overeat (20) .But, It has also been argued that Parental monitoring of food intake has been shown to have a protective effect in reducing childhood overweight from 5 -7 years of age (71). Thus, supporting the distinction between restriction and monitoring if parents are concerned about child overweight and overeating, then monitoring is an obvious surveillance strategy (56).

2.3 Children eating behavior and Parental perception and concern about their own and child's weight status.

Parents perception /concern about child's weight status is one of predictors/ mediating factors that affect children eating behavior. In one of the studies, pressure to eat was associated with parental concern about under-weight Which led to the children to be picky eaters with low food preference whereas food restriction was associated with concern about over-weight that increase the child's food responsiveness leading towards excessive weight gain (54). Similarly, Mothers reporting concern about children's overweight were six times more likely to restrict the children's food intake of select foods and were less likely to pressure the children to eat (72). This finding suggests that parents who are concerned about their children's weight may put them at risk for overeating, binge eating, and fasting practices (57).
Likewise, Another study affirms that mothers reported using more restrictive feeding practices when they perceived daughters as overweight and reported using more pressure in child feeding when they perceived daughters as underweight (73). Mothers were also more likely to classify their daughters who were actually at risk of overweight as being overweight than their sons (74).

In one of the studies, mothers who perceived their daughters as overweight also had elevated weight concerns of their own. Overweight mothers had significantly higher weight concerns and had significantly higher concerns for their daughters' weight than their non-overweight counterparts (66). These supports the finding which point out that mothers, who are

preoccupied with their own weight and eating, report higher levels of restricting daughters' intake which in turn were linked to daughters' restrained eating behavior (66).

2.4. Children eating behavior and parents perceived feeding responsibility

Parents are responsible for where, *when* and *what* their child is fed. A few studies have shown that parents perceived responsibility of feeding affects parental feeding practice and children eating behavior. In one of the studies, Parents' perceived responsibility toward their child's eating was a good predictor for parental restrictive practices (75). However , in another study it was also related to higher teaching about nutrition, higher modeling healthy eating habits, higher encouragement of balance and variety and lower child control over feeding (76).

Structured family meal time is an important aspect of feeding responsibility. The presence of at least one parent during the evening meal was associated with a lower risk of poor consumption of fruit, vegetables, and dairy foods and a lower risk of skipping breakfast in adolescents (77). Children who described their parents as authoritative ate more fruit per day, fewer unhealthy snacks per day, and breakfast more days per week than did those who described their parents as neglectful (78). In addition, one study showed that adolescents who attended family meals perceived more parental support for healthy eating, limitation of television use, and availability of fruit and vegetables at home every day (79)

2.4 Children eating behavior and child's Body Mass Index

It is believed that overweight children are more responsive to external stimuli in the environment (e.g., flavor and color of food), demonstrate greater pleasure in eating and have lower responsiveness to satiety when compared to children with healthy weight, which causes them to eat larger amounts, and in the absence of hunger, thus demonstrating a greater interest in food (80-82). Moreover, they have the habit of eating in order to deal with different emotional states (happiness, anxiety and stress)(18, 82).They often drink sugary beverages during the day and eat more quickly (83) . An experimental study evaluated the eating behavior of 80 children demonstrated that overweight children ate faster and with greater bite size when compared to normal weight children (84). These might be one of the mechanisms through which genetic predisposition leads to weight gain (85). On the other hand, underweight children seem to be more selective in relation to food, consuming small meals, with a limited number of foods and more slowly, thus reflecting a lack of interest in food (18, 82).

However this relationship might be bidirectional as children eating behavior might affect child's BMI In a study done in Thailand preschool children it was found that high food

responsiveness scores and high enjoyment of food score were associated with being overweight (86) while a cross-sectional study conducted in Malaysian children aged 7 to 12 years found that satiety responsiveness, slowness in eating, and emotional under-eating subscales were negatively associated with a child's BMI (58).

Child BMI effect on eating behavior can also be mediated by parental feeding practice In a study conducted in Malaysia with children 7–8 years of age found food restriction was positively correlated with children's BMI, whereas pressure to eat was negatively correlated with children's BMI and that parents of children who are overweight and obese had scores for pressure to eat lower than parents of normal-weight children (87).

2.5 Children eating behavior and child's psychological status

Studies have shown that children psychological problems can influence parent-child interaction related to feeding which in turn can affect their eating behaviors. Psychological problems that emerge during childhood may reflect an underlying difficult temperament (88). Temperament can affect how a child approaches and responds to new foods and to a parent's feeding patterns (89). In a study assessing relation of temperament and eating behaviors emotional temperaments were related to less enjoyment of food and to greater fussy eating, slower eating and higher satiety responsiveness as well as to more emotional over- and under eating (90). In addition , child's emotionality was found to be a predictor of picky eating in a longitudinal study (91) . It was also found that infant temperamental characteristics were associated with increased risk for eating disorder symptoms at 12 to 13 years (92). Children with severe selective eating are more likely to have a concurrent psychiatric diagnosis (depression or social anxiety) and are more likely to experience hypersensitivity to taste and texture which affects eating (17).

In an Australia cross sectional study, both internalizing psychological problems (peer pressure and emotional symptoms) were positively associated with food responsiveness and emotional overeating while from externalizing problems only conduct problems was positively associated with food responsiveness. This study findings also suggest that the relationship between psychological problems and BMI could be mediated by eating behaviors(88).

2.6. Children eating behavior and parental depressive symptoms

Parents with depressive symptoms tend to display a negative affect and be disengaged in parent-child interaction during feeding which could influence the feeding practice and the children's eating behavior indirectly (93). A longitudinal study shows that higher maternal

depressive symptoms in the antenatal period as well as at 3 years postnatal were related to more fussy eating in their 4-year-old children (94) . In another study, mother's negative affectivity at an early point in the child's life has been found to have implications for the later development of the child's eating patterns (91) .Two studies examining the association between maternal depressive symptoms and maternal feeding practices using laboratory-based feeding situations one of the study found that those with elevated depressive symptoms were more likely to engage in forceful, uninvolved, and indulgent feeding styles than mothers with lower levels of depressive symptoms (95). This practices may reduce the extent to which children respond to their internal signals of hunger and satiety (96). while the other study found no significant link to observations of restriction of food (97). On the other hand it was found that concurrent anxiety and depression symptoms predicted controlled feeding, particularly that are characterized by restriction and monitoring (98).

2.7. Children eating behaviors and parent's socio demographic characteristics

2.5.1 Children eating behavior and Child's age and gender

There may be gender difference in eating behaviors of children. Studies of older (adolescent) children has been reported that boys and girls have different eating styles, yet, it is not known at what age these differences start to develop (15).Findings of some studies suggest that parents were more likely to perceive boys as engaging in Food Fussiness behaviors(5, 18) .On the contrary, a study based in China found that parents were more likely to perceive girls as engaging in Food Fussiness behaviors (99).The gender difference can also be explained as it is mediated by parental feeding practice where, parents use greater restriction for their overweight girls in compare with the overweight boys (70) . This could suggest that mothers are more worried about weight gains of girls than of boys. These early gender differences may be precursors of later gender differences in problems of energy balance, in which the prevalence of eating problems is much higher among women (96).

Eating behaviors may vary with age .Food approach behavior mainly food responsiveness have been more apparent as children get older (4, 5) These was supported by one of the studies, that found parents were more likely to perceive older children as engaging in Food Responsiveness and Enjoyment of Food (18) .While ,the food avoidant behaviors has been seen to be high in infants and to decrease with age (4, 5). In line with other study that reported that parents perceived older children as showing lower levels of Food Fussiness and Slowness in

Eating (100). however, Two longitudinal studies argue that children's eating behaviors are stable between the ages of 2 and 5 and in older children between 4 and 11 years of age respectively (4, 101).

2.5.2 Children eating behavior and Parents education and socio-economic status

Parents having low socioeconomic status mainly indicated by their income are associated with problematic eating behaviors, and these in turn associate with body mass index's in the extreme ranges (underweight and overweight) (102). In a study assessing picky eating and overeating found that eating behaviors commonly relate to family income insufficiency such that, children from families experiencing income insufficiency were more likely to report both problematic eating behaviors than those from income sufficient families (102). It has also been shown that parents with lower socioeconomic status (SES) have children with unhealthy dietary habits (103) . Children with a high socioeconomic status consumed more fruit and vegetables and consumed more often breakfast on a daily basis, than children with a low socioeconomic status (104) .This might be because the price of food influences children's and parents' food choice and this may result in people with less money choosing low-cost, thus unhealthier, diets (105). Furthermore, most children will initially refuse newly introduced foods, which results in waste of foods. Therefore, parents with a low SES will prefer to buy food their children prefer, which is usually unhealthy, in order to reduce costs that are accompanied by introducing new food (106) . Eating behavior difference may also be mediated by parental feeding practice as studies have found that household monthly income was inversely related to pressure to eat, parents' perceptions of child weight status, and child BMI (25).

Children eating behavior might be affected by parents educational level .Children of well-educated parents had tasted a larger number of foods, thus displaying lower behavioral neophobia, with lower FNS scores than children of less educated parents (22). parental education also seems to play an important role in the adoption of healthier behaviors .Since, difference in education were found in children's consumption frequencies of fruit, vegetables (107). Mothers with a higher education level tend to consume healthier products, value health above cost in their food choices, and present less permissive parenting practices (108). Alternatively, parents educational status may affect eating behaviors through feeding practice; where, restrictive rules, verbal praise, negotiation and restrain from negative modelling were all more common among mothers with a high educational level (107).

Conceptual framework

The conceptual frame work that will be used is originally developed for the purpose of explaining factors affecting children eating behavior. This study mainly focuses on the association between children eating behavior and parental feeding practice which is described by the double arrow.

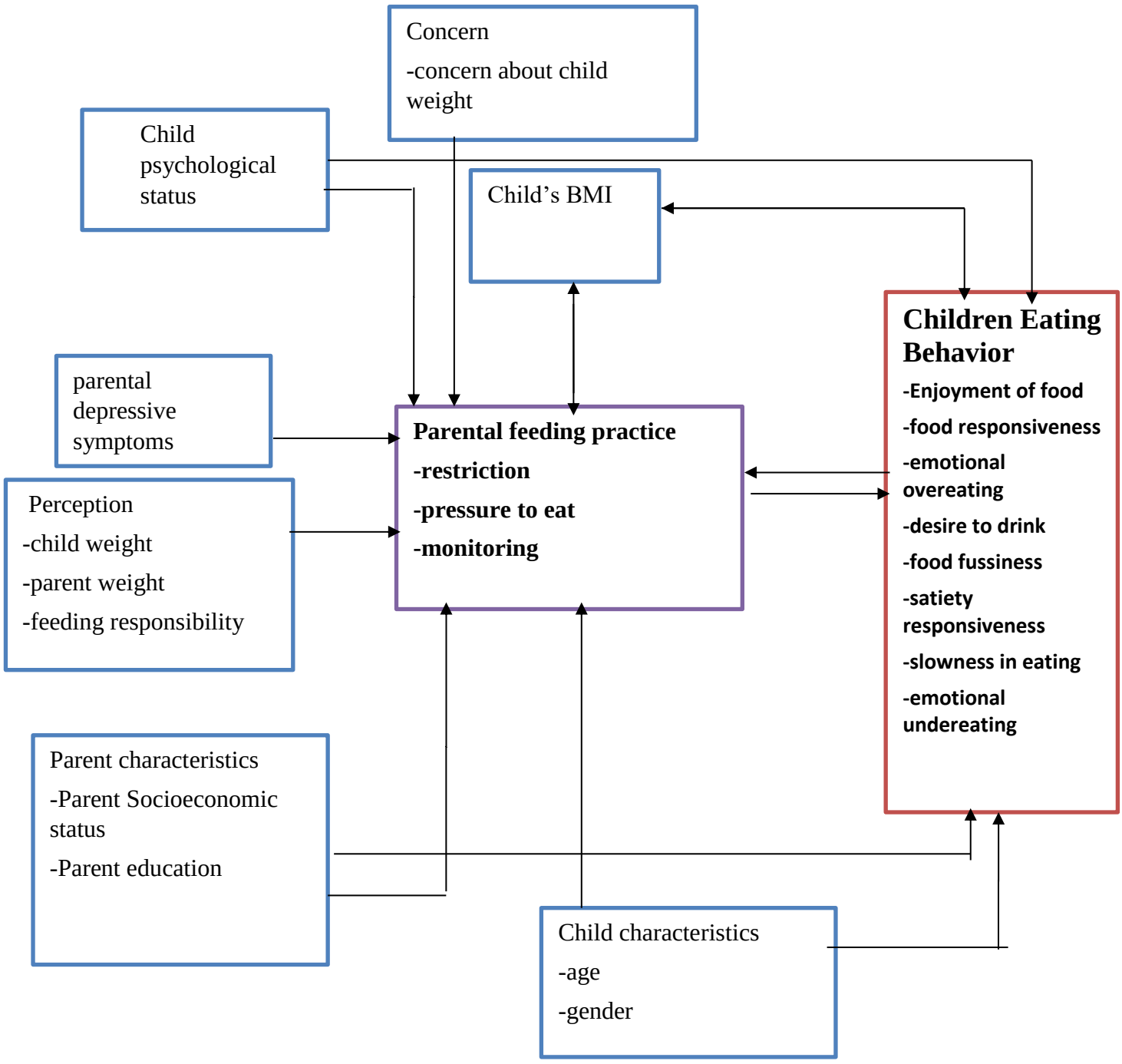

Figure 1. conceptual frame work on factors that affect children eating behavior taken from different literatures (3, 73).

3. OBJECTIVES

3.1 General objective

The general objective of the study is

To assess the different eating behaviors of preschool children and to determine its association with parental feeding practice in Addis Ababa.

3.2. Specific Objective

The specific objectives for the study include:

I. To evaluate eating behaviors among preschool children.
II. To assess parental feeding practices of preschool children
III. To determine the association between children eating behavior and parental feeding practices among preschool children.

4. METHODS AND MATERIALS

4.1. Study area and period

The study was conducted in Addis Ababa, the capital city of Ethiopia. The city has three layers of administration: city government, 10 sub cities and 116 woreda administrations. Based on the 2007 Census, Addis Ababa had a total population of 2,739,551, of whom 1,305,387 were men and 1,434,164 women (52). The prevalence of stunting and underweight among children aged younger than five years was 13.9 % and 4.7% respectively while overweight children was about 2.5 % (109).

According to 2018 report of Addis Ababa City Administration Education Bureau (AACAEB), there are 1168 preschool in the 10 sub cities, where 925 are private, 239 governmental and 2 are public schools.

The study was conducted from March 2019 to May 2019.

4.2. Study Design

A School based cross sectional study design was employed among preschool students.

4.3. Population

4.3.1. Source Population

The source populations for the study were all child parent pairs where the children are those who are attending preschool in the academic year 2018/2019 in Addis Ababa.

4.3.2. Study population

The study population were all preschool students and their parents in the selected schools of Addis Ababa who were attending in the academic year 2018/2019.

4.3.3. Study Unit

A single parent child dyad was selected based on inclusion criteria and sampling technique in the study period.

4.3.4 Inclusion criteria

The inclusion criteria was randomly selected children with ages ranging between 3 up to 6 years (103) and who were attending classes in the selected schools.

4.4.5. Exclusion criteria

Preschool children with visible physical deformity that affect anthropometric measurement were excluded from the study.

4.5. Sample size calculation

For the first objective Sample size was determined using winipepi software version 11.65 with the assumption of single population mean formula choosing one of the subscales and taking the larger sample.

$n= (z\alpha/2)^2 (\partial)^2/w^2$

Z (Standard normal distribution) with C.I of 95% and (α =0.05)	∂ (expected standard deviation of CEB of food fussiness (110)	W(Absolute precision or tolerable marginal error)	Design effect	Non-response rate	n(minimum sample size)
1.96	0.31	0.05	1.5	10%	246

For the second objective Sample size was determined using winipepi software version 11.65 with the assumption of single population mean formula choosing one of the subscales

$n= (z\alpha/2)^2 (\partial)^2/w^2$

Z (Standard normal distribution) with C.I of 95% and (α =0.05)	∂ (expected standard deviation of Parental practice of pressure to eat(111)	W(Absolute precision or tolerable marginal error)	Design effect	Non-response rate	n(minimum sample size)
1.96	0.46	0.05	1.5	10%	542

For the third objective sample size was determined using STATA version 15 software with the assumption of association of children's slowness in eating with parents practice of pressure to eat :

significance level	Power	regression coefficient of slowness in eating (β) (112)	standard deviation	n(minimum sample size)
0.05	0.8	0.30	0.5	349

4.6. Sampling procedure

We used a four-stage sampling technique to obtain a representative sample of study participants. The total sample were all preschools in Addis Ababa. We have then stratified the schools in to three groups using central statistical agency the 2015/16 Ethiopian household consumption – expenditure survey. We then chose one of socio economic status indicator that is the educational level and household expenditure per capita quintile index (113). These surveys have been the key actors in the M&E system by way of producing, analyzing and disseminating poverty related data and results. Through random sampling one sub city from each stratum was selected then using probability proportional to size four schools from each sub city were selected (seen in Annex 7). A sample of students were distributed to equal proportion to each chosen school within each sub city. Three sections from each selected school at which one section from each grade level (grade KG1-KG3) were selected randomly. Students were allocated proportional to the size of students in each selected section. Finally, we obtained students list and systematic random procedure was used to select study participants from each section.

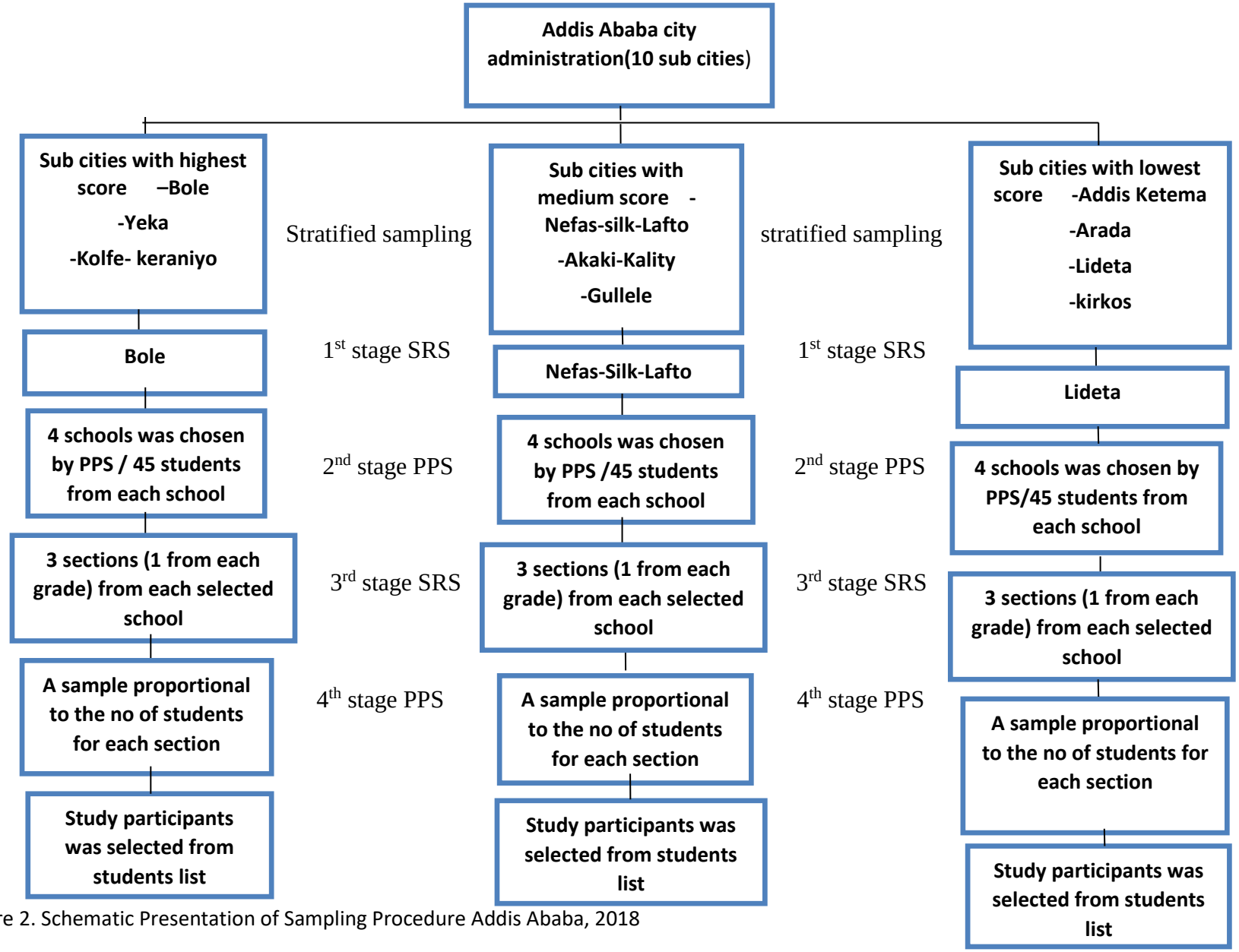

Figure 2. Schematic Presentation of Sampling Procedure Addis Ababa, 2018

4.7. Study Variables

4.7.1. Outcome Variable

The main outcome of this study was children eating behaviors which was measured by children eating behavior questionnaire. The children eating behavior questionnaire is a multi-dimensional, parent-reported questionnaire measuring children's eating behavior of preschool children which was first developed and validated in the UK. The CEBQ has good psychometric properties, research has provided evidence for concurrent validity of the CEBQ with actual observations of child eating behavior (114) and good internal validity with Cronbach's α ranging from 0.72 to 0.91(18) .The CEBQ consists of 35 items originally derived previous literature and from interviews with parents. It is categorized in to eight sub scales which are:

- Enjoyment of food (4 items) : measures a general interest in food captures the extent to which the child enjoys eating and wants to eat (4, 5).

-Food responsiveness(5 items): measures eating in response to external food cues and the desire to spend time eating(4, 5).

-Desire to drink (3 items): detects increased desire to have drinks, particularly sugar-sweetened drinks and has been related to a liking for consuming sweetened drinks (4, 5).

-Food fussiness(6 items): reflects a lack of interest in food and unwillingness to try new foods (food neophobia) (6) .

-Satiety responsiveness(5 items): which reflects the ability to regulate the amount of food that is eaten according to internal satiety cues. (4, 5).

-Slowness in eating(4 items): measures the speed of eating during the course of a meal and reflects a gradually reduced interest in a meal (4).

-Emotional overeating(4 items) and Emotional undereating(4 items) are used to assess increased or decreased eating in response to emotions, such as anger and anxiety (115).

Each item in all the sub scales of the CEBQ were answered using a five-point Likert frequency scale (1 = never, 2 = rarely, 3 = sometimes, 4 = often, 5 = always). And the higher the mean score the higher the expression of the behavior being practiced (90).

Independent Variables

Demographic and socioeconomic characteristics

Socio-demographic characteristics such as age, gender, grade level and school type were included. Age was measured in completed years. Parental education levels using scales ranging from: 1) cannot read and write, 2) read and write, 3) primary education 4) secondary education 5) college diploma and technical school 6) college degree graduate and above were assessed. The preschool students school types were categorized into two groups 1) Private /Missionary /International /Community and 2) Government /Public.

Socioeconomic index were assessed using wealth index in which participants were asked about their household fixed asset and housing condition questions a score "1" given to those who own/have and score of "0" given to those who did not.

Parental feeding practice, Parents perception and concern about child's weight and Parent perceived feeding responsibility

The above independent variables were measured using the child feeding questionnaire. It is a 31-item scale questionnaire originally designed for parents of children aged 2-11. It is used to measure parental beliefs, attitudes, and practices regarding child feeding. The CFQ contains seven subscales, including perceived responsibility, perceived parental weight, perceived child weight, concern about child overweight, restriction, pressure to eat, and monitoring. The higher the mean score the higher engagement in the practice (116) and parent means the primary caregiver that is the person who knows the most about how and what the child is fed. Usually (but not always) this will be the child's mother (117). Research provided evidence for concurrent validity of the CFQ with actual observations of feeding behavior of mothers (11). It has also an excellent internal consistency, with Cronbach's alpha ranging from α =0 .70 - 0.92 (118).

The Parental feeding practice consists of:

-Restriction scale (8 items): measures the extent to which parents restrict their child's access to foods in particular foods that are usually high in sugar, salt and fat (118). It is practiced in a way that can be detected by the child (66).

- Pressure to eat scale (4 items): measures parents tendency to pressure their children to eat more food (118) typically to eat healthy food or to maintain an adequate food intake (59).

Both were answered using a five point Likert scale (1 disagree, 2 = slightly disagree, 3 = neutral, 4 = slightly agree, 5 = agree)

-Monitoring scale has three items which measures the extent to which parents oversee their child's eating (118). It is parents act of controlling a child's intake in a way that cannot be detected by the child (65) answered using a five point Likert scale (1 = never, 2 = rarely, 3 = sometimes, 4 = often, 5 = always).

-Perceived feeding responsibility scale has three item measures parents' perceptions of their responsibility for child feeding (118) answered using a five point Likert scale (1 never , 2 = seldom, 3 = half of the time , 4 = most of the time, 5 = always) .

-Perceived parent and child weight has four and three items respectively measures parents' perceptions of their own and their child's weight status history (118) answered using a five point Likert scale (1= markedly underweight, 2= Underweight, 3=Normal, 4=Overweight, 5=markedly overweight).

-Concern about child overweight scale has three items which assess parents' concerns about the child's risk of being overweight (118) and was answered with Likert scale (1= unconcern, 2=A little concerned, 3=concerned, 4=fairly concerned, 5=very concerned)

Concern about child underweight

Maternal concern about child becoming underweight was measured using the concern about child underweight subscale (2 items) which assess parents' concerns about the child's risk of being underweight (118) answered using a five point Likert frequency scale (1 = never, 2 = rarely, 3 = sometimes, 4 = often, 5 = always) from the Preschooler Feeding Questionnaire (119).

Child's BMI

Anthropometric measurement was also taken to measure children BMI. Weight was measured to the nearest 0.1 kg using an electronic portable scale (Seca). To ensure measurement accuracy the scale was checked for zero reading before each weighing. Height was measured in the standing position, to the nearest 0.5 cm using a portable stadiometer.

Parental depressive symptoms

Parental depressive symptoms were measured using Patient Health Questionnarie-9(PHQ-9). It is a self-report measure used to screen depressive disorders. PHQ-9 is a nine-item questionnaire asked with a recall period of two weeks. The items request how parent have been bothered by depressive symptoms ,with response categories of 0 “not at all”,1 “several days”, 2 “more than half the days”,4 “nearly every day (120). It was validated in Ethiopia (121).

Child psychological status

Children psychological status was assessed using Strengths and Difficulties Questionnaire (SDQ) parent or caregiver report version (SDQ-P) which is widely used behavioral screening tool. It consists of 25 items to assess a range of ‘strengths’ and ‘difficulties’ as behavioral markers of potential mental health problems. The items contribute to five subscales of five items each with a minimum score of 0 (lowest score) to 10 (highest score): conduct problems, hyperactivity/inattention, emotional symptoms, peer problems, and pro social behavior(122).

4.8. Data collection procedures

We used an interview-based questionnaire to assess socio demographic status, children eating behavior and parental feeding practice, parent’s perception and concern about their child’s weight, parents depressions status and child’s psychological status. Anthropometric measurement was also taken to measure children BMI. socioeconomic status was assessed using household fixed asset and housing condition questions.

