

**ADDIS ABABA UNIVERSITY
COLLEGE OF HEALTH SCIENCE
SCHOOL OF PUBLIC HEALTH**



**Assessment of the impact of school feeding program on students'
performance in Addis Ababa government primary school**

**Investigator: MISRAK FEYISSA
Advisor: Prof. JEMAL HAYIDER**

A Thesis Submitted to Addis Ababa University School of Public Health in partial fulfilment for the Requirement for the Master's Degree in Public Health, Addis Ababa University

Jun 2018
Addis Ababa Ethiopia

Approval by the board of examiners

This thesis by Misrak Feyissa is accepted by board of examiners as satisfying these requirement for the degree of masters of public health.

_____ Chair person, Department	_____ Signature	_____ Date
_____ Advisor	_____ Signature	_____ Date
_____ Examiner, Internal	_____ Signature	_____ Date
_____ Examiner, Internal	_____ Signature	_____ Date

DECLARATION

I hereby declare that the work which is being presented in this thesis entitled ‘‘Assessment of the role of school feeding program on students’ performance in Addis Ababa government primary school’’ is original work of my own, has not been presented for a degree to any other university and all the materials used for the thesis have been duly acknowledged.

_____ (MISRAK FEYISSA)	_____ Date
This is to certify that the above declaration made by the candidate is correct to the best of my knowledge.	
_____ (Prof. JEMAL HAYIDER)	_____ Date

Acknowledgment

The results of this study have been made successful due to the contributions, motivations and encouragements from different individuals and institutions. Without them, this work couldn't have been successful.

First of all I would like to thank my God for helping me accomplish passionately and successfully.

Because it is hard to name all individuals and all institutions that contributed to the success of this work, I would like to give many thanks to AAU school of public health faculty members for their endless support, encouragement at all the times that I have been at the College and for their valuable critiques on my academic works. All of the faculty's members without naming any were very helpful to me.

I am however and in a special way indebted to name my academic advisor and supervisor, Professor Jemal Hayidar who worked with me tirelessly and very closely since the starting of the proposal development to the time of my final theses. His continued comments and advice to me have been always fruitful and relevant towards the realisation of the study.

I am grateful to Mr. G/Tsadik for his enthusiastic support and provision of meticulous comments on the final theses work.

I would like to thank my husband Mr. Kebede , who always remained supportive, patient and taking care of everything including my son specially during data collection that made it possible for me to accomplish my study successfully.

Lastly, those whom I did not mention here should not think that I don't value their contributions towards the success of this work; I value them all and appreciate their support.

May the Almighty God be with you all!

Contents	
<u>Acknowledgment</u>	4
<u>Abbreviations</u>	8
<u>ABSTRACT</u>	9
<u>1. Introduction</u>	9
<u>1.1 Background</u>	10
<u>1.2 Problem statement</u>	12
<u>1.3 Significance of the study</u>	14
<u>1.4 Scope of the Study</u>	14
<u>2. LITERATURE REVIEW</u>	15
<u>2.1 School feeding</u>	15
<u>2.2 School feeding and attendance</u>	18
<u>2.3 Enrolment and dropout</u>	18
<u>2.4 School feeding and achievement test score</u>	19
<u>2.5 Research question</u>	20
<u>2.6 Conceptual frame work:</u>	21
<u>3. Objective of the Study</u>	22
<u>3.1 General Objective:</u>	22
<u>3.2 Specific objectives</u>	22
<u>4. METHODS and MATERIALS</u>	23
<u>4.1 Study area</u>	23
<u>4.2 Study design and Period</u>	24
<u>4.3 Target and Study population</u>	24
<u>4.4 Sample size and Sampling procedures</u>	24
<u>Sample Size for Frequency in a Population</u>	25
<u>4.5. Data collection procedures and extraction tools</u>	27
<u>4.6 Operational definitions and Standards</u>	27
<u>4.6. Variables</u>	28
<u>3.5 Data Analysis procedures</u>	28
<u>4.7. Data quality management</u>	28
<u>4.8. Ethical consideration</u>	29
<u>4. RESULT</u>	30
<u>4.1 Demographic Data of Respondents</u>	30
<u>4.2. School Feeding Program and Class Attendance</u>	31
<u>4.3. School Feeding Program and Student Drop-out</u>	32
<u>4.4. School Feeding Program and Student Academic Performance</u>	33
<u>5. DISCUSSIONS AND CONCLUSIONS</u>	34
<u>5.1 Discussions</u>	34

5.2	<u>Conclusion</u>	35
5.3	<u>Limitations</u>	35
6.	<u>RECOMMENDATIONS</u>	36
	<u>Reference-</u>	37
	<u>APPENDICES</u>	39
	<u>Annex 1.Questioner Developed for data collection from school roster on beneficiary students</u>	39
	<u>Annex 2. Ethical clearance form</u>	40
	<u>Annex 3. Support letter of Addis Ababa</u>	41

List of tables

Table 1- profile of schools.....	20
Table 2-students with program by gender, and grade.....	25
Table 3-Level of school absent rate before and after.....	25
Table 4-Students attendance rate by SFP	26
Table 5-Students drop out rate by SFP students.....	27
Table 7- Students Achievement test score by SFP and NSFP students.....	28

Abbreviations

DR	Dropout Rate
ETP	Education and Training Policy
ESDPs	Educational Sector Development Program
ER	Enrolment Ratio
FAO	Food and Agriculture Organisation
FMoE	Federal Ministry of Education
GoE	Government of Ethiopia
NGO	Non-governmental organization
SDG	Sustainable Development Goal
SFP	School Feeding Programme
NSFP	Non School Feeding Programme
SMP	School Meal Program
SPSS	Statistics for social study
WFP	World Food Programme

ABSTRACT

Background: School-age children face high levels of illness and malnutrition during their crucial growing years leading to decrease ability to pay attention and affecting their school performances. Reports indicate that school children can lose as much as 160 days each year due to illness because under nutrition magnifies the effect of every disease. Cognizant of the problem, School feeding program in Addis Ababa is launched in October 2015 through “YenatWeg” charity organization initiated by first lady W/ro Roman. The impact on the students’ school performance has not yet been studied in urban settings.

Objectives: The objective of the study is to assess the impact of school feeding program on students’ attendance, drop out and achievement test, in Addis Ababa government primary schools.

Methods: The overall design of this study is quasi experimental what is known as the “before – after” approach. A school based Study with retrospective analysis was employed among 200 students to assess the role of school feeding program on student’s school performance in Addis Ababa government primary school 2017/2018. Multi stage sampling technique was employed to select study participants. School record review was done for data collection and Paired sample T-test was used for analyzing the result.

