

WOLKITE UNIVERSITY

SCHOOL OF GRADUATE STUDES

ACADEMIC PERFORMANCE AND ITS ASSOCIATION WITH NUTRITIONAL STATUSES AMONG PRIMARY SCHOOL STUDENTS IN GURAGE ZONE SOUTHWEST ETHIOPIA

MPH THESIS

MINYAHIL MENGISTU TSEGAHE

JULY, 2023

WOLKITE, ETHIOPIA

WOLKITE UNIVERSITY

SCHOOL OF GRADUATE STUDES

Academic Performance and Its Association with Nutritional Statuses among Primary School Student's in Gurage Zone Southwest Ethiopia

A Thesis Submitted to School of Graduate Studies in Partial Fulfillment of the Requirements for the Degree of Master of Public Health (MPH) in Human Nutrition

Minyahil Mengistu

Major Advisor; Teklemicheal Gebru (MPH, Assistance Professor)

Co-Advisor: Hamid Zuber (MPH)

JUNY, 2023

WOLKITE, ETHIOPIA

APPROVAL SHEET

WOLKITE UNIVERSITY

SCHOOL OF GRADUATE STUDES

We hereby certify that we have read and evaluated this Thesis titled **"Academic performance and its association with nutritional status among primary school students Gurage zone, southern Ethiopia"** prepared under our guidance by Minyahil Mangiest. We recommend that the Thesis shall be submitted as fulfilling the requirement for the award Degree of MSc. in Human Nutrition.

……	……..	…….
Major Advisor	Signature	Date
…….	…….	…….
Co- Advisor	Signature	Date

As member of the Board of Examiners of the Master of the Master of Science Thesis open defense examination, we have read and evaluated this Thesis prepared by **Minyahil Mengistu Tsegahe** and examined the candidate. We hereby certify that, the thesis is accepted for fulfilling the requirement for the Degree of Master of Science (MSc) in Human Nutrition.

1……	……..	…….
Name of external examiner	Signature	Date
2…….	…….	…….
Name of internal examiner	Signature	Date
3……	……..	…….
Name of chairman	Signature	Date

Final approval and acceptance of the Thesis is contingent up on the submission of its final copy to the council of post graduate program (CPGS) through the candidate's department or school graduate committee (DGC or SGC).

DECLARATION

By my signature below, I declare and affirm that this Thesis/Dissertation is my own work. I have followed all ethical principle of data collection, data analysis and completion of this thesis. All scholarly matter that is included in the thesis has been given recognition through citation. I affirm that I have cited and referenced all source used in this document. Every serious effort has been made to avoid any plagiarism in the preparation of this thesis.

This thesis is submitted in partial fulfillment of the requirement for a degree from the School of Graduate Studies at Wolkite University. The thesis is deposited in the Wolkite University Library and is made available to borrowers under the rules of the library. I solemnly declare that this thesis has not been submitted to any other institution anywhere for the award of any academic degree, diploma or certificate.

Brief quotations from this Thesis/Dissertations may be used without special permission provided that accurate and complete acknowledgement of the source is made. Requests for permission for extended quotations from, or reproduction of, this thesis in whole or in part may be granted by the Head of the School or Department or the Dean of the School of Graduate Studies when in his or her judgment the proposed use of the material is in the interest of scholarship. In all other instances, however, permission must be obtained from the author of the thesis.

Name: Signature……

Date:

School/Department

ACRONYMS AND ABBREVIATIONS

AIDS	Acquired immune deficiency syndrome
BMI	Body Mass Index
EFA	Education for All
ESDP	Education Sector Development Program
EDHS	Ethiopian Demographic Health Survey
GBV	Gender Based Violence
GOE	Government of Ethiopia
GTP	Growth and Transformation Program
HTPs	Harmful Traditional Practices
HEP	Health Extension Programs
HAS	Height for Age
IQ	Intelligence Quotient
IDD	Iodine Deficiency Disorder
IDA	Iron Deficiency Anemia
MDG	Millennium Development Goals
NGOs	Non-Governmental Organization
NEP	Nutrition Education Program
PEM	Protein Energy Malnutrition
RDA	Recommended Daily Allowance
SSA	Sub-Saharan Africa
UNICEF	United Nations Children's Fund
UNESCO	United Nations Educational Scientific and Cultural Organization
USDA	United States Departments of Agriculture
WAZ	Weight for Age
WHO	World Health Organization
WKU	Wolktite University
VAD	vitamin A deficiency

Acknowledgments

Firstly I would like to express my sincere appreciation and thanks to Wolkite University College of Medicine and Health Science Department of Public Health for giving this chance. Then my research Adviser Mr. Teklemicheal Gebru and Mr. Hamid Zuber for their providing unreserved comments, professional advice, and considerate consultation throughout the study period. I would like to extend my thanks Gurage zone education department and Wolkite town Education Office for providing important baseline information and cooperation letter for study area and concerned bodies. I would also like to extend my heartfelt thanks to my lovely families for their strong encouragement and support and also I would like to thank all my friends who helped, encouraged and also provided constructive idea throughout the study period.

I am grateful to all supervisors and data collectors for their hard work and patience in obtaining necessary information withstanding uncomfortable situation in visiting the school to get the required study subjects. Finally I would like to extend my thanks to all study participants for their willingness and genuine response.

Table of Contents

ACRONYMS AND ABBREVIATIONS iii

List of tables iii

List of figures iv

Abstract v

CHAPTER ONE: INTRODUCTION 1

1.1 BACKGROUND 1

1.2. STATEMENT OF THE PROBLEM 3

CHAPTER TWO: LITERATURE REVIEWS 5

2.1. MAGNITUDE AND SEVERITY OF MALNUTRITION 5

2.2. MALNUTRITION 6

2.2.1. COMMON FORMS OF MALNUTRITION IN ETHIOPIA 6

2.2.2. CAUSES OF MALNUTRITION 7

2.3 CONCEPTUAL FRAMEWORK 18

2.4. SIGNIFICANCE OF THE STUDY 19

CHAPTER THREE: OBJEECTIVE OF THE STUDY 20

3.1 GENERAL OBJECTIVE 20

3.2 SPECIFIC OBJECTIVE 20

CHAPTER FOUR: METHODOLOGY 21

4.1. STUDY AREA AND PERIOD 21

4.2. STUDY PERIOD; 22

4.3. STUDY DESIGN 22

4.3.1. SOURCE POPULATION 22

4.3.2. STUDY POPULATION 22

4.4 .INCLUSION AND EXCLUSION CRITERIA 22

4.4.1 INCLUSION CRITERIA 22

4.4.2 EXCLUSION CRITERIA 22

4.5. SAMPLE SIZE DETERMINATION AND SAMPLING PROCEDURE 23

4.5.1 SAMPLING TECHNIQUE 23

4.6. DATA COLLECTION INSRUMENT AND PROCEDURE 25
4.6.1 DATA COLLECTION INSTRUMENT (TOOLS) 25
4.6.2 DATA COLLECTORS 25
4.6.3 DATA COLLECTION PROCEDURE 26
4.7. VARIABLES 26
4.7.1 DEPENDENT VARIABLE 26
4.7.2 INDEPENDENT VARIABLES 26
4.8. DATA PROCESSING AND ANALYSIS 27
4.9. DATA QUALITY ASSURANCE 28
4.10. OPERATIONAL DEFINITION AND DEFINITION OF TERMS 29
4.11 ETHICAL CONSIDERATION 31
4.12 DISSEMINATION PLAN 32
CHAPTER FIVE; RESULTS AND DISCUSSIONS 33
5.1. RESULTS 33
5.1.1. SOCIO DEMOGRAPHIC CHARACTERISTIC 33
5.1.2. NUTRITIONAL STATUS 35
5.1.3. SCHOOL, ENVIROMENTAL AND ACADEMIC PERFORMANCCE 36
5.1.4. FACTORS ASSOCIATED WITH ACADEMIC PERFORMANCE OF SCHOOL AGE CHILDREN 39
5.1.4.1. Bi-variable logistic regression of variable and academic performance of students 39
5.1.4.2 Multivariable logistic regression of variables and academic performance of students 41
5.2. DISCUSSIONS 43
CHAPTER SIX: CONCLUTIONS AND RECOMMENDATIONS 46
6.1 CONCLUSIONS 46
6.2. RECOMMENDATIONS 47
CHAPTER SEVEN: LIMITATIONS OF THE STUDYS 48
REFERENCES 49
ANNEXES 54

List of tables

Table 1: Socio-demographic characteristic of primary school students Wolkite town. 34
Table 2: Average score for each subjects of primary school students in Wolkite town. 36
Table 3: Statistics association between Nutritional statuses with academic performance. 37
Table 4: Bi-variable logistic regression analysis results of academic performance. 40
Table 5: Multivariable logistic regression analysis results of academic performance. 41

List of figures

Figure 1: Shows conceptual frame of association b/n nutritional status with academic performance among school age children in Guraghe Zone Wolkite Ethiopia, 2023. (SOURCE: adapted from searching of different literatures done in low income countries and had significantly associated.)..... 18
Figure 2: Map of Wolkite town..... 21
Figure 3: Schematic presentation of sampling technique of proportionally allocated in each school Wolkite Town primary Schools, Guraghe Zone, Ethiopia, 2023..... 24
Figure 4: Nutritional status of primary school students in Wolkite town. 35
Figure 5: Overall academic performance of primary school students in Wolkite town..... 38

Abstract

Background: Malnutrition is a state of retarded physical development or specific clinical disorder caused by consistent lack of one or more nutrients and also excess amount of nutrients. It was the diminishing health outcome due to deficiency, excess or imbalance of nutrients. Infants, pre-school children, adolescents, pregnant women and elderly people are the persons likely to be malnourished.

Objective: The aim of this study was to assess academic performance and its association with nutritional statuses among Primary School Students in Wolkite town Gurage Zone, SNNPR, in year 2015 E.C

Methods: An institutional based cross-sectional study was conducted among 391 participants age between 6-14 years in Wolkite town. A simple random sampling was used to select the participant from the registration book of selected schools. Weight and height of students was measured using standard instruments. The anthropometric measurement was taken in standardized manner by trained professional and two times measurement was taken to validate. The survey data was analyzed using WHO Anthro Plus software version 1.0.4 and SPSS 23.0.

Results: A total of 391 school children were enrolled with 99.8% response rate. In this study mean academic performance for the study participant were 62.07(± 10.59 SD). The prevalence of underweight, wasting and stunting was 17.4 %, 12% and 9.7 %, respectively. Stunting with 95%CI AOR= 0.39[95%CI: 0.14, 1.02], absent from school with 95%CI AOR= 0.47[95%CI: 0.25, 0.90], Habit of study with 95%CI AOR= 3.76[95%CI: 1.28, 11.02] and happy going to school with 95%CI AOR=3.76[95%CI: 1.28, 11.02] were significantly associated with Academic performance with P value < 0.05.

Conclusion and Recommendation: With regard to academic performance among all study students (14 %) and (86%) had poor and good academic performance achievements. Based on the preceding major finding the following conclusion are made in this study showed that Stunting, Absent from school, Habit of study at night time and Happy going to school were significantly associated with academic performance at p-value < 0.05.The recommendation were The zonal health and education bureau should work in collaboration with other organizations (NGOs) to combat malnutrition and to strengthen the positive effect of nutrition on educational achievement of primary school children.

Key words: Malnutrition, Stunting, Wasting, Underweight, School children, School achievement,

CHAPTER ONE: INTRODUCTION

1.1 BACKGROUND

Malnutrition is a state of retarded physical development or specific clinical disorder caused by consistent lack of one or more nutrients. It is the diminishing health outcome due to deficiency, excess or imbalance of nutrients. Infants, pre-school children, adolescents, pregnant women and elderly people are the persons likely to be malnourished (1). Malnutrition in childhood and pregnancy has many adverse consequences for child survival and long-term well-being. It also has far-reaching consequences for human capital, economic productivity, and national development overall. The consequences of malnutrition should be a significant concern for policymakers in Ethiopia, where 7% of children under five are acutely malnourished or wasted (have low weight-for-height) and 37 % are stunted (have a low height-for-age).according to the most recent Mini-Demographic and Health Survey (2).

Stunting prevalence is classified as “very high” and wasting is classified as “medium” according to the World Health Organization (WHO) global cut-offs (WHO 2020). 22% of women of reproductive age are undernourished, leaving their children predisposed to low birth weight, short stature, low resistance to infections, and high risk of disease and death. Children in rural areas are more likely to be undernourished than those in urban areas, with important variations in stunting and wasting by region (3). This aligns with the introduction of complementary foods recommended to start at six months, which, if not combined with proper water, sanitation, and hygiene (WASH) practices, can have detrimental effects on the nutritional status of children. Schooling is an instrument of individual and social change, increasing the probability of general well-being (4). A decade after adoption of the Education for All (EFA) goals in 2000, many children are still out of school (5). For millions of children, hunger is one of the obstacles to school participation. Primary education is a critical stage in the development of the consciousness and personality of the children. At this stage children are extremely inquisitive and elementary education must encourage this tendency among children. Nutrition is an endogenous factor that affects the learning ability and skills of children at school. The relationship between nutrition and school performance of school-age population in developing countries has been of interest to many researchers due to the frequent observation of poor school performance among malnourished students (6).