Since, the study participants were Amharic speakers, the questionnaire was first prepared in English and it was translated in to Amharic. Prior to data collection pretest and face validity was conducted on a sample of students taken from other schools which were not included in the study. A three days training was given for data collectors. Data collection took a total of two month and one-week duration which was conducted from March up to May. Four data collectors participated in the data collection process. The data collector’s profession were nurses and public health officers. The principal investigator also took the responsibility to control quality of data collected and proper taking of anthropometric measurement. Parents of the randomly selected students from the student list were given invitation to participate in this research through students’ communication book and their teachers. Those willing to participate came at the appointed time

which was usually early in the morning or in the afternoon. Informed consent was taken after explaining the main purpose of the study. Finally, the parents completed an anonymous interview-based questionnaire. Following these children's anthropometric measurement was taken the next day.

Anthropometric measurement

Weight was measured using Seca. digital weight scale. To measure weight, the scale was placed on flat surface and participants were measured with minimum clothes and no shoes. It was recorded to the nearest 0.1 kg. Measurement scales were carefully handled and calibrated every day by placing iron bars before the beginning of data collection and data collectors check whether the scales are at 0.00 reading before taking each measurement. Each participant was standing on the scale feet slightly apart in the middle of the platform of the scale and the researcher recorded the weight reading.

Height was measured using a portable stadiometer, which has a measuring rod with reading scales on both sides and a sliding horizontal head piece that can be adjusted to rest on top of head. While measuring it was placed against the wall after the body meter is rested on the ground and with the visual display facing the researcher. Participants were asked to stand straight where weight was distributed and both feet, buttocks and back touching the wall. The head were positioned so that the line of vision could be at right angles to the body and the arms hang freely by the sides then measurement was recorded to the nearest 0.1 cm. All measurements were recorded on the questionnaire.

4.9. Data quality control

Data quality assurance was done before, during and after data collection. Before data collection, standardization of data collectors on measurement errors was done. A three days practical and theoretical training was given for the data collectors on weight and height measurement and data collection techniques and procedures based on the questionnaires. The purpose of the study was also explained well for the data collectors. The training was given by the principal investigator. Face validity was conducted for the 35 item of the children eating behavior questionnaire and for 31 item of child feeding questionnaire. Two focus group discussions with a total of 20 parents, 10 parents per each focus group discussion was conducted with the aim of clarifying wordings and

for likelihood of the target audience to be able to answer the questions intended. One of the discussion point was "how to best structure the items in a way that could be understood in the context of the country without missing the main intention of the questions" During the focus group discussion, from the total of 20 Parents 9 of them were not clear with the action verbs used to describe emotions on items of 2,9 ,13 and 15 of CEBQ and the questioned seemed redundant to them . On the other hand, 5 of the parents were also confused with the local Amharic terms in item 19 ,30 and 35 of CEBQ. All the items were then modified and rephrased. The remaining items were kept in their original form since there was no challenge or no confusion to understand the items.

Measuring equipment's were tested regularly during data collection. Faulty equipment's were replaced. The following were checked daily: each scale with a standard weight, each height board with a stick that is cut at 110cm and the quality of the measuring tape glued onto the board. Technical error of measurement (TEM) was calculated and the Intra observer technical error of measurement for height was found to be 0.19 and for weight 0.12. On the other hand, the inter observer technical error of measurement for height was found to be 0.21 and for weight was 0.21. In all cases the technical error of measurement was within the acceptable range (123).

Pre-testing of the whole questionnaire was made. On the spot checking and review of completed questionnaires to ensure completeness and consistency of the information was done and immediate actions were taken. To keep accuracy of data, data entry was done by the principal investigator. Non-respondents and parents of the selected children who were absent or didn't come during data collection were contacted twice. After data collection, data was entered and cleaned using epi data version 4.4.1.0 and completeness and consistency was checked.

4.10. Data management and analysis

We used Epi Data version 4.4.1.0 for data entry and the statistical software package Stata version 15.0 for data cleaning and analysis. Data were cleaned for inconsistencies and missing values. All variables with missing data were reported. Variables were assessed for normality, linearity, homoscedasticity, multicollinearity and for outliers. Descriptive statistical analysis was conducted using frequency, percentage and mean (SD) to describe the study population by explanatory variables and children eating behavior.

Wealth index

Principal component analysis (PCA) was conducted by first asking all study participants about their household fixed asset and housing condition questions a score "1" given to those who own/have and score of "0" given to those who did not. Then, all the items asked were assessed for internal consistency to transfer the asset information into latent factors and the first PCA explaining most of the variation based on the objective of the study was taken as a wealth score. Wealth index was by rank ordered into quintiles to give poorest, poor, medium, wealthy and wealthiest status.

Child's BMI-for-age

The World Health Organization (WHO) 2007 growth reference was used as a standard reference for classifying preschool children using WHO Anthro plus software version 1.0.21. based on BMI-for-age cutoffs < -3 will be classified as severely thin, ≥ -3 and <-2 as thin, ≥-2and ≤ +1 as normal weight, and < +1 and ≤ +2 as overweight and >+ 2 as obese. The dataset on WHO Anthro plus software has been merged with STATA dataset using unique variable (identification number).

Children eating behavior and child feeding questionnaire scales

Negatively worded items(sentences) for example, from FF scale" My child enjoys tasting new foods "was scored in a reversed way. A new variable generated by calculating the mean of all items in each subscale for CEBQ and CFQ then they were expressed as mean and standard deviation.

Cronbach's alpha

Cronbach's alpha (α) was used to test internal reliability of each subscale in both CEBQ and CFQ.

parental depression status

Depression was categorized using the standard total PHQ-9 score which was person ranging between 0- 4 was in "no depression", 5-9 as "mild depression, 10-14 as "moderate depression", 15- 19 as "moderately severe depression" and those ranging 20 or higher were considered to be in "severe depression". But, those in severe depression and moderately severe range have been merged with moderate depression due to small observations.

Child's psychological status

Children psychological status was categorized using the standard SDQ parent version categorization of total difficulties scores which is by summing scores from all the scales except the prosocial scale. The resultant score ranges from 0 to 40. A child ranging between 0-13 is considered "Close to average", 14-16 as "Slightly raised ", 17-19 as " High , 20- 40 "Very high ". Close to average means clinically significant problems in this area are unlikely, slightly raised reflect clinically significant problems, high and very high describes there is a substantial risk of clinically significant problems in this area.

Evaluation of mean difference of socio demographic, child BMI for age and psychological factors on children eating behavior scales

Mean differences between each scales of eating behavior and age, parent education, socioeconomic status, child psychological status ,parents depressive symptoms ,child BMI was tested by one way ANOVAs for each of them separately and two sample t test was used for gender.

Evaluation of relation between children eating behavior scales and parental feeding practice and other factors.

Spearman's correlation coefficient was examined within each subscale of CEBQ and between each subscales of parental feeding practice. The Spearman's correlation were interpreted as weak for r 0.10 - 0.3, medium for r 0.30 – 0.5 and strong for r 0.50 – 1.0 according to Cohen's criteria (124).

Finally, Variables with p-value <0.25 in the univariate analyses were included in the multiple linear regression models. But since, most of the variables had a good theoretical reason and some which were significant in other similar studies were also included in the model. A few separate multiple linear regressions were run for each scale of children eating behavior and the association between variables were explored, variables which are statistically significant were considered as predicting factors. In all cases, differences were considered significant if $p<0.05$.

4.11. Ethical consideration

First, ethical clearance was obtained from School of Public Health; Collage of Health Science Addis Ababa University Institutional Review Board. Permission was obtained from Education Departments of Sub-cities and Directors of Schools which are going to be included in the study.

Verbal Informed consent was obtained from parents and school administration after the data collectors clearly explained the aim of the study and the fact that it has no invasive procedure and harm.

Respondents were informed that they could refuse or discontinue participation at any time and they were informed the fact that Information is recorded without their name being mentioned. Only codes were used to keep it anonymous and maintain confidentiality and privacy of respondent.

4.12. Dissemination of results

The result of this study will be disseminated to Addis Ababa University School of Public Health, Ministry of Health, Addis Ababa City Health Bureau and the Addis Ababa City Administration Educational Bureau. Furthermore, great efforts will be made to disseminate the result through participating on related issue seminars, workshops, scientific conferences. It will also be eligible for publications on reputable peer-reviewed journals.

5. RESULT

5.1. General characteristics of the study participants.

A total of 542 parent child dyads were sampled to be included in the study, out of these 525 participated resulting in 96.8% response rate . Only 17 parent child dyads were not included in the study because some parents didn't have adequate time to be interviewed or some children were unwilling to remove shoes or other clothing during anthropometric measurement.

Table 1 shows the general characteristics of the study participants; the mean age of the preschool children was 4.50(±0.04 SD) and most (74.1%) of them came from private/missionary/church schools. Majority (92.2 %) of the interviewed caregivers were mothers with highest educational of being secondary level.

Table 1. Characteristics of the preschool children and their parents in Addis Ababa, Ethiopia 2019

Variables	N	%
Child's age (in year)		
3 years	91	17.3
4 years	172	32.7
5 years	169	32.1
6 years	93	17.7
Child's gender		
Male	247	47
Female	278	53
Grade level		
KG-1	206	39.2
KG-2	181	34.5
KG-3	138	26.3
Caregiver relation to the child		
Mother	484	92.2
Father	14	2.7
Nanny	10	1.9
Others	17	3.2
Parent educational status		
No formal education	59	11.2
Primary education	131	24.9
Secondary education	183	34.8
Technical school and above	152	28.9
Wealth index		
Poorest	105	20.1

Poor	104	19.9
Medium	104	19.9
Wealthy	104	19.9
Wealthiest	104	19.9
Type of school		
Private/missionary/church	389	74.1
Government /public	136	25.9

Child's BMI-for-age

Figure 3 shows BMI-for -age of children in the study. Out of the 525 sampled children 404(76.9%) had normal weight while 68(12.9 %) were overweight and 22(4.1%) were obese. Our finding also showed 22(4.1%) and 9(1.7%) children were thin and severely thin respectively.

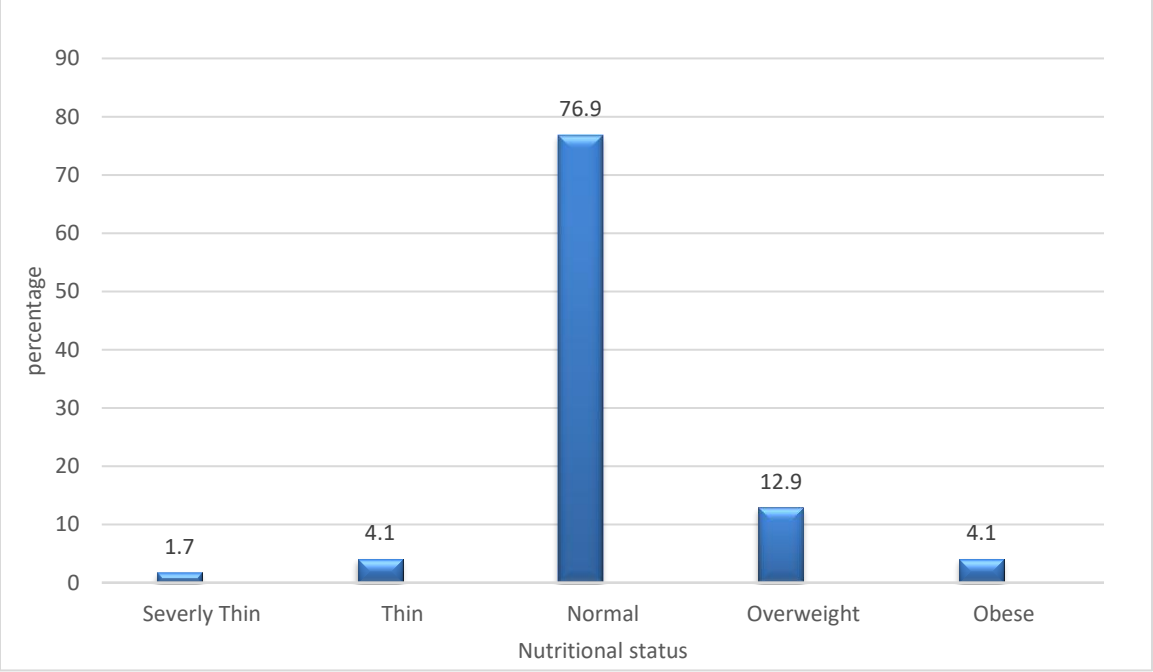

Figure 3. BMI-for-age of preschool children in Addis Ababa, Ethiopia 2019

Parental depression status

Figure 4, indicates depression status of parents in the study. According to our finding majority of the parents 300(57.1%) had no depression while 80(15.2%) of the parents had moderate depression.

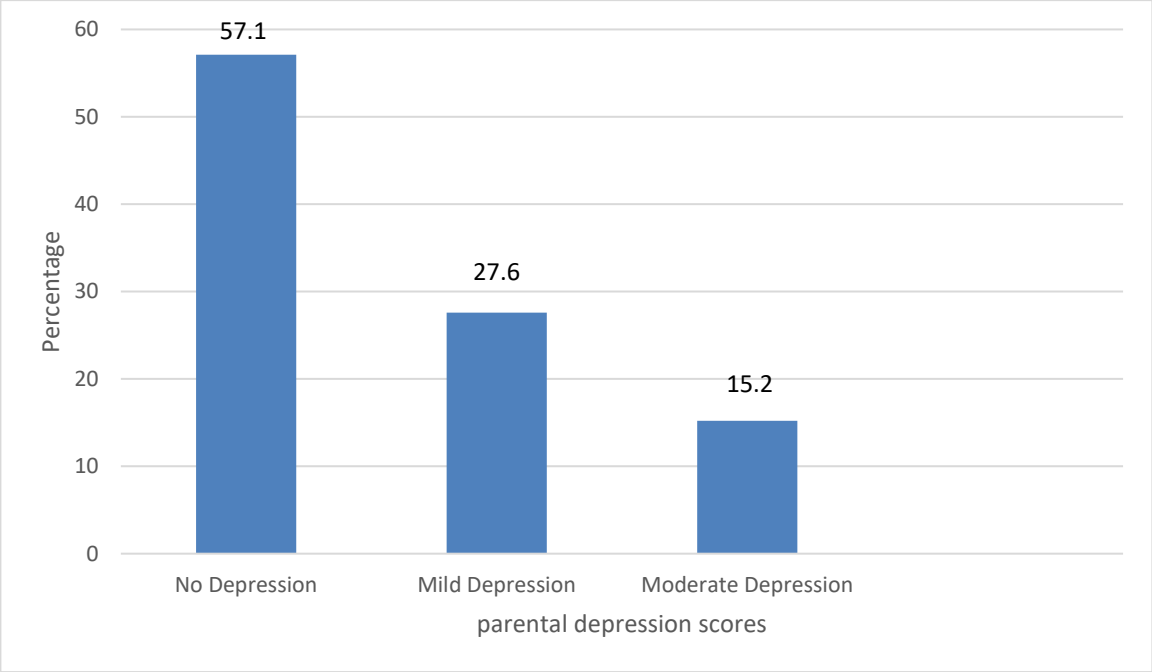

Figure 4. Depression status of preschool children parents in Addis Ababa, Ethiopia 2011

Child's psychological status.

Figure 5, we present child's psychological status was determined using the SDQ-p total difficulty score. Majority of the children 317(60.3%) scored close to average indicating clinically significant problems in this area are unlikely while 81(15.4%) scored very high score indicating there is a substantial risk of clinically significant problems in this area.

.

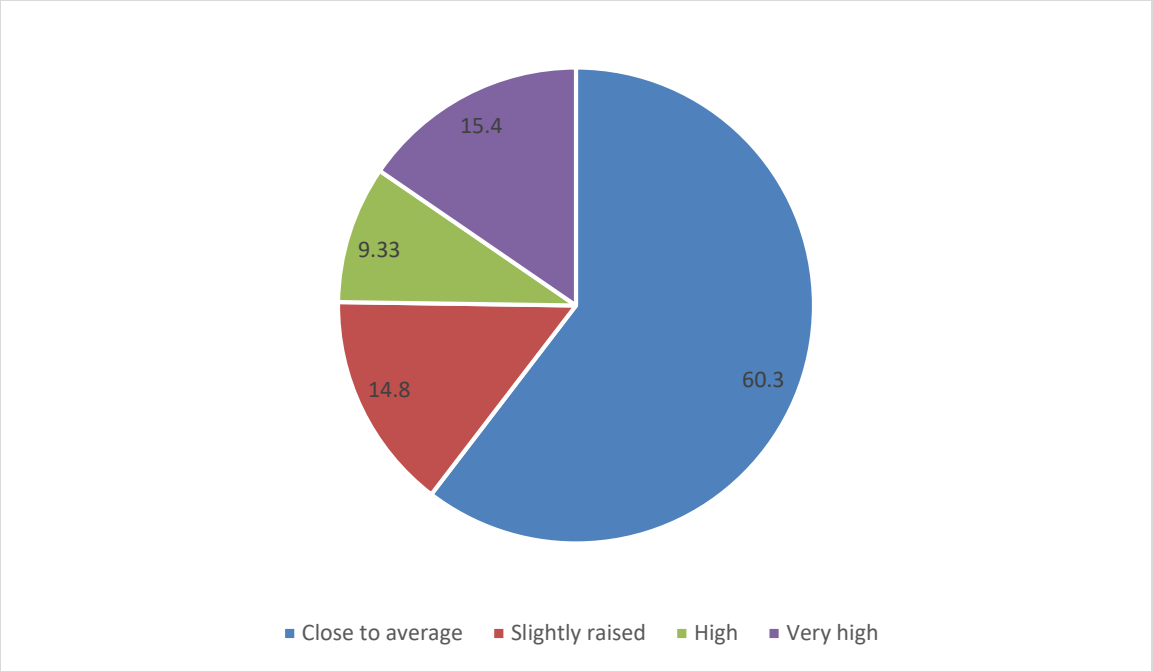

Figure 5. Total difficulty score for preschool children in Addis Ababa, Ethiopia 2019

Descriptive mean scores of children eating behaviors scales

Table 2 shows the mean scores of the different children eating behaviors scales indicating the higher the mean score the higher the expression of the behavior being practiced (90)**.** Most of the scales were close to the scale midpoint (2.5) while the highest scored behavior was slowness in eating 3.47(SD: 0.86) and the lowest was emotional overeating 1.31 (SD:0.59). The internal reliability (Cronbach's alpha) for each subscale of CEBQ ranged from 0.50 to 0.79.

Table 2. Descriptive mean scale scores with standard deviation of the study participants(n= 525) for children eating behavior questionnaire together with their Cronbach alpha in Addis Ababa, Ethiopia 2019

Children eating behavior			
Variables	Mean	SD	Cronbach alpha
Enjoyment of food	3.09	0.99	0.75
Food responsiveness	2.05	0.80	0.56
Desire to drink	3.28	1.08	0.77

Emotional overeating	1.31	0.59	0.79
Slowness in eating	3.47	0.86	0.50
Emotional undereating	2.80	1.02	0.71
Food fussiness	2.48	0.73	0.61
Satiety responsiveness	3.25	0.83	0.72

Descriptive mean scores parental perceived feeding responsibility and perceived own weight, parental perception and concern about child's weight and their feeding practice

Table 3 indicates the mean scores of the seven-scale child feeding questionnaire which includes parental perceived feeding responsibility and perceived own weight, parental perception and concern about child's weight and their feeding practice. For parental feeding practice descriptive mean score indicates the higher the score the higher engagement in the practice (116) .Monitoring practice had the highest mean score 4.13(SD:1.02) while restriction had the lowest score 3.47(SD:0.91). In the meantime, perceived feeding responsibility had the highest score of all the scales 4.47(SD:0.80). The internal reliability (Cronbach's alpha) for each subscale of CFQ ranged from 0.61 to 0.89.

Table 3. Descriptive mean scale scores with standard deviation of the study participants (n= 525) for child feeding practice questionnaire together with their Cronbach alpha in Addis Ababa, Ethiopia 2019

Variables	Mean	SD	Cronbach alpha
Perceived feeding responsibility	4.47	0.80	0.83
Perceived parent weight	3.01	0.47	0.76
Perceived child weight	3.05	0.56	0.89
Concern about child overweight	2.92	1.16	0.61

Concern about child underweight	2.42	1.35	0.64
Restriction	3.47	0.91	0.64
Pressure to eat	4.02	0.99	0.61
Monitoring	4.13	1.02	0.84

Comparison of children eating behavior scales by sociodemographic characteristics

Table 4 includes two sample t test used to compare the difference between male and female mean on each of eating behavior scales. The result describes that there was a significant difference in gender for food responsive (p= 0.004) and food fussiness (p= 0.008) scales.

Table 4. Comparison of children eating behavior scales of the study participants according to gender in Addis Ababa, Ethiopia 2019

Variables	**Male (n =247)** **Mean (**± SD**)**	**Female (n = 277)** **Mean (**±SD**)**	***P*-values**	**t -values**
Enjoyment of food	3.06(0 .96)	3.12(1.0)	0.520	-0.64
Food responsiveness	1.94(0.8)	2.14(0.80)	**0.004**	-2.87
Emotional overeating	1.31 (0.6)	1.31(0.5)	0.976	-0.02
Desire to drink	3.22 (1.0)	3.33(1.0)	0.256	-1.13
Food fussiness	2.57(0.7)	2.40 (0.7)	**0.008**	2.65
Satiety responsiveness	3.24(0.8)	3.27 (0.8)	0.649	-0.45
Slowness in eating	3.48(0.8)	3.47 (0.9)	0.836	0.20
Emotional undereating	2.77(1.0)	2.82 (1.0)	0.545	-0.60

Table 5 includes several one- way between groups analysis of variance conducted to examine mean difference of sociodemographic variables on the different scales of children eating behaviors. There was also a significant difference between parental educational status and all eating behaviors (p=0.047, 0.006, 0.005, 0.009, 0.002, 0.025) except for enjoyment of food and emotional overeating. It was found that children were more food fussier (2.65±0.80) satiety responsive (3.43±0.78) and practiced more emotional undereating (3.17 ±0.99) when their parents had no formal education than children with parents that had primary, secondary or tertiary educational level. while children were more food responsive (2.12 ±0.79) and practiced more desire to drink (3.47±1.05) when their parents had secondary educational level than children with parents with no formal education, primary or tertiary educational level. In the meantime, wealth index was significant for emotional undereating scale (p= 0.017) which shows that children practiced more emotional undereating (2.78 ±1.00) when parents scored poorest on wealth index score than children with parents that scored poor, medium, wealthy or wealthiest.

Table 5. A one-way ANOVA for each scale of children eating behavior by sociodemographic and socioeconomic characteristics of the study participants (n= 525) in Addis Ababa, Ethiopia 2019

	Children eating behavior							
	Enjoyment of food	Food responsiveness	Emotional overeating	Desire to drink	Food fussiness	Satiety responsiveness	Slowness in eating	Emotional undereating
Age								
3	3.17 ±1.06	2.07 ±0.86	1.25±0.55	3.31 ±0.07	2.53 ±0.82	3.28 ±0.82	3.53 ±0.91	2.71±1.03
4	3.10 ± 1.02	2.08 ± 0.79	1.32±0.57	3.33 ±1.03	2.50± 0.68	3.26 ±0.80	3.50± 0.85	2.93 ± 1.03
5	3.06±0.95	1.99 ± 0.80	1.31 ±0.65	3.26± 1.07	2.46 ±0.73	3.25 ±0.83	3.47 ±0.85	2.69±0.98
6	3.07 ± 0.95	2.06±0.79	1.34±0.58	3.20± 1.19	2.44 ±0.72	3.22 ±0.88	3.37 ±0.85	2.86 ±1.06
F statistic p*	0.24 0.870	0.47 0.705	0.39 0.759	0.36 0.783	0.31 0.815	0.08 0.969	0.66 0.578	1.90 0.128
Gender								
Male	3.06 ± 0.96	1.94 ±0.80	1.31 ±0.61	3.22±1.07	2.57±0.75	3.24±0.80	3.48 ±0.81	2.77± 1.00
Female	3.12 ± 1.02	2.14 ±0.80	1.31± 0.58	3.33±1.08	2.40±0.70	3.27±0.85	3.47 ±0.91	2.82±1.04
F statistic P*	0.41 0.520	8.29 **0.004***	0.00 0.976	1.29 0.256	7.03 **0.008***	0.21 0.649	0.04 0.836	0.37 0.545

Educational status									
No formal Education	2.88 ±1.17	1.79±0.70	1.20 ±0.42	3.19±1.00	2.65±0.80	3.43±0.78	3.65 ±0.79	3.17 ±0.99	
Primary education	3.03± 1.02	2.02±0.83	1.29±0.66	3.31±1.16	2.48±0.77	3.41±0.92	3.66 ±0.91	2.82± 1.10	
Secondary education	3.20 ±0.93	2.12 ±0.79	1.30 ±0.57	3.47±1.05	2.35±0.71	3.15±0.80	3.39 ±0.85	2.74±1.05	
Technical school and above	3.10 ± 0.97	2.09 ±0.82	1.37±0.62	3.06± 1.03	2.59±0.65	3.17 ±0.76	3.34±0.82	2.72 ±0.90	
F statistic P*	1.73 0.158	2.64 **0.047***	1.35 0.256	4.13 **0.006***	4.22 **0.005***	3.82 **0.009***	4.87 **0.002***	3.14 **0.025***	
Wealth index									
Poorest	3.17± 1.02	2.01± 0.79	1.29± 0.61	3.25 ±1.07	2.53 ± 0.79	3.15±0.82	3.43 ±0.86	3.06 ±0.96	
Poor	3.10±1.02	2.19± 0.89	1.38± 0.72	3.21± 1.13	2.41 ±0.70	3.23± 0.84	3.56±0.88	2.73 ±1.05	
Medium	3.08± 0.97	1.99± 0.74	1.31± 0.55	3.18 ±1.16	2.43 ±0.78	3.33± 0.81	3.44 ±0.85	2.84±1.04	
Wealthy	3.06±0.90	1.98± 0.71	1.26 ± 0.53	3.30 ±1.04	2.48 ±0.69	3.23± 0.86	3.46±0.94	2.59 ±1.01	
Wealthiest	3.07±1.06	2.1 ±0.88	1.29 ± 0.54	3.44 ±0.99	2.56 ±0.69	3.31 ± 0.81	3.47± 0.79	2.78 ±1.00	
F statistic P*	0.21 0.934	1.27 0.280	0.57 0.682	0.97 0.422	0.80 0.523	0.77 0.543	0.38 0.821	3.03 **0.017***	

*p < 0.05

Comparison of children eating behavior scales by parental depression status, child psychological and nutritional status.

Table 6 describes several one- way between groups analysis of variance conducted to examine the mean difference of children BMI and psychological factors on the different scales of children eating behaviors. The result shows that there was a significant difference between food responsiveness (p=0.017) and emotional eating (p= 0.000,0.000) with parental depression status. It was found that children were more food responsive (2.26±1.01), practiced more emotional over (1.58 ±0.90) and under eating (3.06 ± 1.03) when their parents had moderate depressive symptoms than children with parents with no depression or with mild depressive symptoms. The table below also describes that there is a difference between desire to drink scale (p=0.023) with child's psychological status. which indicates that children practiced more desire to drink (3.44 ±0.99) when they scored slightly raised on the total difficulty score than those that have close to average, high or very high scores. There was also a significant difference between food responsiveness (p=0.012) and emotional overeating (p= 0.023) with child's BMI for age. The result indicates that children practiced more emotional overeating (1.53 ±0.73) when they are obese than those children that are severely thin, thin, normal weight or overweight.