Result: The average absent days of 200 School feeding beneficiaries before SFP and after was 1.67 and 1.23 days respectively. The mean average absent days difference due to school feeding program was found 0.44 (CI 0.148 - 0.732) ($t=2.967$, $P =0.003$).

Similarly the cumulative average of 200 School feeding beneficiaries before SFP and after were 67.61 and 69.02 from hundred respectively. The mean cumulative score difference due to school feeding program was found - 1.406 out of hundred (CI -2.24:-0.57) ($t=-3.31$, $P = 0.001$). Findings from this study provide evidence that, though the result has shown School Feeding Program has some positive effect on children’s academic achievement and attendance, yet the statistical association test of drop-out was found that the drop-out ratio before SFP and after SFP were not statistically different at 5% level ($t = 0.453$, $P > 0.05$).

Conclusion: The test statistics revealed that SFP has contributed significantly on attendance rate and academic performance of SFP beneficiaries.

Key Terms: School Feeding Program, SFP beneficiaries, Absence Rate, Drop-out Ratio, Achievement test Addis Ababa, Ethiopia

1. INTRODUCTION

1.1 Background

According to the United Nations World Food Programme, 66 million primary school age children go hungry every day, with 23 million hungry children in Africa alone (1). Furthermore, 80% of these 66 million children are concentrated within just 20 countries (1). Additionally, 75 million school-age children (55% of them girls) do not attend school, with 47% of them living in sub-Saharan.(1) Only 59% of students enrol in primary school in low income countries finished primary school (1).

Pervasive under nutrition remains a serious obstacle to children's physical and cognitive development in developing countries (2). Hunger diminishes children's ability to concentrate and to retain what they learn at school. School meals attempt to improve poor and credit-constrained households' investments in education by subsidizing the cost of schooling and by reducing short-term hunger and improving nutrition (2).Reports indicate that school children can lose as much as 160 days each year due to illness because under nutrition magnifies the effect of every disease (2).

In Ethiopia also under nutrition is a major public health problem among children causing irreversible consequences on children's physical and mental health and contributes to over half of child deaths. School-age children face high levels of illness and malnutrition during their crucial growing years, decreasing their ability to pay attention and progress in school (3).

Reports indicate that in Ethiopia enrolment rate in primary school increased from 82.1% in 2009 to 94.3% in 2014/15 but it is still low from the target 97.3. Drop out also decreased from 18.6% to 9.9% and the target was to decrease to 1%. (4) .Not only this repetition rate in primary schools unexpectedly increased from 4.9% to 7.3%. Enrolment increased from 73.4% to 94.5%, repetition increased from 1.6 to 1.8%, and drops out increased from 2.24% to 3.8% in Addis Ababa. (5). The Government of Ethiopia has launched a national School Health and Nutrition Strategy and Action Plan on October 2012 to improve access and educational achievement of school-age children through health and nutrition interventions in educational establishments in Ethiopia (6).

World food program (UN-WFP), together with Government of Ethiopia (GOE), sponsored School Meal Program (SMP) since 1994 with an initial pilot project covering 40 primary

schools in selected food insecure woredas' of four regions. The pilot SMP was found to be successful in raising enrolment in primary schools in the target areas prompting the rollout of the SMP over successive years in further food insecure woredas' of the country (7).

In addition the Ethiopian government in collaboration with Yenatweg charity organization has launched a school meal initiative known as “Yenat Gwada” (Mothers’ Nook) from October 2015, feeding some of the vulnerable school children in Addis Ababa (8). There are 220 government and 2 public primary schools in ten sub cities of Addis Ababa and they have 306,345 students. Among these 20,135 students became beneficiaries by the intervention of the first lady under the program. Not only this but also other education stakeholders played their part in feeding 10,192 students. But, still more needy students are expected.(4)

House hold level food insecurity may lead to shortage of regular meal provision for family members in the family. Due to this children face under nutrition which directly or indirectly affect their participation in the school. School feeding program has two face benefits one it has a great roll in reduction of hunger and consequently increase school participation. On the other side it helps the rest of the family by reducing the cost of the beneficiary child. The school meals programs provide on-site meals (breakfast, lunch or snacks) or take-home rations that may be combined with micronutrient supplementation to encourage parents to send their children to school.

In poor countries, where school enrolment is low, school meals can provide a strong incentive to poor households to send their children to school and to keep them there. School meals appear to be attractive as they may not only increase enrolment and reduce dropout but can also improve learning and cognitive development (2).SFPs were viewed as predominantly nutrition/feeding interventions aimed at improving the nutrition status of schoolchildren, so the effects of SFPs on educational outcomes were often not emphasized or examined. In Ethiopia the school feeding program started in most of the drought affected rural areas of the country and addressed all students in selected schools irrespective of their status. But in Addis Ababa, it is a deferent scenario in that the program started very recently in all the government primary school and addresses only the needy ones.

Therefore this study assesses the impact of school feeding program on students’ performance in urban setting.

1.2 Problem statement

School-age children in Ethiopia are affected by a wide range of health- and nutrition-related problems that constrain their ability to thrive and benefit from education (9). School participation may be affected by different factors like food insecurity at household level, economic and social factors, health related factors and so on. Despite the fact that enrolment and drop out in Ethiopia gradually decreasing, it is too much lower than expected. Not only is this repetition not improving (4). Unexpectedly also drop-out and repetition increased from 2010 to 2014/15 in Addis Ababa (5).

The survey research conducted by a joint force of Addis Ababa education bureau and Addis Ababa women and children affair bureau has shown that 26.5% of vulnerable primary school students eat once a day and the experience of 15.8% of them show that there are times that they never take any food for the whole day. Moreover, surprisingly, the study has found that 14.7% of the students are beggars (9). The effect of malnutrition and food insecurity on school participation is assessed by different researchers. A study, which examined the extent of food insecurity on school attendance & educational attainment of 2,100 adolescents in the age group of [13-17] in Jimma zone, by using the 2009 two consecutive surveys of a 5 year longitudinal family study revealed that food insecure adolescents were absent from school compared with their food secure peers (10). Another study has shown that undernourishment of students has negative effect on their average score and grade level, memory and attention, school activities in addition to interaction with their teachers and peers at school (11).