About half of the 10.7 million child deaths among children less than 5 years occurring each year are related to malnutrition in developing countries as estimated by WHO (7). Primary school age (6-12 years) is a vibrant period of bodily growth and intellectual development of the child (8). As a result, Ethiopia has done remarkably well in meeting most of the Millennium Development Goals (MDG) targets. Of note is the achievement of MDG-4 with a 72% reduction in under-five mortality from the 1990 estimate. The significant reduction in child mortality has significantly contributed to an increase in average life expectancy at birth from 45 years in 1990 to 64 years in 2014. Additionally stunting and underweight in children less than five has decreased in the past two decades from 58% to 38% and from 41% to 23%, respectively (4).

1.2. STATEMENT OF THE PROBLEM

Insufficient food intake due to deficiency of food or lack of access to available food is the primal factor for poor nutritional status, Physical and mental developments are impaired during childhood as a result of malnutrition at premature age. Under nourishment affects school performance and often leads to a poorer earnings as a grown-up (9). Malnutrition is impairment to the health of individuals because of deficiency, excess or imbalance of nutrients (1). The school children gain education either from private or public schools. Higher income families are likely to admit their children to private schools whereas disadvantaged people tend to admit their children in public schools. However, in both categories of schools, nutrition education seems to be lacking. Although the families have enough funds for balanced and nutritious food, they lack knowledge about nutrition and the balanced diet, causing malnourishment in the kids (9).

School children are often thought of as naturally healthy, but in many areas in Ethiopia, school children are stunted, underweight, wasted, anemic and deficient in zinc, vitamin D, iodine and vitamin A. In many areas, school children are affected by health- and nutrition-related problems that constrain their ability to thrive and limit their ability to attain their education potential. These inadequate nutritional conditions, highly prevalent in a number of Ethiopian regions are all believed to lead to impaired cognitive ability (4). The EDHS 2019 indicates that in Ethiopia 37% of children are stunted, 7% of children are wasted and 21% children are underweight with strong rural-urban disparities. Studies show that providing meals at schools improves scores on arithmetic tests by increasing regular attendance and improving cognitive capacity (2). Missing breakfast impairs learning performance to a greater extent for children of poor nutritional status. Stunted children enroll in school later than non-stunted children (10).

Primary school age is characterized by dynamic physical growth, mental development and high vulnerability stage (11). Children's physical and mental activities are influenced widely by malnutrition. Adequate nutrition for their body growth, development of organs and their functions, body resistance, mental or neurological and cognitive status could be required in early school age period (12). In addition to underlying nutritional problems, a various study found that boys suffer more from poor educational achievement (23%) than girls (18.6%) (13);

Another study in Morocco also showed more profound effect of malnutrition over boy's school grade average than girls. This study reveals 30.1% of girls and 38.7% of boys rated as poor for mathematics and 17.1% of girls and 37.3% of boys rated as poor to average (13). Another studies also revile the impact of socio demographic factors including sex, absenteeism, and distance from school, grade attended, parental socio economic status and parental involvement in their children's schooling were found to be significantly associated with primary school children's academic performance (14,15).

African malnourished school age children are at risk of repeating grades and dropping out of school with an achievement of 0.2 to 1.2 years less in school education (10). Moreover, more than a quarter of children in sub Saharan Africa are too thin which is resulted in impaired mental development and low educational achievement(14). By 2025 an additional 11.7 million children will be stunted in sub-Saharan Africa when compared to the 2010 data (5). Ethiopian Demographic and Health Survey (2016 EDHS) report shows that the prevalence of severe malnutrition were 18% for stunting, 3% for wasting and 7% for underweight respectively (3). The Cost of Hunger in Africa (COHA) summary report revealed that more than 2 out of every 5 children in Ethiopia are stunted with 16% repetitions in primary school children and an achievement of 1.1 years less in schooling (12).

Even though researches done in South Gondar and Goba Town conclude that nutritional status did not show an association with academic performance (15). other pocket studies done in various areas of Ethiopia consistently reporting association and effect of under nutrition over mathematics score and overall academic performance (14).

CHAPTER TWO: LITERATURE REVIEWS

2.1. MAGNITUDE AND SEVERITY OF MALNUTRITION

Globally, the magnitude and severity of malnutrition are still a public health problem. Malnourishment accounts for 2.6 million of deaths per year and more than 450 million children's failure in somatic and mental development (16). Child under nutrition is a challenge of global health, especially in low- and middle-income countries (17). Current evidences on children in Africa, Asia, and Latin America reported that the mortality of stunted and underweight children was greater than three times that of well-nourished children (18). The importance of food to human development both physically and mentally cannot be over emphasized. Under-nutrition, especially Protein Energy Malnutrition (PEM) in young children continues to be a serious health problem. Evidence has shown that 56 % of the total children born in developing countries die of malnutrition before they are five years old (19).

Moreover, a child who is deprived of an adequate amount of food is likely also to be deprived of hygienic home environment, safe water supply, good health care, and of an intellectually stimulating environment. Today's children are tomorrow's world leaders, that is why nutritional assessment in the community is essential for accurate planning and implementation of intervention program to reduce morbidity and mortality associated with under-nutrition. In the developing countries, 52% and 34-62% of the school-age children are stunted and underweight, respectively. If interventions are not carried out, it is estimated that close to one billion children will be physically and mentally impaired by 2020 (16). As school age is a period of physical and mental development, prolonged under nutrition in this age group impairs their growth. Under nutrition could also increase the susceptibility of children to disease. Despite continued prevention efforts, child under nutrition remains a major public health problem in Sub Saharan Africa, including Ethiopia. Factors including biology, economy, culture, environment and disease contribute to under nutrition. Children are most vulnerable to under nutrition due to their low dietary intake, less access to food, inequitable distribution of food within households, improper food storage and preparation, dietary taboos and infections with pathogens. Child under nutrition can be mitigated through nutritional information campaigns, broader access to maternal and child health care practices and availing affordable, diverse, and nutrient-rich food (13).

The Federal Government of Ethiopia has been working to reduce under nutrition significantly through public education and providing nutritional supplements and financial support to vulnerable families. However, the risk factors of under nutrition are diverse and could potentially change in space and time. To the extent that poor health and nutrition among children has a negative impact on their education, programs or policies that increase children's health status will also improve their education outcomes. Recent studies in the field of nutrition reaffirm the importance of nutrition as a prerequisite for good cognitive development in children. Good nutrition is also essential for country's general development as children's, good health eventually translates into good performance thus resulting into brilliant leaders who will be productive economically, socially and in all other areas as "Health is wealth Thus, there is a need to the pitfalls and design effective intervention strategies (20).

2.2. MALNUTRITION

Malnutrition is a general term that includes many conditions, including under nutrition, over nutrition and micronutrient deficiency diseases (like vitamin A deficiency, iron deficiency anemia, iodine deficiency disorders and scurvy).It is refers to an impairment of health either from a deficiency or excess or imbalance of nutrients is of public health significance among children all over the world. Adequate food and nutrition are essential for proper growth and physical development to ensure optimal work capacity, normal reproductive performance, adequate immune reactions and resistance to infections (21).

2.2.1. COMMON FORMS OF MALNUTRITION IN ETHIOPIA

Malnutrition is a major public health problem in many developing countries. It is one of the main health problems facing women and children in Ethiopia. The country has the second highest rate of malnutrition in Sub-Saharan Africa (SSA). Ethiopia faces the four major forms of malnutrition: acute and chronic malnutrition, iron deficiency anemia (IDA), vitamin A deficiency (VAD), and iodine deficiency disorder (IDD). The 2005 Demographic Health Survey (DHS) has shown that about 47 % and 11% of Ethiopian children under five years of age were stunted and wasted respectively. Thirty eight percent of children under five years of age were underweight and 11% were severely underweight. Malnutrition is also very high amongst women. One in four women (27%) in Ethiopia are thin i.e. they have body mass index of less than 18.5 (13).

Previous classifications of severe acute malnutrition

Protein-energy-malnutrition (PEM): A clinical syndrome present in infants and children as a result of deficient intake and/or utilization of food.

Marasmus: Severe form of acute malnutrition that is characterized by wasting of body tissues. Marasmus children are extremely thin.

Kwashiorkor: Severe form of acute malnutrition characterized by bilateral edema and weight-for-height of greater or equal to -2 SD

Marasmic-Kwashiorkor: Severe form of acute malnutrition characterized by bilateral edema and weight-for-height of less than -2 SD (22).

2.2.2. CAUSES OF MALNUTRITION

The causes of malnutrition can be very complex. Malnutrition is influenced by many factors acting at multiple levels. These factors often act in a continuous cycle and include dietary intake issues, diseases, food insecurity, and inadequate maternal and child health care and sanitation services. Illiteracy and poverty may also influence the food intake of people and become causes of malnutrition.

A) Immediate causes of malnutrition

The immediate causes associated with malnutrition include poor diet and disease. Poor diet: If a child doesn't get an adequate diet they will become malnourished. The poor diet might be due to not enough food, or a lack of variety of foods in meals; low concentrations of energy and nutrients in meals; infrequent meals; insufficient breast milk; and early weaning. Disease: Diseases, especially infectious diseases, cause under nutrition because a sick child may not eat or absorb enough nutrients, or may lose nutrients from the body due to vomiting or diarrhea, or have increased nutrient needs which are not met. The diseases most likely to cause under nutrition are: measles; diarrhea; AIDS; respiratory infections; malaria; and intestinal worms (20).

b) Underlying causes of malnutrition

Poor diet and disease are the immediate causes of malnutrition for children but it is always important to try to find out why that child has a poor diet or why they have developed the disease. The underlying causes differ within different communities and from family to family but it is useful to group them into: family food shortages; inadequate care of children and women; unhealthy environment and poor health services; and too many children in a family to feed. For each underlying cause you identify, there is probably another, 'deeper' cause. For example, a child may have a poor diet because the family has little food. But why is the family short of food? Perhaps they have too little land or a low income. Eventually you should be able to determine the basic causes.

Family food shortages:

Many families do not have enough food to feed everyone properly throughout the year. But why are these families short of food? The possible reasons for family food shortages may be that there is a large number of families in the locality, leading to over-cultivation of their lands. Another might be the effects of low income or poor budgeting. Some people may spend so much on 'non-essential' things such as 'khat', cigarettes and beer, so there is not enough money left for the family's food needs. There may also be poor distribution of food among families. There will be different causes for food shortages, some depending on the region in which you live. You might have identified large family size, small size of farming land, low income, or extravagance by the husbands on unnecessary items, such as cigarettes and beer.

Identifying local causes of family food shortages

Inadequate care of children and women: Nutrition and health care are often determined by the amount of care given to women and children, and this is strongly affected by a woman's workload, access to resources and her education. If the mother is busy, she might not have enough time to breastfeed and care for her child. Many women are uneducated and have little knowledge about feeding, childcare and hygiene. Thus they lack awareness of the correct things to do. These same women often cannot or do not attend clinics or women's groups where they could learn skills to improve their lives and that of their families (23).

Effects of women's activity on nutritional status of children

Mothers may spend much of their time fetching water, farming or doing labor work; a minority of mothers may be government employees. If a mother is busy with these and other activities, she may not get time to breastfeed, prepare foods for her children and or ensure her children's hygiene. Children of these mothers may be at higher risk of under nutrition either due to lack of appropriate and adequate feeding, or due to repeated infections as a result of poor sanitary conditions. Unhealthy environment and poor health services: Disease is more likely to occur, especially among young children, when there are poor living conditions such as overcrowding, low immunization coverage and poor health services (24).

C) Basic causes of malnutrition

Nutrition is a vital component of human health, life, and brain development through the entire lifespan. Balanced nutritious is crucial for endurance, physical growth, cognitive development and productivity. As well, malnutrition is considered a pressing problem that affects the ability of children to learn and causes them to perform at a lower level in school. Under nutrition is a major public health challenging affecting academic school achievement. Ethiopia is one of the sub-Saharan African countries basically affected by child malnutrition. The availability and control of resources (human, economic and organizational) at the various levels of society are a result of four major factors. These are political factors, cultural factors, environmental factors, and social factors. Any one or a combination of these can be a basic cause of malnutrition.

Political factors

Certain political factors, such as policy decisions and economic situations caused by inflation or war, can cause under nutrition. A good example was the high level of malnutrition amongst many Ethiopian citizens during the Ethiopian-Eritrean war (25).