Table 6. A one-way ANOVA for each scale of children eating behavior by parental depression status, child psychological and nutritional status of the study participants (n= 525) in Addis Ababa, Ethiopia 2019

Children eating behavior								
	Enjoyment of food	Food responsiveness	Emotional overeating	Desire to drink	Food fussiness	Satiety responsiveness	Slowness in eating	Emotional undereating
Parental depression status								
No depression	3.05 ± 0.97	1.97±0.80	1.24 ±0.51	3.26 ±1.07	2.51 ±0.75	3.23 +0.80	3.44±0.86	2.64±1.05
Mild depression	3.16 ±1.00	2.08 ±0.67	1.29± 0.50	3.27±1.11	2.45±0.64	3.29 ±0.82	3.5±0.85	3.00±0.89
Moderate depression	3.12±1.08	2.26±1.01	1.58 ±0.90	3.36±1.05	2.42± 0.79	3.27± 0.95	3.55 ±0.89	3.06 ± 1.03
F statistic P*	0.61 0.544	4.07 **0.017***	10.46 **0.000***	0.24 0.783	0.61 0.544	0.26 0.768	0.57 0.566	9.66 **0.000***
Child's psychological status								
Close to average	3.07±0.97	2.01±0.75	1.28± 0.52	3.17 ±1.07	2.46 ±0.72	3.22±0.83	3.41±0.86	2.76±1.00
Slightly raised	3.22±0.91	2.11± 0.78	1.29±0.67	3.52±1.02	2.47 ±0.73	3.31± 0.73	3.63 ±0.83	3.05± 1.07
High	3.16±1.11	2.22± 0.92	1.34 ±0.63	3.38±1.23	2.66 ±0.79	3.35±0.87	3.52 ±0.81	2.86±0.98
Very high	3.01±1.09	2.03±0.95	1.40 ±0.76	3.44 ±0.99	2.49 ±0.73	3.26±0.89	3.53±0.93	2.68±1.08
F statistic P*	0.72 0.538	1.12 0.338	0.93 0.427	3.19 **0.023***	1.12 0.339	0.50 0.681	1.55 0.200	2.05 0.105

Child's nutritional status								
Severely thin	3.22 ± 1.00	2.33± 0.90	1.30 ± 0.46	3.40 ±1.15	2.25 ± 0.30	3.77 ±0.52	3.47 ± 0.93	2.41± 0.92
Thin	3.10 ± 0.85	2.29 ±0.87	1.21± 0.40	3.25 ± 1.14	2.23 ±0.66	3.28 ± 0.78	3.77 ± 0.94	2.90 ±0.91
Normal weight	3.04 ± 1.00	1.98 ± 0.78	1.27 ± 0.54	3.29 ± 1.06	2.5 ± 0.73	3.28 ± 0.83	3.47 ± 0.84	2.81 ±1.03
Overweight	3.28 ± 0.97	2.28 ± 0.86	1.50 ± 0.84	3.36± 1.15	2.49 ±0 .75	3.13 ± 0.81	3.45± 0.95	2.73 ±1.01
Obese	3.46 ±1.00	2.22 ±0.80	1.53 ±0.73	2.75 ±0.99	2.58± 0.79	2.92 ±0.86	3.26 ±0.76	3.01 ±1.15
F statistic	1.72	3.24	2.85	1.45	0.99	2.22	1.00	0.68
P*	0.143	**0.012***	**0.023***	0.214	0.411	0.065	0.409	0.606

P*<0.05

Correlation between children eating behavior scales and parental feeding practice scales

Table 6 shows Spearman correlation coefficient computed to assess the relationship between all children eating behavior scales and parental feeding practice scales, overall children eating behaviors coefficients represented small to large relation based on Cohen's guideline (124). All eating behavior scales were significantly correlated with at least one of the feeding practices scales. It shows that parents practice of food restriction had moderate positive correlation with child food responsiveness, r=0.306, p< .001, enjoyment of food r= 0.236, p <.001 and with desire to drink r= 0.224, p<.001 while it had a small negative relation with food fussiness r=0.175 p<.001. Although most of these associations were small, pressure to eat had a positive correlation with the food avoidant behaviors and negative relation with food approach behaviors except for desire to drink with p< 0.05.

The child feeding practice scales were only weakly correlated with each other. Monitoring had a moderate correlation with restriction r=0.254 p<.001 and small relation with pressure to eat r=0.169 p<.001.

Correlations between the CEBQ subscales indicated mostly small to large relation, e.g. food responsiveness had strong correlation with enjoyment of food r=0.536 p<.001 and emotional overeating r= 0.439 p<.001. Indicating that children who are more responsive to food cues also tend to enjoy their food. Food fussiness had a negative correlation with the food approach scales ranging from moderate r= -0.377 p<.001 (enjoyment of food) to small coefficient r= 0.107 p<.05(desire to drink). satiety responsiveness had a strong positive correlation with slowness in eating (r= 0.564 p<.001) and a negative relation for all the food approach with p<.001 except for desire to drink. Suggesting that children who are more satiety responsive also tend to eat slower and tend to enjoy their food less.

Table 7.Spearman rank Correlations between the CEBQ scales, CFQ scales of the participants in Addis Ababa, Ethiopia 2019

Pearson correlation coefficient											
	Children eating behavior								Parental feeding practice		
Children eating behavior	Enjoyment of food	Food responsiveness	Emotional overeating	Desire to drink	Food fussiness	Satiety responsiveness	Slowness in eating	Emotional under eating	restriction	Pressure to eat	monitoring
Enjoyment of food	1.000										
Food responsiveness	0.546**	1.000									
Emotional overeating	0.294**	0.439**	1.000								
Desire to drink	0.142**	0.221**	0.144*	1.000							
Food fussiness	-0.377**	-0.228**	-0.062**	-0.107**	1.000						
Satiety responsiveness	-0.443**	-0.195**	-0.203**	0.131**	0.243**	1.000					
Slowness in eating	-0.304**	-0.159**	-0.249**	0.058	0.202**	0.564**	1.000				
Emotional under eating	-0.033	0.146**	0.043	0.106**	0.065	0.267**	0.317**	1.000			
Parental feeding practice											
Restriction	0.236**	0.306**	0.160**	0.224**	-0.175**	-0.055	-0.001	0.123**	1.000		
Pressure to eat	-0.152**	-0.105**	-0.154**	0.103*	0.098**	0.212**	0.182**	0.060	0.079	1.000	
Monitoring	0.114*	0.107*	0.019	0.109*	-0.112*	0.014	0.04	0.025	0.254**	0.169**	1.000

*P<0.05 **p<0.001

Association between children eating behavior scales with parental feeding practices and other variables.

In table 7 we present a few separate multiple linear regression models carried out to investigate the relationship between each scales of children eating behavior and each scale of parental feeding practice. We conducted the multiple regressions controlling for sociodemographic characteristics, parent's depression status, child's psychological status, parents perceived feeding responsibility, parents perceived own and child weight and concern about child under or over weight. Variables with p-value < 0.25 in univariate analysis were included in the models but most of the variables were chosen based on there good theoretical reason and there analytic results (significance level) in other similar studies. Category variable groups were dummy coded and entered in the models.

There was a significant relationship between children eating behavior and parental feeding practice. The main effects that was observed was a positive association between food approach behaviors: enjoyment of food (*b= 0.22, p*<0.001), food responsiveness (*b=0.22, p<0.001*), emotional overeating (*b=0.08, p<0.05*) and desire to drink (*b=0.26, p<0.001*) and parental food restriction practice. And these scales also had a negative association with parents practice of pressure to eat except for desire to drink. Meanwhile, of the food avoidant behaviors: food fussiness (b= 0.10, *p*<0.001) satiety responsiveness (0.14, *p*<0.001) and slowness in eating (*b= 0.12, p < 0.05*) had a positive association with parents practice of pressure to eat. In the meantime, negative association was found between food fussiness (*b=-0.13, p<0.001*) and parents practice of restriction. Parents practice of monitoring was not found significantly associated with any of eating behavior scales.

Results of the regressions also found that the of food approach behaviors enjoyment of food (*b=0.13, p<0.001*), food responsiveness (*b=0.17, p<0.001),* emotional Overeating (*b=0.11,p<0.001*) had a positive significant association with parents concern about their child's overweight status. Which shows the higher the level of the parents' concerns for their child being overweight the higher the food approach behaviors. Parents concern about child's underweight was negatively associated with enjoyment of food (*b=-0.14, p<0.001*) and positively with desire to drink (*b=-0.07, p<0.01*) satiety responsiveness (*b=0.08, p<0.01*), slowness in eating (*b=0.08,p<0.01*) and emotional undereating*(b= 0.07,p<0.05*). Parents perceived feeding responsibility was associated with satiety responsiveness and emotional undereating.

Children eating behavior scales were also found to have association with some characteristics of the study participants. Food responsiveness (*b=0.18, p<0.01*) and food fussiness (*b=-0.18, p<0.01*) were found to have association with gender. Two out of four food avoidant eating behaviors had a negative association with parent's education status while taking no formal education as a referent group. Parents depression status was positively associated with emotional overeating (*b=0.28, p<0.001*) and emotional undereating *(b=0.42,p<0.001, b=0.32,p<0.01)* while taking no depression as referent group. Slowness in eating, desire to drink, and emotional undereating were found to have a positive borderline association with child's psychological status using total difficulty score with close to average as a referent group. Child's nutritional status was significantly associated satiety responsiveness (*b=-0.64, p<0.05*) taking severely thin as a referent group.

Table 8. Multiple linear regression analysis showing association of eight dimensions of children eating behavior with parental feeding practice in Addis Ababa, Ethiopia 2019

	Children eating behavior								
	Enjoyment of food β (SE)	Food responsiveness β (SE)	Emotional overeating β (SE)	Desire to drink β (SE)	Food fussiness β (SE)	Satiety responsiveness β (SE)	Slowness in eating β (SE)	Emotional undereating β (SE)	
Age in years	-0.03(0 .04)	-0.009(0.03)	0.04(9.02)	-0.06(0.04)	-0.01(0.03)	-0.02(0.03)	-0.05(0.03)	-0.01(0.04)	
Gender: Female	0 .04(0.08)	0.18(0.06)**	0.02(0.05)	0.06(0.09)	-0.18(0.06)**	0.007(0.07)	-0.05(0.07)	0.06(0.08)	
Parent education status									
Primary education	-0.01(0.15)	0.07(0.11)	0.04(0.09)	0.05(0.17)	-0.10(0.11)	-0.05(0.13)	-0.001(0.13)	-0.51(0.15)**	
Secondary education	0 .07(0.14)	0.16(0.11)	0.07(0.08)	0.19(0.16)	-0.19(0.11)	-0.30(0.12)**	-0.25(0.136)	-0.60(0.15)**	
Technical school and above	-0.07(0.15)	0.09(0.12)	0.12(0.09)	-0.18(0.17)	0.02(0.11)	-0.23(0.13)	-0.25(0.13)	-0.50(0.16)**	
Wealth index									
Poor	-0.14(0.13)	0.11(0.10)	0.02(0.07)	-0.01(0.14)	-0.07(0.10)	0.10(0.11)	0.17(0.11)	-0.30(0.13)*	
Medium	-0.07(0.13)	0.007(0.10)	0.02(0.07)	-0.06(0.14)	-0.07(0.09)	0.14(0.11)	-0.004 (0.11)	-0.22(0.13)	
Wealthy	-0.03(0.13)	-0.002(0.10)	-0.04(0.07)	0.02(0.14)	-0.03(0.10)	0.03(0.11)	-0.02(0.11)	-0.48(0.13)**	
Wealthiest	-0.09(0.13)	0.04(0.10)	-0.04(0.07)	0.18(0.14)	0.06(0.09)	0.16(0.11)	0.04(0.11)	-0.27(0.13)*	
Parent depression status									
Mild depression	0.07(0.09)	-0.004(0.07)	-0.005(0.05)	-0.14(0.11)	-0.06(0.07)	0.03(0.08)	0.003(0.08)	0.32(0.10)**	

Moderate depression	0.09(0.12)	0.18(0.09)	0.28(0.07)**	-0.11(0.14)	-0.08(0.09)	-0.04(0.10)	-0.01(0.11)	0.42(0.13)**	
Children eating behavior									
	Enjoyment of food β (SE)	Food responsiveness β (SE)	Emotional overeating β (SE)	Desire to drink β (SE)	Food fussiness β (SE)	Satiety responsiveness β (SE)	Slowness in eating β (SE)	Emotional undereating β (SE)	
Child's psychological status									
Slightly raised	0.09(0.12)	0.06(0.09)	0.004(0.07)	0.26(0.13)	0.08(0.09)	0.06(0.10)	0.21(0.10)*	0.23(0.12)	
High	0.05(0.14)	0.15(0.11)	0.01(0.08)	0.16 (0.16)	0.27(0.11)*	0.13(0.12)	0.07(0.13)	-0.06 (0.15)	
Very high	0.02(0.12)	0.06(0.09)	0.13(0.07)	0.21(0.13)	0.02(0.09)	-0.02(0.10)	0.06(0.11)	-0.14 (0.12)	
Child's nutritional status									
Thin	-0.20(0.37)	-0.11(0.29)	-0.09(0.22)	-0.16(0.42)	-0.03(0.28)	-0.50(0.32)	0.40(0.34)	0.49(0.39)	
Normal weight	-0.25(0.32)	-0.30(0.25)	0.03(0.19)	-0.12(0.35)	0.18(0.24)	-0.47(0.27)	0.13(0.28)	0.49(0.33)	
Overweight	-0.16(0.33)	-0.07(0.26)	0.20(0.20)	-0.01(0.38)	0.22(0.25)	-0.54(0.29)	0.17(0.30)	0.37(0.35)	
Obese	-0.08(0.37)	-0.22(0.29)	0.11(0.22)	-0.47(0.42)	0.32(0.28)	-0.64(0.32)*	0.03(0.33)	0.58(0.39)	
Perceived feeding responsibility	0.03(0.05)	0.005(0.04)	0.01(0.03)	-0.03(0.06)	0.04(0.04)	0.11(0.04)*	0.09(0.05)	0.13(0.05)*	
Perceived parent weight	-0.01(0.08)	0.07(0.06)	0.005(0.05)	0.03(0.09)	0.08(0.06)	0.05(0.07)	0.04(0.07)	-0.08(0.09)	
Perceived child weight	0.18(0.07)*	0.01(0.06)	0.04(0.04)	0.03(0.08)	-0.09 (0.05)	-0.11(0.06)	-0.17(0.06)**	-0.13(0.07)	
Concern about child underweight	-0.14(0.03)**	-0.02(0.02)	-0.001(0.01)	0.07(0.03) *	0.03(0.02)	0.08(0.02)**	0.08(0.02)**	0.07(0.03)*	

Concern about child overweight	0.13(0.03)**	0.17(0.03)**	0.11(0.02)**	-0.04(0.04)	0.01(0.02)	-0.02(0.03)	0.002(0.03)	0.09(0.03)**	
Children eating behavior									
	Enjoyment of food β (SE)	Food responsiveness β (SE)	Emotional overeating β (SE)	Desire to drink β (SE)	Food fussiness β (SE)	Satiety responsiveness β (SE)	Slowness in eating β (SE)	Emotional undereating β (SE)	
Parental feeding practice									
Restriction	0.22(0.04)**	0.22(0.03)**	0.08(0.02)**	0.26(0.05)**	-0.13(0.03)**	-0.04(0.04)	-0.003(0.04)	0.10(0.04) *	
Pressure to eat	-0.11(0.04)**	-0.08(0.03)**	-0.11(0.02)**	0.04(0.04)	0.10(0.03)**	0.14(0.03)**	0.12(0.04)**	0.02(0.04)	
Monitoring	0.01(0.04)	-0.001(0.03)	-0.01(0.02)	0.07(0.05)	-0.05(0.03)	-0.008(0.04)	0.01(0.04)	-0.02(0.04)	

*P<0.05 **P<0.01 Referent groups: Gender: male , Educational status: no formal education, Wealth index: very poor, Depression status: no depression, Total difficulty score: normal, Nutritional status: severely thin

Unstandardized beta coefficient is used in all the regression models.

The above table is number of multiple linear regression models done for each of the eight-scale dimension of eating behavior separately but compiled for simplicity.

6. DISCUSSION

The main aim of this study was to examine the association between children eating behavior and parental feeding practice particularly in preschool children in Addis Ababa. This study revealed that food approach behaviors had positive association with parents practice of food restriction while they had a negative association with pressure to eat except for desire to drink scale. Meanwhile, food avoidant behaviors had a positive association with parents practice of pressure to eat. Food fussiness scale had a negative association with parents practice of restriction.

First, it is essential to consider the reported descriptive statistics , for the children eating behavior scales some of the mean scores were 2.05(SD:0.80) for FR, 3.28(SD:1.08) for DD, 2.48(SD: 0.73) for FF and 2.08(SD:1.02) for EUE the scores were similar to those reported in previous studies (125-127). Satiety responsiveness 3.25(SD:0.83) and the highest scored behavior slowness in eating 3.47(SD: 0.86) were much higher than a study done in Portugal which was 2.87(SD:0.93) and 2.88(SD:1.16) respectively (100) This might be due to the difference in age group as the above study included children aged 3-13 years and ability to self-regulate food intake decrease with age (5). While the lowest scored behavior emotional overeating 1.31 (SD:0.59) was similar to finding in china (99) and Sweden (115) .The parental feeding practices mean scores for monitoring 4.13(SD:1.02) and restriction 3.47(SD:0.91) had similar scores while pressure to eat 4.02(SD:0.99) had much higher score compared to an Australian study (125).This variation might be because the above study is done in one of the developed countries on highly educated mothers and there are evidences that parental feeding practice are affected by socioeconomic and educational status (25, 128) . From the results of estimated Cronbach's alpha, the most notable result was the low alpha value for food responsiveness and slowness in eating. All other estimates were close to or above 0.70. The reason for the low alpha might be because Cronbach alpha is quite sensitive to the number of items in the scale Which have been seen in other similar studies (99, 129) . It is common to find scales with quite low Cronbach values when the items are less than ten (130). The scales were also correlated with each other ranging from weak to strong in line with other studies (18, 131)

As hypothesized , food approach behaviors including enjoyment of food, food responsiveness , emotional overeating and desire to drink had positive association with parents practice of food restriction .This finding was similar to previous studies where, it was found that more restrictive feeding practice predicted increased food-approaching behavior, that is, enjoyment of food and emotional overeating (132). Another cohort study revealed that restriction was positively correlated with food responsiveness at both time points (21).

The reason for these might be that overt restriction of a palatable food item can increase a child's desire for the ''forbidden'' foods (133, 134). Persistent restriction may lead to children overindulging on these foods when they become available. That is, they learn to respond to food cues rather than internal cues of hunger and satiety. This notion is supported by a longitudinal study where the daughters of overweight mothers who used high levels of restrictive feeding when they were 5 years old displayed more food responsive eating behavior at 9 years than the girls whose mothers used low levels of restriction (135). In contrast to these studies controlling for baseline values, another study found no association between the maternal use of restrictive feeding practices assessed at 2-4 years of age and food responsiveness 12 months later (21).

Another finding was that parents practice of restriction was less in children with food fussiness behavior. This is in line with other similar previous study where fussy eating was significantly negatively associated with 'restriction', such that fussier children were less restricted for foods high in sugar and fat(136). On the contrary, findings from other study has reported of using greater levels of restriction with children who were fussier, perhaps because they perceive fussier children to have a more limited diet and to more readily consume energy-dense foods (137) and it could be that parents use restriction of energy-dense foods in an attempt to encourage consumption of rejected foods (62).

Given the cross-sectional nature of this study bidirectional relationship is possible. Since, restriction had been shown to be associated with different food approach behaviors with the proposed mechanism being that unavailability of restricted foods makes them more attractive, leading to overconsumption when they become freely available. However, it is equally possible that parents of highly obesogenic eating behavior children feel the need to restrict the child's intake of unhealthy food.

In line with our other main hypothesis, the other major finding of this study was the food avoidant behaviors food fussiness, satiety responsiveness and slowness in eating had a positive association with parents practice of pressure to eat. These finding confirms the results of previous cross-sectional study with supporting ,maternal reports of pressuring their child to consume more food at meals was associated with food avoidance eating behaviors and uniquely predicted slowness in eating, emotional under-eating, and satiety responsiveness (126). This explanation can also be substantiated by the current study correlations seen between CEBQ food avoidant scales and pressure to eat similar with other study (11) . However in one of prospective study, it was found that there was no relationship between pressure to eat and food fussiness (21).

Children who are forced to consume certain foods develop a "cognitive aversion" for those foods because they associate the food with the negative feeding experience (138). They also develop lowered interest in food (125) and will have negative comments about food (62). It is possible that the cognitive aversion might also apply to the general experience of trying new foods (21). This has also been in line with retrospective reports have found that adults‘ food dislikes can be traced back to negative experiences involving pressure to eat (139).

In the meantime food approach behaviors enjoyment of food, food responsiveness and emotional overeating were found to have a negative association with parents practice of pressure to eat in line with another study that stated parents who used pressure had children who were less likely to have food responsiveness and enjoyment of food (63). This was also evidenced by the current study correlation result and by another prospective study, where practice of pressure to eat and enjoyment of food were negatively correlated (101) .Generally, Children who enjoyed food less, were fussier, or ate more slowly, had mothers who were more likely to use pressure strategies to feed her child (20).

A bidirectional relationship is possible as parents may pressure their child to eat more in response to their child’s avoidant eating behavior (126) and due to concerns about children not eating enough or not getting a healthy balanced diet (61) , or maybe pressuring strategies could be implicated in the development and persistence of these problems .

The Desire for Drinks scale was found to have positive relation with pressure to eat, monitoring and parent practice of restriction. The result also show that it has a positive significant correlation with some of food avoidant and food approach scales. These findings are surprising given that desire for drinks was originally conceptualized as an indicator of obesity risk (desire to drink sweetened beverages; e.g., soft drinks) The reason for these finding might be Thus the desire for drinks items do not explicitly make reference to the types of drinks (e.g., soft drinks) or the relevance of this scale may be age dependent as study show that soft drink consumption increases with age (131) .

In the current study it was found that parents practice of monitoring was not found significantly associated with any of eating behavior scales similar to an American study which shows monitoring was not associated with child intake (140). This might be because since, most parents scored higher on monitoring than on the other two practices in the present study, possibly reflecting the social desirability endorsing monitoring practices (11). These makes it difficult to examine association between eating behaviors and monitoring practice, due to the limited variance of the results .On the contrary a brazil study on school age children found that ,lower use of monitoring increased child intake of unhealthy food by approximately two times (141). Results regarding relation of parents practice of monitoring and children eating behavior remains inconsistent.

In addition, results of the regressions found that the food approach behaviors: enjoyment of food, food responsiveness, emotional overeating had a positive significant association with parents concern about their child's overweight status. The finding was similar to another cross sectional study where mothers with higher levels of concern about child overweight reported more frequent use of restriction, and greater child food responsiveness (125). But, it is possible that mothers react to the children's eating behavior for reasons other than their concern about child weight, for example concern about the child's fat or sugar intake. It was also found that food avoidant behaviors (SE and SR) were associated with parents practice of pressure to eat and concern about child underweight. This was in line with another study where the relationship between child food fussiness and maternal use of pressure to eat was partially mediated by maternal concern about the child being or becoming underweight. This finding suggested that perhaps children's fussy eating might come from mothers use pressure because they are concerned that their children will become underweight (125).

Several studies have been done for the potential effect of eating behavior on subsequent children's BMI (60, 86). Conversely, BMI might also affect eating behavior through an increase in energy needs and up-regulation of appetite (142). An interesting finding that supports the above statement in this study was that child's BMI was significantly negatively associated with satiety responsiveness taking severely thin as a referent group. This finding was similar with other studies where high child satiety responsiveness to be associated with lower BMI scores among children (11, 100). And less satiety responsiveness was mainly a consequence of a high BMI in childhood (142). The reason for these might be because infants' innate ability to self-regulate food intake decrease with age and their eating may to a greater extent be shaped by external factors (5) and the other biological explanation might be the lack of satiety responsiveness can be a result of decreased leptin sensitivity. The satiety-hormone leptin has an inhibitory effect on appetite regulation in healthy-weight individuals. However, overweight people have elevated leptin levels that are causing impaired leptin-signaling capacity in the hypothalamus, leading to leptin resistance (143). Potentially, subclinical levels of excess weight might already affect children's leptin sensitivity, which consequently decreases satiety levels. In the meantime , No other scales were found to have association with BMI similar with other study (127).

Parents depression status was also positively associated with children's emotional overeating and emotional undereating while taking no depression as referent group. This might be because According to a British study, emotional eating can be explained mostly by environmental variance, rather than genetic influences and emotional eating mainly overeating in response to negative emotions is a learned behavior (144). This suggests that children that engage in emotional eating might learn these behavior from their parents with depressive symptoms or in response to these negative interactions with their parents. Similarly, an Australian study showed an association with parental depression with children eating behavior although the scales were a different eating behavior scale than the finding from this study, It showed enjoyment of food and food fussiness were predicted by parental depression (145). Alternatively, the role of parents feeding practices may explain the relationship between parent's depression and children's eating behavior traits. That is parents with depressive symptoms tend to display a negative affect and be disengaged in parent-child interaction including the use of less sensitive child-feeding practices (93). This explanation can be substantiated by a cross sectional study which mothers with elevated depressive symptoms

reported more pressuring of children to eat which in turn might affect children eating behavior (95).

We have also found that food fussiness and slowness in eating scales had a positive association with child's psychological status using total difficulty score with close to average as a referent group. This was in line with UK study, where several significant relationships were identified between child emotional temperament and food avoidant eating behaviors (90) .This might be because children with psychological problems tend to have impaired feeding skills such as hypersensitivity to taste and texture which affects eating process and makes feeding interaction difficult (17). On the contrary another study found that both internalizing problems scores (peer pressure and emotional symptoms) and externalizing (conduct problems) were positively associated with obesogenic eating behaviors (food responsiveness and emotional overeating) (88). The inconsistency between these studies show further investigations should be done between children's psychological status and their eating behaviors.

The current study also found a significant association between gender in food responsiveness and food fussiness scales. The present study also found a significant difference in gender suggesting that female children were more food responsive than male children while male children were more food fussier. On the contrary, another study found that boys might be more interested in food than girls and girls might be more 'picky' than boys at an early age (99). But, Studies have also shown no consensus regarding the association (variation) in eating behavior depending on the child's gender. In one of the studies the authors found no differences in behavior between gender (115) . And this might probably be because the major differences between boys and girls can be observed in adolescence that, as it is during this phase that girls begin to worry about body self-image, which leads to food restriction attitudes and increased esthetic awareness (146). This might also be the reason that there was no association found between age and children eating behavior in the current study. Another finding was that socio economic status was not associated with any of eating behaviors traits except for emotional undereating these was similar to a study done in Australia (145) .This relation might be explained by parental feeding practice where inverse association have been found between parents socio economic status and parental Pressure to eat (128) . And this maternal reports of pressuring their child to consume more food at meals was associated with food avoidance eating behaviors uniquely predicting emotional under-eating (126).