A number of studies reveal that school feeding programs have significant positive impact on school participation. Such studies suggest school feeding programs are effective in encouraging school enrolment, enhancing class attendances, and lowering student drop-outs (12, 13). To the contrary, few other studies reveal that there are no observable impacts of school feeding program on school participation especially on cognitive performance and class attendance (14, 15).

According to the United Nations World Food Program, School Feeding Program is an incentive for vulnerable families to invest in children's education and encourages poor households to send children to school and helps to keep them there (16).

In Ethiopia the school feeding started in 1994 by the support of UNWFP focusing on rural areas only and it is after long period of time in 2015 that the school feeding started in Addis Ababa (7). The program only addresses few and there are other needy students (5). The school feeding in Addis Ababa is a different scenario when we compare with other rural areas. The feeding program which is being implemented in rural areas benefit all students irrespective of their social, economic and health status of the students. Whereas in Addis Ababa only few selected students get the chance. Not only this but awareness level and the nature of problem students in urban areas face is not the same with the rural students.

Since the launching of the school meal program in Addis Ababa government primary schools 20,135 students are benefiting from the school feeding program(5). But its impact on the students' school performance is not yet studied in urban setting indicating a gap of information. Therefore this study examine whether the SFP has an impact on primary school students' performance or not in Addis Ababa government primary schools.

1.3 Significance of the study

SFPs were viewed as predominantly nutrition/feeding interventions aimed at improving the nutrition status of schoolchildren, so the effects of SFPs on educational outcomes were often not emphasized or examined. In addition in Ethiopia school meal programs are implemented mostly in rural areas and emphasis not given to urban areas. Assessing the impact of school feeding on students' will contribute to the effective implementation of the program in other urban areas. A better understanding of the impact of the intervention on education is required by organizations concerned with community development, researchers, and policy makers. The study would also provide directions for further research and development schemes that would benefit the school population.

1.4 Scope of the Study

The research is limited to analysing the impacts of School Feeding Program on school participation among primary school children. According to the Ethiopian Education and Training Policy, primary education is a level of education that ranges from grade 1 through grade 8 .This level of education is divided in to first cycle (grades 1-4) and second cycle (grades 5-8) education. And the primary school age children are those from 7-14 year of age. Although the impacts of SFP are studied in various ways such as the impacts on nutrition, cognitive development, Household factors for school performance, learning achievement interims of IQ, agricultural production, and so on, yet these aspects are beyond the scope of this research and hence are not covered here. In terms of geography, the study has been conducted in Addis Ababa.

2. LITERATURE REVIEW

Some of the literatures discussed in this section maintain the claim that School Feeding Program has indeed significant positive impact on students School performance and some others argue in the contrary.

2.1 School feeding

School feeding programs have been defined by the World Bank as “targeted social safety nets that provide both educational and health benefits to the most vulnerable children, thereby increasing enrolment rates, reducing absenteeism, and improving food security at the household level” (16).

Schools have become a natural and convenient setting for the implementation of health and education interventions. School feeding is just one facet of school health initiatives, as other programs may include de-worming, HIV/AIDS prevention and education, and life and health skills education. Overall, school feeding programs have been shown to directly increase the educational and nutritional status of recipient children, and indirectly impact the economic and social lives of themselves and their family (17). Additionally, school feeding directly addresses the Millennium Development Goals (MDGs) of reducing hunger by one-half, achieving universal primary education, and achieving gender parity in education by 2015 (18).

According to the United Nations World Food Programme, 66 million primary school age children go hungry every day, with 23 million hungry children in Africa alone (1). Furthermore, 80% of these 66 million children are concentrated within just 20 countries. Additionally, 75 million school-age children (55% of them girls) do not attend school, with 47% of them living in sub-Saharan Africa (1). Thus, the need to reduce hunger while increasing school enrolment in these children is evident, and school feeding programs have been developed to target this multifaceted problem.

WFP currently provides school feeding resources to an average of 22 million children in school, about half of whom are girls, across 70 countries. The total financial contribution for these programs is almost USD\$500 million per year. Many governments work alongside world food program (WFP) in school-feeding programs, though in countries where the government is non-functional or corrupt, it may work on its own or with other non-governmental organizations. The World Food Programme has estimated that US\$3.2 billion

is needed each year to feed the 66 million school-age children around the globe, an amount of US\$50 per child (6).

As early as 1790, a combined programme of teaching and feeding hungry children was begun in Munich, Germany, and in France in 1867, a school lunch programme for needy children was established in about 464 areas (15). Netherlands became the first country to adopt national legislation specifically to provide school lunches in 1900 (15).

The Government of Ethiopia (GoE) has adopted an Education and Training Policy(ETP) in 1994 with a view to achieving universal primary education by the year 2015(19,5) To attain this goal, the GoE has so far been implementing three phases of multi-year Education Sector Development Programmes (ESDPs). One of the main components of the ESDPs has been the school meals program (SMP), which the GoE undertakes in partnership with the United Nations World Food Programme (WFP)(3). ESDP III has expanded school meals to remote schools in food insecure and vulnerable areas in Ethiopia. In particular, the program targets pastoralist areas and chronic food deficit highland woredas in the country. The main objective of school meals in Ethiopia is to attract children to school in chronically food insecure areas, increase enrolment, stabilize attendance and reduce drop-out. It also pays special attention to increase in girls' enrolment in program areas with a view to bringing about gender disparity in school enrolment (8).

In Ethiopia, SFP has another twin component called Children-In-Local-Development-Based Food for Education (CHILD-FFE) that was included in the World Food Program (WFP) Country Program. UN-WFP, together with Government of Ethiopia (GoE), sponsored School Meal Program (SMP) started in Ethiopia in 1994 with an initial pilot project covering 40 primary schools in selected food insecure woredas' of four regions of the country. The pilot SMP was found to be successful in raising enrolment in primary schools in the target areas prompting the rollout of the SMP over successive years in further food insecure woredas' of the country (7). Under this package, each child is entitled to approximately 650 kcal (kilo calorie) per day in the form of Porridge. The SMP also aims at alleviating short-term hunger for children by feeding them in schools which is in line with the Millennium Development Goals, which the Ethiopian Ministry of Education set to achieve Universal Primary Education by 2015. In order to reach this goal, it is essential to provide incentives for parents to send their children to school. Thus, Food for Education (FFE) is designed to promote increased enrolment and attendance and reduce dropouts in chronically food insecure districts in rural

Ethiopia by providing a daily hot meal in school. FFE meals additionally make it easier for children to concentrate on their work, facilitating learning (7). Data on Food for education (FFE) shows that school enrolment increased by 3% in 2010, attendance rate increased from 90% in 2010, and dropout rates fell to 8% for girls and 9% for boys in FFE schools, which is lower than the national dropout rate of 14.6% for girls and 13% for boys (7).