Cultural factors

There may be many and it can be hard to get people to realize that these beliefs have a negative impact on their or their children's bodies. For example, abrupt weaning due to pregnancy, the belief that food should not be given to a child who is suffering from measles or diarrhea, and sharing food from the same bowl between different children, can result in the child getting less than their body requirements, are examples of some of the cultural factors that may affect nutrition. Environmental or natural disasters Drought, floods and earthquakes are other basic causes that can lead to malnutrition. The 1977 drought of Ethiopia is a good example of a natural disaster with terrible consequences (13).

Malnutrition Consequences on Communities.

The enormous consequences of malnutrition are often not appreciated because they may be hidden. Often there are no obvious signs, and the victims themselves are silent and not aware of the problem. Yet, data available now indicates that, in Ethiopia, malnutrition starts very early in life for large numbers of children who become progressively more malnourished during the first two years of life. By 24 months, considerable damage to the developing child has been done and satisfactory recovery becomes less likely. Well-nourished women are likely to be fit and healthy and able to look after their family well. The outcomes of pregnancy and lactation are improved when the woman is healthy herself. As you read in an earlier study session in this Module, the nutritional needs of a pregnant and a lactating woman are greater than at other times in her life. During pregnancy, the food the mother eats also helps to meet the nutritional needs of the unborn baby. During lactation, the food the mother eats helps in production of breast milk (22).

Social factors

Poverty is the reason that some families cannot produce or buy more food. Men often leave home to search for work, leaving women to bring up children alone. Poverty can lead to family quarrels and child abuse. Often women have less access to money, land and other resources, and less control over family decisions than men. Just as malnutrition has many causes, its effects are also multidimensional in nature (26).

Increased risk of disease and death Malnutrition

Sub-optimal infant feeding practices, and vitamin A deficiency, significantly lower the resistance to infections and dramatically increase the risk of illnesses and death. Millions of children die of severe acute malnutrition each year.

Low productivity of the malnourished individuals

Stunting has a serious impact on the productivity of individuals. Stunted children grow up to become less productive adults. Studies show that labor productivity declines as severity of stunting increases. Iodine deficiency also significantly reduces the productivity of an individual (27).

Poor school performance and attendance

Proper nutrition is essential for mental and physical development and for school performance. Malnutrition reduces children's learning ability, school performance and attendance. Iodine deficiency lowers the ability of children to think and become creative and productive adults. Iodine is necessary for the normal development of the brain of the fetus during pregnancy.

Poverty perpetuation (a vicious circle)

Malnutrition affects children, women, and communities and will prevent them from reaching their full mental and physical capacity. As we have discussed earlier, a malnourished child will grow to a malnourished adult. The productivity of the adult will be decreased and poverty will continue (18).

Education

Quality education plays a pivotal role in the economic, social and political development. Currently, getting children into schools is not enough; government ensures that children attain the basic knowledge and skills needed for personal well-being (28). Primary school is an important stage in the development of consciousness and personality of the child. It is also a key factor for the development and can also be a burden for a country if there is a high failure rate since it consumes many resources from a country. Besides, all parents want their children to be smart and intellectual; therefore, school failure is stress full for both parents and students. Children are considered the greatest national resource of any country that builds the future of the nation, and schooling is an instrument of individual and social change, increasing the probabilities of general wellbeing (29).

Though gradual improvements exist, Ethiopia's learning outcomes are still low in primary schools. For instance, over half of 4th grade and 8^{th}-grade students tested in 2015 scored below the proficiency level defined as "Below Basic" in all subjects, except English for grade 8. This means that the student has minimal understanding of the subject and lacks the skills to solve simple problems appropriate for that grade level. The academic achievement of school-age children can be affected by several factors such as nutritional status, demographics, and socio-economic factors. Several studies have shown that malnutrition negatively affects the academic performance of students (13).

The consequences of malnutrition should be a significant concern for policymakers in Ethiopia, where about 5.8 million children under 5 years (38%) are suffering from chronic malnutrition (stunting or low height for age), according to the most recent Demographic and Health Survey (DHS). A cross-sectional survey conducted in southern Ethiopia revealed that the prevalence of stunting was 16.9% and its correlation with school underperformance was significantly high. Similarly, studies conducted in Goba town and primary schools of Hawa Galan district showed that nutritional status like stunting, underweight and wealth index was found to be correlated with academic performance of students. Malnutrition has an intergenerational cycle. A malnourished mother will give birth to a low birth weight baby; the low birth weight baby will grow as a malnourished child, then to a malnourished teenager, then to a malnourished pregnant woman, and so the cycle continues Good nutrition has been said to have favorable effects on educational attainment. It is expected that a well-nourished child will learn more readily than a

poorly nourished one. It is an everyday observation that children who are on a poor diet show little activity and lack energy. The children in primary school are losing part of the most important period of education (14).

Lack of food, good health and hygiene have a major effect on life and thus performance in education. Many children do not get enough of the right food to eat. They do not grow well, they become ill, many die and they do not grow up as clever, as healthy or as tall as they should be. A child who is properly fed on a balanced diet develops faster. Such a child is ever active and is always regular in school attendance, very motivated and looks healthy. He /She becomes attentive in class as most of his/ her senses, if not all are functional. Proper nutrition is essential for growth, development, health and one's well-being since food is a critical need for the survival of the human species (30). Good nutrition helps to improve child survival, to promote healthy growth and development, to contribute to better cognitive and economic development. It also reduces and mortality rate, and the risk of chronic diseases such as cardiovascular disease, diabetes, kwashiorkor, marasmus, hypertension, even in adulthood. The nutritional status of a person is a measurement of the extent to which his / her physiological needs for nutrients are being met. It also refers to the state of health of a person which is the product of a balance between nutrient intake and utilization by his body (31).

Good nutrition is essential for physical, intellectual and emotional development. However, in Ethiopia; more than 70% of children with protein-energy malnutrition exist. Although food is essential, it has often been lacking, from the qualitative and quantitative point of view resulting in the occurrence of malnutrition. Indeed, malnutrition (under-nutrition, over-nutrition) is a public health problem of significant importance in developing countries. Needless to say, pre-school children are younger and more vulnerable to the effects than their older counterparts. Research on the effects of breakfast on cognition shows that, particularly for younger children, skipping breakfast can have adverse effects on both general energy-level and cognition, further more consuming breakfast resulted in better scores on three different types of tests (32).

African region has the highest estimated prevalence of stunting (39.8 – 46.5%) and has the lowest rate of improvement. This report further says that in the East Africa sub-region, rates of stunting are increasing (33). An analysis of the nutritional situation was done on various studies carried out among children and their nutritional status worldwide. The analysis concluded that growth retardation observed among school-age children is striking and suggests that nutritional status of school children in these countries is at risk (15). Nutritional status is therefore an area of concern for study among school children and a threat to their academic performance and even later development and productivity (17).

The Relationship between Nutrition and Cognitive Development

Balanced nutrition is an important requirement of every living organism. The biological functions of the human body are interconnected and powered by the nutrients found in food. The nutrients provided by food serve as fuel to support the proper function for every single cell of the human body (34). This valuable information is confirmed by recent research conducted showing that although genetics and environmental forces affect development of the brain, poor nutrition has the most detrimental outcome on the brain and the cognitive processes of children. Nonetheless indicate that it is very difficult to depict the influence that nutrition plays on the development of the brain and cognition due to other related factors such as demographics and social economics (18).

However, it is very important to understand that this one factor, nutrition, is very easily modified in order to assist students in achieving their potential in brain development and cognitive processes. Also, he quotes the study which indicates that poor nutrition in fact has detrimental effects on brain development. The conclusions of agree with the study, indicating that poor nutrition in early infancy could severely affect cognitive development, which is essential for learning (16). Speculate that many factors could impair the learning process necessary for academic achievement, but nutrition has a greater impact on students' school attendance or the ability to stay focused. For example, they indicate that poor nutrition can lead to emotional disorders such as "irritability, moodiness, and short attention span that can disrupt the child's learning process (27). Furthermore, inadequate nutrition has a direct link to behavior problems, which in turn affects academic performance. Poor nutrition may lead to psychological disorders and as a result may ultimately be one of the leading causes for low GPA and dropping out of school. Malnourishment is becoming an epidemic even in well-developed countries (24).

About 48% of adolescent children in Africa are malnourished. They indicate that children who are severely malnourished are easily detected because of their physical appearance, but moderate malnutrition is difficult to identify because it requires detection by other measurements. There is not enough understanding about the ramifications of malnutrition, whether it may be mild or moderate, but the consequences may be detrimental. That study also denotes that mild or moderate malnutrition is more prevalent than severe malnutrition and possibly has greater implications regarding the cognitive abilities of children. It also indicates that their investigation was aimed to rule out several factors associated with cognitive development. Their results reveal that nutrition, school activities, and family structure are all connected to cognitive development (35). In addition, they concur that there is a definite relationship between nutrition and cognitive skills regardless of students' social or economic status. Research in the area of nutrition indicates that an improvement of diet seems to be the key factor of improving irritability, hyperactivity, and short attention span. According to these authors, learning disorders and behavioral patterns may be improved by enhancing dietary intake. They also indicate that an improved diet may play a significant role in the improvement of students' psychological behavior as it is a significant ecological factor which affects neuropsychological function (21,36).

Also indicate that the majority of studies point directly to poor diet or nutrition as being the root factor of behavioral problems and learning disabilities. They imply that to improve academic performance, one must start at the root of the problem by improving dietary intake and nutrition for school-age children. Research indicates that a nutritious diet will in fact improve neurological problems such as irritability and short attention span, and that it is the number one ecological factor that affects the most sensitive functions of cognitive learning and academic achievement (37). Protein-energy malnutrition (PEM) during the early years of childhood affects cognitive development and the functioning process. He also adds that school-age children at risk of malnutrition with a record of chronic PEM are physically and mentally challenged in school activities (20).

The health of school-age children at risk of malnutrition or with chronic PEM was restored after receiving a proper diet. Additionally, he indicates that children's physical and mental challenges diminished after receiving adequate nutrition. Although, research focus was to investigate the effect of poor nutrition and health status in children from developing countries in Africa, Asia, and Latin America, his results apply to any school-age child who is not receiving the proper nutrients via food or vitamin supplements. His results have a strong message that school-age children require certain nutrients to ensure the proper neurological and physiological function to improve academic performance (27,38).

Finding the relationship between nutrition and cognitive processes is challenging because there are many controversial factors (environmental genetic, and nutritional) that make it difficult to determine if one or all are responsible for cognitive development (18). Research points to poor nutrition as one of the obvious factors directly or indirectly responsible for poor cognitive processes. They also mention that the brain continues to develop from gestation, to childhood and even during adulthood; hence, nutrition is an essential component from gestation to adulthood to ensure proper brain function. Moreover, they indicate that PEM in the early years of life can have profound effects on academic performance, and continues through school-age children eight to nine years of age and in some cases up to 15 years of age. The implication is that dietary components maintain the function of the brain as well as the neurotransmitter process (24).

The Relationship between Dietary Practices' and Academic Performance

In spite of the programs and policies regarding school-age children's nutrition, little has been done to address Ethiopian school-age children's poor nutrition practices and academic performance. Even if there are several factors involved with nutrition and academic performance. For example, they indicate that biological, psychological, socioeconomic, and cultural factors may be associated with nutrition and academic performance. Although they consider many factors that contribute to poor nutrition, they concur that poor nutrition may be the major factor that contributes to poor academic performance (38).

There were strong link between malnutrition and academic performance. It is reported that policy makers have recognized several factors linking poor academic scores, attendance, and the quality of education to social and economic status, and are eager to improve the quality of education by demanding standards based curricula and subject competency (qualified) teachers. 31 researchers agree that policy makers have failed to recognize that health and nutrition are key factors for improving school-age children's academic performance (14,17).

Breakfast and school performance

Some researchers report that eating breakfast is related to higher academic performance. On the other hand, skipping breakfast has been associated with poor academic performance (18). Other researcher's confirm that students who skip breakfast had lower daily intake and tend to gain weight because they are inclined to eat more unhealthy snacks. Consequently, the overall result ok skipping breakfast is the negative effect on academic achievement, which is reflected in lack ok energy and inability to do simple school tasks. Researchers emphasize that breakfast is the most important meal ok the day, even though its consumption has a 32 short-term effect in improving some learning skills (24).

Effects related to nutrition and academic performance of children deprived of food:

Psychosocial and Behavioral Effects

- Higher levels of aggression, hyperactivity and anxiety as well as passivity
- Difficulty getting along with other children
- Increased need for mental health services

Learning and Academic Impact

- Lower test scores and poorer overall school achievement
- Repeating a grade in school
- Increased school absences, tardiness, and school suspension (27,38).