In the current study the other interesting finding was that parents educational status had a significant difference and was negatively associated with most of the food avoidant scales. which was similar with another study where children of well-educated parents had tasted a larger number of foods, thus displaying lower behavioral neophobia, with lower FNS scores than children of less educated parents (22). This might be because mothers with a low educational level are more likely to have negative perceptions about introducing different quality and variety of foods (147) on the other hand, mothers with a higher education level tend feed their children healthier more diverse products at an early age and value health above cost in their food choices (108). On the contrary, in another study children with higher Appetite Restraint scores including the sub-domains Satiety Responsiveness, Slowness in Eating, Food Fussiness at 7 years of age seem to come from families with a higher educational level (52).

Strength

As a major strength, this research study tried to address an important public health concern on parent child feeding interaction. The study incorporated all dimensions of eating styles which helped to assess the association with parental practice on a wider scope of different eating styles. Comparability with other international studies is possible since all the questionnaires were well known standard tools.

Limitation

However, there are limitations to our study that should be considered. First and foremost, the cross-section design nature of the study hinders to infer causal conclusions between children eating behavior and parental feeding practice. Second the measures were based on the parents' self-report rather than direct observation of parental feeding practices and children eating behavior. Since, it is subjective it might introduce some bias. Parents may not be able to accurately estimate how much their child's eating behavior deviates from typical child eating behavior or that their perception of their child's eating behavior might be biased by their own concerns about eating and feeding behaviors. Although there are many advantages to employing observations and laboratory tests instead of questionnaires, these techniques are not cost effective specially in a population studies such as the present which is why these studies relied on parental reports. The other drawback was that the children eating behavior and child feeding questionnaire are not validated

in this study area. These might jeopardize the tools ability to assess accurately what it was supposed to measure. However, It has been validated in similar developing areas and the effect has been minimized by performing face validity and internal reliability (Cronbach alpha) test were conducted on a sample of parents before using measurement scale.

Conclusion

This study revealed that parents that practice food restriction had children that have more food approach behaviors. Indicating that Parents that practiced food restriction had children that were more food responsive, tend to emotionally overeat, tend to enjoy food more and had more desire to drink. Meanwhile, parents that practice pressure to eat had children that have more food avoidant behaviors. Indicating parents that practice pressure to eat had children that were more food fussier, satiety responsive and tend to eat slower. After adjusting for factors such as socio demographic characteristics, parent's perception and concern about child weight, parental depression status and child psychological status.

Recommendation

Parents and other caregivers

-It will help parents to understand eating behaviors in young children and to practice appropriate feeding practice to overcome eating problems.

Researchers

- To further our understanding of how the relations between parent feeding practice and child eating behaviors evolve over time to reduce the effect on unhealthy nutritional status it will be better to utilize longitudinal research designs.

- Use of observational methodology in naturalistic settings such as the home environment, as it would enhance our understanding of the associations among parent feeding practice and child eating behaviors by overcoming limitations related to questionnaire bias.

Health care providers

-Health care providers should be trained to provide better support for parents in understanding and managing eating behaviors in young children and to counsel parents on appropriate feeding practice to overcome feeding problems.

Policy makers and other stake holders

-It can help policy makers and relevant stakeholders to develop targeted public health interventions that can alter the specific eating behaviors and in turn to prevent their impact on nutritional status. It might also be useful incorporate appropriate children eating behavior and parental feeding practices as an important component of child feeding strategies. In Ethiopia it is essential to include these component in addition to responsive feeding in national nutritional programs for improvement of nutritional status of children 24-59 months.

7. REFERENCE

1. Savage JS, Fisher JO, Birch LLJTJoL, Medicine, Ethics. Parental influence on eating behavior: conception to adolescence. 2007;35(1):22-34.
2. Ventura AK, Birch LL. Does parenting affect children's eating and weight status? International Journal of Behavioral Nutrition and Physical Activity. 2008;5(1):15.
3. Wardle J, Guthrie CA, Sanderson S, Rapoport L. Development of the Children's Eating Behaviour Questionnaire. Journal of Child Psychology and Psychiatry and Allied Disciplines. 2001;42(7):963-70.
4. Ashcroft J, Semmler C, Carnell S, Van Jaarsveld C, Wardle JJEjocn. Continuity and stability of eating behaviour traits in children. 2008;62(8):985.
5. Sleddens EF, Kremers SP, Thijs CJIJoBN, Activity P. The Children's Eating Behaviour Questionnaire: factorial validity and association with Body Mass Index in Dutch children aged 6–7. 2008;5(1):49.
6. Falciglia GA, Couch SC, Gribble LS, Pabst SM, Frank RJJotADA. Food neophobia in childhood affects dietary variety. 2000;100(12):1474-81.
7. Svensson V, Lundborg L, Cao Y, Nowicka P, Marcus C, Sobko T. Obesity related eating behaviour patterns in Swedish preschool children and association with age, gender, relative weight and parental weight-factorial validation of the Children's Eating Behaviour Questionnaire. International Journal of Behavioral Nutrition and Physical Activity. 2011;8(1):134.
8. Spence JC, Carson V, Casey L, Boule NJIJoPO. Examining behavioural susceptibility to obesity among Canadian pre-school children: the role of eating behaviours. 2011;6(sup3):e501-7.
9. Sleddens EF, Kremers SP, Thijs C. The Children's Eating Behaviour Questionnaire: factorial validity and association with Body Mass Index in Dutch children aged 6–7. International Journal of Behavioral Nutrition and Physical Activity. 2008;5(1):49.
10. Rimm-Kaufman SE, Pianta RCJJoAdp. An ecological perspective on the transition to kindergarten: A theoretical framework to guide empirical research. 2000;21(5):491-511.
11. Jansen PW, Roza SJ, Jaddoe VW, Mackenbach JD, Raat H, Hofman A, et al. Children's eating behavior, feeding practices of parents and weight problems in early childhood: results from the population-based Generation R Study. 2012;9(1):130.
12. Bellisle FJCor. Intense sweeteners, appetite for the sweet taste, and relationship to weight management. 2015;4(1):106-10.
13. Shim JE, Kim J, Mathai RA, Association SKRTJJotAD. Associations of infant feeding practices and picky eating behaviors of preschool children. 2011;111(9):1363-8.
14. Scaglioni S, Salvioni M, Galimberti CJBJoN. Influence of parental attitudes in the development of children eating behaviour. 2008;99(S1):S22-S5.
15. Wardle J, Marsland L, Sheikh Y, Quinn M, Fedoroff I, Ogden JJA. Eating style and eating behaviour in adolescents. 1992;18(3):167-83.
16. Migraine A, Nicklaus S, Parnet P, Lange C, Monnery-Patris S, Des Robert C, et al. Effect of preterm birth and birth weight on eating behavior at 2 y of age–. 2013;97(6):1270-7.
17. Zucker N, Copeland W, Franz L, Carpenter K, Keeling L, Angold A, et al. Psychological and psychosocial impairment in preschoolers with selective eating. 2015:peds. 2014-386.
18. Wardle J, Guthrie CA, Sanderson S, Rapoport LJTJoCP, Psychiatry, Disciplines A. Development of the children's eating behaviour questionnaire. 2001;42(7):963-70.
19. Rhee KE, Lumeng JC, Appugliese DP, Kaciroti N, Bradley RHJP. Parenting styles and overweight status in first grade. 2006;117(6):2047-54.
20. Webber L, Cooke L, Hill C, Wardle JJJotADA. Associations between children's appetitive traits and maternal feeding practices. 2010;110(11):1718-22.

21. Gregory JE, Paxton SJ, Brozovic AMJIJoBN, Activity P. Maternal feeding practices, child eating behaviour and body mass index in preschool-aged children: a prospective analysis. 2010;7(1):55.
22. Mustonen S, Oerlemans P, Tuorila HJA. Familiarity with and affective responses to foods in 8–11-year-old children. The role of food neophobia and parental education. 2012;58(3):777-80.
23. Vandeweghe L, Moens E, Braet C, Van Lippevelde W, Vervoort L, Verbeken SJBph. Perceived effective and feasible strategies to promote healthy eating in young children: focus groups with parents, family child care providers and daycare assistants. 2016;16(1):1045.
24. Patrick H, Nicklas TAJJotACoN. A review of family and social determinants of children's eating patterns and diet quality. 2005;24(2):83-92.
25. Blissett J, Bennett CJEjocn. Cultural differences in parental feeding practices and children's eating behaviours and their relationships with child BMI: a comparison of Black Afro-Caribbean, White British and White German samples. 2013;67(2):180.
26. Tariku A. Effect of Feeding Style on Intake of Complementary Foods Appetite and Nutritional Status of Infants Aged 9-11 Month in West Gojam Ethiopia: Addis Ababa University; 2016.
27. Harbron J, Booley SJSAJoCN. Responsive feeding: establishing healthy eating behaviour early on in life. 2013;26(3):S141-S9.
28. Ventura AK, Birch LLJIJoBN, Activity P. Does parenting affect children's eating and weight status? 2008;5(1):15.
29. Bryant-Waugh R, Markham L, Kreipe RE, Walsh BT. Feeding and eating disorders in childhood. International Journal of Eating Disorders. 2010;43(2):98-111.
30. McDermott BM, Mamun AA, Najman JM, Williams GM, O'Callaghan MJ, Bor W. Preschool children perceived by mothers as irregular eaters: physical and psychosocial predictors from a birth cohort study. Journal of Developmental and Behavioral Pediatrics. 2008;29(3):197-205.
31. Lewinsohn PM, Holm-Denoma JM, Gau JM, Joiner Jr TE, Striegel-Moore R, Bear P, et al. Problematic eating and feeding behaviors of 36-month-old children. 2005;38(3):208-19.
32. Marcus MD, Kalarchian MAJIJoED. Binge eating in children and adolescents. 2003;34(S1):S47-S57.
33. Popkin B, Slining MJOR. New dynamics in global obesity facing low-and middle-income countries. 2013;14:11-20.
34. Bjørklund OK. Predictors of children's eating behaviors: a prospective study: Norges teknisk-naturvitenskapelige universitet, Fakultet for samfunnsvitenskap og teknologiledelse, Psykologisk institutt; 2014.
35. French SA, Epstein LH, Jeffery RW, Blundell JE, Wardle JJA. Eating behavior dimensions. Associations with energy intake and body weight. A review. 2012;59(2):541-9.
36. Jansen PW, Roza SJ, Jaddoe VW, Mackenbach JD, Raat H, Hofman A, et al. Children's eating behavior, feeding practices of parents and weight problems in early childhood: results from the population-based Generation R Study. International Journal of Behavioral Nutrition and Physical Activity. 2012;9(1):130.
37. Dubois L, Farmer A, Girard M, Peterson K. Preschool children's eating behaviours are related to dietary adequacy and body weight. European Journal of Clinical Nutrition. 2007;61(7):846.
38. Sandvik P, Ek A, Somaraki M, Hammar U, Eli K, Nowicka PJIJoBN, et al. Picky eating in Swedish preschoolers of different weight status: application of two new screening cut-offs. 2018;15(1):74.
39. Marchi M, Cohen PJJotAAoC, Psychiatry A. Early childhood eating behaviors and adolescent eating disorders. 1990;29(1):112-7.
40. Wright C, Birks EJCc, health, development. Risk factors for failure to thrive: a population-based survey. 2000;26(1):5-16.
41. Tanofsky-Kraff M, Faden D, Yanovski SZ, Wilfley DE, Yanovski JAJIJoED. The perceived onset of dieting and loss of control eating behaviors in overweight children. 2005;38(2):112-22.

42. Blissett J, Meyer C, Haycraft EJEB. Maternal mental health and child feeding problems in a non-clinical group. 2007;8(3):311-8.
43. Mitchell GL, Farrow C, Haycraft E, Meyer CJA. Parental influences on children's eating behaviour and characteristics of successful parent-focussed interventions. 2013;60:85-94.
44. Vollmer RL, Mobley ARJA. Parenting styles, feeding styles, and their influence on child obesogenic behaviors and body weight. A review. 2013;71:232-41.
45. Mitchell GL, Farrow C, Haycraft E, Meyer C. Parental influences on children's eating behaviour and characteristics of successful parent-focussed interventions. Appetite. 2013;60:85-94.
46. McHale SM, Crouter AC, McGuire SA, Updegraff KAJCd. Congruence between mothers' and fathers' differential treatment of siblings: Links with family relations and children's well-being. 1995;66(1):116-28.
47. Birch LL, Fisher JAJPC. Appetite and eating behavior in children. 1995;42(4):931-53.
48. Wondafrash M, Amsalu T, Woldie MJBPH. Feeding styles of caregivers of children 6-23 months of age in Derashe special district, Southern Ethiopia. 2012;12(1):235.
49. Marmot M, Friel S, Bell R, Houweling TA, Taylor S, lancet CoSDoHJT. Closing the gap in a generation: health equity through action on the social determinants of health. 2008;372(9650):1661-9.
50. Gahagan SJJod, JDBP bp. The development of eating behavior-biology and context. 2012;33(3):261.
51. Njardvik U, Klar EK, Thorsdottir FJHsr. The factor structure of the Children's Eating Behaviour Questionnaire: A comparison of four models using confirmatory factor analysis. 2018;1(3):e28.
52. Albuquerque AGM. Eating behaviours related to appetite during chilhood: Determinants from a prospective approach. 2015.
53. Wardle J, Carnell SJAP. Parental feeding practices and children's weight. 2007;96:5-11.
54. Webber L, Hill C, Cooke L, Carnell S, Wardle JJEjocn. Associations between child weight and maternal feeding styles are mediated by maternal perceptions and concerns. 2010;64(3):259.
55. Farrow CV, Blissett JJP. Controlling feeding practices: cause or consequence of early child weight? 2008;121(1):e164-e9.
56. Shloim N, Edelson LR, Martin N, Hetherington MMJFip. Parenting styles, feeding styles, feeding practices, and weight status in 4–12 year-old children: a systematic review of the literature. 2015;6:1849.
57. Burk JF. Comprehensive Feeding Practices Questionnaire: A Validation Study in a Lower Socioeconomic Status Community: Oklahoma State University; 2009.
58. Farrow C, Galloway A, Fraser KJA. Sibling eating behaviours and differential child feeding practices reported by parents. 2009;52(2):307-12.
59. Ritchie LD, Welk G, Styne D, Gerstein DE, Crawford PBJJotADA. Family environment and pediatric overweight: what is a parent to do? 2005;105(5):70-9.
60. Wright CM, Parkinson KN, Shipton D, Drewett RFJP. How do toddler eating problems relate to their eating behavior, food preferences, and growth? 2007;120(4):e1069-e75.
61. Galloway AT, Fiorito L, Lee Y, Birch LLJJotADA. Parental pressure, dietary patterns, and weight status among girls who are "picky eaters". 2005;105(4):541-8.
62. Galloway AT, Fiorito LM, Francis LA, Birch LLJA. 'Finish your soup': counterproductive effects of pressuring children to eat on intake and affect. 2006;46(3):318-23.
63. Yekani HAK, Mushtaq Y, Farahani B, Abdi H, Sotoodeh RJTEJoS, Sciences B. The Impact of Parental Feeding Practices on Their Children's Appetitive Traits: A Study among Children Aged 5-11 Years Old in Dubai Private Schools. 2013;5(2):899.
64. Gregory JE, Paxton SJ, Brozovic AM. Pressure to eat and restriction are associated with child eating behaviours and maternal concern about child weight, but not child body mass index, in 2-to 4-year-old children. Appetite. 2010;54(3):550-6.

65. Ogden J, Reynolds R, Smith AJA. Expanding the concept of parental control: a role for overt and covert control in children's snacking behaviour? 2006;47(1):100-6.
66. Francis LA, Hofer SM, Birch LLJA. Predictors of maternal child-feeding style: maternal and child characteristics. 2001;37(3):231-43.
67. Fisher JO, Birch LLJTAjocn. Restricting access to palatable foods affects children's behavioral response, food selection, and intake–. 1999;69(6):1264-72.
68. Fisher JO, Birch LLJJotADA. Parents' restrictive feeding practices are associated with young girls' negative self-evaluation of eating. 2000;100(11):1341-6.
69. Birch LL, Fisher JO, Davison KKJTAjocn. Learning to overeat: maternal use of restrictive feeding practices promotes girls' eating in the absence of hunger. 2003;78(2):215-20.
70. Wardle J, Sanderson S, Guthrie CA, Rapoport L, Plomin RJOr. Parental feeding style and the inter-generational transmission of obesity risk. 2002;10(6):453-62.
71. Brann LS, Skinner JDJJotADA. More controlling child-feeding practices are found among parents of boys with an average body mass index compared with parents of boys with a high body mass index. 2005;105(9):1411-6.
72. May AL, Donohue M, Scanlon KS, Sherry B, Dalenius K, Faulkner P, et al. Child-feeding strategies are associated with maternal concern about children becoming overweight, but not children's weight status. 2007;107(7):1167-74.
73. Birch LL, Fisher JO, Grimm-Thomas K, Markey CN, Sawyer R, Johnson SL. Confirmatory factor analysis of the Child Feeding Questionnaire: a measure of parental attitudes, beliefs and practices about child feeding and obesity proneness. Appetite. 2001;36(3):201-10.
74. Maynard LM, Galuska DA, Blanck HM, Serdula MKJP. Maternal perceptions of weight status of children. 2003;111(Supplement 1):1226-31.
75. Spruijt-Metz D, Lindquist CH, Birch LL, Fisher JO, Goran MIJTAjocn. Relation between mothers' child-feeding practices and children's adiposity. 2002;75(3):581-6.
76. de Lauzon-Guillain B, Musher-Eizenman D, Leporc E, Holub S, Charles MAJJotADA. Parental feeding practices in the United States and in France: relationships with child's characteristics and parent's eating behavior. 2009;109(6):1064-9.
77. Rhee KE, Coleman SM, Appugliese DP, Kaciroti NA, Corwyn RF, Davidson NS, et al. Maternal feeding practices become more controlling after and not before excessive rates of weight gain. 2009;17(9):1724-9.
78. Videon TM, Manning CKJJoah. Influences on adolescent eating patterns: the importance of family meals. 2003;32(5):365-73.
79. Pearson N, Atkin AJ, Biddle SJ, Gorely T, Edwardson CJPhn. Parenting styles, family structure and adolescent dietary behaviour. 2010;13(8):1245-53.
80. Carnell S, Wardle JJTAjocn. Appetite and adiposity in children: evidence for a behavioral susceptibility theory of obesity–. 2008;88(1):22-9.
81. Tanofsky-Kraff M, Ranzenhofer LM, Yanovski SZ, Schvey NA, Faith M, Gustafson J, et al. Psychometric properties of a new questionnaire to assess eating in the absence of hunger in children and adolescents. 2008;51(1):148-55.
82. Webber L, Hill C, Saxton J, Van Jaarsveld C, Wardle JJIjoo. Eating behaviour and weight in children. 2009;33(1):21.
83. Berkowitz RI, Moore RH, Faith MS, Stallings VA, Kral TV, Stunkard AJJO. Identification of an obese eating style in 4-year-old children born at high and low risk for obesity. 2010;18(3):505-12.
84. Laessle R, Uhl H, Lindel B, Müller AJIJoO. Parental influences on laboratory eating behavior in obese and non-obese children. 2001;25(S1):S60.
85. Llewellyn CH, Trzaskowski M, van Jaarsveld CH, Plomin R, Wardle JJJp. Satiety mechanisms in genetic risk of obesity. 2014;168(4):338-44.

86. Thongbai W, Fongkaew W, Kennedy CM, Aree P, Patumanond JJPRIJoNR. Risk factors contributing to overweight among preschool children. 2011;15(1):13-27.
87. Wan Abdul Manan W, Norazawati A, Lee YJMjon. Overweight and obesity among Malay primary school children in Kota Bharu, Kelantan: parental beliefs, attitudes and child feeding practices. 2012;18(1).
88. Mallan KM, Daniels LA, Nicholson JMJO. Obesogenic eating behaviors mediate the relationships between psychological problems and BMI in children. 2017;25(5):928-34.
89. Birch LL, Fisher JOJTAjocn. Mothers' child-feeding practices influence daughters' eating and weight–. 2000;71(5):1054-61.
90. Haycraft E, Farrow C, Meyer C, Powell F, Blissett JJA. Relationships between temperament and eating behaviours in young children. 2011;56(3):689-92.
91. Hafstad GS, Abebe DS, Torgersen L, von Soest TJEb. Picky eating in preschool children: The predictive role of the child's temperament and mother's negative affectivity. 2013;14(3):274-7.
92. Martin GC, Wertheim EH, Prior M, Smart D, Sanson A, Oberklaid FJIJoED. A longitudinal study of the role of childhood temperament in the later development of eating concerns. 2000;27(2):150-62.
93. McLearn KT, Minkovitz CS, Strobino DM, Marks E, Hou WJP. The Timing of Maternal Depressive Symptoms and Mothers9 Parenting Practices With Young Children: Implications for Pediatric Practice. 2006;118(1):e174-e82.
94. De Barse LM, Cano SC, Jansen PW, Jaddoe VV, Verhulst FC, Franco OH, et al. Are parents' anxiety and depression related to child fussy eating? Archives of Disease in Childhood. 2016;101(6):533-8.
95. Goulding AN, Rosenblum KL, Miller AL, Peterson KE, Chen Y-P, Kaciroti N, et al. Associations between maternal depressive symptoms and child feeding practices in a cross-sectional study of low-income mothers and their young children. 2014;11(1):75.
96. Birch LL, Fisher JOJP. Development of eating behaviors among children and adolescents. 1998;101(Supplement 2):539-49.
97. Haycraft E, Farrow C, Blissett JJJoFP. Maternal symptoms of depression are related to observations of controlling feeding practices in mothers of young children. 2013;27(1):159.
98. Gemmill AW, Worotniuk T, Holt CJ, Skouteris H, Milgrom JJCo. Maternal psychological factors and controlled child feeding practices in relation to child body mass index. 2013;9(4):326-37.
99. Cao Y-T, Svensson V, Marcus C, Zhang J, Zhang J-D, Sobko TJIJoBN, et al. Eating behaviour patterns in Chinese children aged 12-18 months and association with relative weight-factorial validation of the Children's Eating Behaviour Questionnaire. 2012;9(1):5.
100. Viana V, Sinde S, Saxton JJBJoN. Children's Eating Behaviour Questionnaire: associations with BMI in Portuguese children. 2008;100(2):445-50.
101. Farrow C, Blissett JJA. Stability and continuity of parentally reported child eating behaviours and feeding practices from 2 to 5 years of age. 2012;58(1):151-6.
102. Dubois L, Farmer A, Girard M, Peterson K, Tatone-Tokuda FJIJoBN, Activity P. Problem eating behaviors related to social factors and body weight in preschool children: A longitudinal study. 2007;4(1):9.
103. Fernández-Alvira JM, Börnhorst C, Bammann K, Gwozdz W, Krogh V, Hebestreit A, et al. Prospective associations between socio-economic status and dietary patterns in European children: the Identification and Prevention of Dietary-and Lifestyle-induced Health Effects in Children and Infants (IDEFICS) Study. British Journal of Nutrition. 2015;113(3):517-25.
104. van Ansem WJ, Schrijvers CT, Rodenburg G, van de Mheen D. Maternal educational level and children's healthy eating behaviour: role of the home food environment (cross-sectional results from the INPACT study). International Journal of Behavioral Nutrition and Physical Activity. 2014;11(1):113.
105. Darmon N, Ferguson E, Briend A. Do economic constraints encourage the selection of energy dense diets? Appetite. 2003;41(3):315-22.

106. Daniel C. Economic constraints on taste formation and the true cost of healthy eating. Social Science and Medicine. 2016;148:34-41.
107. Vereecken CA, Keukelier E, Maes LJA. Influence of mother's educational level on food parenting practices and food habits of young children. Appitite. 2004;43(1):93-103.
108. Hupkens CL, Knibbe RA, Van Otterloo AH, Drop MJ. Eat it or leave it: Educational differences in how mothers handle children's food dislikes. Ecology of Food and Nutrition. 2000;39(4):247-70.
109. Health EPHIaFMo. Mini Demographic andHealth Survey. Addis Ababa, Ethiopia Ethiopian Public Health Institute and Federal Ministry of Health2019.

110. Passos DRd, Gigante DP, Maciel FV, Matijasevich AJRPdP. Children's eating behavior: comparison between normal and overweight children from a school in Pelotas, Rio Grande do Sul, Brazil. 2015;33(1):42-9.

111. Do LM, Eriksson B, Tran TK, Petzold M, Ascher H. Feeding of preschool children in Vietnam: A study of parents' practices and associated factors. BMC Nutrition. 2015;1(1):16.
112. Powell FC, Farrow CV, Meyer C. Food avoidance in children. The influence of maternal feeding practices and behaviours. Appetite. 2011;57(3):683-92.
113. CITY AA, ADMINISTRATION. <HCE 2016 Statistical Report Addis Ababa (1).pdf>. Addis Ababa: ADDIS ABABA CITY ADMINISTRATION 2015/16 March 2018

114. Fernandez C, DeJesus JM, Miller AL, Appugliese DP, Rosenblum KL, Lumeng JC, et al. Selective eating behaviors in children: An observational validation of parental report measures.International journal of Behvaioral nutriton and Physical Activity. 2018;127:163-70.
115. Svensson V, Lundborg L, Cao Y, Nowicka P, Marcus C, Sobko TJIJoBN, et al. Obesity related eating behaviour patterns in Swedish preschool children and association with age, gender, relative weight and parental weight-factorial validation of the Children's Eating Behaviour Questionnaire.Nutrition and Diettetics. 2011;8(1):134.
116. Jani Mehta R, Mallan KM, Mihrshahi S, Mandalika S, Daniels LAJN, dietetics. An exploratory study of associations between A ustralian-I ndian mothers' use of controlling feeding practices, concerns and perceptions of children's weight and children's picky eating. 2014;71(1):28-34.
117. Organization WH. Indicators for assessing infant and young child feeding practices: part 2: measurement. 2010.
118. Birch LL, Fisher JO, Grimm-Thomas K, Markey CN, Sawyer R, Johnson SLJA. Confirmatory factor analysis of the Child Feeding Questionnaire: a measure of parental attitudes, beliefs and practices about child feeding and obesity proneness. 2001;36(3):201-10.
119. Baughcum AE, Powers SW, Johnson SB, Chamberlin LA, Deeks CM, Jain A, et al. Maternal feeding practices and beliefs and their relationships to overweight in early childhood. 2001;22(6):391-408.
120. Kroenke K, Spitzer RL, Williams JBJJogim. The PHQ-9: validity of a brief depression severity measure. 2001;16(9):606-13.
121. Gelaye B, Williams MA, Lemma S, Deyessa N, Bahretibeb Y, Shibre T, et al. Validity of the patient health questionnaire-9 for depression screening and diagnosis in East Africa. 2013;210(2):653-61.
122. Goodman R, Ford T, Simmons H, Gatward R, Meltzer HJTBJoP. Using the Strengths and Difficulties Questionnaire (SDQ) to screen for child psychiatric disorders in a community sample. 2000;177(6):534-9.
123. Ulijaszek SJ, Kerr DA. Anthropometric measurement error and the assessment of nutritional status. British Journal of Nutrition. 1999;82(3):165-77.
124. Cohen J. Statistical power analysis for the behavioural sciences, 2nd edn.(Hillsdale, NJ: L. Erlbaum Associates). 1988.