School feeding program in Addis Ababa is launched in October 2015. 222 government primary schools hosting 515,915 students in the same year with enrolment rate of 0.5 (5). The school meal program was intended to alleviate hunger and increase school enrolment, decrease school dropout, and absence. In order to meet this, the beneficiaries were selected carefully by the schools and wereda administration after the regional education bureau revealed the need assessment result which indicates more than 20,000 children were in need of the support.

SFPs can address some of the nutrition and health problems of school-age children. SFPs and other school-based nutrition and health programs can also motivate parents to enrol their children in school and to see that they attend regularly. Experience shows that properly designed and effectively implemented SFPs can:

1. Alleviate short-term hunger in malnourished or otherwise well-nourished school children. This helps to increase the attention and concentration of students producing gains in cognitive function and learning (20).
2. Motivate parents to enrol their children in school and have them attend regularly. When programs effectively reduce absenteeism and increase the duration of schooling, educational outcomes (performance, dropout, and repetition) improve (20).
3. Address specific micronutrient deficiencies in school-age children. Most important of these are iodine and iron, which directly affect cognition. Meeting the iron and iodine needs of school-age children can translate into better school performance (20).
4. Increase community involvement in schools, particularly where programs depend on the community to prepare and serve meals to children (20).

2.2 School feeding and attendance

A review of articles on School feeding programs in developing countries: impacts on children's health and educational outcomes conducted by Jomaa et al in 2011 revealed relatively consistent positive effects of school feeding in school enrolment, and attendance of the children participating in SFPs compared to non-participants. Another study conducted in Kenya revealed that school feeding has a significant impact on students' attendance (21). However, the positive impact of school feeding on growth, cognition, and academic achievement of school-aged children receiving SFPs compared to non-school-fed children was less conclusive (22). In the contrary, the study conducted in Tanzania in 2013 indicates the absence of significant relationship between school feeding and attendance (23).

A community based comparative cross sectional study conducted in 2014 in Bishoftu to evaluate the impact of World food program School feeding program on students' participation shows that there is no significant difference in attendance of program schools and non-program schools students (2).

Another case control study conducted in Debrelibanos, Ethiopia, documented a different result. The analysis revealed that there is a significant relationship between attendance and school meal.

2.3 Enrolment and dropout

Access to universal primary school education has been a key policy priority for many nations trying to meet the Millennium Development Goals (MDGs). However, learning outcomes of students in sub-Saharan African, particularly those in rural areas, remain disappointing. Of the continent's approximately 128 million school aged children, only half attend school and learn basic skills. In Ethiopia enrolment rate and drop out is 94.3% and 9.9% in 2014/15 respectively. (4) Hunger makes children be sick and weak and as a result they will frequently miss classes and are poorly prepared to learn. In hunger affected areas many students are reported not going to school, and those in school have higher dropout rates and higher school absenteeism. In Nigeria the school feeding program increased school enrolment and attendance (20). A study conducted in Cameroon revealed that school feeding increased enrolment by 36.5% (24). A study in Senegal revealed that the school feeding program did not have a significant impact on grade repetition or the dropout rate (25). The same is true for

study made in Bishoftu which reported that there is no significant relation between school feeding and students' enrolment and dropout rate (6). But the study in Jigjiga showed that school dropout significantly associated with school feeding (26). When we see the studies there is no common finding on the impact. This implies that there should be further study on the factors that contribute as a confounder.

2.4 School feeding and achievement test score

School feeding programs (SFPs) other than alleviating short-term hunger, improve cognition of children, and transfer income to families (16). Education and learning depend on good nutrition and health. Nutritional and health status are powerful influences on a child's learning and on how well a child performs in school. Children who lack certain nutrients in their diet (particularly iron and iodine), or who suffer from protein-energy malnutrition, hunger, parasitic infections or other diseases, do not have the same potential for learning as healthy and well-nourished children. Weak health and poor nutrition among school-age children diminish their cognitive development either through physiological changes or by reducing their ability to participate in learning experiences - or both. Children who are hungry have more difficulty concentrating and performing complex tasks (27).

Achievement test is a test developed to assess skill or knowledge of students. The most common type of achievement test is a standardized test developed to measure skills and knowledge learned in a given grade level, usually through planned instruction, such as training or classroom instruction. Achievement test scores are often used in an educational system to determine what level of instruction for which a student is prepared. High achievement test scores usually indicate a mastery of grade-level material, and the readiness for advanced instruction. Low achievement scores can indicate the need for remediation or repeating a course grade (4).

Different studies are conducted to prove the positive impact of SFPs on students' participation and achievements. Underachievement in schools is a global problem and is especially prevalent in developing countries. In Ethiopia Reputation rate increased from 4.9% to 7.3% from 2009 to 2014/15 the same is true in Addis (4, 5). Hunger adversely affects the active participation of students in school which lead to low achievement test score. In India a study showed that skipping breakfast adversely affect the cognition of students (28). The finding of the study conducted in Uganda in 2012 revealed that students who did not

have regular breakfast and lunch encounter under achievement (29). Study conducted in rural Ethiopia showed that there is a significant association between achievement and school feeding. Another study conducted in Debrelibanos, Ethiopia tried to compare students who enrolled in the feeding program and non-feeding program and documented no deference between the two groups (13).