2.3 CONCEPTUAL FRAMEWORK

The conceptual frame work is to deal with the dependent factor (academic performance) and the in-dependent factors (Socio demographic factors, Nutritional indices and associated factors)

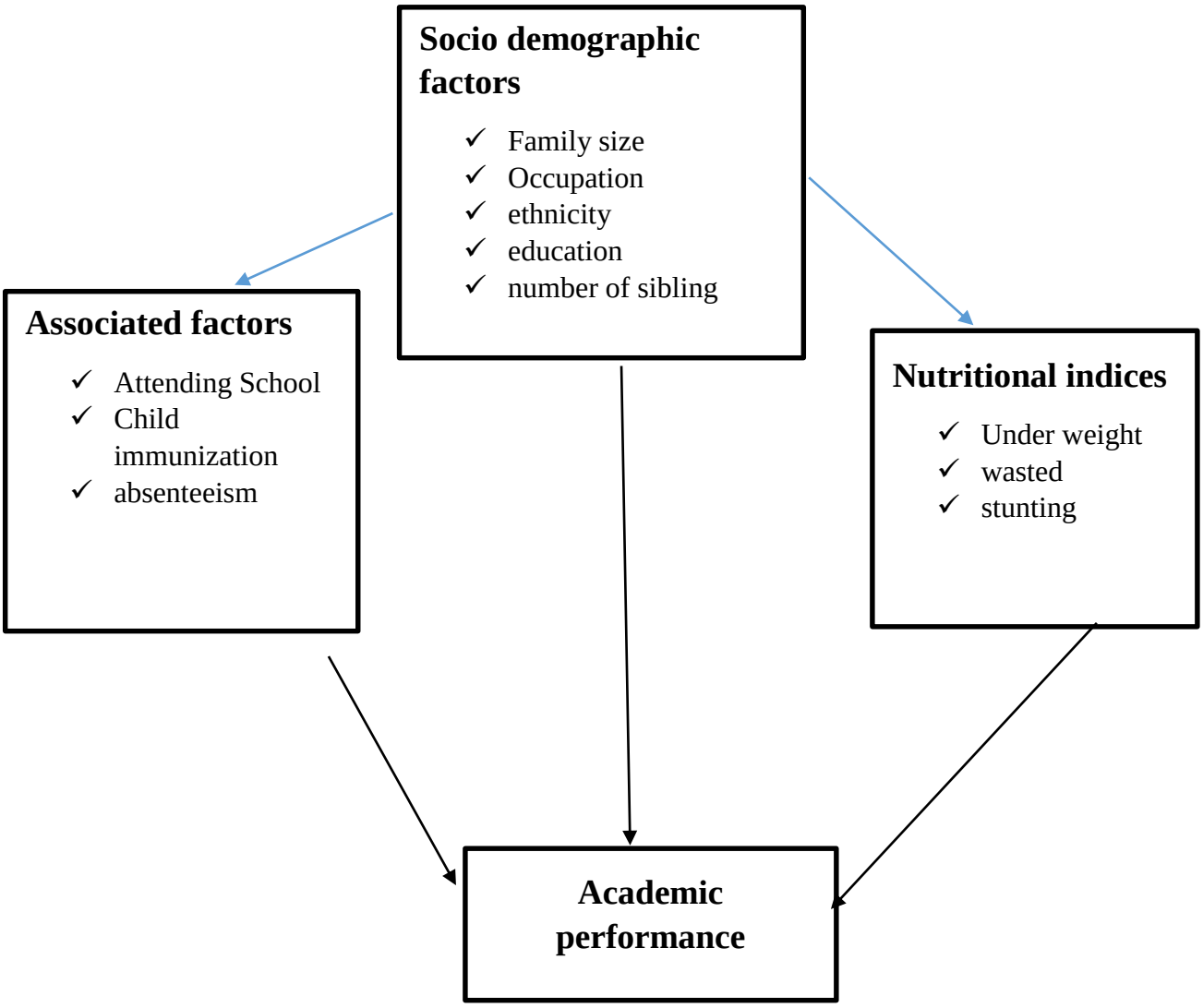


Figure 1: Shows conceptual frame of association b/n nutritional status with academic performance among school age children in Guraghe Zone Wolkite Ethiopia, 2023.

(SOURCE: adapted from searching of different literatures done in low income countries and had significantly associated.)

2.4. SIGNIFICANCE OF THE STUDY

The findings of this study provide useful information and add value to the existing Knowledge on the relationship between nutrition and performance of primary school children in Wolkite town .It also helps to plan suitable nutritional & health programs for this school based on the realities revealed from this study, Encourage government and other stake holders for the development of programs and policies related to nutrition. This study was uses for clinician in early screening of the case based on the best anthropometric indices and early identification and management of nutritional status in Ethiopia and also have aimed at assessing the effect of nutritional status on academic performance of school-aged children.

Determining the correlation between nutritional statuses with academic performance to assist health system and other concerned body to plan appropriate and efficient school based feeding. The reason for conducting this study is there is no study done in this topics in this area so the finding have an initial document to collaboration health and education. Like as it was investigated in various developed and developing countries, the effect of nutritional status to the school performance need to be consistently indented in our context for convincing planner and diverting emphasis since factors differ across various socio-demographic factors. With a diverse role of nurses even as school nurses, the output of this study probably shifts attention of school nurses for specific nutritional intervention at school level parallel to other routine service and nurses working in policy design for resource and effort mobilization (16).

By far this study Benefit the regional education and health office policy makers and zonal planners to intend appropriate nutritional interventions through SFP and NEP at school in order to deal with the impact of malnutrition on academic performance among primary school children. Although there are several reports of malnutrition in Ethiopia, the relationship of nutritional status and educational performance of school-aged children was not yet explored in different areas of the country. Thus, this study was aimed at assessing academic achievements and its association with nutritional status of primary school children in Wolkite town of southern Ethiopia. Although several studies have documented the status of one or two micronutrients among children (14). Finally, the results of the study was used by stake holders like education office and health unit in developing curriculum and a programed for equipping parents of Primary school Children with knowledge on good nutrition and importance of balanced diet which is vital for good performance.

CHAPTER THREE: OBJEECTIVE OF THE STUDY

3.1 GENERAL OBJECTIVE

- To assess academic performance and its association with nutritional status among Primary School Students in Wolkite town Gurage Zone, Ethiopia, 2023.

3.2 SPECIFIC OBJECTIVE

- To assess nutritional Status among primary school students.
- To assess academic performance among primary school students.

CHAPTER FOUR: METHODOLOGY

4.1. STUDY AREA AND PERIOD

The study was conducted in SNNPR, Gurage zone, Walkite town from February 1 to March 30/2023 G.C. Wolkite is a town and separate woreda in south-western Ethiopia. The administrative center of the Gurage Zone of the Southern Nations, Nationalities and Peoples' Region (SNNPR), this town has a latitude and longitude of 8°17′N 37°47′E/ 8.283°N 37.783°E and an elevation between 1910 and 1935 meters above sea level. The structural plan of Wolkite town is set up from five kebeles and three sub towns. The three sub towns are Bekure, Addis birhan and Gubrea and the corresponding kebeles are Selamber, Edgetber, Menaheria, Addis birhan and Addis hiwotIt .there is one hospital governmental and three health centers. It is surrounded by Kebena woreda and it was part of former Goro woreda. Wolkite town has a total population of 66410, of whom 53% are men and 47% are women. The plurality of the inhabitants practiced Ethiopian Orthodox Christianity, with 48.17% of the population reporting that belief, while 42.31% were Muslim, 7.86% were Protestants, and 1.34% were Catholic. Wolkite town has a total students who enrolled in 2015 E.c was 10222(M=5217, F=5010, There is ten governmental (Aba frases, Addis hiwot, Gasora, Selamber, Buchach, Shea mender, Rasa silasa, Wku community, Walkite primary school, T/berihane and six non-gov'tal (Kidus Yosef ,Ribote, Meka sadike, Kidit marime, Sogoma, Niksese) This study was conducted in three private schools and five public schools [Guragea zone socio-economic profile, accessed 4 September 2020]



Figure 2: Map of Wolkite town.

4.2. STUDY PERIOD;

Data were collected from February 1 to March 30/ 2023 G.C in gurage zone wolkite town, Guragea, south west Ethiopia SNNPR.

4.3. STUDY DESIGN

A School based cross-sectional study design was conducted. The participant age was 6-14 years children from private and public schools in wolkite town, Guragea, south west Ethiopia.

4.3.1. SOURCE POPULATION

All children age 6-14 years from private and public schools in wolkite town, Guragea, south west Ethiopia.

4.3.2. STUDY POPULATION

All randomly selected children of age 6-14 year who was available during the study period in the school in wolkite town, Guragea, south west Ethiopia.

4.4 .INCLUSION AND EXCLUSION CRITERIA

4.4.1 INCLUSION CRITERIA

- All those students present at the day of survey within age group of 6-14 years.

4.4.2 EXCLUSION CRITERIA

- All those students who were unable to respond and critically sick during the study period.

4.5. SAMPLE SIZE DETERMINATION AND SAMPLING PROCEDURE

The sample size was determined using single population proportion formula.

n= number of participants to be interviewed

Z=critical value at 95% confidence interval

P= Southern Ethiopia revealed that the prevalence of stunting was 36.3% (2).

d= margin of error between sample statistics and population parameter (5%)

$$n = \frac{(Z\alpha/2)^2 p\,(1-P)}{d^2}$$

$$n = \frac{(1.96)^2 \times 0.363(1 - 0.363)}{(0.05)^2} = 355$$

By considering 10% non-response rate, the final sample size was **391**

4.5.1 SAMPLING TECHNIQUE

Simple random sampling method were used to select children's in primary school. In the selected school, a sampling frame were prepared from the students roster in each grade, and students each grade were selected by simple random (a lottery) method proportional to the student size of the class. k=N/n. select kth unit after that first number was k=26 students were taken as technique to obtain the final study participant.

SCHEMATIC PRESENTATION OF PROPORTIONAL ALLOCATION OF SAMPLING TECHNIQUE

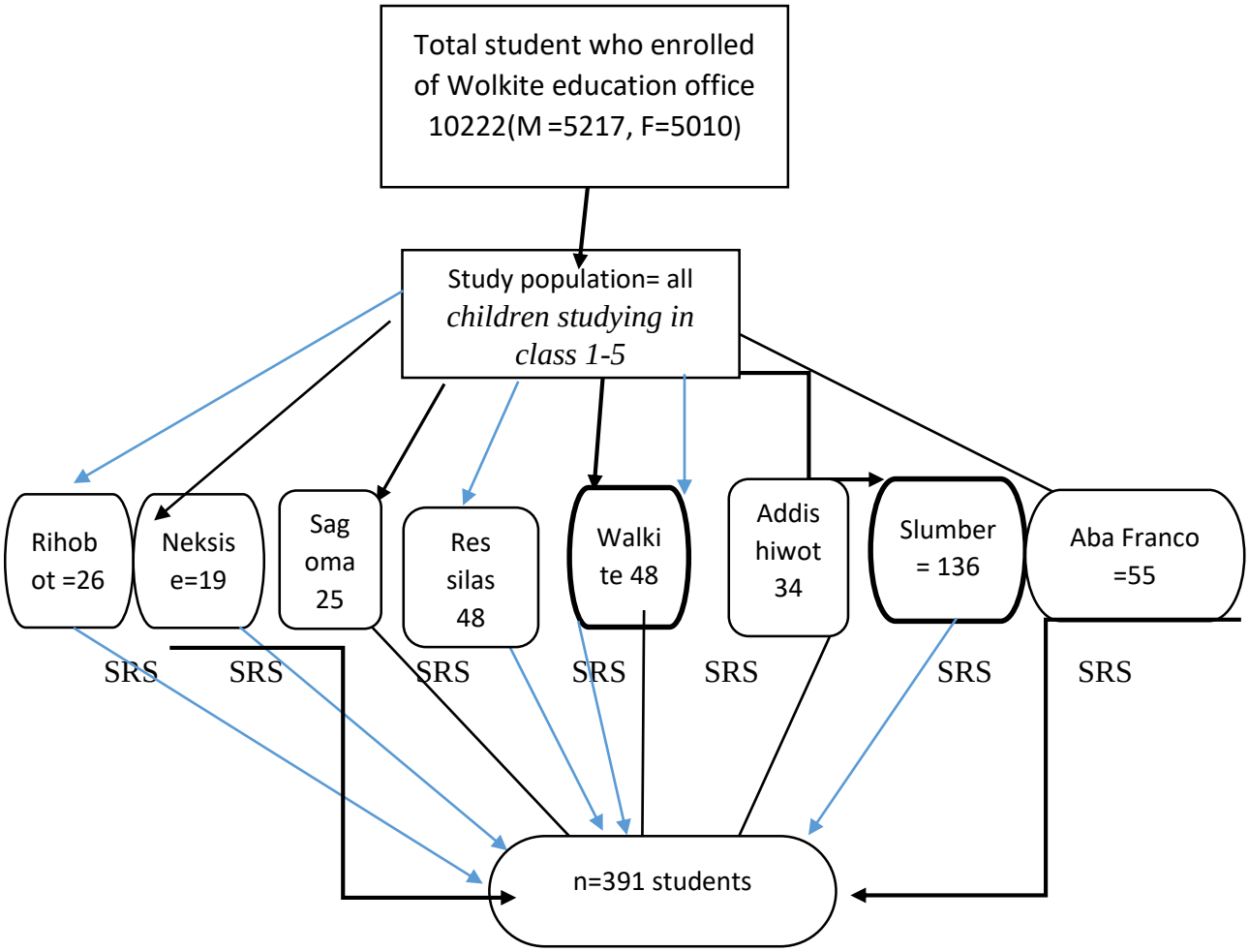


Figure 3: Schematic presentation of sampling technique of proportionally allocated in each school Wolkite Town primary Schools, Guraghe Zone, Ethiopia, 2023.