125. Gregory JE, Paxton SJ, Brozovic AMJA. Pressure to eat and restriction are associated with child eating behaviours and maternal concern about child weight, but not child body mass index, in 2-to 4-year-old children.Appetite. 2010;54(3):550-6.
126. Powell FC, Farrow CV, Meyer CJA. Food avoidance in children. The influence of maternal feeding practices and behaviours. Appetite. 2011;57(3):683-92.
127. Powers SW, Chamberlin LA, Van Schaick KB, Sherman SN, Whitaker RCJO. Maternal feeding strategies, child eating behaviors, and child BMI in low-income African-American preschoolers. Obesity. 2006;14(11):2026-33.
128. Cardel M, Willig AL, Dulin-Keita A, Casazza K, Beasley TM, Fernández JR. Parental feeding practices and socioeconomic status are associated with child adiposity in a multi-ethnic sample of children. Appetite. 2012;58(1):347-53.
129. Santos JL, Ho-Urriola JA, González A, Smalley SV, Domínguez-Vásquez P, Cataldo R, et al. Association between eating behavior scores and obesity in Chilean children. Nutrition Journal. 2011;10(1):108.
130. Pallant JJSSm, version. Checking the reliability of a scale. 2001;12.
131. Mallan KM, Liu W-H, Mehta RJ, Daniels LA, Magarey A, Battistutta DJA. Maternal report of young children's eating styles. Validation of the Children's Eating Behaviour Questionnaire in three ethnically diverse Australian samples.Appetite. 2013;64:48-55.
132. Steinsbekk S, Belsky J, Wichstrøm L. Parental feeding and child eating: An investigation of reciprocal effects. Child Development. 2016;87(5):1538-49.
133. Fisher JO, Birch LLJTAjocn. Restricting access to palatable foods affects children's behavioral response, food selection, and intake.The American journal of Clinical Nutriton. 1999;69(6):1264-72.
134. Jansen E, Mulkens S, Jansen AJA. Do not eat the red food!: prohibition of snacks leads to their relatively higher consumption in children.Appetite. 2007;49(3):572-7.
135. Francis L, Birch LJIjoo. Maternal weight status modulates the effects of restriction on daughters' eating and weight.International journal of Obesity. 2005;29(8):942.
136. Harris HA, Fildes A, Mallan KM, Llewellyn CHJIJoBN, Activity P. Maternal feeding practices and fussy eating in toddlerhood: a discordant twin analysis.International journal of Behavioral Nutrition and Physical Activity. 2016;13(1):81.
137. Gillian HJBFJ. Introducing the Infant's First Solid Food.British journal of Nutrition. 1993;95(9).
138. Batsell Jr WR, Brown ASJL, Motivation. Human flavor-aversion learning: A comparison of traditional aversions and cognitive aversions. Learning and Motivation.1998;29(4):383-96.
139. Blissett J, Meyer C, Haycraft EJA. Maternal and paternal controlling feeding practices with male and female children.Appetite. 2006;47(2):212-9.
140. Hennessy E, Hughes SO, Goldberg JP, Hyatt RR, Economos CDJJotAoN, Dietetics. Permissive parental feeding behavior is associated with an increase in intake of low-nutrient-dense foods among American children living in rural communities.Journal of Academy of Nutriton and Dietetics. 2012;112(1):142-8.
141. Mais LA, Warkentin S, Latorre MdRDd, Carnell S, Taddei JAAdCJFin. Parental Feeding Practices among Brazilian school-aged children: associations with Parent and child characteristics.Frointers in Nutriton. 2017;4:6.
142. Derks IP, Sijbrands EJ, Wake M, Qureshi F, van der Ende J, Hillegers MH, et al. Eating behavior and body composition across childhood: a prospective cohort study. International Journal of Behavioral Nutrition and Physical Activity. 2018;15(1):96.
143. Myers Jr MG, Leibel RL, Seeley RJ, Schwartz MW. Obesity and leptin resistance: distinguishing cause from effect. Trends in Endocrinology and Metabolism. 2010;21(11):643-51.
144. Herle M, Fildes A, Steinsbekk S, Rijsdijk F, Llewellyn CH. Emotional over-and under-eating in early childhood are learned not inherited. Scientific Reports. 2017;7(1):9092.

145. Boswell N, Byrne R, Davies PSJA. Eating behavior traits associated with demographic variables and implications for obesity outcomes in early childhood.Appitite. 2018;120:482-90.
146. Finato S, Rech RR, Migon P, Gavineski IC, Toni Vd, Halpern RJRPdP. Body image insatisfaction in students from the sixth grade of public schools in Caxias do Sul, Southern Brazil. Revista Pavlista De Pediatria. 2013;31(1):65-70.
147. Campbell K, Crawford D, Jackson M, Cashel K, Worsley A, Gibbons K, et al. Family food environments of 5-6 year-old-children: does socioeconomic status make a difference? Asia Pacific Journal of Clinical Nutrition. 2002;11(Supplement 3):553-61.

Annex 1 : Information sheet

Addis Ababa University, School of public health

Subject Information Sheet

Hello, My name is ———————————————— I am here on behalf of Nardos Wondafrash, a student in Addis Ababa University School of public health nutrition unit. She is conducting a research on "Association of children eating behavior and parental feeding practice " among children in selected preschools of Addis Ababa. She has received permission from Addis Ababa university school of public health and the respected sub city education bureau to conduct this study. You are selected by multistage random sampling technique to participate in this study because your children are currently attending in one of those selected preschools for the study purpose. Your participation on this study will only be on based on your willingness. You have the right to choose not to take part in this study. If you choose to take part, you have the right to stop at any time. If you are willing to participate or refuse or decide to withdraw later, you will not be subjected to any ill-treatment. If you agree to participate in the study, your child's weight and height will be measured using standard measuring instruments. Only light closes will be wearing during weight measurement and height will be measured with bare foot. You will be interviewed about your feeding practice and about depressive symptoms. You will also be asked about your children eating behavior and psychological status. You can stop at any time if you don't feel comfortable during an interview. The child measurement will take 15 minutes and filling the questionnaire will take about 30 minutes also. The study could provide base line data for policy makers and relevant stakeholders for promoting and implementing of healthy eating habits and feeding practices. It could also give insight on children eating behaviors among preschool children and what major factors could be associated. The information that you provide will be kept confidential by using only code numbers and locking the data. Your name will not be written on the questionnaire. No one will have access to the non-coded data except the principal investigator and the data will not be used for purposes other than the study.

Your willingness and active participation is very important for the success of this study.

Annex 2 :Informed Consent and/or Ascent Form

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

A) Yes B) No

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

_____ _____

Respondents (parents)

Signature _____Date_____

Interviewer

Name_____ Signature_____

Questionnaires ID number_____

Date of interview_____ Starting time_____ Completed_____

Result of interview

A) Completed

B) Not completed

C) Partially completed

D) Refused

Checked by Supervisor: Name _____Signature_____

For further explanation use the Principal Investigator's Address;

Name: Nardos Wondafrash Gebru

Email: nardosw06@gmail.com

Cell phone: +251 910-03-23-74

Instruction: circle all the possible answers of the respondent from the choice provided.

Annex 3: Survey Questionnaire (English Version)

Questionnaire ID Number _____

Addis Ababa University School of Public Health

Survey Questionnaire to assess socio demographic background, children eating behavior , and parental feeding practice Survey Questionnaire (English Version)

Name of the sub-city	
Name of school	
Date of interview	...../DD/……/MM/……../YR/
Time started	……/Hr/……./Min/
Time ended	……../Hr/……./Min/
Interviewer	Name…… Signature……..
Checked by supervisor	Name……. Signature……..

Addis Ababa University School of Public Health

Survey Questionnaire to assess children eating behavior and parental feeding practice

Part1. Background information

No.	Questions	Response	Skip
101	What is the age of your child (in year and month)	Date ☐☐ I don't know….99 Month ☐☐ I don't know…99 Year ☐☐ I don't know…99	
102	What is the gender of your child	Male……1 Female……2	
103	How much is your household family size?	☐☐	
104	What is your relation to the child?	1.Father……1 2.Mother……2 3.Nanny……3 4.Other(specify)……4	
105	What is your educational Status?	can't read and write……1 Can read and write ……2	

		Primary school (grade 1-8) ……3 Secondary school (grade 9 - 12)……..4 Some college or technical school ……5 College graduate or above ……6	
106	Which grade is your child now?	KG-1……1 KG-2……2 KG-3……3 O-class……..4	
107	What is the type of school	private……..1 Government……...2	

Part 2. Household socio-economic status (Wealth Index)

Instruction: Now I am going to ask you about your household assets, services and housing conditions. please circle your possible answer within the response box.

No.	Questions	**Responses**	**Skip**
1. Housing Condition – please answer the following questions thinking about the housing condition of your household and circle your possible answer.			
201	Home ownership	Private……..1 Government……..2 Rent……..3 Other (specify) ——……..99	

202	Number of rooms	☐☐	

203	Number of individuals per sleeping room	☐☐	
204	Main construction material used for the roof: CIRCLE ALL THAT APPLY	**Natural roof** Thatch/mud.....1 **Rudimentary roof** Rustic mat/ plastic sheet.....2 Reed/bamboo .....3 Wood planks.....4 Cardboard .....5 **Finished roof** Metal/corrugated iron.....6 Wood .....7 Cement .....8 Ceramic tiles .....9 Other(specify): _____99	

205	Main construction material used for the floor: CIRCLE ALL THAT APPLY	**Natural floor** Earth/sand……1 Dung……2 **Rudimentary floor** Wood planks……3 Palm/bamboo……4 **Finished floor** parquet or polished wood……5 vinyl or asphalt strips/plastic tile……6 Ceramic Tiles……7 Cement……8 Carpet……9 Other(specify):_____99	

206	Main construction material used for exterior walls: CIRCLE ALL THAT APPLY	**Natural walls** No walls .....1 Cane/Trunks/Bamboo/Reed .....2 **Rudimentary walls** Wood with Mud ..... 3 Stone with mud ..... 4 **Finished walls** Cement……5 Stone with lime/cement ..... 6 Bricks .....7 Cement blocks……..……8 Wood planks/shingles ..... .9 Other(specify)_____99	
207	What kind of toilet facility does your household have? [INTERVIEWER: LIMIT TO ONE RESPONSE; IF TWO TYPES ARE MENTIONED, RECORD THE TYPE CLOSEST TO THE TOP OF THE LIST]	Pour flush toilet…….....……..1 Ventilated improved pit latrine..... …….2 Pit latrine with slab…….....3 Pit latrine without slab……4 No latrine…….....0 Other (specify): _____99	
208	Does the household have its own water source within the compound? (Multiple Response is possible)	Yes, unprotected well……..……1 Yes, protected well……..……..2 Yes, pipe water ……..……..3 No ……..……..0	

209	What is the main source of drinking water for members of your household? (Do not read the options, just ask and circle what they told you)	Piped water .....1 Protected well .....2 Unprotected well .....3 Protected spring ..... 4 Unprotected spring ..... 5 Surface water (River/stream/ Pond/lake//Dam) ..... 6 Tanker .....7 Bottled water ..... 8 Other (specify) _____9	
2. Household assets & services – In answering the questions below please think of assets & services available in your household			
210	Does your house hold have?		
	Electricity	Yes…….1 No……0	
	Radio	Yes…….1 No……0	
	Television	Yes…….1 No……..0	
	non-mobile telephone	Yes…….1 No……0	
	Computer	Yes…….1 No……..0	
	Refrigerator	Yes…….1 No……0	
	Table	Yes…….1 No……..0	
	Chair	Yes…….1 No……0	
	A bed with cotton/ Sponge/ spring matters	Yes…….1 No……..0	

	A kerosene lamp/pressure lamp	Yes…….1 No……..0	
	Solar	Yes…….1 No……..0	
	Sofa	Yes…….1 No……..0	
211	Do any members of this household own?		
	A watch?	Yes…….1 No……..0	
	A mobile phone?	Yes…….1 No……..0	
	A bicycle?	Yes…….1 No……..0	
	A motorcycle?	Yes…….1 No……..0	
	A car or truck?	Yes…….1 No……..0	
212	What type of fuel does your household mainly use for cooking? (Multiple Response is possible)	Electricity……1 Biogas……2 Kerosene……3 Wood……4 Charcoal……5 Straw/shrubs/grass……6 Animal Dung……7 Agricultural crop……8 Other (specify): _____99	
213	Does any members of this household have a bank/microfinance account?	Yes ……1 No……0	

ID:

Part 3. Child Eating Behavior Questionnaire (CEBQ)

To assess children eating behavior with different scales .Please read the following statements and tick the boxes most appropriate to the child's eating behavior.

	Never	Rarely	Some -times	Often	Always	
301.My child loves food	☐	☐	☐	☐	☐	EF
302. My child eats more when worried	☐	☐	☐	☐	☐	EOE
303. My child has a big appetite	☐	☐	☐	☐	☐	SR*
304. My child finishes his/her meal quickly	☐	☐	☐	☐	☐	SE*
305. My child is interested in food	☐	☐	☐	☐	☐	EF
306. My child is always asking for a drink	☐	☐	☐	☐	☐	DD
304. My child refuses new foods at first	☐	☐	☐	☐	☐	FF
305. My child eats slowly	☐	☐	☐	☐	☐	SE
306. My child eats less when angry	☐	☐	☐	☐	☐	EUE
307.My child enjoys tasting new foods	☐	☐	☐	☐	☐	FF*
308.My child eats less when s/he is tired	☐	☐	☐	☐	☐	EUE
309.My child is always asking for food	☐	☐	☐	☐	☐	FR
310.My child eats more when annoyed	☐	☐	☐	☐	☐	EOE
311.If allowed to, my child would eat too much	☐	☐	☐	☐	☐	FR
312.My child eats more when anxious	☐	☐	☐	☐	☐	EOE
313. My child enjoys a wide variety of foods	☐	☐	☐	☐	☐	FF*

314.My child leaves food on his/her plate at the end of a meal	☐	☐	☐	☐	☐	SR
315.My child takes more than 30 minutes to finish a meal	☐	☐	☐	☐	☐	SE

	Never	Rarely	Some -times	Often	Always	
315.Given the choice, my child would eat most of the time	☐	☐	☐	☐	☐	FR
316.My child looks forward to mealtimes	☐	☐	☐	☐	☐	EF
317.My child gets full before his/her meal is finished	☐	☐	☐	☐	☐	SR
318.My child enjoys eating	☐	☐	☐	☐	☐	EF
319. My child eats more when she is happy	☐	☐	☐	☐	☐	EUE
320.My child is difficult to please with meals	☐	☐	☐	☐	☐	FF
321. My child eats less when upset	☐	☐	☐	☐	☐	EUE
322.My child gets full up easily	☐	☐	☐	☐	☐	SR
323.My child eats more when s/he has nothing else to do	☐	☐	☐	☐	☐	EOE
324.Even if my child is full up s/he finds room to eat his/her favourite food	☐	☐	☐	☐	☐	FR
325.If given the chance, my child would drink continuously throughout the day	☐	☐	☐	☐	☐	DD
326.My child cannot eat a meal if s/he has had a snack just before	☐	☐	☐	☐	☐	SR
327.If given the chance, my child would always be having a drink	☐	☐	☐	☐	☐	DD

328.My child is interested in tasting food s/he hasn't tasted before	☐	☐	☐	☐	☐	FF*
329. My child decides that s/he doesn't like a food, even without tasting it	☐	☐	☐	☐	☐	FF
330.If given the chance, my child would always have food in his/her mouth	☐	☐	☐	☐	☐	FR
331.My child eats more and more slowly during the course of a meal	☐	☐	☐	☐	☐	SE

SCORING OF THE CEBQ

(Never=1, Rarely=2, Sometimes=3, Often=4, Always=5)

Food responsiveness	=	item mean FR
Emotional over-eating	=	item mean EOE
Enjoyment of food	=	item mean EF
Desire to drink	=	item mean DD
Satiety responsiveness	=	item mean SR
Slowness in eating	=	item mean SE
Emotional under-eating	=	item mean EUE
Food fussiness	=	item mean FF

Part 4. Child Feeding Questionnaire(CFQ)

To assess parental feeding responsibility, child's weight concern and perception and feeding practice

Perceived responsibility							
		never	Seldom	Half of the time	Most of the time	always	
401.	When your child is at home, how often are you responsible for feeding her?						
402.	How often are you responsible for deciding what your child's portion sizes are?						
403.	How often are you responsible for deciding if your child has eaten the right kind of foods?						
Perceived parent weight							
		markedly underweight	Underweight	Normal	Overweight	markedly overweight	
404.	Your Childhood (5 to 10 years old)						
405.	Your adolescence						
406.	Your 20s						
407.	At present						

Perceived child weight							
		markedly underweight	underweight	normal	overweight	markedly overweight	
408.	Your child during the first year of life						
409.	Your child as a toddler						
410.	Your child as a preschooler						
Concern about child weight overweight							
		unconcern	A little concerned	concerned	fairly concerned	very concerned	
411.	How concerned are you about your child eating too much when you are not around her?						
412.	How concerned are you about your child having to diet to maintain a desirable weight?						
413.	How concerned are you about your child becoming over weight						
Child underweight concerns (from preschooler feeding questionnaire)							
		Never	Rarely	Sometimes	Often	Always	
414.	I am worried that my child will become underweight.						

415.	I am worried that my child is underweight right now						
Parental feeding practice							
Restriction							
		disagree	slightly disagree	Neutral	slightly agree	ˆ agree	
416.	I have to be sure that my child does not eat too many sweets (candy, ice cream, cake or pastries)						
417.	I have to be sure that my child does not eat to many high-fat foods						
418.	I have to be sure that my child does not eat too much of her favourite foods						
419.	I intentionally keep some foods out of my child's reach						
420.	I offer sweets (candy, ice cream, cake, pastries) to my child as a reward for good behaviour						
421.	I offer my child her favourite foods in exchange for good behaviour						

422.	If I did not guide or regulate my child's eating, she would eat too many junk foods						
423.	If I did not guide or regulate my child's eating, she would eat too much of her favourite foods						
Pressure to eat							
		disagree	slightly disagree	neutral	slightly agree	agree	
424.	My child should always eat all of the food on her plate						
425.	I have to be especially careful to make sure my child eats enough						
426.	If my child says "I'm not hungry", I try to get her to eat anyway						
427.	If I did not guide or regulate my child's eating, she would eat much less than she should						
Monitoring							
		never	Rarely	sometimes	mostly	Always	
428.	How much do you keep track of the sweets						

	(candy, ice cream, cake, pies pastries) that your child eats?						
429.	How much do you keep track of the snack food (potato chips) that your child eats?						
430.	How much do you keep track of the high-fat foods that your child eats?						

Part 5. PHQ-9 : validated tool to assess depressive symptoms in Ethiopia 1.Over the last 2 weeks, how often have you been bothered by any of the following problems?

No.		Not at all (0)	Several days (1)	More than half the days (2)	Nearly every day (3)
501.	Little interest or pleasure in doing things.				
502.	Feeling down, depressed, or hopeless.				
503.	Trouble falling /staying asleep, sleeping too much.				
504.	Feeling tired or having little energy.				
505.	Poor appetite or over eating.				

506	Feeling bad about yourself or that you are a failure, or have let yourself or your family down.				
507.	Trouble concentrating on things, such as reading the newspaper or watching TV.				
508.	Moving or speaking so slowly that other people could have noticed. Or the opposite; being so fidgety or restless that you have been moving around more than usual.				
509.	Thoughts that you would be better off dead or of hurting yourself in some way				

2. If you checked off any problem on this questionnaire so far, how difficult have these problems made it for you to do your work, take care of things at home, or get along with other people?

Not difficult at all ☐

Somewhat difficult ☐

Very difficult ☐

Extremely difficult ☐

Part 6. Strengths and Difficulties Questionnaire

For each item, please mark the box for Not True, Somewhat True or Certainly True. It would help us if you answered all items as best you can even if you are not absolutely certain. Please give your answers on the basis of the child's behavior over the last six months or this school year.

Child's name ..... Male/Female

Date of birth.....

No.		Not True	Somewhat True	Certainly True
601.	Considerate of other people's feelings			
602.	Restless, overactive, cannot stay still for long			
603.	Often complains of headaches, stomach-aches or sickness			
604.	Shares readily with other children, for example toys, treats, pencils			
605.	Often loses temper			
606.	Rather solitary, prefers to play alone			
607.	Generally well behaved, usually does what adults request			
608.	Many worries or often seems worried			
609.	Helpful if someone is hurt, upset or feeling ill			
610.	Constantly fidgeting or squirming			
611.	Has at least one good friend			

612.	Often fights with other children or bullies them			
613.	Often unhappy, depressed or tearful			
614.	Generally liked by other children			
615.	Easily distracted, concentration wanders			
616.	Nervous or clingy in new situations, easily loses confidence			
617.	Kind to younger children			
618.	Often argumentative with adults (Often lies or cheats(4-10))			
619.	Picked on or bullied by other children			
620.	Often offers to help others (parents, teachers, other children)			
621.	Can stop and think things out before acting			
622.	Can be spiteful to others (Steals from home, school or elsewhere 4-10)			
623.	Gets along better with adults than with other children			
624.	Many fears, easily scared			
625.	Good attention span, sees work through to the end			

Signature ..... Thank you very much for your help

Parent / Teacher / Other (Please specify):……. Date .....

Part **7. Anthropometric measurements**

NO	Anthropometric measurement	1st measurement	2nd measurement
701	Weight in kilograms	`	`
702	Height in centimeters	`	

Annex 4 ፡Information sheet (Amharic version)

አዲስ አበባ ዩኒቨርስቲ ጤና ሣይንስ ፋካሊቲ የህብረተሰብ ጤና አጠባበቅ ትምህርት ክፍል

የተጠያቂው/የመላሾች የመረጃ ቅፅ

ጤና ይስጥልን እንደምን አሉ ስሜ.....ይባላል።የመጣሁት በአዲስ አበባ ዩኒቨርስቲ የህብረተሰብ ጤና አጠባበቅ የስነ ምግብ ትምህርት ክፍል ለሚያደርገው የማስተርስ ዲግሪ የማሟያ የጥናትና የምርመር ስራ እየሰራች ያለችውን ተማሪ ናርዶስ ወንድአፍራሽ ን ወክዬ ነው። የልጆች የአመጋገብ ጸባይ እና የወላጆች የመመገብ ተግባር ግንኙነት በአዲስ አበባ በሚገኙ የግልና የመንግስት ትምህርት ቤቶች ላይ ጥናት እያደረገች ሲሆን ከአዲስ አበባ ዩኒቨርሲቲ፣አዲስ አበባ ት/ት ቢሮና ከተመረጡት ትምህርት ቤቶችም ፍቃድ አግኝታለች።

እርስዎ በዚህ ጥናት ላይ እንዲሳተፉ የተመረጡት በተደጋጋሚ በተደረገ የአጋጣሚ የናሙና አወሳሰድ ስሌት መሰረት ለዚህ ጥናት አላማ ከተመረጡት ትምህርት ቤቶች በአንዱ ውስጥ ልጆት ስለሚማሩ ነው።የእርስዎ ተሳትፎ ሙሉ በሙሉ በእርስዎ ፍቃደኝነት ላይ የተመሰረተ ነው።በጥናቱ ላይ ያለመሳተፍ ሙሉ መብት አሎዎት ። ለመሳተፍ ፍቃደኛ ከሆኑ በኋላም በፈለጉት ጊዜ ማቆም ወይም ማቋረጥ ይችላሉ ። በጥናቱ ባለመሳተፍዎ የሚደርስቦት ምንም አይነት ችግር አይኖርም።በጥናቱ ለመሳተፍ ከተስማሙ እርስዎንና ልጅዎን በተመለከተ የተወሰኑ ጥያቄዎችን እንጠይቆታለን ። በዚህ መጠይቅ መሰረታዊ መረጃ፤ የልጆች የአመጋገብ ጸባይ ፤ የወላጆች የመመገብ ተግባር፤ የድብርት ስሜት የተመለከተ ጥያቄዎችን እንጠይቅዎታለን።እንዲሁም የልጅዎ የስነልቦና ሁኔታ እንጠይቃለን። የልጆት ክብደትና ቁመትን ደረጃቸውን በጠበቁ መሳሪያዎች እንለካለን።በመጠይቁ ጊዜ ጥሩ ስሜት ካልተሰማዎት በማንኛውም ጊዜ አቋርጠው መሄድ ይችላሉ። ይህ መጠይቅ 30 ደቂቃ ያህል ይፈጃል።

በመጨረሻም ከእርስዎ የምንሰበስበው መረጃ ከስምዎ ጋር አይያያዝም።ስምዎት እንደማይጠቀስ ፤ሚስጥራዊ ሆኖ እንደሚቆይ እና ለማንም አካል ተላልፎ እንደማይሰጥ ልናረጋግጥልዎት እንወዳለን።የዚህ ጥናት ውጤት ግን ተጠርዞ እና ተዘጋጅቶ ጉዳዩ ወደ ሚመለከታቸው የጤና ድርጅቶች ወይም ለሌሎች አካላት ሊሰጥ ይችላል።

Annex 5: Informed consent sheet (Amharic version)

ፍቃደኝነት የመጠየቅያ ቅጽ

ከላይ በተገለጸውን ቅጽ መስማማትዎን በፊርማዎ ያረጋግጡ

_____

መረጃው የተሰጠበት ቀን

_____

የአጥኚው ፊርማ

_____

ለተጨማሪ ማብራሪያ የዋና አጥኚውን አድራሻ ይጠቀሙ ስም፡ ናርዶስ ወንድአፍራሽ ኢሜይሌ:

nardosw06@gmail.com ስልክ +251 910 03 23 74 Annex 7:

የስምምነትመጠየቂያ/ማረጋገጫ ቅፅ ከላይ በሰጠዎት መረጃ መሰረት በጥናቱ ላይ ለመሳተፍ

ፈቃደኛ ነዎት?