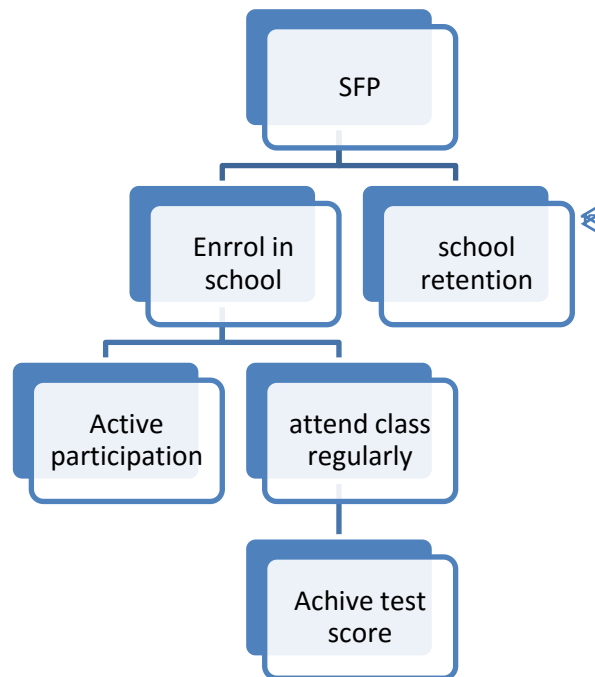
Therefore from previous discussion some studies revealed school feeding has a significant effect on attendance, achievement test, enrolment and dropout. In the contrary some other studies revealed that school feeding has no significant effect on students' school performance. This implies that having an in-school feeding program—even that reaching the neediest populations- does not necessarily address the desired outcome. This implies that having an in-school feeding program—even that reaching the neediest populations- does not necessarily address the desired outcome. But in theory school feeding has a significant effect on attendance, enrolment and dropout. In Ethiopia the school feeding program is started in most of the drought affected rural areas of the country and addressed all students in selected schools irrespective of their status (7). But in Addis Ababa, it is a deferent scenario in that the program started very recently in all the government primary school and addresses only those who are poor. Though the program is running, the impact is not yet assessed. Therefore, this study will substantiate the previous established findings in favour or against keeping the challenges of availability of data in mind.

2.5 Research question

Up on the review of related literatures, the research questions are therefore designed as:

- Does SFP have significant impact on children's academic achievement in Addis Ababa?
- Does SFP have significant impact on children's school attendance in Addis Ababa?
- Does SFP have significant impact on children's Dropout rate in Addis Ababa?

2.6 Conceptual frame work:



School feeding programme would attract more pupils' access to education through increased enrolment, attending school regularly, continuing with education without dropping out and active involvement in classroom activities. The school feeding programme is the independent variable while the others are dependent variable. These dependent variables influenced by school feeding programme as it acts as a strong motivating factor to the suffering children to attend school and acquire education. Therefore the incentive of SFP on education will lead to increased pupil enrolment, regular attendance, active involvement of pupils in classroom learning activities and retention enhance achievement of universal primary education.

3. OBJECTIVE OF THE STUDY

3.1 General Objective:

To assess the impact of school feeding program on students school performance in Addis Ababa public primary school in 2017

3.2 Specific objectives

- To assess the impact of school feeding program on students attendance,
- To assess the impact of school feeding program on students drop out,
- To assess the impact of school feeding program on students achievements test score

4. METHODS and MATERIALS

4.1 Study area

The study was conducted in Addis Ababa, the capital city of Ethiopia with 3.5 million populations. Addis Ababa is selected because other survey research conducted by a joint force of Addis Ababa education bureau and Addis Ababa women and children affair bureau has shown that 26.5% of vulnerable primary school students eat once a day and the experience of 15.8% of them show that there are times that they never take any food for the whole day (10). In addition the information gap is found in urban setting and the school feeding program in urban areas especially in Addis Ababa covered all government primary schools but for only few selected students which is a deferent senarion from the rural school feeding program. Addis Ababa has 10 sub cities. There are 810 government and private primary schools in Addis Ababa with a total 509,900 students and 222 are government primary schools with 10,58 teachers and 306,345 students(5). By the year 2016 all the 222 government primary schools started on-sight school feeding program by addressing 20,135 beneficiaries with the support of ‘yenta-weg’ charity organisation and 10,213 other non-governmental organisation. (5)

According to Education and training policy of Ethiopia “primary education will be of eight years duration” and estimated age limit is 7-14” (30). The study was held in three sub cities, Gulele, Yeka and kolfe. These sub cities have 20, 28, and 26 government primary schools respectively and there are 12357, 24113, and 29565 students respectively (5). Among these 3304, 4540 and 3477 are beneficiaries of school feeding program respectively (5).

4.2 Study design and Period

The design of this study is quasi-experimental of specific type a before-after Study method. A school based study was employed to assess the role of school feeding program on student's school performance in Addis Ababa government primary school 2017/2018.

4.3 Target and Study population

The target population of this study consisted of all government primary school students who enrolled in school feeding program in Addis Ababa.

The source populations are students in Yeka, Gulele and Kolfe sub cities.

The study population of this study consisted of students in six primary school in three sub cities of Addis Ababa which are randomly selected and enrolled in school feeding program.

4.4 Sample size and Sampling procedures

The sample size was calculated using sample size determination formula for single population's proportions with the following assumptions. From previous studies a prevalence of 15.5 was obtained.

Assumptions: Prevalence of 15.5 % was used from prevalence.

Design effect 1

Confidence level 95%

Sample Size for Frequency in a Population

Population size(for finite population correction factor or fpc)(N):	20135
Hypothesized % frequency of outcome factor in the population (p):	15.5% +/- 5
Confidence limits as % of 100(absolute +/- %)(d):	5%
Design effect (for cluster surveys- $DEFF$):	1

Sample Size(n) for Various Confidence Levels

ConfidenceLevel(%)	Sample Size
95%	200
80%	86
90%	141
97%	244
99%	342
99.9%	764

Equation

$$\text{Sample size } n = [DEFF * N * p(1-p)] / [(d^2 / Z^2_{1-\alpha/2} * (N-1) + p*(1-p)]$$

Results from OpenEpi, Version 3, open source calculator--SSPropor

Based on these assumptions, the total calculated sample size is 200. Multi stage sampling technique is applied. Addis Ababa is selected purposively since the study is going to be done in urban setting. There are ten sub cities in Addis Ababa and 222 government found in these sub cities and they have 279,557 female and 230,343 male students. All these schools started school feeding program and 30,327 students are enrolled in the program.

To select study participants first three sub cities (Gulele, Yeka and kolfe) selected from the ten sub cities purposively based on the high number of beneficiaries they have. These sub cities have 20, 28, and 26 government primary schools respectively and there are 12357, 24113, and 29565 students in each sub cities respectively. Among these 3304, 4540 and 3477 are beneficiaries of school feeding respectively. Two from each sub city a total of six primary schools were selected randomly.

Finally 200 students from beneficiary students as a study group selected randomly from the selected six schools. (See fig-2) .