Among 10222 enrolled students, 391 study participants were selected by Simple random sampling (SRS)

4.6. DATA COLLECTION INSRUMENT AND PROCEDURE

4.6.1 DATA COLLECTION INSTRUMENT (TOOLS)

Data were collected by preparing questionnaire adapted from previous related studies that was initially prepared in English and then translated into Amharic to collect the data. Primary data was collected using structured questionnaire and by anthropometric measurement. The structured questionnaires comprised mainly of details on household profiles like age, sex, education level and occupation of household members and household size. Educational performance of students was assessed using semester examination mark obtained from the overall four subject average. The date of birth for each child was inquired from the caretaker/mother and school registers also checked.

Anthropometric measurements taken for the children included:

Height: The height of children was measured using stadiometer placed on hard flat surface with line of sight perpendicular to the horizontal surface. Children were made to stand bare foot on height board and with feet parallel and joined together and with heels and buttock touching the wall. It was made sure that that head was held erect and hands were hung closely at the sides. The child's height will be measured to the nearest one decimal place.

Weight: Weight was measured by electronic digital weighing scale and read to the nearest 0.1 kg with minimal clothing and no shoes. Calibration was done before and after weighing every child by setting it to zero.

4.6.2 DATA COLLECTORS

Data collectors were 10 students who completed grade 10 and are fluent speaker of the local language and 3 BSC nurse supervisors recruited. Training was given for three days on the objective of the study, method of data collection, interview techniques and procedures for data collectors and supervisors.

4.6.3 DATA COLLECTION PROCEDURE

Data were obtained from the sampled school, face to face interviewing at school and Anthropometric measurements taken for the students. The completeness of questioner was checked every day by the supervisors.

4.7. VARIABLES

Study variables was categorized into two groups: Dependent variables and independent variables.

4.7.1 DEPENDENT VARIABLE

Academic performance

4.7.2 INDEPENDENT VARIABLES

a) **Socio-demographic variables:** ethnicity, family size, income, occupation, education, religious, and number of sibling.
b) **Nutritional status:** under wt., wasted, and stunting.
c) **Associated factor:** Attending school, Child immunization and Absenteeism.

4.8. DATA PROCESSING AND ANALYSIS

The data were checked, edited, coded for completeness and consistency. And entered in to Epi-data version 3.1 software packages. Then exported to SPSS version 23 for further analysis. The Descriptive analysis was used to compute frequencies and percentage. Binary logistic regression was done to identify factors associated. All variables that have significant association in the binary logistic regression (p-value < 0.25) were entered in to the model. Multivariable logistic regression model were done to identify factors associated with academic performance. Finally significant statistical association was declared by using adjusted odd ratio, and 95% confidence intervals. The data were presented in different table and Antro-plus software was used to calculate WHO Standards. Z-scores of height-for-age and BMI-for-age for each child were calculated based on the WHO criteria and curves were made and educational performance of student was assessed using semester examination mark obtained for the overall four subject average.

4.9. DATA QUALITY ASSURANCE

The data quality was ensured before data collection, during data collection, coding, entry and analysis. Before data collection pre-testing the questionnaire and adequate training was provided to data collectors and supervisors. During data collection, adequate follow up and supervision were provided to data collectors by supervisors. The filled questionnaires were checked for completeness, accuracy, and consistency by supervisors after the data collection on daily base. Consequently, any problems encountered were discussed among the survey team and solved immediately. Double entry verification was employed to assure quality of data. The questionnaire were prepared first in English and translated into Amharic language and retranslated back to English by other person to check for consistency. The questionnaire was pre-tested on 5% of the sample size other than the sampled school in the town before data collection period, which were not included in the main data analysis to identify the clarity of question, sequence of questions, and gap on data collector and also to familiarize the data collectors with instruments.

4.10. OPERATIONAL DEFINITION AND DEFINITION OF TERMS

Academic performance : was the dependent variable for the study and operationally measured by taking two semester's average score result of the total subjects obtained from the individual child's semester grade report and considered as good if it is more than the mean academic performance and poor if less than the mean academic performance. Students grade report cards taken as measure of academic performances (Zaini MZ et al., 2005).

Nutritional status: is the child's state of the body which is determined by anthropometric measurement indices as stunted, wasted, underweight or overweight based on the WHO standard reference 2007 (39).

Anthropometric measurements: is the nutritional status measurement method of primary school children to identify whether they are stunted, wasted underweight or overweight.

Malnutrition: is a poor nutritional status of primary school children which is expressed in anthropometric indices when the Z-scores for the WHO standards of 2007 are less than or equal to minus two (Z-scores < -2SD) or more than plus one for BAZ (z-score > +1 SD).

Stunting: indicates the nutritional status of the study participants when their height for age z-score is less than or equal to minus two (HAZ < -2SD) for the WHO standard reference 2007.

Well nourished: indicate children's nutritional status which is measured as HAZ greater than minus two standard deviation (HAZ> -2 SD) to the WHO reference 2007.

Underweight: indicates the child's nutritional status among the study participants which is measured as body mass index for age z-score less than or equal to minus two (BAZ<-2SD) of the WHO standard reference 2007.

Wasting: is the nutritional status of primary school children aged 7-10 years and expressed in weight for age z-score less than or equal to minus two (WAZ < -2SD) of the WHO standard reference 2007.

Overweight: is the school age children nutritional status which is measured in terms of body mass index for age z-score greater than or equal to plus one (BAZ ≥ +1 SD) of the WHO standard reference 2007.

Primary school children: - Children who attend primary school (one to five grade) and are in the age group of 6-14 years. (ESDP V, 2015)

Absenteeism: the student not attended at school during the school hour for more than five day in academic semester.

4.11 ETHICAL CONSIDERATION

Ethical clearance was obtained from ethical review board collage of medicine and health sciences, Wolkite University. Official letter of co-operation also was written to Wolkite town administration. Letter of co-operation, which obtained from the education desk of the town submitted to each Keble's administrative. Verbal consent from parents/care taker of study subjects was obtained and the objective of the study was explained to them. Privacy and confidentiality of collected information was ensured at all level.

4.12 DISSEMINATION PLAN

The finding of this study was presented to Wolkite University, College of Health Science and Medicine School of Public Health and then distributed to Guragea Zone Health Department, Guragea Zone Education Department, Guragea Zone Women, Child and Youths Department, Wolkite Town Health Office, Wolkite Town Education Office and Wolkite Town Women, Child and Youths Office. The finding may also presented in different seminars, meeting and workshop.

CHAPTER FIVE; RESULTS AND DISCUSSIONS

5.1. RESULTS

A total of 391 students who had available during the study period in the school were interviewed in wolkite town, Guragea, south west Ethiopia. The data was collected and analyzed using the Statistical Package for Social Science (SPSS). The response rate, Table and Figure are provided to supplement the narrative description of data and analyses of result.

5.1.1. SOCIO DEMOGRAPHIC CHARACTERISTIC

A total of 391 public and private primary school children were enrolled with 99.8% response rate. Out of these participants, (27.6%) were males and (72.2%) were females with mean age of (9.17±1.438SD) and (10.8±1.65SD) respectively. Almost all the respondent were female. About religious (43.7%) were orthodox, (38.9%) were Muslim religious respectively.

Majority of the participants, (95.4%) Of the respondents live in urban setting. (68 %) are Gurage and also 65 (16.6%) are kebena of them Ethnicity are respectively. The educational level were (18.7 %), (20.5 %), (29.4 %) and (31.5 %) of the respondent are illiterate, primary, secondary and tertiary level on educational status are respectively. Majority of the participants, (97.7%) were married. More than half of the participants, (71.4%) were from a family size of three and five, (12.8%) were one and two and also (15.4 %) were family size above five. From the result in the table below. (See Table 1 below).

Table 1: Socio-demographic characteristic of primary school students Wolkite town.

Variable	Category	Frequency (n)	Percentile (%)
Sex	Male	108	27.6
	Female	283	72.2
Religious	Orthodox	171	43.7
	Muslims	152	38.9
	Catholic	52	13.3
	Protestant	14	3.6
	Other	02	0.5
Residence	Urban	373	95.4
	Rural	18	4.6
Ethnicity	Gurage	266	68
	Kebena	65	16.6
	Oromo	43	11
	Other	17	4.3
Profession	Governmental	235	60.1
	Merchant's	98	25.1
	Farmer	26	6.6
	Others*	32	8.2
Educational level	Illiterate	73	18.7
	Primary	80	20.5
	Secondary	115	29.4
	Collage and above	123	31.5
Marital status	Married	382	97.7
	Died	5	1.3
	Divorced	4	1
Family size	<2	50	12.8
	3-5	279	71.4
	>5	62	15.4

N.B. Ethnicity others: Wolayita and Amhara.

5.1.2. NUTRITIONAL STATUS

The nutritional status of the study participants was measured by using WHO AnthroPlus software measurement techniques and the results of the study participants have been put by referring the world health organization cut points. The prevalence of underweight, wasting and stunting was 17.4%, 12% and 9.7%, respectively. Regarding breakfast, More than half of the participants, (66.5%) ate breakfast before going to school and more than half, 55% of them ate breakfast always, (70.6 %) Child eat food with sibling and Majority of the participants, (98%) were headed by both father and mother. (See Figure 4 below)

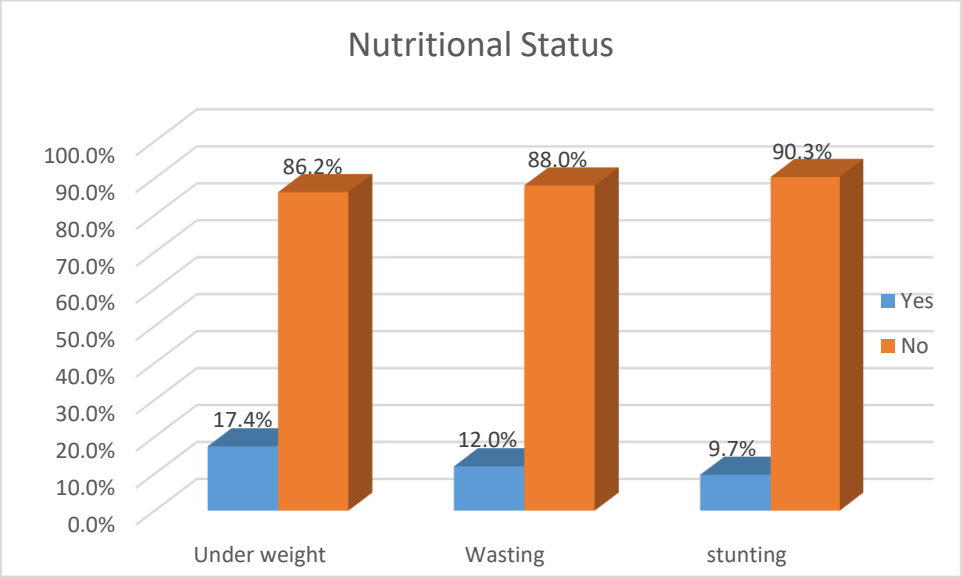


Figure 4: Nutritional status of primary school students in Wolkite town.

5.1.3. SCHOOL, ENVIROMENTAL AND ACADEMIC PERFORMANCCE

Among all study students Majority of the participants, 85.4 % and 85.4 % of the students was punished by teacher for their doing wrong activity and not doing homework. Almost all of students have habit of studying at night time (94.6 %) and more than half of the participants, (78.5%) of the students like their school and has smooth relationship with teachers. The mean for average score in Amharic subjects was 61.09(±11.01SD), the mean for average score in English subjects was 62.51(±11.07SD), the mean for average score in Math's subjects was 61.68(±11.029SD), the mean for average score in Sciences subjects was 63.00(±11.43SD), (See table 2 below).

Table 2: Average score for each subjects of primary school students in Wolkite town.

	average score in Amharic	average score in English	average score in math's	average score in sciences	Overall average score
Mean	61.09	62.51	61.68	63	62.07
Median	64.00	64	64	65	64.5
Mode	70	64a	70	71	73
Std. Deviation	11.01	11.077	11.029	11.43	10.59

The Statistical association between Nutritional statuses with academic performance of primary students were in both private and governmental school students are negatively correlated nutritional statues with academic performance. The Pearson correlation measures the strength of the linear relationship between two variables with a value Pearson correlation is negative linear correlation between Nutritional statuses with academic performance (See table 3 below).