1. አዎ
2. አይደለሁም ፈቃደኛ ካልሆኑ ምክንያቱን ፅፈው ወደ ሚቀጥለው ተሳታፉ እለፍ————————

የተሳታፊ (የወላጅ) ፊርማ ————————ቀን————————

የመጠይቁ ውጤት

1. ሙሉ በሙሉ የተሞላ
2. በከፊል የተሞላ

3.ምንም ያልተሞላ በተቆጣጣሪዎች ተረጋግጧል ፡

ማሳሰቢያ፡ ተሳታፊዎች የሚሰጡትን መልስ ከተሰጡት አማራጮች ውስጥ ለይተው ያክብቡ

Annex 6 ፡Survey questionnaires (Amharic version)

የመጠይቁ መለያ ቁጥር————

በአዲስ አበባ ዩኒቨርስቲ ህክምና ሣይንስ ፋኩልቲ የህብረተሰብ ጤና አጠባበቅ ትምህርት ክፍል የልጆች የአመጋገብ ጸባይ እና የወላጆች የመመገብ ተግባር ግንኙነት ለማወየቅ የተዘጋጀ የጥናታዊ ፅሁፍ መረጃ መሰብሰቢያ መጠይቅ

የክፍለ ከተማ ስም	
የት/ቤቱ ስም	
የተጠያቂው መለያ ቁጥር	
መጠይቁ. የተሞላበት ቀን	……/ቀን/…… ……../ወር/…… /ዓ.ም/
በተቆጣጣሪው ተረጋግጦአል	ስም……ፉርማ……

ክፍል1.መሰረታዊ መረጃን የተመለከቱ ጥያቄዎች

ተ.ቁ	ጥያቄ	መልስ	ዝለል
101	የልጅዎ እድሜ ስንት ነው?	ቀን ☐☐ አመት ☐☐☐☐ አላውቅም.....99 ወር አላውቅም.....99 ☐☐ አላውቅም...99	
102	የልጅዎ ጾታ?	1.ወንድ.....1 2.ሴት.....2	
103	የቤተሰብዎ ብዛት ስንት ነው?	☐☐	
104.	እርስዎ ለልጅቷ / ለልጅ ምኑ ኖት?	1. እናት.....1 2. አባት.....2 3. ሞግዝት.....3 4. ሌላ (ይገለፅ)፡_____99	
105.	የእርስዎ የትምህርት ደረጃ ?	1.ያልተማረ/ች (ማንበብና መፃፍ የማይችል / የማትችል).....1 2.ማንበብና መፃፍ የምትችል/የማይችል.....2 3.የመጀመሪያ ደረጃ (ከ1ኛ-8ኛክፍል).....3 4.ሁለተኛ ደረጃ (ከ9ኛ-12ኛ ክፍል).....4 5.የተወሰነ የኮሌጅ ወይም የቴክኒክና ሙያ ት/ት ያላት/ያለዉ.....5 6.ኮሌጅ ያጠናቀቀ/ች ወይም ከዛ በላይ.....6 7.አላቅም 7	
106.	ልጅዎ ስንተኛ ክፍል ነው ?	☐☐	
107.	የትምህርት ቤቱ አይነት	1. የግል/የሚሲዮን/የሀይማኖት.....1 2. የመንግስት/የህዝብ.....2	

ክፍል 2. የቤተሰብን የሀብት ደረጃ የተመለከቱ ጥያቄዎች

የሚቀጥሉት ጥያቄዎች የሚኖሩበት ቤት ውስጥ ስለሚገኙ ንብረቶችና የቤትአሰራር ሁኔታ ይመለከታል			
1. የቤት አሰራር ሁኔታ፡- እባክዎ የሚቀጥለትን ጥያቄዎች ስለሚኖሩበት ቤት አሰራርና ሁኔታ እያሰቡ ይመልሱ			
ተ.ቁ	ጥያቄ	መልስ	ዝለል
201	የሚኖሩበት ቤት ባለቤትነቱ የማንነው?	የግል.....1 ከግለሰብኪራይ.....3 የመንግስት (የቀበሌ).....2 ሌላካለይገለፅ_____99	
202	የሚኖሩበት ቤት ስንት ክፍል አለው ?	☐☐	
203	በቤትዎ ውስጥ በአንድ የመኝታ ክፍል ስንት ሰው ይጠቀማል?	☐☐	

204	የሚኖሩበት ቤት ጣሪያው ምንድን ነው?	**ተፈጥሮ ጣሪያ** **የተጠናቀቀ ጣሪያ** ሳር/ጭቃ.....1 ቆርቆሮ.....6 **በቅጡ ያልተጠናቀቀ ጣሪያ** ዉብየጣሪያጣዉላ.....7 ፕላስቲክ/ሸራ .....2 ሲሚንቶ.....8 ቀርቀሃ/ሸምበቆ.....3 ሴራሚክጣሪያ .....9 የእንጨትሳንቃ/ጣዉላ.....4 ሌላ (ይገለፅ)፡_____99 ካርቶን.....5	
205	የሚኖሩበት ቤት ወለሉ ምንድን ነው?	**የተፈጥሮ ወለል** **የተጠናቀቀ ወለል** አፈር/አሸዋ.....1 የተጠላለፈዉብየወለልጣዉላ...5 ፍግ.....2 ፕላስቲክንጣፍ.....6 **በቅጡ ያልተጠናቀቀ ወለል** በሴራሚክንጣፍ .....,7 የእንጨትሳንቃ/ጣዉላ.....3 ሲሚንቶ.....8 ሸምበቆ .....4 ስጋጃምንጣፍ.....9 ሌላ (ይገለፅ)_____99	
206	የቤቱ የዉጨኛዉ ግድግዳ በዋነኛነት ከምንድነው የተሰራው?	**የተፈጥሮ ግድግዳ** **የተጠናቀቀ ግድግዳ** የሌለዉ.....1 ሲሚንቶ.....5 አገዳ/ግንድ/ሸምበቆ.....2 ድንጋይናሲሚንቶ.....6 **በቅጡ ያልተጠናቀቀ ግድግዳ** የሸክላ ጡብ.....7 እንጨትናጭቃ.....3 ብሎኬት.....8 ድንጋይናጭቃ.....4 የእንጨትሳንቃ/ጣዉላ.....9 ሌላ (ይገለፅ)፡_____99	
207	ቤቱ ምን ዓይነት የመፀዳጃ ቤት አለዉ?**ከአንድ በለይ መልስ ከተሰጠ በዋናነት የሚጠቀሙትን ይመዝግቡ**	በዉሀ የሚወርድ ሽንት ቤት.....1 ርብራብ የሌለዉ ሽንት ቤት....4 የአየር ማስወጫ ቱቦ ያለዉ ሽንት ቤት....2 መፀዳጃ ቤት የለዉም.....5 ርብራብ ያለዉ ሽንት ቤት.....3 ሌላ (ይገለፅ)፡_____99	

208	በግቢያችሁ ዉስጥ የራሳችሁ የመጠጥ ዉሃ አለ? (ከአንድበላይመመለስይቻላል)	አዎ፤ ያልተጠበቀ የጉድጓድ.....1 አዎ፤የቧንቧ ዉሃ.....3 አዎ፤የተጠበቀ የጉድጓድ.....2 የለም.....0	
209	ቤተሰቡ በዋነኛነት የመጠጥ ዉሃ የሚያገኘዉ ከምንድን ነዉ?	የቧንቧ ዉሃ.....1 የተጠበቀ ጉድጓድ.....2 ያልተጠበቀ ጉድጓድ.....3 የተጠበቀ.....4 ያልተጠበቀ.....5 የከርሰ ምድር ዉሃ.....6 ታንከር.....7 የታሸ ገ ዉሃ.....8 ምንጭ ሌላ(ይገለፅ): _____99 ምንጭ	
2. የቤት ንብረት እና አገልግልቶች፡- እባክዎ የሚቀጥሉትን ጥያቄዎች ቤትዎ ዉስጥ ስለሚገኙ ንብረቶችና አገልግልቶች እያሰቡ ይመልሱ			
210	ቤተሰቡ የሚከተሉት ቁሳቁሶች አሉት?	**አዎ የለም** ሀ. የኤሌክትሪክመብራት.....1.....0 ለ. ሬድዮ .....1.....0 ሐ. ቴሌቪዝን.....1.....0 መ. የቤት ስልክ.....1.....0 ሠ.ኮምፒዉተር.....1.....0	
		ረ. ፈሪጅ.....1.....0 ሰ. ጠረንፔዛ.....1.....0 ቃ. ሶፋ.....1.....0 ሸ. ወንበር.....1.....0 ቀ. አልጋ ከነፍራሹ.....1.....0 በ. የኤሌክትሪክ ምጣድ.....1.....0 ተ. የኩራዝ መብራት.....1.....0 ቸ. ሶላር.....1.....0	
211	ከቤተሰቡ አባላት ዉስጥ የሚከተሉት ቁሳቁሶች ያለዉ አለ?	**አዎ የለም** ሀ. ሰዓት.....1.....0 ለ. የስልክቀፎ.....1.....0 ሐ. ብስክሌት.....1.....0 መ. ሞተር.....1.....0 ሠ. መኪና.....1.....0 ረ. ባጃጅ.....1.....0	

212	ቤቱ ባብዛኛዉ ለምግብ ማብሰያነት የሚጠቀመዉ ምንድን ነዉ?	የኤሌክትሪክታይል.....1 ሳር.....6 ባዮጋዝ.....2 የከብትተረፈምርት (ኩበት).....7 ናፍታ.....3 የሰብልተረፈምርት (ገለባ).....8 እንጨት.....4 ሌላ (ይገለፅ)፡_____9 ከሰል.....5	
213	ከቤተሰቡ አባላት ዉስጥ የቁጠባ ደብተር (የባንክወ.ዘ.ተ) ያለዉ አለ?	አዎ.....1 የለም.....0	

ክፍል 3፡የልጆች የአመጋገብ ጸባይ(CEBQ)

ተ.ቁ		መቼም	አልፎ አልፎ	አንዳንዴ	ብዙጊዜ	ሁልግዜ
301.	ልጅዎ ምግብ ይወዳል/ትወዳለች					
302.	ልጅዎ ሲጨነቅ / ስትጨነቅ አብዝቶ/አብዝታ ይመገባል/ትመገባለች					
303.	ልጅዎ ጥሩ የመመገብ ፍላጎት አለው/አላት					
304.	ልጅዎ የቀረበለትን/ላትን ምግብ በፍጥነት ይጨርሳል/ትጨርሳለች					
305.	ልጅዎ የምግብ ፍላጎት አለዉ/አላት					

306.	ልጅዎ ሁልጊዜ የሚጠጣ ነገር ይጠይቃል/ትጠይቃለች					
307.	ልጅዎ አዲስ ምግብ መጀመሪያ ላይ ለመመገብ ፍቃደኛ አይሆንም/አትሆንም					
308.	ልጅዎ ሲመገብ /ስትመገብ ቀስ ብሎ/ላ ነው					
309.	ልጅዎ ሲናደድ /ስትናደድ					

	የሚመገበው/የምትመገበው ምግብ መጠን ይቀንሳል					
		መቼም	አልፎአልፎ	አንዳንዴ	ብዙጊዜ	ሁልግዜ
310.	ልጅዎ አዲስ ምግብ መቅመስ ይወዳል/ትወዳለች					
311.	ልጅዎ ሲደክመው /ሲደክማት የሚመገበው/የምትመገበው ምግብ መጠን ይቀንሳል					

312.	ልጅዎ ሁልጊዜ ምግብ (ይጠይቃል/ትጠይቃለች) ስጡኝ ይላል/ትላለች					
313.	ልጅዎ ሲበሳጭ/ስትበሳጭ አብዝቶ/ታ ይመገባል/ትመገባለች					
314.	ልጅዎን ከተዉት ከመጠኑ/ኗ በላይ ይመገባል/ትመገባለች					
315.	ልጅዎ ሲረበሽ/ስትረበሽ አብዝቶ/ታ ይመገባል/ትመገባለች					
316.	ልጅዎ የተለያዩ ምግቦችን መመገብ ይወዳል/ትወዳለች					

317.	ልጅዎ ከተሰጣት/ከተሰጠው ምግብ ላይ ያስተርፋል/ታስተርፋለች					
318.	ልጅዎ የቀረብለትን/ላትን ምግብ ለመጨረስ ከ30 ደቂቃ በላይ ይፈጅባታል/ይፈጅበታል					

319.	ልጅዎ ምርጫ ከተሰጠው/ከተሰጣት አብዛኛውን ጊዜ እየበላ/አየበላች ታሳልፋለች/ያሳልፋል					
320.	ልጅዎ የምግብ ሰአቱን/ቷን በጉጉት ይጠብቃል/ትጠብቃለች					
321.	ልጅዎ የቀረበለትን/ላትን ምግብ ከማለቁ በፊት ይጠግባል/ትጠግባለች					
322.	ልጅዎ ምግብ መመገብ ያስደስተዋል/ያስደስታታል (ያዝናናዋል/ያዝናናታል)					
323.	ልጅዎ ደስተኛ ሲሆን/ስትሆን አብዝቶ ምግብ ይመገባል/ትመገባለች					

		መቼም	አልፎአልፎ	አንዳንዴ	ብዙጊዜ	ሁልግዜ
324.	ለልጅዎ የሚያስደስተውን/የሚያደስታትን ምግብ መመምረጥ ከባድ ነው					
325.	ልጅዎ ሲከፋው/ት የሚመገበው/የምትመገበው ምግብ መጠን ይቀንሳል					
326.	ልጅዎ ሲመገብ/ስትመገብ በቀላሉ ቶሎ ይጠግባል/ትጠግባለች					
327.	ልጅዎ ምንም እያደረገ ካልሆነ አብዝቶ መመገብን ይመርጣል/ትመርጣለች					
328.	ልጅዎ ቢጠግብም/ብትጠግብም የሚወደው/የምትወደው ምግብ ከገኘ/ች ይጨምራል/ትጨምራለች					

329.	ልጅዎን ከተዉት ቀኑን ሙሉ የሚጠጣ ነገር እየጠጣ/ች ይውላል/ትውላለች					
330.	ልጅዎ አስቀድማ/ሞ (ከእራት/ከምሳ በፊት) መክሰስ ከበላ/ች ምግብ መመገብ አይችልም/አትችልም					
331.	ልጅዎን ከተዉት ሁልጊዜ የሚጠጣ ነገር ይዞ/ዛ ይገኛል/ትገኛለች					
332.	ልጅዎ አዲስ ምግብ ለመቅመስ ይጎጎል/ትጎጎለች					
333.	ልጅዎ የተሰጠውን ምግብ ሳይቀምስ/ሳትቀምስ እንደማይወድው/እንደማት ወደው ይወስናል/ትወስናለች					

334.	ልጅዎን ከተዉት ሁልጊዜ ምግብ እየበላ/ላች ይገኛል/ትገኛለች					
335.	ልጅዎ ገበታ እየጨረሰ/እየጨረሰች ስትመጣ ፍጥነቷ/ፍጥነቱ ይቀንሳል					

ክፍል 4፡ ህጻናትን የመመገብ የተመለከቱ ጥያቄዎች(CFQ questionnaire)

የመመገብ ሀላፊነት ስሜት(ግንዛቤ) በተመለከተ						
		መቼም	አልፎአልፎ	ግማሹን ጊዜ	ብዙ ጊዜ	ሁል ጊዜ
401.	ልጅዎ ቤት ዉስጥ ሲኖር/ስትኖር ለመመገብ እርስዎ ምን ያህል ሀላፊነት ይሰማዎታል					
402.	ልጅዎ የሚመገበዉን /የምትመገበውን የምግብ መጠን ለመወሠን ምን ያህል ሀላፊነት ይሰማዎታል					
403.	ልጅዎ ተገቢዉን የምግብ አይነት እንዲመገብ /እንድትመገብ የመወሰን ምን ያህል ሀላፊነት ይሰማዎታል					
የራስዎን የሰዉነት ክብደት ያለዎት መረዳት(ግንዛቤ)						

		ከጤናማ የሰዉነ ት ክብደት እጅግ በጣም ያነሰ	ከጤናማ የሰዉነት ክብደት በታች	ጤናማ የሰዉነት ክብደት	ከጤናማ የሰዉነት ክብደ ት ከመጠን ያለፈ	ከጤናማ የሰዉነት ክብደት እጅግ በጣም ከፍ ያለ
404.	በልጅነት ጊዜ (ከ 5-10 ዕድሜ ላይ)					
405.	በጉርምስና ጊዜ					

406.	በ 20ኛዉ ዕድሜ ላይ					
407.	በ አሁኑ ጊዜ					
ስለ ልጅዎ የሰዉነት ክብደት ያለዎት መረዳት (ግንዛቤ)						
		ከጤናማ የሰዉነት ክብደት እጅግ በጣም ያነሰ	ከጤናማ የሰዉነት ክብደት በታች	ጤናማ የሰዉነት ክብደት	ከጤናማ የሰዉነት ክብደት ከመጠን ያለፈ	ከጤናማ የሰዉነት ክብደት እጅግ በጣም ከፍ ያለ
408.	ልጅዎ ጨቅላ በነበረበት/ችበት ዕድሜ አካባቢ ላይ					
409.	ልጅዎ ድክ ድክ በሚልበት/በምትልበት ዕድሜ ላይ					

410.	ልጅዎ ቅድመ ትምህረት በጀመረበት/ችበት ዕድሜ ላይ					
ስለ ልጅዎ የሰዉነት ክብደትመጠን ያሎት አመለካከት/አስተሳሰብ(ስጋት)						
		አያሳስበኝም	በጥቂቱ ያሳስበኛል	ያሳስበኛል	በመጠኑ ያሳስበኛል	በጣም ያሳስበኛል
411.	ከልጅዎ አጠገብ ከሌሉ ስለ ልጅዎ ከመጠን በላይ መመገብ ምን ያህል ያሳስቦታል					
412.	ልጅዎ የተፈለገዉን የሰዉነት ክብደት መጠን ለማምጣት ምግብ መቀነስ ቢኖርበት/በት ምን ያህል ያሳስቦታል					

413.	ልጅዎ ከልክ ያለፈ የሰዉነት ክብደት እየኖረው/ራት ቢመጣ ምን ያሃል ያሳስቦታል					
		መቼም	አልፎ አልፎ	አንዳንዴ	ብዙ ግዜ	ሁል ጊዜ
414.	ልጅዎ የሰዉነት ክብደቱ ዝቅተኛ እየሆነ ይመጣል ብለዉ ይጨናቀሉ					
415.	በአሁን ሰዐት ልጅዎ ዝቅተኛ የሰዉነት ክብደት አለው ብለዉ ይጨናቀሉ					

የወላጆች የመመገብ ተግባር፡ከስር የተዘረዘሩ ተግባሮች ያልዎት አመለካከት						
የወላጆች የልጆችን የምግብ የመገደብ(መወሰን) ተግባር						
		አልስማማም	በጥቂት እስማማለው	ገለልተኛ	በጥቂት እስማማለው	እስማማለው
416.	ልጅዎ ብዙ ጣፋጭ ምግቦች(ከረሜላ፣አይስ ክሪም፣ኬክ) እንዳትመገብ/እንዳይመገብ ይገድባለሁ					
417.	ልጅዎ ብዙ ቅባት የበዛበት ምግቦች እንዳትመገብ/እንዳይመገብ ይገድባሉ					
418.	ልጅዎ አብዝታ/ቶ (ከመጠን በላይ) የምትወደውን/የሚወደውን ምግቦች እንዳትመገብ/እንዳይመገብ ይገድባሉ					
419.	ልጅዎ የማይደርስበት/የማትደርስበት ቦታ አንዳንድ ምግቦችን ያስቀምጣሉ					
420.	ለልጅዎ ጥሩ ጸባይ ጣፋጭ ምግቦችን እንደ ሽልማት ይሰጣሉ					
421.	ለልጅዎ ጥሩ ጸባይ የምትወደውን/የሚወደውን ምግቦችን እንደ ሽልማት ይሰጣሉ					
422.	እርስዎ የልጅዎትን አመጋገብ ባይቆጣጠሩ፣ልጅዎ ብዙ ጤናማ ያልሆኑ ምግቦችን ትመገባለች/ይመገባል					

423.	እርስዎ የልጅዎትን አመጋገብ ባይቆጣጠሩ፣ልጅዎ የምትወደውን ምግቦች አብዝታ/አብዝቶ ይመገባል/ትመገባለች					
የወላጆች ልጆች እንዲበሉ የግፊት ተግባር						
424.	ልጅዎ ሁሌም የተሰጣት/የተሰጠውን ምግብ በአግባቡ መጨረስ አለባት/አለበት					
425.	ልጅዎ በቂ ምግብ መመገቡን/መመገቧን ጥንቃቄ ይወስዳሉ					
426.	ልጅዎ አራበኝም ብትልም/ቢልም አስገድደው ያበሉታል/ያበሉዋታል					
427.	ልጅዎትን አመጋገብ በአግባቡ ካልተከታተሉ ፣ልጅዎ መመገብ ካለለበት/ባት አሳንሶ/አሳንሳ ይመገባል/ትመገባለች					
የወላጅ የልጆችን ምግብ የመቆጣጠር ተግባር						
		መቼም	አልፎአልፎ	አንዳንዴ	ብዙጊዜ	ሁልግዜ
428.	ልጅዎ የምትመገበውን/የሚመገበውን ጣፋጭ ምግቦች ምን ያህል ይከታተላሉ					
429.	ልጅዎ የምትመገበውን/የሚመገበውን የመዳረሻ(መክሰስ) ምግቦች ምን ያህል ይከታተላሉ					

430.	ልጅዎ የምትመገበውን / የሚመገበውን ቅባት የበዛበት ምግቦች ምን ያህል ይከታተላሉ					

ክፍል 5.የመደበት ስሜት

በሚመለከት/PHQ-9 የመደበት ስሜትን መለኪያ ባለፉት ሁለት ሳምንት ጊዜ ውስጥ የሚከተሉት ችግሮች በየስንት ጊዜ አጋጥሞት ያውቃል

ተ.ቁ.		አጋጥኝ አያውቅም (0)	ብዙጊዜ ያጋጥመኛል (1)	ከግማሽ ቀን በላይ (2)	በየ ቀኑ (3)
501.	ነገሮችን ለማድረግ ምንም/ጥቂት ፍልላጎት አለማሳየት				
502.	ደስታ ማጣት ፤ መደበት እና ተስፋ ማጣት				
503.	እንቅልፍ ማጣት ወይም እረዥም ሰአት መተኛት				
504.	የድካም ስሜት ወይም አነስተኛ አቅም መኖር				
505.	የምግብ ፍላጎት መቀነስ ወይም በብዛት መመገብ/ መብላት				
506.	ስለራስዎ የሚሰማ መጥፎ ስሜት ወይም የውድቀት ስሜት ፤ ራስን ወይም ቤተሰብን ለውድቀት የመዳረግ ስሜት				
507.	ነገሮችን በተመስጦ የማድረግ ለምሳሌ በንባብ ወቅት / ቴሌቪዥን በመመልከት ወቅት				

507.	ንግግር ወይም እንቅስቃሴ በሚያደርጉበት ወቅት ከወትሮው በተለየየ				
	ሰዎችን ትኩረት ለማግኘት በቀስታ ማድረግ ፤ ድምፅን ከፍ አድርጎ መናገር ወይም እረፍት ማጣትና መንቀሽቀሽ				
508.	በህይወት መኖሬ ትርጉም የለውም ብሎ የማሰብ ወይም ራስን የመጉዳት ስሜት				

ይህን መጠይቅ በሚሞለበት ጊዜ በዚህ መጠይቅ ውስጥ ያጋጠምዎት ችግር ምን ያህል በስራዎት ላይ ፤ በቤት ውስጥ በሚያከናውኗቸው ተግባራት ላይና ከሰዎች ጋር ባለዎት መግባባት ላይ ምን ያህል አስቸጋሪ አድርጎብዎታል?

ምንም አስቸጋሪ አላደረገብኝም በጥቂቱ/በትንሹ ☐

አስቸጋሪ አድርጎብኛል በጣም አስቸጋሪ አድርጎብኛል ☐

እጅግ በጣም አስቸጋሪ አድርጎብኛል ከላይ ያሉትን ☐

ጥያቄዎች አጠቃላይ ደምሩ = ☐

ክፍል6፡የጠንካራና ደካማ ጎኖች መጠይቅ

እባክዎን ለእያንዳንዱ መዘርዝር ትይዩ 'እውነት አይደለም'፤'በከፊል እውነት ነው 'ወይም' በእርግጥ እውነት ነው' የሚለው ስር ካሉት ሳጥኖች በአንዱ ምልክት ያድርጉ ። ምንም እንኳን በፍጹም እርግጠኛ ባይሆኑ ወይም መዘርዝሩ ስሜት የማይሰጥቢ መስልም ፤ለሁሉም መዝርዝሮች በሚችሉት አቅም መልስ ቢሰጡን ይረዳናል።እባክዎንየሚሰጡትመልስልጅዎባለፉትስድስትወራትወይምበዘንድሮውየትምህርትዘ መንያሳየውን/ያሳየችውንባህሪበተመለከተይሁን።

የልጁ ስም ..... ወንድ/ሴት .....

የትውልድ ዘመን .....