Figure 2 sampling procedure

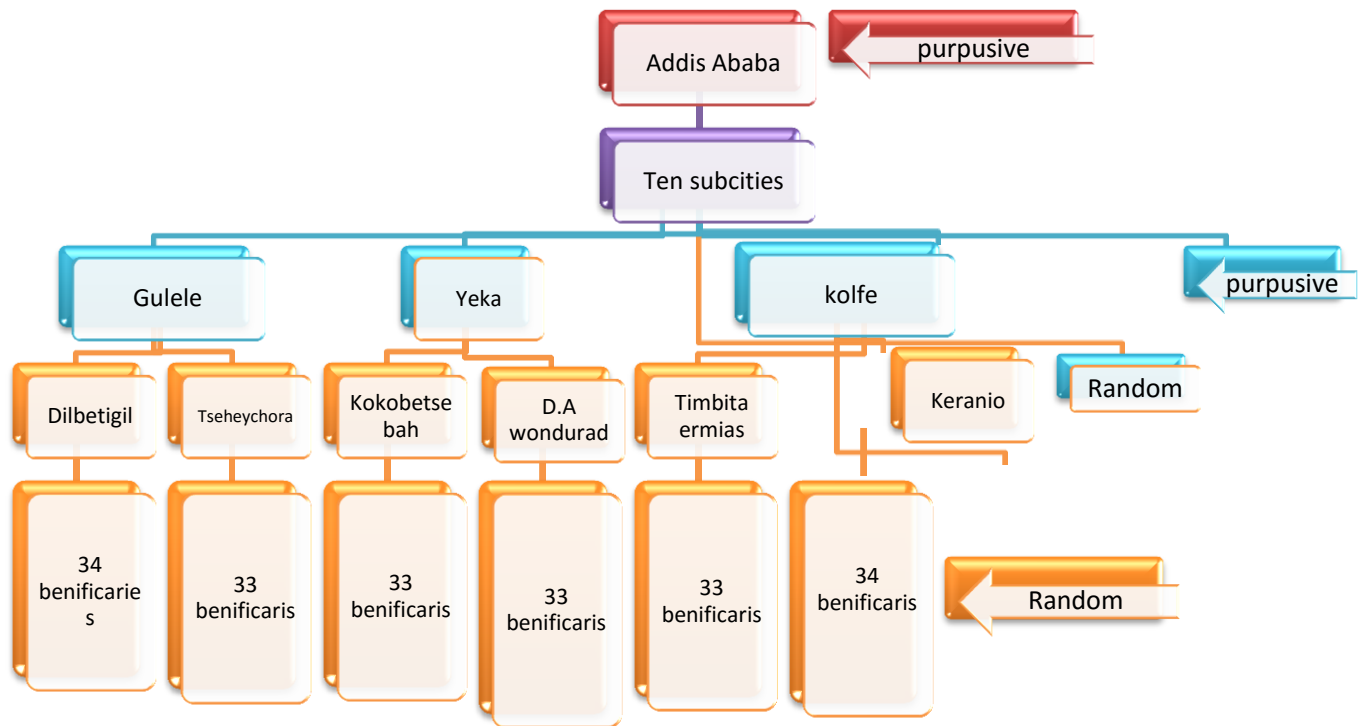


Table.1 Profile of schools

No	school	Sub city	wereda	established	Total No. of students	No of beneficiaries
1	Timbite Ermias	Kolfe keranio	09	1968E.C	668	170
2	keranio	“	08		4725	515
3	Dilbetigil	Gulele	01	1952 E.C	2460	350
4	Tsehaychora	“	03	1950 E.C	1465	131
5	kokobetsebah	Yeka	05	1924 E.C	1408	107
6	D/A Wondirad	“	11	1924 E.C	3572	245

4.5. Data collection procedures and extraction tools

The data were collected from secondary source. Accordingly secondary data on students' attendance, achievement test and dropout were collected from schools' rosters by using structured tools. Data collectors who have the experience working in schools were selected and trained for one day on how to collect and compile data to ensure that they understand the objectives and methodologies as well as each item included in the data gathering tools. Six data collectors who have first degree were recruited from schools.

4.6 Operational definitions and Standards

School feeding (SF) is defined here as the provision of food to school children. There are many types of programmes but they can be classified into two main groups based on their modalities: (1) in-school feeding, where children are fed in school; and (2) take-home rations, where families are given food if their children attend school. In-school feeding can, in turn, be divided into two common categories: (1), programmes that provide meals; and (2), programmes that provide high-energy biscuits or snacks.

Primary school: It is a school which has a class from grade 1-8. This level of education is divided in to first cycle (grades 1-4) and second cycle (grades 5-8) education. And the primary school age children are those from 7-14 year of age.

Students School participation: It includes students achievement test students' school enrolment, students' school attendance, and students' school drop-out.

Absenteeism is the indicator employed in this study and it measures class attendance. Thus, the attendance rate has been measured by pupil absentee days over the study period. In other words, Absence Rate measures the number of days a primary school child failed to fully attend class during the academic year.

Drop-out Ratio (DR), it is the ratio of the number of children who dropped out of school during the academic year divided by those who were actually enrolled in to school the same year.

Achievement test: It is a test to determine whether a student masters the level or the subject or not like average student grade.

4.6. Variables

Independent variables

In-School feeding Program

Dependent Variables

Non-attendance (number of days a student miss class before and after the implementation of the program during 2013/14 and 2016/17 academic year)

School dropout (status of dropping before and after the program)

Achievement test score (the annual average score of the student before and after the implementation of the program which is the 2013/14 and 2016/17 academic year average score)

3.5 Data Analysis procedures

The quantitative data extracted from the School registry were checked for completeness and consistency by the principal investigator. The data were edited, reviewed and entered into SPSS version 20. Descriptive statistical methods using frequency tables were used to summarize and analyse the data. Paired T-test at 95% CI was used for analysing the result.

4.7. Data quality management

To ensure the quality of the data, Careful design, translation and retranslation of the questionnaire, careful selection, proper training of the data collectors were done. In addition conducting a pre-test of 5% and supervision of the data collection procedures were also implemented. Not only were these but the data collected were revised for accuracy and completeness by data collectors and supervisor. Proper categorization and coding of the data and checking the recorded data were implemented to ensure the quality of collected data.

4.8. Ethical consideration

Ethical clearance for the study was obtained from Institutional Review Board of the Addis Ababa University, school of public health and support letter was obtained from Addis Ababa Education bureau. Letters for each six schools were obtained from the three sub cities. Although all studies have some degree of risk, the potential risk in this investigation is quite minimal.

The benefits of data collected and documented are possibly to influence policy creation, planning and decision making approaches in the future.