Table 3: Statistics association between Nutritional statuses with academic performance.

		Academics Performance	Under wts	Wasting	Stunting
Academics Performance	Pearson correlation	1	-0.067	0.077	0.066
	Sig (2- tailed)		0.172	0.130	0.193
	N	391	391	391	391
Under wts	Pearson correlation	-0.067	1	-0.004	0.032
	Sig (2- tailed)	0.172		0.943	0.532
	N	391	391	391	391
Wasting	Pearson correlation	0.077	0.004	1	-0.121*
	Sig (2- tailed)	0.130	0.943		0.016
	N	391	391	391	391
Stunting	Pearson correlation	0.066	0.032	-0.121*	1
	Sig (2- tailed)	0.193	0.532	0.016	
	N	391	391	391	391

*** Correlation significant at the 0.05 level (2- tailed)**

The overall academic performance of primary school students in Wolkite town in both governmental and private school. In this study the mean academic performance for the study participant were 62.07(±10.59SD), with regard to among all study students (14 %) had poor academic performance achievements. Additionally (86%) had good academic performance achievements on semester average. (See figure 5 below).

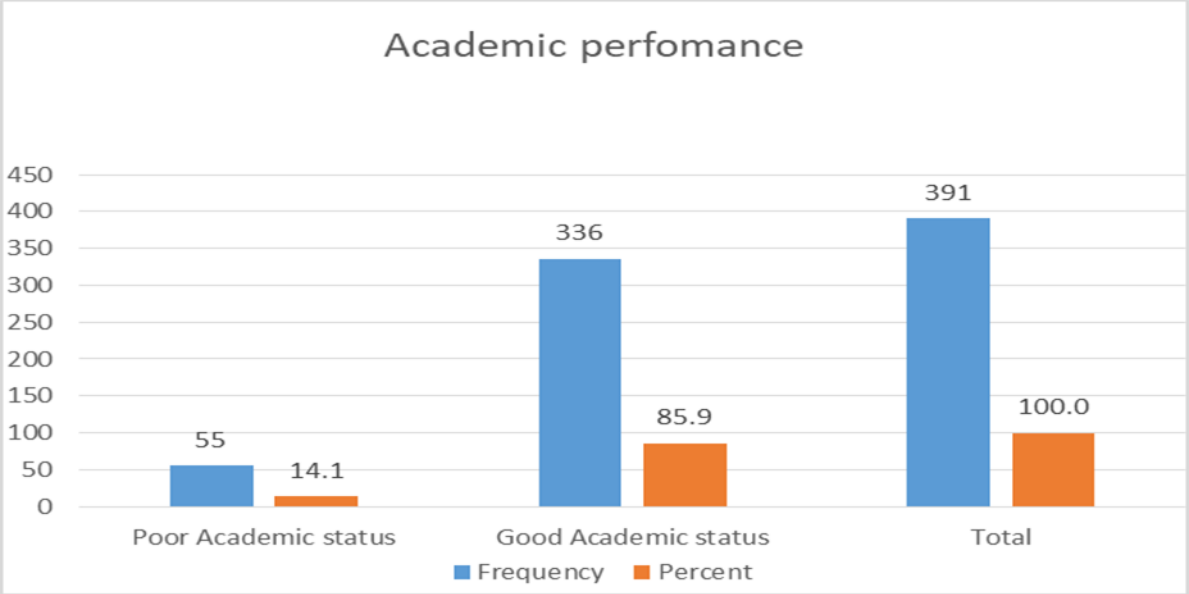


Figure 5: Overall academic performance of primary school students in Wolkite town.

5.1.4. FACTORS ASSOCIATED WITH ACADEMIC PERFORMANCE OF SCHOOL AGE CHILDREN

In this Below Bi-variable logistic regression of variable and Multivariable logistic regression of variables were as follow.

5.1.4.1. Bi-variable logistic regression of variable and academic performance of students

Bi-variable logistic regression analysis was done to see the effect of independent variable on dependent variable. The regression result of this finding generally show that there was statically significantly positive relationship between stunting and Academic performance with AOR= 0.39[95%CI: 0.14, 1.02]. The regression result of this finding generally show that there was statically significantly positive relationship between absent from school and Academic performance with AOR= 0.47[95%CI: 0.25, 0.90]. The regression result of this finding generally show that there was statically significantly positive relationship between habit of study at night and Academic performance with AOR= 3.76[95%CI: 1.28, 11.02] and The regression result of this finding generally show that there was statically significantly positive relationship between happy going to school and Academic performance with AOR= 3.76[95%CI: 1.28, 11.02] were all mentioned above variable are significantly associated with Academic performance. On the other hand the Head of house of respondents, religious, Ethnicity, Educational level, Professions, Comfortable study in house, Knowledge about malnutrition, Underweight and Wasting are show statically associated negative relationship between to Academic performance.

Table 4: Bi-variable logistic regression analysis results of academic performance.

Variables	Category	Academic performance		COR	P-value (< 0.05)
		Poor ≤ 50 % N (%)	Good ≥ 50% N (%)		
Who was respondents	Mother Father	45(81.8%) 10(18.2%)	238(70.8%) 98(29.2%)	1.85(0.89,3.82) 1.00	0.09
Religious of respondents	Orthodox Muslims Catholic Protestant Other	22(40%) 20(36.4%) 9(16.4%) 3(5.5%) 1(1.8%)	149(44.3%) 132(39.3%) 43(12.8%) 11(3.3%) 1(0.3%)	6.77(0.40,112.24) 6.60(0.39,109.78) 4.77(0.27,83.71) 3.66(0.17,77.55) 1.00	0.18 0.18 0.28 0.40
Ethnicity of respondents	Gurage Kebena Oromo Other	40(72.7%) 9(16.4%) 3(5.5%) 3(5.5%)	226(67.3%) 56(16.7%) 40(11.9%) 14(4.2%)	1.21(0.33,4.40) 1.33(0.32,5.58) 2.85(0.52,15.83) 1.00	0.77 0.69 0.23
Educational level	Illiterate Primary Secondary Collage and above	10(18.2%) 15(27.3%) 18(32.7%) 12(21.8%)	63(18.8%) 65(19.3%) 97(28.9%) 111(33%)	0.68(0.28,1.66) 0.46(0.21,1.06) 0.58(0.27,1.27) 1.00	0.40 0.06 0.17
Professions of respondents	Governmental Merchant's Farmer Others	29(57.2%) 17(30.9%) 2(3.6%) 7(12.7%)	206(61.3%) 81(24.1%) 24(7.1%) 25(7.4%)	1.98(0.79,5.01) 1.33(0.49,3.58) 3.36(0.63,17.81) 1.00	0.14 0.56 0.15
Habit of study	Mid night Night	7(12.7%) 48(87.3%)	14(4.2%) 322(95.8%)	3.35(1.28,8.73) 1.00	0.01
Absence from school	Yes No	27(49.1%) 28(50.9%)	112(33.3%) 224(66.7%)	1.93(1.08,,3.43) 1.00	0.02
Happy going to school	No Yes	39(70.9%) 16(29.1%)	268(79.8%) 68(20.2%)	0.62(0.33,1.17 1.00	0.14
Comfortable study in house	Yes No	50(90.9%) 5(9.1%)	322(95.8%) 14(4.2%)	0.43(0.15,1.260 1.00	0.12
Knowledge about mal nutrition	No Yes	41(74.5%) 14(25.5%)	278(82.7%) 58(17.3%)	0.61(0.31,1.19) 1.00	0.14
Under weight	No Yes	49(89.1%) 6(10.9%)	274(81.5%) 62(18.5%)	1.84(0.75,4.51) 1.00	0.17
Wasting	No Yes	45(81.8%) 10(18.2%)	299(89%) 37(11%)	0.56(0.26,1.19) 1.00	0.13
Stunting	Yes No	47(85.5%) 8(14.5%)	306(91.1%) 30(8.9%)	0.57(0.25,1.33) 1.00	0.19

5.1.4.2 Multivariable logistic regression of variables and academic performance of students

The model fitting multivariate analysis was checked with Hosmer and Lemeshow goodness of fit and Adjustment of variable using logistic regression was made for predicting variable were associated with Academic performance. Independent variable were significantly associated with Academic performance at 0.25 and less level of significance from bi-variant analysis were entered in to Multivariable logistic regression model p-value < 0.05 were considered as statically significant and odd ratio with 95% CI to see the important association.

Table 5: Multivariable logistic regression analysis results of academic performance.

Variable	Category	Academic performance		COR 95% CI	AOR 95% CI	P-value (< 0.05)
		Poor ≤ 50 %	Good ≥ 50%			
Who was respondents	Mother Father	45(81.8%) 10(18.2%)	238(70.8%) 98(29.2%)	1.85(0.89,3.82) 1.00	2.05(0.94,4.53) 1.00	0.07
Religious of respondents	Orthodox Muslims Catholic Protestant Other	22(40%) 20(36.4%) 9(16.4%) 3(5.5%) 1(1.8%)	149(44.3%) 132(39.3%) 43(12.8%) 11(3.3%) 1(0.3%)	6.77(0.40,112.24) 6.60(0.39,109.78) 4.77(0.27,83.71) 3.66(0.17,77.55) 1.00	2.73(0.13,56.85) 2.63(0.12,55.75) 1.87(0.08,42.11) 1.62(0.05, 45.37) 1.00	0.51 0.52 0.69 0.77
Ethnicity of respondents	Gurage Kebena Oromo Others	40(72.7%) 9(16.4%) 3(5.5%) 3(5.5%)	226(67.3%) 56(16.7%) 40(11.9%) 14(4.2%)	1.21(0.33,4.40) 1.33(0.32,5.58) 2.85(0.52,15.83) 1.00	0.63(0.13, 2.89) 0.81(1.60. 4.10) 1.65(0.24, 11.37) 1:00	0.55 0.79 0.61
Educational level	Illiterate Primary Secondary Collage and above	10(18.2%) 15(27.3%) 18(32.7%) 12(21.8%)	63(18.8%) 65(19.3%) 97(28.9%) 111(33%)	0.68(0.28,1.66) 0.46(0.21,1.06) 0.58(0.27,1.27) 1.00	0.99(0.36,2.68) 0.42(0.17,1.04) 0.44(0.18,1.05) 1.00	0.99 0.06 0.06
Professions	Gov*tal	29(57.2%)	206(61.3%)	1.98(0.79,5.01)	2.42(0.84, 6.94)	0.10

of respondents	Merchant's Farmer Others	17(30.9%) 2(3.6%) 7(12.7%)	81(24.1%) 24(7.1%) 25(7.4%)	1.33(0.49,3.58) 3.36(0.63,17.81) 1.00	1.18(0.40. 3.46) 4.14(0.67, 25.47) 1.00	0.76 0.12
Habit of study	Night Mid night	7(12.7%) 48(87.3%)	14(4.2%) 322(95.8%)	3.35(1.28,8.73) 1.00	3.76(1.28,11.02) 1.00	0.01*
Absence from school	Yes No	27(49.1%) 28(50.9%)	112(33.3%) 224(66.7%)	1.93(1.08,,3.43) 1.00	0.47(0.25,0.90) 1.00	0.02*
Happy going to school	No Yes	39(70.9%) 16(29.1%)	268(79.8%) 68(20.2%)	0.62(0.33,1.17 1.00	3.76(1.28, 11.02) 1.00	0.01*
Comfortable study in house	Yes No	50(90.9%) 5(9.1%)	322(95.8%) 14(4.2%)	0.43(0.15,1.260 1.00	0.46(0.13,1.66) 1.00	0.23
Knowledge about mal nutrition	No Yes	41(74.5%) 14(25.5%)	278(82.7%) 58(17.3%)	0.61(0.31,1.19) 1.00	0.87(0.40,1.89) 1.00	0.73
Under weight	No Yes	49(89.1%) 6(10.9%)	274(81.5%) 62(18.5%)	1.84(0.75,4.51) 1.00	2.19(0.83,5.79) 1.00	0.11
Wasting	No Yes	45(81.8%) 10(18.2%)	299(89%) 37(11%)	0.56(0.26,1.19) 1.00	0.51(0.21,1.26) 1.00	0.14
Stunting	Yes No	47(85.5%) 8(14.5%)	306(91.1%) 30(8.9%)	0.57(0.25,1.33) 1.00	0.39(0.14,1.02) 1.00	0.05*

N.B. "*" Significant at 95% CI and P –Value < 0.05

5.2. DISCUSSIONS

This study attempted to assess academic performance and its association with nutritional status among Primary School Students in Wolkite town Gurage Zone, Ethiopia, 2023. Nutritional status is the state of person`s health in term of the nutrients in his or her diet. Nutritional assessment are anthropometric, biochemical, clinical and dietary. Anthropometric assessment measurement of size, weight, height, MUAC, head circumference and skin fold. In this study the mean academic performance for the study participant were 62.07(±10.59SD) which is lower achievement when compared with study done Hawa Gelan in Oromia, Ethiopia 67.2(± 15 SD)(14,15). From the total students 61% of students are stunting more likely poor academic performance in compare to those students who were not-stunting. In this study the prevalence of stunted was 9.7%. This result was lower than to study done on September 2019 Oromiya, Ethiopia comparative cross- sectional was 10.5% (21) and also study done Cross-sectional survey conducted in S.N.N.P.R, Ethiopia revealed that the prevalence of stunting was 16.9 % which is higher than to this study (40)

An anthropometric assessment conducted in Addis Ababa among primary school children revealed that students using National center for health statistics reference data, the prevalence of stunting were 9.8% (31) in which the stunting were significantly comparable with the present study. The difference may be attributed to factor associated with socio-economic and demographic status, the study area.