ተ.ቁ		አውነት አይደለም	በከፊል እውነት ነው	በእርግጥ እውነት ነው
601.	ስለ ሌሎች ሰዎች ስሜት ይጠነቀቃል/ትጠነቀቃለች			
602.	ይንቀዠቀዠል/ትንቀዠቀዠለች፤ እረፍት የለሽ ነው/ነች፤ አንድ ቦታ አርፎ መቆየት አይችልም/አትችልም			
603.	ብዙ ጊዜ ራሴን፤ ሆዴን አመመኝ ወይም አቅለሸለሸኝ ይላል/ትላለች			
604.	ለሌሎች ልጆች ያለውን/ያላትን ነገር በቀላሉ ያጋራል/ታጋራለች(የሚበላ፤ መጫወቻ፤ እርሳስ፤ ወዘተ)			
605.	ብዙ ጊዜ በጣም ተናዳጅና ግልፍተኛ ነው /ናት(ይንፈራፈራል/ትንፈራፈራለች፤ ይማታል / ትማታለች ፤ ይጮሃል/ትጮሃለች፤ ይወራወራል/ትወራወራለች)			
606.	አይደባለቅም/አትደባለቅም፤ገለል ይላል/ትላለች፤ ለብቻው/ዋ የመጫወት አዝማሚያ አለው/አላት			
607.	በጥቅሉ ታዛዥ ነው / ናት ፤ ብዙ ጊዜ አዋቂዎች የጠየቁትን /የጠየቋትን ያደርጋል/ታደርጋለች			

608.	ስለ ብዙ ነገር ይሰጋል/ትሰጋለች፤ ብዙ ጊዜ ትንሽ ትልቁ ያሳስበዋል/ያሳስባታል			
609.	ሰው ተጎድቶ፤ ከፍቶት ወይም አሞት ካየ/ካየች ይረዳል/ትረ?ዳለች			
610.	ያለማቋረጥ በተቀመጠበት/በተቀመጠችበት ይቁነጠነጣል / ትቁነጠነጣለች፤ይንቆራጠጣል/ትንቆራጠጣለች፤ ይጠማዘዛል/ትጠማዘዛለች			
611.	ቢያንስ አንድ ጥሩ ጓደኛ አለው/አላት			
612.	ብዙ ጊዜ ከሌሎች ልጆች ጋር ይደባደባል/ትደባደባለች ወይም ጉልበተኝነቱን/ጉልበተኛነቷን ያሳያል/ታሳያለች			
613.	ብዙ ጊዜ ደስተኛ አይደለም/አይደለችም፤ ይከፋዋል /ይከፋታልወይም እንባው/እንባዋ ይመጣል			
614.	በጥቅሉ በሌሎች ልጆች ተወዳጅነት አለው/አላት			
615.	በቀላሉ ሀሳቡ/ሀሳቧ ይበታተናል፤ትኩረቱም/ትኩረቷም አንድ ቦታ ላይ አይቆ?ይም			
616.	አዲስ ሁኔታዎች ሲገጥሙት/ሟት ይረበሻል / ትረበሻለች ፤ወላጆቹ/ቿ ላይ ጥብቅ ይላል/ትላለች፤ ወይም አልለቅምይላል/ትላለች፤ በቀላሉ በራስ መተ?ማመን ያጣል/ታጣለች			
617.	ከእርሱ/ከርሷ ለሚያንሱ ልጆች ደግ ነው/ናት			
618.	ዘወትር ከአዋቂዎች ጋር ይከራከራል/ትከራከራለች፤ ይጨቃጨቃል/ትጨቃጨቃለች(ከፍ ላለ ልጅ ብዙ ጊዜ ይዋሻል/ትዋሻለች ወይም ያጭበረብራል/ታጭበረብራለች)			
619.	ሌሎች ልጆች ይተናኮሉታል/ይተናኮሏታል፤ ያበሽቁታል /ያበሽቋታል ወይም ጉልበተኝነታቸውን ያሳዩታል/ያሳይዋታል			
620.	ብዙ ጊዜ ሌሎችን ለመርዳት ፈቃደኛ ነው / ናት (ወላጆች፤መምህራን፤ሌሎች ልጆች)			

621.	አንድ ነገር ከማድረጉ/ከማድረጓ በፊት ስለነገሩ በቅድሚያ ያስተውላል/ታስተውላለች			
622.	ለሌሎች ጨካኝ ወይም ክፉ ሊሆን/ልትሆን ይችላል /ትችላለች(ከፍ ላለ ልጅ ከቤት፣ ከትምህርት ቤት ወይም ከሌላ ቦታ ይሰርቃል/ትሰርቃለች)			
623.	ከሌሎች ልጆች ይልቅ ከአዋቂዎች ጋር በቀላሉ ይግባባል/ትግባባለች			
624.	ብዙ ነገሮች ይፈራል/ትፈራለች፤ በቀላሉ ድንግጥ ይላል/ትላለች			
625.	የጀመራቸውን/የጀመረቻቸውን ነገሮች እስከመጨረሻቸው ድረስያከናውናል/ታከናውናለች፤ጥሩ የትኩረትስፋት አለው / አላት			

ፊርማ.....ቀን ..... እናት/አባት/ሌላ/ እባክዎን ይግለፁ

ከላይ ያሉትን ጥያቄዎች በየክፍሉ መሰረት ደምሩ

Emotional problems:3,8,13,16,24

Conduct problems :5,7,12,18,22

Hyperactivity scale:2,10,15,21,25

Peer problems:6,11,14,19,23

Prosocial : 1,4,9,17,20

ክፍል 7 : በመረጃ ሰብሳቢ/በጠያቂው የሚሞላ

የሰውነት መጠን ልኬት

መመሪያ ፡ አሁን ቁመትዎ ፣ ክብደትዎ የምንለካ ይሆናል ። ስለዚህ የለበሱትን ከባድ ልድሶች እና ያደረጉትን ጫማ እንዲያወልቁ እጠይቃሉ ።

ተ.ቁ	የሰውነት መጠን ልኬት	የመጀመሪያ ልኬ ት	ሁለተኛ ልኬት
701	ክብደት በኪሎ ግራም	☐☐☐.☐	☐☐☐.☐
702	ቁመት በሴንቲ ሜትር	☐☐☐.☐	☐☐☐.☐

ስለትብብርዎ በጣም አመሰግናለሁ

Annex 7: Sampling procedure for each sub city

	BOLE SUBCITY listed based on wereda decending order		
no.	names	popln	cum freq
1	አምሳል አጸደህጻናት	81	81
2	መክሊት አጸደህጻናት	88	169
3	ሙስተቅበል	57	226
4	ቦሌካውንቲ	59	285
5	አልፋዩኒክ	110	395
6	ቼሪ አጸደህጻናት	80	475
7	አየር አምባ	280	755
8	ማርች 8 1ኛ ደረጃ ት/ቤት	150	905
9	አልፋ መስ/የተሳ/ልዩ ት/ቤት	34	939
10	ስኩል አፍ ቱሞሮው	305	1244
11	ፕሪስቲጀየስ	136	1380
12	ብራይት ፊውቸር	73	1453
13	ቅድስት ሃና	253	1706
14	ካራክተር ሆል ማርክ	100	1806
15	አስከኪላ	98	1904
16	ሊትል ኢንስታይን	49	1953
17	ማክሚላን	78	2031
18	ጊብሰን	363	2394
19	ብርሀንህ ዛሬ	114	2508
20	ምስራቅድል	211	2719
21	ኤሎን	239	2958
22	አባቂራ	55	3013
23	ማርያሩባቶ	324	3337
24	ሴንትማርክ	83	3420
25	ስኩልኦፍቱሞሮ	199	3619
26	ሪታ	58	3677
27	ማክሚላን	40	3717
28	አዲስ ራዕይ	329	4046
29	ግሎሪ	154	4200

30	ቅድስት ማርያም	65	4265
31	ጊብሰን	241	4506
32	ሆሎን	94	4600
33	ኑራ	102	4702
34	ማያ	109	4811
35	ዋን ፕላኔት	145	4956
36	ምስራቅ በር ቁ.2 ት/ቤት	190	5146
37	ፒላር አካዳሚ	82	5228
38	እዉቀት ጮራ አካዳሚ	45	5273
39	ማክዲል አካዳሚ	91	5364
40	ፊሊያ አካዳሚ	113	5477
41	ሀዉስ አፍ ኪዳን ት/ቤት	14	5491
42	ሀሞና ት/ቤት	35	5526
43	ፓንቶክራተር	66	5592
44	ግሎዉ	106	5698
45	ኦርሶላይን	329	6027
46	ዩሪካ	100	6127
47	ሰአሊተ መምህረት	85	6212
48	ማለዳ	99	6311
49	ሜሪላንድ	154	6465
50	መሳለሚያ	142	6607
51	ሉል	90	6697
52	ማህቶት	35	6732
53	ሐዌተን	148	6880
54	ማይፊውቸር	120	7000
55	አልፋዩኒክ2	162	7162
56	አቤኔዘር	275	7437
57	አዲስ ቪዝን	88	7525
58	ፋውንቴን ኦፍ ኖውሌጅ	515	8040
59	ቪዥን	150	8190
60	ሳፋሪ	938	9128
61	ኩዌስት	41	9169
62	ፅናት	119	9288
63	ፊሊፐር ኢንተርናሽናል	154	9442
64	ትሪሊየም ኢንተርናሽናል	181	9623

65	ኔሽንስ ኒውሆፕ	139	9762
66	ኢንቴሌክቸል	60	9822
67	ኦሊቭ	16	9838
68	ዲቦራህ	327	10165
69	ያንግ ሩትስ	381	10546
70	ጎሮ	498	11044
71	ቦሌ አዲስ	546	11590
72	ቅ/ገብርኤል	142	11732
73	አል-ሂምራን	124	11856
74	አቤኔዘር	105	11961
75	እናፈራ	57	12018
76	የምስራች	199	12217
78	ሮዝ ማውንቴን	61	12278
79	ሲፈን ዩዝ	120	12398
80	ፀደይ ጀይ	120	12518
81	ኤደን	69	12587
82	ሀዊተን	51	12638
83	ጵሾን	138	12776
84	ሸቡ ኤጀርሳ	268	13044
85	ሀርመኒ ሂልስ	372	13416
86	አኤልሻዳይ	202	13618
87	ቦሌገነት	210	13828
88	ኢትዮ ዩዝ	143	13971
89	ንስር	169	14140
90	ዴሊቨራንስ	167	14307
91	ራዕይ	113	14420
92	ሲያኔ	36	14456
93	ቢቢኤስ አካዳሚ ቁ.1	70	14526
94	ቢቢኤስ አካዳሚ ቁ.2	165	14691
95	ሕፃናት ኤደን	145	14836
96	ይርጋለም አካዳሚ	46	14882
97	ትሪሂል አካዳሚ	74	14956
98	ዛጎል አካዳሚ	104	15060
99	ሳፋሪ አካዳሚ	420	15480
100	የኛ አካዳሚ	125	15605

101	በሻሌ አካዳሚ	460	16065
102	መሪ 1ኛ ደ/ት/ቤት	151	16216
103	ሰላም አካዳሚ	63	16279
104	ስታር አካዳሚ	45	16324
105	ኤፍኤ አካዳሚ	70	16394
106	አደይ አካዳሚ	33	16427
107	ዴሊቨራንስ	137	16564
108	ለሚ	374	16938
109	ናሳ አካዳሚ	108	17046
110	ሆሄ ስኩል	110	17156
111	ነፀብራቅ	27	17183
112	ኢትዮ ሀርቫርድ	141	17324
113	ሀርመኒየስ ላፍ	185	17509
114	ሪች ኢን ኖውሎጅ	76	17585
115	ቦሌ ወረገኑ	320	17905
116	የቡልቡላ ራዕይ	310	18215
117	ቦሌቡልቡላ መድሀኒያለም	265	18480
118	ቼሪ	130	18610
119	አክትቬት	220	18830
120	ሮሆቦት	140	18970
121	በእምነት	91	19061
122	ሱፐርኪድስ	78	19139
123	ሆፕ ኦፍ ክድ	132	19271
124	ጌታቸዉ ሸሬ	89	19360
125	አዉዝልየም	206	19566
126	እመሙዝ	106	19672
127	ኤልሻዳይ	71	19743
128	ኬቢ	346	20089
129	ብራይት ብሬን	93	10182
130	እስኩል ኦፍ ኣይጎዳ	186	20368
131	ቦሌ ቡልቡላ አጸደ ህጻናት	69	20437
132	ኤ ስኩር	136	20573
133	ቬካስ	58	20631
134	ቦሌ ገርጂ	614	21245
135	ቦሌ ሀ/ሰብ	188	21433
136	አዲስ ግሎባል	250	21683

137	ሱፐር አካዳሚ	218	21901
138	ትኩረት	86	21987
139	ምህረት	230	22217
140	ጌትቄይ	95	22312
141	ኤክስለስ	151	22463
142	እምቡጥ	153	22616
143	ሶፊስትስ ቁ.1	171	22787
144	ሶፊስትስ ቁ.2	26	22813
145	ቶምናጄሪ	24	22837
146	ሃኒ	98	22935
147	አዴዘርዓያቆብ	90	23025
148	ገርጂ አጸደ ህፃናት	65	23090
149	ሱፐር ሆሊሴቭየር	145	23235
150	ኢትዮ ፓረንት	435	23670
151	ዩኒቲ	280	23950
152	ካዉንስል	113	24063
153	ካንትሪ	218	24281
154	ብሪቲሽ	204	24485
155	ቪዥን	342	24827
156	ፎከስ	60	24887
157	ህዳሴ	214	25101

	25,101/ 4= 6,275 sampling interval					
	Random no. =100 school chosen= RS+ RS+2SI….					
	schools chosen are those that include cum. Frequency of 100, 6375, 12,676, 18,925					

NIFAS SILK SUBCITY listed based on wereda decending order

n0.	school name	poln	cum freq.		
1	ጂኒየስ ዞን	142	142		
2	ጎህ መምህራን አካዳሚ	30	172		
3	ፉሪ ማርያም	87	259		
4	በዓልፐራሲም	51	310		
5	ቤተሰብ	53	363		
6	ቦሊያም	31	394		
7	ቢያንቦን	28	422		
8	ንዋይቻሌንጅ ቁ1	412	834		
9	ንዋይቻሌንጅ ቁ2	476	1310		
10	ኤች. ቢ	123	1433		
11	ክቢሮዝ	92	1525		
12	ፅጌረዳ ቁ2	70	1595		
13	ፅጌረዳ ቁ1	147	1742		
14	ሃዊ ዳንዲበሩ	244	1986		
15	ማይድሪም	38	2024		
16	ፍሬሆህተ ብርሃን	75	2099		
17	ሰይፉ ደመቀ	50	2149		
18	ቡሉ ናይል	59	2208		
19	ቃልማል	97	2305		
20	ቁ.አ.ታ	74	2379		
21	ላይት ሃውስ	97	2476		
22	ይርጋለም	42	2518		
23	ሔብሮን	71	2589		
24	ምስራቅ	147	2736		
25	ካሰች	178	2914		
26	ኒውፎርቹን	85	2999		
27	ብርሊያንት ዩዝ	44	3043		
28	ማውንት ኦሊቭ	105	3148		
29	ስታንፎርድ	325	3473		
30	ዜማ	46	3519		
31	ሪደምሽን	119	3638		
32	አርክሜን	64	3702		
33	ሩት	132	3834		
34	ህዳሴ የመ	210	4044		

35	ሃናየመ	608	4652		
36	ህብር-ቁ2	337	4989		
37	ሲ ኤስ ኤስ	77	5066		
38	ግሬት ኢትዮጲያ	72	5138		
39	ሁንዴ ጉዲና	65	5203		
40	ንጋት አ/ህ	53	5256		
41	ሰዉ ፀጋ	24	5280		
42	ዴፍሮም	94	5374		
43	ፕራይድ	87	5461		
44	ሮማን	178	5639		
45	ኪድስ ቪቭን	89	5728		
46	ሻምፒዮን	146	5874		
47	ቆሬ ብ/ወ/ት/ቤት	36	5910		
48	ኦሪጅን አፍ ኖዉለጅ	22	5932		
49	አልፋ ብሌን	44	5976		
50	ቲ ደብሊዉ ትሪኒቲ	143	6119		
51	ዶልፊን	115	6234		
52	ኒዉ ሆፕ	150	6384		
53	ዋሊፍ	44	6428		
54	ሰስትሮንግ	76	6504		
55	አዲስ ህይዎት	38	6542		
56	ሄርማን	99	6641		
57	ፊዉቸር	162	6803		
58	ኢምብሬሲንግ	99	6902		
59	ልማት	73	6975		
60	ቅ/ማርያም	182	7157		
61	ፒር ፓዉሎ	136	7293		
62	የአምድ	146	7439		
63	የመ/ደ/ገ/ቅ/ሚካኤል	424	7863		
64	ክሩዝ	917	8780		
65	ብራና	64	8844		
66	ኒው ኢንግሊሽ	331	9175		
67	ካፕቹን ዳናግል	158	9333		
68	ብስርአተገብርኤል	392	9725		
69	ስኩል አፍ ቱሞሮ	348	10073		
70	የኔታ	104	10177		

71	ኤስ ኦኤስ	180	10357		
72	ስፕርንግ	417	10774		
73	ሮበስት	164	10938		
74	መ/መ/እየሱስ	175	11113		
75	ኤቨርእስት	42	11155		
76	ማልድ	107	11262		
78	ሞደርን	110	11372		
79	ግራንአርድ	57	11429		
80	ሳራካንዛሮ	52	11481		
81	ግፍትድ ሃነድ	13	11494		
82	ደብል	100	11594		
83	ኪድስ ፈርስት	34	11628		
84	ላይት ሀውስ	58	11686		
85	አይ ስ ኤስ	60	11746		
86	መቅደላ	160	11906		
87	መካኒሳ	146	12052		
88	ተስፋ መ/ት/ቤት	107	12159		
89	ጊብሰን ዩዝ አካዳሚ	774	12933		
90	መካኒሳ አባድር	119	13052		
91	ስኩል ኦፍ ኔሽን	96	13148		
92	ስትራይቨርስ	120	13268		
93	አሌክሳንደር	128	13396		
94	ሳንኮስት	154	13550		
95	ኤፍኤም	86	13636		
96	ኤምቲ	90	13726		
97	ቬሮኒካ	178	13904		
98	ሳሌምአፀደህፃናት	91	13995		
99	ሳቤዲአፀደህፃናት	68	14063		
100	ዳርሲይአፀደህፃናት	137	14200		
101	ስብሰቴ ነጋሴ የ/ደ/ትቤት	110	14310		
102	አግኣዚያን የመ/ደ/ትቤት	190	14500		
103	በቲዲ የመ /ደ/ት/ቤት	173	14673		
104	ኤዶን የመ/ደ/ት/ቤት	202	14875		
105	መቅረዝ	203	15078		
106	ለምለም	83	15161		
107	አዲስ አምባ 1ኛ ደረጃ ት/ቤት	235	15396		

108	ፋልከን ቁ.1 አካዳሚ	156	15552		
109	ፋልከን ቁ.2 አካዳሚ	177	15729		
110	ፋልከን ቁ.3 አካዳሚ	218	15947		
111	ኤል ቤተል አካዳሚ	366	16313		
112	ቲፒ ፋይ ዩዝ አካዳሚ	152	16465		
113	ስኩል ኦፍ አይጎዳ	141	16606		
114	ሰኔ ዘጠኝ	372	16978		
115	አብዮት ፋና	312	17290		
116	ፕሮሚስ ኪፐርስ	147	17437		
117	ፕሮግረስ	74	17511		
118	ፖክሩል ናሳ	106	17617		
119	ኑርጀማል	140	17757		
120	ሰለሞንስ	73	17830		
121	ኤሽኮል	138	17968		
122	ቲ-ደብሊዉ- ኤስ	127	18095		
123	ሌሳንክሆሊንስ	74	18169		
124	የኔታ ሀሁ አብሳሪ	147	18316		
125	ሩት	84	18400		
126	ቆጣሪ	554	18954		
127	እውቀት ብርሐን	57	19011		
128	ስንዝሮ	217	19228		
129	ምሳሌ	79	19307		
130	ጅንየስ ኪድስ	62	19369		
131	ልዑል መኮነን	122	19491		
132	አስሮክ	132	19623		
133	አስፓየር ዩዝ	60	19683		
134	አኤፍራታ	136	19819		
135	አቅሌስያ	97	19916		
136	ሮሆቨትቪዥን	93	20009		
137	የሮም	113	20122		
138	ኢያቄንወሃና	131	20253		
139	ሻሎም	120	20373		
140	ሲዶን	263	20636		
141	ፍኖተሎዛ	**229**	20865		
142	ጊብሰን ዩዝ	230	21095		
143	የአብ ቃል	72	21167		
144	አዲስ ሂወት	78	21245		
145	ሚሞሪ	50	21295		

146	ሳባቦሩ	70	21365		
147	ኤሽኮል	112	21477		
148	ፀደይ	107	21584		
149	እስኩል ኦፍ ቢ.ኤስ.ሲ	63	21647		
150	አሜን	51	21698		
151	ሜትሮ	62	21760		
152	ሊደርሽፕ	115	21875		
153	ኢትዮ ጅነሲስ	66	21941		
154	ፀዳል	169	22110		
155	ኤቢ ኢንፎ	270	22380		
156	ሳዉዝዌስት	555	22935		
157	ኤዋይቢ	81	23016		
158	ግሎዉ	85	23101		
159	ሰንሻይን	101	23202		
160	ሐሉአም	145	23347		
161	ጆይስ	109	23456		
162	ፊዉቸርጀነሬሽን	170	23626		
163	እምዩ	67	23693		
164	አማኑኤል	412	24105		
165	አቡነጳዉሎስ	152	24257		
166	ማጋቢት-28	283	24540		
167	ላፍቶ	252	24792		
168	ኖላዊ	232	25024		
169	ዩኒክ	95	25119		
170	ረድኤት ቁ1	156	25275		
171	ረድኤት ቁ2	168	25443		
172	አምባ ዩዝ	165	25608		
173	ምዕራፍ	110	25718		
174	ዳይናሚክ	247	25965		
175	ፈለገ ነዋይ	71	26036		
176	ግዕዝ	134	26170		
177	ኣፕል	64	26234		
178	አፎሚያ	64	26298		
179	ጵንኤል	240	26538		
180	ቢብራስት	95	26633		
181	አቡነ ጎርጎሪዮስ	536	27169		
182	ሰኒ ላንድ	86	27255		
183	ሰፈረ ሰላም	148	27403		

184	ደድሪም ሰክሰስ	556	27959		
185	የያንዱኣለም	164	28123		
186	እስኩል ኦፍ ኢንዲያና	341	28464		
187	ሳዉዝዌስት(ጀሞ)	724	29188		
188	ስፕርንግ ኦፍ ኖሌጅ	338	29526		
189	ማርክ ዩዝ	521	30047		
190	ጀሞ ሁለት	439	30486		

25,101/ 4= 7,621 sampling interval

Random no. =100 school chosen= RS+ RS+2SI....

schools chosen are those that include cum. Frequency of 100, 7,721, 15,342, 22,963

	LIDETA SUBCITY		listed based on wereda decending order		
no.	school name	popln	cum freq.		
1	መስከረም 1	85	85		
2	ልማት ምንጭ	159	244		
3	ኢንተሊጀንት ሚሊኒያ	302	546		
4	ፅናት አካዳሚ	147	693		
5	መዝገበ ብርሀን አጸደ ህጻናት	98	791		
6	ሰላም አጸደ ህጻናት	156	947		
7	ኡስማን አጸደ ህጻናት	114	1061		
8	ኢትዮ ካናዳ አጸደ ህጻናት	519	1580		
9	ሂልቶፕስ አጸደ ህጻናት	268	1848		
10	04/06/	285	2133		
11	ብሪታኒካ አ/ህጻናት	300	2433		
12	ቢላል አ/ህጻናት	109	2542		
13	ብራይት አ/ህጻናት	121	2663		
14	ኤልሆም ኦፍ ኪድስ	180	2843		
15	አሜሪካና ባልቻ ኬጂ	232	3075		
16	አሜሪካና ጌጃ ኬጂ	54	3129		
17	ሌኮ አብዲሳ አጋ ኬጂ	140	3269		
18	ካራማራ ኬጂ	427	3696		
19	ቀበሌ 37 ኬጂ	229	3925		
20	ቀበል 29 ኬጂ	257	4182		
21	ብሪሊያንስ ኬጂ	153	4335		

22	ቀበሌ 30 አፀደ-ህፃናት	51	4386		
23	ቀበሌ 41 አፀደ-ህፃናት	151	4537		
24	ቀበሌ 42 አፀደ-ህፃናት	196	4733		
25	እድገት በስራ	222	4955		
26	ጎላ አፀደ ህፃናት	422	5377		
27	የስማማ ህፃናት	203	5580		
28	ሩሃማ አፀደ ህፃናት	107	5687		
29	አባድር አፀደ ህፃናት	313	6000		
30	ተስፋ ኮከብ	212	6212		
31	ቅዱስ ጊዮርጊስ	138	6350		
32	አሜሪካና	301	6651		
33	መካነ ኢየሱስ	253	6904		
34	ፍሬህይወት ቁ.1 ት/ቤት	154	7058		
35	ትሩሆኝስ አፀደ ህፃናት	136	7194		
36	ሊዛ አፀደ ህፃናት	89	7283		
37	ጉድኔቨርስ አፀደ ህፃናት	109	7392		

7392/ 4= 1,848 sampling interval

Random no. =100 school chosen= RS+ RS+2SI….

schools chosen are those that include cum. Frequency of 100, 2,202, 3,796, 5,644

Annex 8: univariate regression for each of children eating behavior scales and independent variables

Enjoyment of food	Coefficient	SE	95% CI	P- value
Independent variable				
Age in years	**-0.03**	**0.04**	**-0.11 to 0.56**	**0.480**
Gender				
Female	**0.05**	**0.08**	**-0.11 to 0.22**	**0.521**
Parent education status				
Primary education	**0.15**	**0.15**	**-0.15 to 0.45**	**0.329**
Secondary school	**0.31**	**0.14**	**0.02 to 0.61**	**0.034**
Technical school and above	**0.21**	**0.15**	**-0.08 to 0.51**	**0.161**
Wealth index				
Poor	**-0.07**	**0.13**	**-0.34 to 0.19**	**0.599**
Medium	**-0.09**	**0.13**	**-0.36 to 0.17**	**0.506**
Wealthy	**-0.11**	**0.13**	**-0.38 to 0.16**	**0.422**
Wealthiest	**-0.10**	**0.13**	**-0.37 to 0.17**	**0.463**
Parent depression status				
Mild depression	**0.10**	**0.10**	**-0.08 to 0.30**	**0.282**
Moderate depression	**0.06**	**0.12**	**-0.18 to 0.31**	**0.604**
Child's psychological status (total difficulty score)				
Slightly raised	**0.14**	**0.12**	**-0.10 to 0.31**	**0.253**
High	**0.09**	**0.15**	**-0.20 to 0.39**	**0.550**
Very high	**-0.06**	**0.12**	**-0.30 to 0.18**	**0.606**
Child's nutritional status				
Thin	**-0.11**	**0.39**	**-0.89 to 0.65**	**0.761**
Normal weight	**-0.08**	**0.33**	**-0.84 to 0.47**	**0.591**
Overweight	**0.06**	**0.35**	**-0.62 to 0.75**	**0.855**
Obese	**0.24**	**0.39**	**-0.53 to 1.01**	**0.537**
Perceived feeding responsibility	**0.07**	**0.05**	**-0.02 to 0.18**	**0.143**
Perceived parent weight	**0.02**	**0.09**	**-0.15 to 0.20**	**0.793**
Perceived child weight	**0.27**	**0.07**	**0.12 to 0.42**	**0.000**
Concern about child underweight	**-0.16**	**0.03**	**-0.23 to -0.10**	**0.000**
Concern about child overweight	**0.18**	**0.03**	**0.11 to 0.26**	**0.000**
Restriction	**0.25**	**0.04**	**0.16 to 0.34**	**0.000**
Pressure to eat	**-0.15**	**0.04**	**-0.23 to -0.06**	**0.000**
Monitoring	**0.10**	**0.04**	**0.02 to 0.18**	**0.015**

Food responsiveness	Coefficient	SE	95% CI	P- value
Independent variable				
Age in years	**-0.01**	**0.03**	**-0.09 to 0.05**	**0.601**
Gender				
Female	**0.20**	**0.07**	**0.06 to 0.34**	**0.004**
Parent education status				
Primary education	**0.23**	**0.12**	**-0.01 to 0.47**	**0.068**
Secondary school	**0.32**	**0.12**	**0.09 to 0.56**	**0.007**
Technical school and above	**0.29**	**0.12**	**0.05 to 0.54**	**0.016**
Wealth index				
Poor	**0.18**	**0.11**	**-0.03 to 0.40**	**0.106**
Medium	**-0.02**	**0.11**	**-0.24 to 0.19**	**0.851**
Wealthy	**-0.02**	**0.11**	**-0.24 to 0.19**	**0.811**
Wealthiest	**0.08**	**0.11**	**-0.13 to 0.30**	**0.429**
Parent depression status				
Mild depression	**0.10**	**0.08**	**-0.05 to 0.26**	**0.178**
Moderate depression	**0.28**	**0.10**	**0.08 to 0.48**	**0.006**
Child's psychological status (total difficulty score)				
Slightly raised	**0.10**	**0.10**	**-0.09 to 0.30**	**0.312**
High	**0.20**	**0.12**	**-0.03 to 0.44**	**0.098**
Very high	**0.01**	**0.10**	**-0.18 to 0.21**	**0.861**
Child's nutritional status				
Thin	**-0.04**	**0.32**	**-0.66 to 0.58**	**0.894**
Normal weight	**-0.35**	**0.27**	**-0.88 to 0.18**	**0.196**
Overweight	**-0.04**	**0.28**	**-0.60 to 0.51**	**0.874**
Obese	**-0.10**	**0.31**	**-0.72 to 0.51**	**0.738**
Perceived feeding responsibility	**0.05**	**0.04**	**-0.02 to 0.14**	**0.173**
Perceived parent weight	**0.06**	**0.07**	**-0.07 to 0.21**	**0.346**
Perceived child weight	**0.05**	**0.06**	**-0.06 to 0.18**	**0.357**
Concern about child underweight	**-0.03**	**0.02**	**-0.08 to 0.02**	**0.232**
Concern about child overweight	**0.22**	**0.02**	**0.16 to 0.28**	**0.000**
Restriction	**0.27**	**0.03**	**0.20 to 0.34**	**0.000**
Pressure to eat	**-0.10**	**0.03**	**-0.17 to -0.03**	**0.003**
Monitoring	**0.08**	**0.03**	**0.01 to 0.14**	**0.021**