In order to ensure data confidentiality, no name is used in this study. Each subject was coded, which was used throughout the research. In addition, all the data collected was kept and stored in a secured place. The data collected will be used for a course project and possibly in presentations and publications

4. Result

4.1 Demographic Data of Respondents

The data were collected from 200(Male=47.3%; Female=52.2%) school children. From the total 200 students of SFP, 103(51.5%) students are Male and the rest 97(48.5%) of students are female. The school children's age ranged within the interval of 9 to 17 years. The most common age group of study participant ranged between 11 to 13 years (66%). Educationally, from 200 school children of which 48 (24.0%) children are from grade 1-4 and 152 (76.0%) are from 5-8.

The case summaries of the observable demographical characteristics of school children are indicated in table 2.

Table 2: Students with the school feeding program by gender, age and grade level

Socio Demographic Characteristics	Group	SFP	
		Count	Percent
Sex	Boys	103	51.5%
	Girls	97	48.5%
	Sub-Total	200	100.0%
Age	9-10 Years	16	8.0%
	11-13 Years	132	66.0%
	14-17 Years	52	26.0%
	Sub-Total	200	100.0%
Student Grade Level	1-4	48	24.0%
	5-8	152	76.0%
	Sub-Total	200	100.0%

4.2. School Feeding Program and Class Attendance

Class attendance, measured by Absence Rate, was also analysed to determine if the School Feeding Program has significant positive impact on school participation. SFP was hypothesized to be one of the variables that make a difference on the level of attendance that was intended to increase attendance rate by providing an incentive to children for attending school each day. The study found evidence of significant association of School Feeding Program on class attendance.

Table 3 showed the effect of school feeding on SF beneficiaries on students' average absent days. The average absent days of 200 School feeding beneficiaries before SFP and after was 1.67 and 1.23 days respectively. The mean average absent days difference due to school feeding program was found 0.44 (CI 0.148 - 0.732) ($t=2.967$, $P=0.003$).

Table 3: Levels of School absent Rate before and after introduction of SFP

Paired Samples Test									
		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	absent Before SF- absent After SF	0.44	2.097	0.148	0.148	0.732	2.967	199	0.003

From the table above it can be concluded that school feeding has contributed significantly in reduction of absent rate of beneficiary students.

4.3. School Feeding Program and Student Drop-out

The quantitative data from a total of 200 SFP beneficiaries were analysed to understand the effect of school feeding on dropout rate. Before school feeding program implementation only 2.5% of the children enrolled in primary school dropped out of school. However after the start of school feeding program the result showed that only 1% of students were dropped out of school. The statistical association of these drop-out ratios are tested using the McNemar Test and it was found that the drop-out ratio before SFP and after SFP were not statistically different at 5% level ($t = 0.453, P > 0.05$).

Table 4: Students drop out Rate by SFP beneficiaries

Dropout Rate Before School Feeding				Total
		Dropout Students	Non-Dropout Students	
	Count	5	195	200
	Percent	2.5%	97.5%	100%
Dropout Rate After School Feeding				
	Count	2	198	200
	Percent	1%	99%	100%
Null Hypothesis		Test	T Statistics	Decision
The distribution of different values across Dropout rate before SF and Dropout rate After SF are equally likely		Relate Sample McNemar Test	.453	Retain the null hypothesis

4.4. School Feeding Program and Student Academic Performance

Table 5 showed that the effect of school feeding on SF beneficiaries on students cumulative average score. The cumulative average of 200 School feeding beneficiaries before SFP and after were 67.61 and 69.02 from hundred respectively. The mean cumulative score difference due to school feeding program was found - 1.406 out of hundred (CI -2.24:-0.57) ($t=-3.31$, $P = 0.001$).

Table 5: Students Achievement Test Score by SFP and Non-SFP students

Paired Samples Test									
		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	Average before - average after	-1.40655	5.99639	.42401	-2.24268	-.57042	-3.317	199	.001

From the table above it can be concluded that school feeding has contributed significantly in improving the test score of beneficiary students.

5. DISCUSSIONS AND CONCLUSIONS

5.1 Discussions

The study findings have proved that for improvement in attendance rate were that SFP is a fundamental instrument to increase the attendance rate in treatment group. On the other hand, school feeding program is a motivation factor to attract students to attend school as expected. This is similar to the claim that School Feeding Program improves the nutritional status of children so that they can attend school in many studies. Thus the nutritional function of SFP might be high to have significant effect on attendance. This finding is consistent with Ahmed (2004) finding which states that the impact of SFP on school attendance is positive though small. In his finding, the SFP contributes for the increment of participating student's school attendance by 1.34 days a month, which is 6 percent of total school days a month (31). Jacoby & Cueto (1996) also found that, a school breakfast increased attendance rates of fourth and fifth-grade students by 0.58 percentage points in the treatment schools.

Prior studies that have noted the importance of nutrition for the children learning and performance in school emphasized the effect of malnourishment to attend school regularly and which in turn leads to poor academic performances. These studies advocate school meals improved nutrition and bring educational achievements due to its primary effect on child nutrition (Kazianga et al., 2009; Vermeersch and Kremer, 2004; Neeser, 2012). Although, food has classically been perceived as a means of providing energy and building materials to the body, research over the years has provided exciting evidence for the influence of dietary factors on mental function. Not only are children motivated to get into school but also there is a significant impact on their nutritional status and development, cognitive capabilities and academic performance. Literature has shown that the development and learning potential of the beneficiaries depend on the quality and nutrient components of food (32).

School Feeding was seen as a safety valve especially for poor families and also tended to keep children in school and concentrate better on their lessons.

5.2 Conclusion

This study found that despite the observed significant positive effect of school feeding on academic achievement and attendance, School Feeding Program shows no significant positive impacts on drop-out rates that need further investigation.

5.3 Limitations

The first limitation of this study is that it was conducted only in six schools and lack diversification; hence this limits the ability of the findings to be generalized considering SFP beneficiaries in Addis Ababa. Second, the study does not establish immediate causal relationship between SFP and school participation indicators since other external factors might have also affected the relationships. The relative impact of the program could have better been explained by capturing the impacts of such external and household factors.

This study was conducted only on six primary schools in Addis Ababa. It is suggested that, a similar study be conducted in large population and more primary schools in different settings in Addis Ababa where SFPs is implemented so as to determine whether or not the SFPs had enhanced school enrolment, attendance and academic performance. The study should also consider in controlling and identifying household, community and school management factors that helps to enhance educational performances of students.