The finding obtained in the study indicated that there was significant relationship between Happy going to school and academic achievement in primary school students. The result showed that from the total students those was happy going to school have four times more likely good academic performance in compare to those who are not happy going to school. Happiness corresponds to what we feel from both inside and outside (41). Academic achievement can be expressed as one of the most important criteria for the success of education and educational activities offered at school (42).

The evaluation of the finding obtained from the current study as a whole showed that there were significant association between happy going to school and academic achievement in school students. From this point of view, we can say that there were positive significant relationship between with happiness and academic achievement. Moreover, the findings obtained from the study indicated that significantly explained both academic achievement and happiness. Accordingly, increasing the level of happiness in school students will increase their academic achievement and happiness. In this context, based on research findings, we can say that interventions based on the development of happiness are an important common point that should be emphasized in studies conducted to increase both achievement and happiness level(43).

The finding obtained in the study indicated that there was significant relationship between absent from school and academic achievement in primary school students. The result showed that from the total students those was absent from school have 53 % more likely poor academic performance than those who are not absent from school have 47 % less likely good academic performance. School absenteeism is excused or unexcused absences from school by child. It is line with the finding who stated that interest is enduring characteristic expressed between person and a particular activity or object(43). Child who lacks interest in school activity will not be motivated to learn. School absenteeism the finding show that school absenteeism can lead to poor academic performance.

Predisposing factor of school absenteeism are lack of money for educational material, sickness prevents from going to school, Long distance from home to school, fear of teacher by doing wrong activity, fear of exam, Non-attendance due to pampering from family member, pressure from friends to be absent, Taking care of sibling and Lack of interest in school activities. Effect of school absenteeism are poor academic performance, Droop out of school and unemployment, use of substance and cannabis, Anti-social behavior and Anxiety, depression and phobia aggression cruelty(43).

Study time was recognized as an important factor for students' grade. Students need different levels of effort based on their knowledge difficulty, learning ability, and career goals. Firstly, students should invest the necessary study time if they want to get better grade. Secondly, academic performance does not need to make further requirements on the amount of study time, and the main point is to improve the learning skills. For example, they can make good use of the time and find suitable learning methods. Otherwise, it will not make much difference no matter the time invested more or less. Students should not blindly pursue the length of learning time, but should focus on the learning quality in each hour. Reasonable improvement of study efficiency can not only save learning time, but also allow students to have extra time to explore extracurricular interests. All in all, it is essential to spend enough time, but it is even more critical to get learning benefits during this period. The finding obtained in the study indicated that there was significant relationship between Habit of study at night and academic achievement in primary school students. The result showed that from the total students those was habit of study at night have four times more likely good academic performance in compare to those who are not habit of study at night(44–46).

CHAPTER SIX: CONCLUTIONS AND RECOMMENDATIONS

6.1 CONCLUSIONS

In this study with regard to academic performance among all study students (14 %) and (86%) had poor and good academic performance achievements. The prevalence of underweight, wasting and stunting was 17.4 %, 12% and 9.7 %, respectively. Stunting with 95%CI AOR= 0.39[95%CI: 0.14, 1.02], absent from school with 95%CI AOR= 0.47[95%CI: 0.25, 0.90], Habit of study with 95%CI AOR= 3.76[95%CI: 1.28, 11.02] and happy going to school with 95%CI AOR=3.76[95%CI: 1.28, 11.02] were significantly associated with Academic performance with P value < 0.05.

6.2. RECOMMENDATIONS

Accordingly the following recommendation made to the relevant bodies:

The zonal health and education bureau should work in collaboration with other organizations (NGOs) to combat malnutrition and to strengthen the positive effect of nutrition on educational achievement of primary school children. And also, they should implement nutritional interventions through school feeding programs (SFP) by mobilizing funds and work intensively over preschool programs. The town health and education bureau should be work in collaboration to combat stunting. They must collaboration work on these predictors to improve academic performance.

The school teachers should be motivate the students to attend the regular class since those students absent from school performed low in academic performance. The school teachers should be discuss with the parents regarding to their class attendance, motivate female students and create opportunity to discuss with family about student status.

Since the majority of studies done in primary school children nutritional status and educational achievement relationship were cross-sectional which does not show the causal effect of one on the other. They are also recommended to perform further study with qualitative method to get better clue on nutritional statuses with academic performance. Therefore we recommend researchers to conduct further study with strong study design to investigate the true relationship between nutritional status and academic achievement of school age children.

CHAPTER SEVEN: LIMITATIONS OF THE STUDYS

The study does not assess the clinical and biochemical nutritional status of the students which are essential for growth and development of mind. It also does not assess the children's dietary diversity and young infancy period nutritional status like exclusive breast feeding and weaning practices which might be one of the determinants of educational achievement in school age children. Finally, some important limitations of this study was cross-sectional nature of the study could not establish a cause and effect relationship between the dependent and independent variables.

REFERENCES

1. Raina SK, Sharma S, Bhardwaj A, Singh M, Chaudhary S, Kashyap V. Malnutrition as a cause of mental retardation: A population-based study from Sub-Himalayan India. J Neurosci Rural Pract. 2016;7(3):341–5.
2. FMOH. Mini Demographic and Health Survey. 2019.
3. ICF and CSA (CSA) [Ethiopia]. Ethiopia, Demographic and Health Survey. 2016.
4. EDHS. Demographic and Health Survey. 2016.
5. unicef. Children , food and nutrition. 2019.
6. Adelman S, Gilligan DO, Lehrer K. How Effective Are Food for Education Programs ? A Critical Assessment of the Evidence from Developing Countries. 2008;
7. Olack B, Burke H, Cosmas L, Bamrah S, Dooling K, Feikin DR, et al. Nutritional status of under-five children living in an informal urban settlement in Nairobi, Kenya. J Heal Popul Nutr. 2011;29(4):357–63.
8. Devries S, Dalen JE, Eisenberg DM, Maizes V, Ornish D, Prasad A, et al. A deficiency of nutrition education in medical training. Am J Med. 2014;127(9):804–6.
9. Govender I, Rangiah S, Kaswa R, Nzaumvila D. Malnutrition in children under the age of 5 years in a primary health care setting. South African Fam Pract. 2021;63(1):1–6.
10. Asmare B, Taddele M, Berihun S, Wagnew F. Nutritional status and correlation with academic performance among primary school children , northwest Ethiopia. BMC Res Notes [Internet]. BioMed Central; 2018;(December). Available from: https://doi.org/10.1186/s13104-018-3909-1
11. Getaneh Z, Melku M, Geta M, Melak T, Hunegnaw MT. Prevalence and determinants of stunting and wasting among public primary school children in Gondar town, northwest, Ethiopia. BMC Pediatr. BMC Pediatrics; 2019;19(1):1–11.
12. Nyaradi A, Li J, Hickling S, Foster J, Oddy WH. The role of nutrition in children's neurocognitive development, from pregnancy through childhood. Front Hum Neurosci. 2013;7(March):35–77.

13. Guush Berhane, John Hoddinott NK and AM. The Productive Safety Net Programme in Ethiopia Impacts on children ’ s schooling , labour and nutritional status January 2017 Impact Evaluation Report 55. 2017.

14. Abebe F, Geleto A, Sena L, Hailu C. Predictors of academic performance with due focus on undernutrition among students attending primary schools of Hawa Gelan district , Southwest Ethiopia : a school based cross sectional study. BMC Nutr. BMC Nutrition; 2017;3(30):1–8.

15. Admasie A, Ali A, Kumie A. Assessment of demographic , health and nutrition related factors to a school performance among school children in Ethiopia. Ethiop J Heal Dev. 2013;27(2):104–10.

16. Ayalew M, Bayray A, Bekele A, Handebo S. Nutritional Status and Educational Performance of School-Aged Children in Lalibela Town Primary Schools , Northern Ethiopia. Hindawi, Int J Pediatr. 2020;2020:1–20.

17. Tigist Eniyew, Fikirtemariam Abebe, Debela Gela AA and DT. Nutritional status of primary school students and its association on academic performance in north-central Ethiopia : Cross sectional study. 2019.

18. Koirala S. COMPARATIVE STUDY ON NUTRITIONAL STATUS OF PRIMARY LEVEL SCHOOL CHILDREN STUDYING IN PRIVATE AND PUBLIC SCHOOLS OF BABIYA VDC , SUNSARI by Sukriti Koirala Department of Nutrition & Dietetics COMPARATIVE STUDY ON NUTRITIONAL STATUS OF PRIMARY LEVEL SCHOOL. 2018.

19. Chandramohan S, Khan J, Raj J. Nutritional Status Assessment of Primary school children in Udupi District Karnataka : A Cross Sectional Study. Int J Appl Res Stud. 2015;4(3):1–7.

20. Frye KH. ASSESSING THE NUTRITIONAL STATUS OF PRIMARY SCHOOL by. 2013.

21. Amare B, Moges B, Fantahun B, Tafess K, Woldeyohannes D, Yismaw G, et al. Micronutrient levels and nutritional status of school children living in Northwest

Ethiopia. Nutr J. 2012;11(108):1–8.

22. Abdulahi A, Shab-Bidar S, Rezaei S, Djafarian K. Nutritional Status of Under Five Children in Ethiopia: A Systematic Review and Meta-Analysis. Ethiop J Health Sci. 2017;27(2):175–88.

23. Eshete H, Abebe Y, Loha E, Gebru T, Tesheme T. Nutritional Status and Effect of Maternal Employment among Children Aged 6-59 Months in Wolayta Sodo Town, Southern Ethiopia: A Cross-sectional Study. Ethiop J Health Sci. 2017;27(2):155–62.

24. Katie Adolphus CLL and LD. The effects of breakfast on behavior and academic performance in children and adolescents. Front Hum Neurosci. 2013;7(August):1–28.

25. Bhutta ZA, Berkley JA, Bandsma RHJ, Kerac M, Trehan I, Briend A. Severe childhood malnutrition. Nat Rev Dis Prim. 2017;3(1).

26. Biadgilign S, Shumetie A, Yesigat H. Does economic growth reduce childhood undernutrition in Ethiopia? PLoS One. 2016;11(8):1–14.

27. Holt EE. High school student â€TM s nutritional status and their academic performance. CSUSB ScholarWorks. 2007.

28. Terefe B, Adraw Z, Woyiraw W, Damtie G, Temesgen SA. Nutritional status and its association with academic performance among 5-8 grade students in Debremarkos second cycle primary school , Amhara Regional. Ethiop j public Heal nutr. 2021;4(2):103–9.

29. Ndava, Miriam, Lovemore Musemwa, Simbarashe Ndhleve LZ. Predictors of Nutritional Status and Academic Performance of Under-Five Early Childhood Development Children in Zimbabwe. J Int Coop Dev. 2021;4(2):14–26.

30. Müller O, Krawinkel M. Malnutrition and health in developing countries. C Can Med Assoc J. 2005;173(3):279–86.

31. Degarege D, Degarege A, Animut A. Undernutrition and associated risk factors among school age children in Addis Ababa , Ethiopia. BMC Public Health. ???; 2015;15(375):1–9.

32. Bain LE, Awah PK, Geraldine N, Kindong NP, Sigal Y, Bernard N, et al. Malnutrition in Sub - Saharan Africa: Burden, causes and prospects. Pan Afr Med J. 2013;15:1–9.

33. Medhin G, Hanlon C, Dewey M, Alem A, Tesfaye F, Worku B, et al. Prevalence and predictors of undernutrition among infants aged six and twelve months in Butajira , Ethiopia : The P-MaMiE Birth Cohort. 2010;

34. Wolde M, Berhan Y, Chala A. Determinants of underweight , stunting and wasting among schoolchildren. BMC Public Health. 2015;15(8):1–9.

35. Mohajan HK. Food and Nutrition Scenario of Kenya. Am J Food Nutr. 2014;2(2):28–38.

36. Hedwig Acham, JoyceK. Kikafunda, MarianK. Malde WO-T& AE. policy school health policy. Food Nutr Res. 2012;6628(56):11217.