Emotional overeating	Coefficient	SE	95% CI	P- value
Independent variable				
Age in years	**0.23**	**0.26**	**-0.02 to 0.96**	**0.384**
Gender				
Female	**0.001**	**0.52**	**-0.10 to 1.23**	**0.977**
Parent education status				
Primary education	**0.09**	**0.09**	**-0.09 to 0.27**	**0.335**
Secondary school	**0.09**	**0.08**	**-0.07 to 0.27**	**0.265**
Technical school and above	**0.17**	**0.09**	**-0.003 to 0.35**	**0.055**
Wealth index				
Poor	**0.09**	**0.08**	**-0.07 to 0.25**	**0.270**
Medium	**0.01**	**0.08**	**-0.14 to 0.17**	**0.858**
Wealthy	**-0.02**	**0.08**	**-0.18 to 0.13**	**0.973**
Wealthiest	**0.002**	**0.08**	**-0.16 to 0.16**	**0.402**
Parent depression status				
Mild depression	**0.04**	**0.05**	**-0.06 to 0.16**	**0.402**
Moderate depression	**0.33**	**0.07**	**0.19 to 0.18**	**0.000**
Child's psychological status (total difficulty score)				
Slightly raised	**0.003**	**0.07**	**-0.14 to 0.15**	**0.960**
High	**0.05**	**0.09**	**-0.12 to 0.23**	**0.558**
Very high	**0.11**	**0.07**	**-0.02 to 0.26**	**0.110**
Child's nutritional status				
Thin	**-0.008**	**0.23**	**-0.55 to 0.37**	**0.704**
Normal weight	**-0.003**	**0.20**	**-0.42 to 0.36**	**0.878**
Overweight	**0.19**	**0.21**	**-0.21 to 0.61**	**0.348**
Obese	**0.19**	**0.23**	**-0.26 to 0.65**	**0.409**
Perceived feeding responsibility	**0.005**	**0.03**	**-0.05 to 0.06**	**0.873**
Perceived parent weight	**0.023**	**0.05**	**-0.08 to 0.13**	**0.672**
Perceived child weight	**0.06**	**0,04**	**-0.02 to 0.15**	**0.139**
Concern about child underweight	**-0.01**	**0.01**	**-0.05 to 0.02**	**0.504**
Concern about child overweight	**0.13**	**0.02**	**0.09 to 0.17**	**0.000**
Restriction	**0.11**	**0.02**	**0.05 to 0.16**	**0.000**
Pressure to eat	**-0.13**	**0.02**	**-0.18 to -0.08**	**0.000**
Monitoring	**0.01**	**0.02**	**-0.03 to 0.06**	**0.615**

Desire to drink	Coefficient	SE	95% CI	P- value
Independent variable				
Age in years	**-0.04**	**0.04**	**-0.13 to 0.05**	**0.364**
Gender				
Female	**0.10**	**0.09**	**-0.07 to 0.29**	**0.256**
Parent education status				
Primary education	**0.12**	**0.16**	**-0.20 to 0.45**	**0.453**
Secondary school	**0.27**	**0.16**	**-0.03 to 0.59**	**0.082**
Technical school and above	**0.12**	**0.16**	**-0.44 to 0.19**	**0.450**
Wealth index				
Poor	**-0.03**	**0.14**	**-0.33 to 0.25**	**0.810**
Medium	**-0.06**	**0.14**	**-0.36 to 0.22**	**0.649**
Wealthy	**0.05**	**0.14**	**-0.23 to 0.35**	**0.704**
Wealthiest	**0.19**	**0.14**	**-0.09 to 0.49**	**0.187**
Parent depression status				
Mild depression	**0.006**	**0.10**	**-0.20 to 0.22**	**0.949**
Moderate depression	**0.09**	**0.13**	**-0.17 to 0.36**	**0.492**
Child's psychological status (total difficulty score)				
Slightly raised	**0.35**	**0.13**	**0.08 to 0.62**	**0.009**
High	**0.20**	**0.16**	**-0.11 to 0.53**	**0.204**
Very high	**0.26**	**0.13**	**0.006 to 0.53**	**0.045**
Child's nutritional status				
Thin	**-0.14**	**0.42**	**-0.98 to 0.68**	**0.726**
Normal weight	**-0.10**	**0.36**	**-0.82 to 0.60**	**0.767**
Overweight	**-0.04**	**0.38**	**-0.79 to 0.70**	**0.907**
Obese	**-0.64**	**0.42**	**-1.48 to 0.18**	**0.128**
Perceived feeding responsibility	**0.07**	**0.58**	**-0.03 to 0.18**	**0.201**
Perceived parent weight	**0.02**	**0.09**	**-0.17 to 0.21**	**0.818**
Perceived child weight	**0.01**	**0.08**	**-0.15 to 0.17**	**0.879**
Concern about child underweight	**0.08**	**0.03**	**0.01 to 0.15**	**0.018**
Concern about child overweight	**-0.02**	**0.04**	**-0.10 to 0.05**	**0.500**
Restriction	**0.26**	**0.05**	**0.17 to 0.36**	**0.000**
Pressure to eat	**0.09**	**0.04**	**0.001 to 0.18**	**0.048**
Monitoring	**0.10**	**0.04**	**0.009 to 0.19**	**0.030**

Food fussiness	Coefficient	SE	95% CI	P- value
Independent variable				
Age in years	**-0.13**	**0.03**	**-0.09 to 0.33**	**0.343**
Gender				
Female	**-0.16**	**0.06**	**-0.29 to -0.04**	**0.008**
Parent education status				
Primary education	**-0.17**	**0.11**	**-0.39 to 0.05**	**0.133**
Secondary school	**-0.30**	**0.10**	**-0.51 to -0.08**	**0.006**
Technical school and above	**-0.06**	**0.11**	**-0.27 to 0.15**	**0.588**
Wealth index				
Poor	**-0.12**	**0.10**	**-0.32 to 0.07**	**0.233**
Medium	**-0.09**	**0.10**	**-0.29 to 0.10**	**0.347**
Wealthy	**-0.04**	**0.10**	**-0.24 to 0.15**	**0.650**
Wealthiest	**0.03**	**0.10**	**-0.16 to 0.23**	**0.739**
Parent depression status				
Mild depression	**-0.05**	**0.07**	**-0.20 to 0.08**	**0.426**
Moderate depression	**-0.08**	**0.09**	**-0.26 to 0.09**	**0.344**
Child's psychological status (total difficulty score)				
Slightly raised	**0.01**	**0.09**	**-0.16 to 0.19**	**0.864**
High	**0.20**	**0.11**	**-0.05 to 0.42**	**0.068**
Very high	**0.03**	**0.09**	**-0.14 to 0.21**	**0.733**
Child's nutritional status				
Thin	**0.02**	**0.29**	**-0.59 to 0.54**	**0.933**
Normal weight	**0.24**	**0.24**	**-0.24 to 0.72**	**0.331**
Overweight	**0.23**	**0.26**	**-0.28 to 0.74**	**0.376**
Obese	**0.32**	**0.29**	**-0.24 to 0.89**	**0.265**
Perceived feeding responsibility	**-0.10**	**0.03**	**-0.08 to 0.06**	**0.799**
Perceived parent weight	**0.05**	**0.06**	**-0.07 to 0.18**	**0.402**
Perceived child weight	**-0.09**	**0.05**	**-0.20 to 0.01**	**0.106**
Concern about child underweight	**0.05**	**0.02**	**0.007to 0.99**	**0.024**
Concern about child overweight	**-0.02**	**0.02**	**-0.07 to 0.03**	**0.439**
Restriction	**-0.13**	**0.03**	**-0.20 to -0.007**	**0.000**
Pressure to eat	**0.08**	**0.03**	**0.02 to 0.14**	**0.007**
Monitoring	**-0.06**	**0.03**	**-0.12 to -0.002**	**0.041**

Satiety responsiveness	Coefficient	SE	95% CI	P- value
Independent variable				
Age in years	-0.01	0.03	-0.09 to 0.05	0.633
Gender				
Female	**0.03**	**0.07**	**-0.10 to 0.17**	**0.649**
Parent education status				
Primary education	**-0.02**	**0.12**	**-0.27 to 0.23**	**0.858**
Secondary school	**-0.27**	**0.12**	**-0.52 to -0.03**	**0.025**
Technical school and above	**-0.25**	**0.12**	**-0.50 to -0.01**	**0.041**
Wealth index				
Poor	**0.07**	**0.11**	**-0.15 to 0.30**	**0.518**
Medium	**0.18**	**0.11**	**-0.04 to 0.40**	**0.118**
Wealthy	**0.01**	**0.11**	**-0.14 to 0.30**	**0.486**
Wealthiest	**0.15**	**0.11**	**-0.07 to 0.38**	**0.178**
Parent depression status				
Mild depression	**0.05**	**0.08**	**-0.10 to 0.22**	**0.489**
Moderate depression	**0.04**	**0.10**	**-0.16 to 0.24**	**0.696**
Child's psychological status (total difficulty score)				
Slightly raised	**0.09**	**0.10**	**-0.11 to 0.29**	**0.379**
High	**0.12**	**0.12**	**-0.12 to 0.37**	**0.326**
Very high	**0.03**	**0.10**	**-0.16 to 0.24**	**0.725**
Child's nutritional status				
Thin	**-0.49**	**0.32**	**-1.13 to 0.14**	**0.131**
Normal weight	**-0.49**	**0.27**	**-1.04 to 0.05**	**0.076**
Overweight	**-0.64**	**0.29**	**-1.21 to -0.06**	**0.029**
Obese	**-0.85**	**0.32**	**-1.49 to -0.20**	**0.914**
Perceived feeding responsibility	**0.09**	**0.04**	**0.01 to 0.18**	**0.026**
Perceived parent weight	**0.008**	**0.07**	**-0.14 to 0.15**	**0.914**
Perceived child weight	**-0.17**	**0.06**	**-0.30 to-0.04**	**0.006**
Concern about child underweight	**0.12**	**0.26**	**0.07 to 0/17**	**0.000**
Concern about child overweight	**-0.05**	**0.03**	**-0.12 to 0.002**	**0.060**
Restriction	**-0.03**	**0.03**	**-0.11 to 0.03**	**0.326**
Pressure to eat	**0.17**	**0.03**	**0.10 to 0.24**	**0.000**
Monitoring	**0.002**	**0.03**	**-0.06 to 0.07**	**0.951**

Slowness in eating	Coefficient	SE	95% CI	P- value
Independent variable				
Age in years	**-0.05**	**0.03**	**-0.12 to 0.02**	**0.188**
Gender				
Female	**-0.01**	**0.07**	**-0.16 to 0.13**	**0.836**
Parent education status				
Primary education	**0.01**	**0.13**	**-0.25 to -0.27**	**0.923**
Secondary school	**-0.26**	**0.12**	**-0.51 to -0.01**	**0.042**
Technical school and above	**-0.31**	**0.13**	**-0.57 to -0.05**	**0.018**
Wealth index				
Poor	**0.13**	**0.12**	**-0.10 to 0.36**	**0.274**
Medium	**0.008**	**0.12**	**-0.22 to 0.24**	**0.941**
Wealthy	**0.02**	**0.12**	**-0.20 to 0.26**	**0.815**
Wealthiest	**0.04**	**0.12**	**-0.19 to 0.28**	**0.708**
Parent depression status				
Mild depression	**0.05**	**0.08**	**-0.11 to 0.22**	**0.543**
Moderate depression	**0.10**	**0.10**	**-0.10 to 0.32**	**0.315**
Child's psychological status (total difficulty score)				
Slightly raised	**0.21**	**0.10**	**-0.005 to 0.43**	**0.045**
High	**0.10**	**0.13**	**-0.15 to 0.36**	**0.441**
Very high	**0.11**	**0.10**	**-0.09 to 0.32**	**0.282**
Child's nutritional status				
Thin	**0.30**	**0.34**	**-0.37 to 0.97**	**0.381**
Normal weight	**0.006**	**0.29**	**-0.56 to 0.57**	**0.983**
Overweight	**-0.02**	**0.30**	**-0.62 to 0.58**	**0.948**
Obese	**-0.21**	**0.34**	**-0.88 to 0.46**	**0.539**
Perceived feeding responsibility	**0.09**	**0.04**	**0.002 to 0.18**	**0.044**
Perceived parent weight	**-0.01**	**0.07**	**-0.16 to 0.14**	**0.886**
Perceived child weight	**-0.22**	**0.06**	**-0.35 to -0.09**	**0.001**
Concern about child underweight	**0.12**	**0.02**	**0.07 to 0.17**	**0.000**
Concern about child overweight	**-0.02**	**0.03**	**-0.08 to 0.04**	**0.534**
Restriction	**0.02**	**0.04**	**-0.05 to 0.10**	**0.565**
Pressure to eat	**0.14**	**0.03**	**0.07 to 0.22**	**0.000**
Monitoring	**0.01**	**0.03**	**-0.05 to 0.09**	**0.644**

Emotional undereating	Coefficient	SE	95% CI	P- value
Independent variable				
Age in years	**-0.002**	**0.04**	**-0.09 to 0.08**	**0.954**
Gender				
Female	**0.05**	**0.08**	**-0.12 to 0.23**	**0.545**
Parent education status				
Primary education	**-0.34**	**0.16**	**-0.65 to -0.03**	**0.031**
Secondary school	**-0.42**	**0.15**	**-0.72 to -0.12**	**0.005**
Technical school and above	**-0.45**	**0.15**	**-0.75 to -0.14**	**0.004**
Wealth index				
Poor	**-0.33**	**0.14**	**-0.61 to -0.05**	**0.018**
Medium	**-0.22**	**0.14**	**-0.50 to 0.05**	**0.110**
Wealthy	**-0.47**	**0.14**	**-0.74 to -0.19**	**0.001**
Wealthiest	**-0.27**	**0.14**	**-0.55 to -0.001**	**0.049**
Parent depression status				
Mild depression	**0.36**	**0.10**	**0.16 to 0.56**	**0.000**
Moderate depression	**0.42**	**0.12**	**0.17 to 0.67**	**0.001**
Child's psychological status (total difficulty score)				
Slightly raised	**0.28**	**0.12**	**0.02 to 0.53**	**0.029**
High	**0.09**	**0.15**	**-0.20 to 0.40**	**0.528**
Very high	**-0.07**	**0.12**	**-0.33 to 0.17**	**0.531**
Child's nutritional status				
Thin	**0.49**	**0.40**	**-0.30 to 1.29**	**0.227**
Normal weight	**0.39**	**0.34**	**-0.28 to 1.07**	**0.255**
Overweight	**0.31**	**0.36**	**-0.39 to 1.03**	**0.383**
Obese	**0.59**	**0.40**	**-0.20 to 1.39**	**0.145**
Perceived feeding responsibility	**0.11**	**0.05**	**0.007 to 0.22**	**0.036**
Perceived parent weight	**-0.12**	**0.09**	**-0.30 to 0.06**	**0.192**
Perceived child weight	**-0.19**	**0.07**	**-0.35 to -0.04**	**0.012**
Concern about child underweight	**0.11**	**0.03**	**0.05 to 0.17**	**0.001**
Concern about child overweight	**0.11**	**0.03**	**0.03 to 0.18**	**0.003**
Restriction	**0.15**	**0.04**	**0.05 to 0.24**	**0.002**
Pressure to eat	**0.05**	**0.04**	**-0.03 to 0.14**	**0.205**
Monitoring	**0.01**	**0.04**	**-0.06 to 0.10**	**0.670**

Annex 9 : Technical error of measurement for weight and height

Intra observer TEM of height data in cm (N=10)								
Measurer: 1					Measurer: 2			
subject number	1st measurement	2nd measurement	Difference(D)	D^2	1st measurement	2nd measurement	Difference(D)	D^2
1	100.5	100.2	0.3	0.09	99.9	99.6	0.3	0.09
2	98.5	98.2	0.2	0.04	98.7	98.4	0.3	0.09
3	102.4	102.8	-0.4	0.16	102.1	101.8	0.3	0.09
4	106.3	106.0	0.3	0.09	106.6	106.2	0.4	0.16
5	94.3	94.0	0.3	0.09	94.0	94.3	-0.3	0.09
6	111.7	111.4	0.3	0.09	111.3	111.2	0.1	0.01
7	103.5	103.3	0.2	0.04	104.1	104.2	-0.1	0.01
8	112.2	112.0	0.2	0.04	112.3	112.1	0.2	0.04
9	109.3	109.6	-0.3	0.09	109.0	109.3	-0.3	0.09
10	107.7	107.4	0.3	0.09	107.9	107.6	0.3	0.09
Absolute Intra Observer TEM = 0.025 cm					Absolute Intra Observer TEM = 0.1949 cm			
Intra observer TEM [∑ ∑(mi1-mi2) sq / 2*K*Nj] = 0.198746069 Standard deviation = 1.4753 Inter observer TEM = 0.2156 cm Coefficient of reliability = 97.5 %								

TEM of Weight data in kg (N=10)								
Measurer: 1					Measurer: 2			
subject number	1st measurement	2nd measurement	Difference(D)	D^2	1st measurement	2nd measurement	Difference(D)	D^2
1	13.3	13.5	-0.2	0.04	13.1	13.2	-0.1	0.01
2	12.8	12.7	0.1	0.01	12.6	12.4	0.2	0.04
3	18.5	18.7	-0.2	0.04	18.2	18.3	-0.1	0.01
4	15.6	15.7	0.1	0.01	15.5	15.7	-0.2	0.04
5	17.8	18.0	0.2	0.04	17.2	17.4	-0.2	0.04
6	12.6	12.8	-0.2	0.04	12.8	12.9	-0.1	0.01
7	11.5	11.1	0.4	0.16	11.1	11.0	0.1	0.01
8	14.6	14.3	0.3	0.09	14.9	15.0	-0.1	0.01
9	17.2	17.3	-0.1	0.01	17.6	17.5	0.1	0.01
10	15.7	15.8	-0.1	0.01	15.2	15.2	0	0
Absolute Intra Observer TEM = 0.15 kg					Absolute Intra Observer TEM = 0.095 kg			
Intra observer TEM [∑ ∑(mi1-mi2) sq / 2*K*Nj] = 0.1255 Standard deviation = 1.3401 Inter observer TEM = 0.2155 kg Coefficient of reliability = 98.71 %								

Curriculum Vitae: Nardos Wondafrash

Last updated: December, 2018

Personal Information

First name: Nardos Middle name: Wondafrash Last name: Gebru

Age: 24 years Sex: Female Marital status: Single

Place of Birth: Addis Ababa, Ethiopia

Date of Birth: 06 June , 1994

Nationality: Ethiopian

Language: Amharic and English: Speak, Read and Write

Email: nardosw@gmail.com

Phone number (mobile): +251910-03-23-74

Home Address : Nifas silk sub-city, Wereda 09 ,House number 118/0086, Addis Ababa, Ethiopia

I. Academic Qualification

1. Degree of Public Health:

Period of study: March 2012-July 2016 G.C

Program: Public Health

Institution: Dilla University, School of public Health, Ethiopia

2. Ethiopian Higher Education Entrance Certificate:

Period of study: September 2010-July 2012 G.C

Program: Preparatory Program

Institution: Dandii Boru school, Addis Ababa, Ethiopia

3. Ethiopian General Secondary Education Certificate:

Period of study: September 2008-July 20010 G.C

Program: High School

Institution: Dandii Boru school, Addis Ababa, Ethiopia

4. Short trainings

1. Effective teaching skill for academic staffs

Program: *training*

Institution: Dilla University

2. Software training on SPSS, STATA AND R program

Program: training

Institution: Dilla university

5. Work Experience

1. Graduate Assistant II at Dilla University

Duration of employment:

- July 2016- October 2017

Institution: Dilla University, College of health science and Medicine , School of Public Health

Professional Associations

Memberships

- Ethiopian Public Health Association (EPHA)

Skills, interests and hobbies

- Know how on statistical software packages (SPSS, EPI INFO, WHO-Anthro,Epi data)
- Team leadership
- Good communication skills
- IT know how
- Public speech

Future Plans and Interests

- To upgrade my level of education to the next higher level
- Giving voluntary health services.
- To be an expert on my area of study.

References:

1. **Dr. Frehiwot Eshetu**
   Senior public health specialist at CDC Ethiopia
   Mob- 0911-50-05-17
2. **Mrs. Hiwot Amare (co- founder of N4ED)**
   Mob-0911-23-27-76

Curriculum Vitae

Name: Robel Yirgu

Sex: Male

Age: 33

Home Address

Addis Ababa

Cell: 0924407180

Office no: 0115547319

Email: yirgurob@gmail.com

EDUCATION	
February, 2013	**Master of Public Health** (MPH, in Epidemiology), Department of Preventive medicine, School of Public Health, Addis Ababa University.
June, 2006	**Bachelor of Science (Bsc),** Department of Public Health, College of Health Sciences, Haramaya University.
SHORT COURSES	
April-June, 2017	**Clinical Research and Evidence-based Medicine (SCREM),** Institute of Tropical Medicine (ITM), Antwerp, Belgium.
June, 2013	**Reproductive Health Commodity Security**, Department of Reproductive Health, School of Public Health, Addis Ababa University.
January 20-23	**Scientific Grant Writing,** Medical Education Partnership Initiative (MEPI), College of Health Sciences, Addis Ababa University.
WORK EXPERIENCE	
2013- 2018	**Lecturer,** School of Public Health, Addis Ababa University.
Since Nov, 2017	**Graduate Program Coordinator**, School of Public Health.
2009-2010	**Assistant lecturer,** College of Health Sciences, Adama University.
2009-2010	Head, Department of Public Health, College of Health Sciences,Adama University.
2007-2009	**Graduate assistant I & II,** College of Health Sciences, Adama University.
RESEARCH EXPERIENCE	
Since, 2017	**Co-investigator:** Technology Enabled Maternal and child health care (TEMACC) intervention research project.A.A.U,University of Linz, Austria

Since, 2013	**Regional coordinator**: "Performance Monitoring and Accountability 2020" a survey designed to develop a mobile-Assisted Data and Dissemination System (mADDS) using mobile devices to measure core and country specific indicators of family planning service need and utilization in ten countries of Africa and Asia. A national community and facility based survey, A.A.U, Ministry of Health and Johns Hopkins University.
Since, 2014	**Research coordinator: "**Facility Assessment For Reproductive Health Commodities and Services". An annual national facility based survey. A.A.U, UNFPA.
Since, 2017	**Research coordinator:** Performance Monitoring and Accountability 2020: Women and Girls' Empowerment and sexual and reproductive choices. ***A qualitative study*** A.A.U, Ministry of Health and Johns Hopkins University.
2015	**Research Assistant: "**Enhancing Demand and Quality of Community Based Family Planning Including Long Acting Contraceptive Services Provided at Health Posts and Health Centers in Amhara Region Project ***Pre-Implementation Qualitative Assessment***" JSI, L10K.
2014-2016	**Research Coordinator:** *"*The role of Phone-based applications and client centered communication in improving maternity and family planning services". Addis Ababa University and UNFPA.
2015	**Principal investigator:** Can socio cultural factors determine diagnostic delay for TB treatment in rural Ethiopia, ***a qualitative study***
2014	**Research assistant:** "Respectful maternity care, ***a qualitative study*** in Amhara and Sothern Nations Nationalities and peoples' regions of Ethiopia" JSI, L10K.
2014	**Principal investigator:** Determinants of delayed care seeking for TB suggestive symptoms in rural Ethiopia: a community based unmatched case-control study
2013	**Research assistant:** "Effect of maternal death on living children in central part of Ethiopia, ***a qualitative study***". A.A.U and University of Harvard.
2013	**Research Coordinator:** "Values at bed side" a national survey of ethical dilemmas physicians face in Ethiopia. A.A.U, University of Bergen, Norway

PUBLICATIONS	- Sisay MM, **Yirgu R,** Gobezayehu AG, Sibley LM. (2014). Unheard souls in the backyard: ***a qualitative study*** of attitudes and values surrounding stillbirth and neonatal mortality among grandmothers, mothers and unmarried girls in rural Amhara and Oromia regions, Ethiopia. *Journal of Midwifery and womens' health*, 59(1), 110-7. https://www.ncbi.nlm.nih.gov/pubmed/24588912 - **Yirgu R,** Molla M, Gobezayehu A, Sibley A. (2016). Perinatal mortality magnitude, determinants and causes in West Gojam: population-based nested case-control Study. *Ploseone*,11 (7). https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4965173/ - **Yirgu R,** Sibley L, Molla A.(2017) Determinants of neonatal mortality in rural Northern Ethiopia: A Population based nested case control study. *Ploseone*. http://journals.plos.org/plosone/article?id=10.1371/journal.pone.0172875 - **Yirgu R**, Lemessa F, Hirpa S, Alemayehu A, Klinkenberg E.(2017) Determinants of delayed care seeking for TB suggestive symptoms in rural Ethiopia: a community based unmatched case-control study. *BMC Infectious diseases*. https://bmcinfectdis.biomedcentral.com/articles/10.1186/s12879-017-2407-8 - Fenta E, **Yirgu R**, Shikur B, Hagos S. (2017) Single 24-hour recall overestimates exclusive breast feeding practices among infants aged less than six months in rural Ethiopia. *BMC Nutrition* https://internationalbreastfeedingjournal.biomedcentral.com/articles/10.1186/s13006-017-0126-9 - Moges G, Getachew B, Shiferaw S, **Yirgu R**.(2016) Under nutrition and its determinants among daily laborers working in cobblestone project in Ethiopia. *Global Journal of Public Health and Medicine* http://www.gjmedph.com/uploads/O3-Vo5No2.pdf - Zelalem A, Endeshaw M, Awoke M, Shiferaw S, Yirgu R. Effect of Nutrition Education on pregnancy specific nutrition knowledge and healthy dietary practice among pregnant women in Addis Ababa. *Clinics in Mother and child Health*

- Moges T, Shiferaw S, **Yirgu R**, Gebremichael B. Is small play area in private schools and adolescent's sedentary behavior linked to overweight and obesity in Addis Ababa, Ethiopia? A comparative cross-sectional Study. *Journal of Epidemiology and health* file:///C:/Users/Robel/Desktop/Working%20files/Academic%20promotion/Is%20inadequate%20play%20area%20.pdf
- Dereje D, **Yirgu R**, Chichyibelu T. Magnitude of Overweight/Obesity and Associated Factors among High School Adolescents' in Addis Ababa, Ethiopia. *Journal of Nutritional disorders and therapy* file:///C:/Users/Robel/Desktop/Working%20files/Academic%20promotion/magnitude-of-overweightobesity-and-associated-factors-among-high-school-adolescents-in-addis-ababa-ethiopia-2161-0509-1000231.pdf
- Workneh A, Shiferaw S, Spigit M, **Yirgu R**, Geertjan D. Designing mHealth for maternity services in primary health facilities in a low-income setting – lessons from a partially successful implementation. *BMC Medical informatics and Decision making* file:///C:/Users/Robel/Desktop/Working%20files/Academic%20promotion/Designing%20mhealth%20for%20maternity%20services.pdf

GRANTS RECEIVED

2015 **PI:** Operational research grant for a research on TB, KNCV/USAID/TB CARE-I (9,500.00 USD)

2016 **PI:** Adaptive problem solving research grant, Addis Ababa University (5,000.00 USD)

2017 **Co-PI:** Thematic research grant, Addis Ababa University (60,000.00 USD)

REFERENCES

- Dr. Mitike Molla (PhD, MPH, Bsc) Dean, School of Public Health, Addis Ababa
  - Tel-0911131805
  - E-mail- mitikemolla@gmail.com
- Dr. Assefa Seme(MD, MPH), Head, Department of Reproductive Health and Health Service Management, School of Public Health, Addis Ababa University

	- Tel- 0911228193 - E-mail- assefaseme@gmail.com - Dr. Solomon Shiferaw (MD, MPH) Public Health Nutrition unit, Department of Reproductive Health and Health Service Management, School of Public Health. - Tel- 0911406845 - E-mail- solomonshiferaw@gmail.com

Assurance of principal investigator

The undersigned agrees to accept responsibility for the scientific ethical and technical Conduct of the research .

Name of the student: _____

Date. _____ Signature _____

Approval of the primary Advisor

Name of the primary advisor: _____

Date. _____ Signature _____