6. RECOMMENDATIONS

Based on the result of the study the following recommendations were made:

- The study recommends policy makers and implementers to consider schools feeding as one tool to improve schools and students performance by increasing attendance and achievement besides alleviating the immediate hunger.
- The study recommends t the government may insure that a constant supply of school feeding program in schools by mobilizing local and international resources so as to maintain regular school attendance and improved educational performances.
- Continuation of school-feeding with diversification of sources/food items and modality is suggested to improve the School feeding program.
- Further investigation and intervention is required on other house hold factors like; economic, social and health related factors.

Reference-

1. The World Bank. "Education". (2013). Retrieved November, 2016.
2. Food and agriculture organization. "School based feeding and child Nutrition/performance."(2012)
3. International Fund for Africa. "Sustainable School Health and Nutrition Program".(2014-2015).
4. Federal Minister of Education. "Educational statistics". Addis Ababa Ethiopia.(2014/15).
5. City Government of Addis Ababa Education bureau: "Education Statistics Annual Abstract." (March 2017).
6. Ministry of education Ethiopia. Ethiopia School health and nutrition strategy. Addis Ababa Ethiopia. (2012)
7. WFP School Meals Programme in Ethiopia: A Mixed-methods Based Impact Study Final Evaluation Report. University of Mannheim and World Food Programme Ethiopia (2011).
8. Robert Poppe, Markus Fri olichy, Getnet Haile."School meals and educational outcomes in rural Ethiopia" Ethiopia. (March 2012).
9. BoE & BoWC A survey study to assess the situation of primary school students who are attending school in difficult situations; un published manuscript, Addis Ababa Education Bureau & Addis Ababa Women & Children Affair Bureau, Addis Ababa, Ethiopia. (2015).
10. Belachew, Hadley, Lindstrom, Gebremariam, Lachat & Kolsteren (2011), the extent of food insecurity affects school attendance & educational attainment of adolescents in Jimma zone. (2009).
11. World Food Programme (WFP). 2012. "Global School Feeding Survey." World Food Programme, Rome,
12. Asmamaw Guta. "Assessment of the deference of school feeding program on school participation of primary school students of Bishoftu town." Addis Ababa Ethiopia. (2014).
13. World Food Programme. "School Meals". (2009). Retrieved November, 2016.
14. Cecilia Adroque, Maria Eugenia Orlicki. "Do In-School Feeding Programs Have an Impact on Academic Performance and Dropouts?" The Case of Public Schools in Argentina. (2012).
15. School feeding in low income countries. Wikipedia free encyclopaedia. Retrieved on October 2016.
16. Ermias Asefa. "The impact of school feeding program on academic performance:" The case of selected elementary school in Debrelibanos wereda, Addis Ababa Ethiopia.(June 2015).
17. Counterpart International. School feeding boost attendance, enrolment and students' performance. Cameron. (2016).
18. Millennium Development Goals". The United Nations. 2013. Retrieved February 2017.
19. Education and training policy of Ethiopia. Addis Ababa Ethiopia. (1994).
20. Isa Yunusa, Ahmed Muhammed, Khalid Adegbusi, Sherif Adegbusi, "school feeding program in Nigeria: Avehicle for nourishment of pupils. Nigeria.(2012) [PubMed]
21. Omwami EM1, Neumann C, Bwibo. "Effects of a school feeding intervention on school attendance rates among elementary schoolchildren in rural Kenya". Kenya. (2010). [PubMed]

22. Jomaa LH1, McDonnell E, Probart C. "School feeding programs in developing countries: impacts on children's health and educational outcomes". USA.(2011). [PubMed]
23. Benjamin NgajiOganaga. "Feeding students; examining vie of parents, students and teachers on World Food Program school feeding initiatives in Chamwin district Tanzania". (2013).
24. Meg Hewitt. School feeding program boosts enrolment, performance in Cameroon. Cameroon. (2010). [PubMed]
25. Brandon Routman and Jessica Elaine Smith. "The Impact of School Feeding Programs in Senegal." (2013)
26. Fitum Aregawi. "The impact of school feeding program on students' enrolment and dropout in Jigjiga zone Somalia national regional state". ETHIOPIA. (2016).
27. Joy Miller Del Rossa. School feeding program improving effectiveness and increasing the benefit to education. A guide for project managers. UK. (1999).
28. Gajre NS1, Fernandez S, Balakrishna N, Vazir S. "Breakfast eating habit and its influence on attention-concentration, immediate memory and school achievement". India. (2008). [PubMed]
29. Acham H1, Kikafunda JK, Malde MK, Oldewage-Theron WH, Egal AA. "Breakfast, midday meals and academic achievement in rural primary schools in Uganda:" [PubMed]
30. Implications for education and school health policy. (2012). [PubMed]
31. Ahmed, A.U. 2004. "Impact of Feeding Children in School: Evidence from Bangladesh." International Food Policy Research Institute, Washington, DC.
32. Jukes, M., L. Drake, and D. Bundy. 2008. "School Health, Nutrition and Education for All: Levelling the Playing Field." CABI Publishing, Wallingford, UK.

APPENDICES

Annex 1. Questioner Developed for data collection from school roster on beneficiary students.

0.1 Sub city _____

0.2 District _____

0.3 Name of the school _____

0.4 Date _____

0.5 Student grade _____

0.6 student sex _____

0.7 Student age _____

1. Have the student ever been absent from school in the last month (2013/14) before the feeding program started?

1. Yes 2. No If Yes for how many days _____

2. Have the student ever been absent from school during 2016/17 (2009) academic year?

1. Yes 2. No If Yes for how many days _____

3. Did the student drop his/her study before the feeding program started?

1- Yes 2- No

4. Did the student drop his/her study after the feeding program started?

1- Yes 2-No

5. What was the student's average grade during the last academic year before the program _____

6. What was the student's average grade during the last academic year (2016/17) after the program _____

Annex 2. Ethical clearance form



ADDIS ABABA UNIVERSITY
College of Health Sciences
School of Public Health
Ethical Clearance Form

Version 01, Dec. 2017

Date: /012/7 / 2017 /
Ref.No. SPH/2009

Project number / 001 /

Date of approval (D/M/Y) /13_/10/2017/

Project Title: Assessment of the role of school feeding program on students' performance in Addis Ababa.

Name of PI Misrak Feuiss	Phone Number	
Institution	School of Public Health	
Department	MPH	

Decision of Research and Ethics Committee:

<input checked="" type="checkbox"/> Approved	<input type="checkbox"/> Approved with Recommendation
<input type="checkbox"/> Resubmission	<input type="checkbox"/> Disapproved

Valid until

Dean, School of Public Health

Signature 

Date 11/2 / 07 / 17