37. Amare B, Moges B, Moges F, Fantahun B, Admassu M. Nutritional status and dietary intake of urban residents in Gondar , Northwest Ethiopia. BMC Public Health. 2012;12(752):2–10.

38. Prado EL, Dewey KG. Nutrition and brain development in early life. Nutr Rev. 2014;72(4):267–84.

39. WHO. Child growth standards and the identification of severe acute malnutrition in infants and children. 2009.

40. Awel AA, Lema TB, Hebo HJ. Nutritional status and associated factors among primary school adolescents of pastoral and agro- pastoral communities , Mieso Woreda , Somali Region , Ethiopia : A comparative cross-sectional study. J Public Heal Epidemiol. 2016;8(11):297–310.

41. Willms JD. Student engagement at school: A sense of belonging and participation. OECD Retrieved from www pisa oecd org on March. 2019.

42. Kasikci F, Ozhan MB. Prediction of Academic Achievement and Happiness in Middle School Students : Inq Educ. 2021;13(2).

43. Amalu MN, Abang KB. School absenteeism among primary school pupils in cross river state: Psychological implication for national development. Glob Jounrnal Educ Res.

2016;15:49–56.

44. Jafari H, Aghaei A, Khatony A. Relationship between study habits and academic achievement in students of medical sciences in. Dove Press. 2019;

45. Walck-shannon EM, Rowell SF, Frey RF. To What Extent Do Study Habits Relate to Performance ? CBE—Life Sci Educ •. 2021;1–14.

46. Atsiaya E, Maiyo JK. Study of the relationship between study habits and academic achievement of students : A case of Spicer Higher Secondary School , India. Int J Educ Adm Policy Stud. 2019;7(7):134–41.

ANNEXES

Annex I: Consent form

Consent form

TITLE OF STUDY [Association b/n nutritional status with academic performance and its association among primary school at Wolkite Town, Guragea, Southwest Ethiopia.]

PRINCIPAL INVESTIGATOR

[Minyahil Mengistu]

[Public health]

[Wolkite, Gubrea]

[0911786628]

[minyahilmengistu@gmail.com]

PURPOSE OF STUDY

You are being asked to take part in this research. Before you decide to participate in this study, it is important that you understand why the research is being done and what it will involve. Please read the following information carefully. Please ask the researcher if there is anything that is not clear or if you need more information.

The purpose of this study is to assess academic performance and its association with nutritional status among Primary School Students in Wolkite town Gurage Zone.

STUDY PROCEDURES

The procedures, preferably in chronological order, which will be employed in the study. We will measure the weight and height of students. The amount of time required of participants per session is 25 minute, if applicable.

RISKS

There is no any risk on the study

BENEFITS

On this survey you can get benefit from it such as

A) Help to plan suitable nutritional and health programs for this school based on the realities revealed from this study.

B) Encourage government and other stake holders for the development of programs and policies related to nutrition.

CONFIDENTIALITY

Your responses to this [survey] will be anonymous. Please do not write any identifying information on your [survey]. Or for the purposes of this research study, your comments will not be anonymous. Every effort will be made by the researcher to preserve your confidentiality including the following: [State measures taken to ensure confidentiality, such as those listed below:

Assigning code names/numbers for participants that will be used on all research notes and documents

Participant data will be kept confidential except in cases where the researcher is legally obligated to report specific incidents. These incidents include, but may not be limited to, incidents of abuse and suicide risk.

CONTACT INFORMATION

If you have questions at any time about this study, or you experience adverse effects as the result of participating in this study, you may contact the researcher whose contact information is provided on the first page. If you have questions regarding your rights as a research participant, or if problems arise which you do not feel you can discuss with the Primary Investigator, please contact the Institutional Review Board at WKU.

VOLUNTARY PARTICIPATION

Your participation in this study is voluntary. It is up to you to decide whether or not to take part in this study. If you decide to take part in this study, you will be asked to sign a consent form. After you sign the consent form, you are still free to withdraw at any time and without giving a reason. Withdrawing from this study will not affect the relationship you have, if any, with the researcher. If you withdraw from the study before data collection is completed, your data will be returned to you or destroyed.

CONSENT

I have read and I understand the provided information and have had the opportunity to ask questions. I understand that my participation is voluntary and that I am free to withdraw at any time, without giving a reason and without cost. I understand that I will be given a copy of this consent form. I voluntarily agree to take part in this study.

Participant's signature _____ Date _____

Investigator's signature _____ Date _____

Questionnaire

Appendix II: Questionnaires

Confidentiality and Consent

[Interviewer: Please read the following paragraph to the respondent]

Dear Respondent,

Good morning/good afternoon. Thank you for your willingness to with me today. I am_____. The purpose of my visit is to ask you some questions related to nutritional status.

Your name will not be written on this form, and will never be used in connection with any of the information you tell me. The data will be kept confidential. Your frank answers will help us to better understand the academic performance and its association with nutritional status among Primary School Students aged 6-14 years studying in private and public schools in Wolkite town Gurage Zone SNNPR, Ethiopia.2022 among school children studying in class 1-5 .We would greatly appreciate your help in responding to the interview. The interview will take 20-30 minutes. Would you be willing to participate?

Agree _____ Disagree_____

Name and Signature of Interviewer:

Name_____Signature_____Date_____

Supervisor's Remark: _____

Name _____ Signature_____

General information

a) Name of school ……. Code number ……

b) Type of school (governmental, □ non- governmental□)

c) Grade of student ……

i) Details about family

1. Socio-demographic Characteristics Questions

S.NO	Question	Alternative answers
1.	How old are you respondent (years) _____	
2.	Sex of respondent?	Male □ b) female□
3.	Respondents residence area?	1. Urban 2.Rural
4.	Religion?	1. Orthodox 2. Muslim 3. Protestant 4. Catholic 5. Others (Specify)……..
5.	Ethnicity?	1. Guraghae 2.Amhara 3.wolita 4. Oromo 5. Kebena. 6. Others (Specifiy)……
6.	Educational status of the respondent?	1. Illiterate 2. Primary 3. Secondary 4. College and above
7.	What is your profession?	1. Government employer 2.Merchant 3. Farmer 4. Other (state) ----------
8.	What is your marital status?	1. Single 2.Married 3. Widowed 4.Divorced
9.	Family size?	1. 2 2. 3-5 3. >5

ii) Detail about children

S.NO Question Alternative answers

1. Sex of child a) male b) female
2. Age of child (months) ……
3. Weight of child (kg) ……
4. Height of child (cm) …….
5. Child eat food with sibling a) Yes b) NO
6. Is it child living with family a) Yes b) NO?

iii) Detail about children academic performance

S.NO Question Alternative answers

1. Is it child eat breakfast before going to school? a) Yes b) NO
2. Is it child punished by teacher for their doing wrong activity in class?

   a) Yes b) NO
3. Is it child punished by teacher for their not doing homework?

   a) Yes b) NO

4. At which time habit of studying? a. Night time b) mid night c) day time
5. Are you study regularly? a) Yes b) NO
6. Are you absent from school? a) Yes b) NO?
7. Average score of children in each subjects

   a) Amharic ……. b) Math's…….

   c) English …… d) Science……. e) Others (Specify)…….

2. Personal and environmental factor

I) Detail about children

S.NO	Question	Alternative answers
1.	Do you have vegetable in house?	a) Yes b) NO
2.	Are you happy going to school?	a) Yes b) NO
3.	Are you comfortable to study in house?	a) Yes b) NO
4.	Which area was preferred to study?	a) House b) school library
5.	Type of light used for study?	A) Electricity b) kerosene c) Candled. D) Others (specify)

ii) Detail about family

S.NO	Question	Alternative answers
1.	Do you know about malnutrition?	a) Yes b) NO
2.	If you answer is yes what the main cause of malnutrition is?	a) Lack of food b) Un- hygienic practice c) Reason not known
3.	What is your source of Drinking Water?	A) River b) Well c) Water tape d) other (specify)……..
4.	Do you have purify drinking water?	a) Yes b) NO
5.	Do you have toilet in your home?	a) Yes b) NO
6.	Do you used iodized salt on your meal?	a) Yes b) NO
7.	Do you have domestic animal at home?	a) Yes b) NO

ፍቃደኝነት መጠየቂያ

በመጀምርያ የከበረ ሰላምታዬን አቀርባለሁኝ።

እኔ_____እባለለሁኝ። እዚህ የመጣሁበት ምክኒያት ከምግብ እጥረት ጋር በተያያዘ ጥቂት ጥያቄዎችን ለመጠየቅ ነው። የእርሶ ስም አያስፈልግም፣ በተጨማሪም የሚሰጡንን ማንኛዉም መረጃ በሚስጥር እንደምንጠብቅ ቃል እንገባለን። የእርሶ ግልጽ የሆነ መረጃ በሲራችን ላይ ማለትም (የምግብ እጥረት መለኪያዎችን በመጠቀም ክብደት፣ቁመት እና የትምህርት ውጤትንና ተዛማጅ ጉዳዮችን በወልቂጤ ከተማ ባሉ እድሜያቸው ከ 6እስከ 12 በሆኑ ሰዎች ላይ ሚጠና ጥናት ላይ) ከፍተኛ እገዛ ያረግልናል። ቃለ መተይቁ ከ20 እስከ 30 ደቂቃ ይፈጃል። ለመሳተፍ ዝግጁኖት

አዎን ……. አይደለሁም…….

እጅግ ውድ ጊዜዎን ለጥናቱ ለመስጠት ፈቃደኛ በመሆንዎ ከልብ የመነጨ

ምስጋናዬን በቅድሚያ ማቅረብ እፈልጋለሁ።

በዲጋሚ እናመሰግናለን!!!!

ከአክብሮት ጋር

ምንያህል መንግስቱ

አጠቃላይ መረጃ

1. የትምህርት ቤቱ ስም _____ መለያ ቁጥር_____

2.የትምህርት ቤቱ አይነት (የመንግስት ወይሰ የግል) _____

3.የተማሪው የትምህርት ክፍል_____

ክፍል አንድ፡- ጠቅለል ያለ ስለ ቤተሰብ መረጃ በተመለከተ

1.1 ተሳታፊ ማህበራዊ እና አካባቢያዊ ሁኔታ መረጃ

1. እድሜዎት ስንት ነው? _____

2. ጾታ ሀ. ወንድ ለ. ሴት

3. የመኖሪያ አካባቢ ሀ. ከተማ ለ. ገጠር

4. የሃይማኖት ሁኔታ?

ሀ/ ኦርቶዶክስ ሐ/ ፕሮተስታንት ሠ/ .ሌላ

ለ/ ሙስሊም መ/ ካቶሊክ

5. ብሄር

ሀ/ ጉራጌ ሐ/ ወላይታ ሠ/ ቀቤና

ለ/ አማራ መ/ ኦሮሞ ሸ/ ሌላ

6. የተሳታፊው የትምህርት ደረጃ

ሀ/ ያልተማረ ሐ/ ሁለተኛ ደረጃ

ለ/ አንደኛ ደረጃ መ/ ሶስተኛ ና ከዛ በላይ

7. የእርሶ ሙያ ምንድነው?

ሀ/ የመንግስት ሰራተኛ ለ/ ገበሬ

ሐ/ ነጋዴ መ/ ሌላ ካለ ይጥቀሱ _____

8. የእርሶ የትዳር ሁኔታ

ሀ/ ያላገባ/ች ለ/ የሞተበት/ባት

ሐ/ ያገባ/ች መ/ የፈታ/ታች

9. የቤተሰብ ብዛት ስንት ነው?

ሀ/ ሁለት ለ/ ከሶስት እስከ አምስት ሐ/ ከአምስት በላይ

ክፍል ሁለት፡- የህፃኑ ጠቅለል ያለ መረጃ በተመለከተ

1.የልጅ ፆታ? ሀ/ ወንድ ለ/ ሴት

2 የልጅ እድሜ (በወራት) ፡-_____

3.ክብደት (በኪሎ ግራም) ፡-_____

4.ቁመት (ሜትር) ፡-_____

5.ህፃኑ ክንድሞቹ ጋር አብሮ ምግብ ይመገባል?

ሀ/ አይመገብም ለ/ ይመገባል

6.ህፃኑ ከቤተስብ ጋር ነው የሚኖረው?

ሀ/ አዎን ለ/ አይደለም

ክፍል ሶስት: የህፃኑ ጠቅለል ያለ የትምህርት መረጃ በተመለከተ

1.ህፃኑ ትምህርት ቤት ከመሄዱ በፊት ቁርስ ይበላል?

ሀ/ አዎን ለ/ አይበላም

2.ህፃኑ ክፍል ውስጥ ሲረብሽ በመምህሩ ይቀጣል?

ሀ/ አዎን ለ/ አይቀጣም

3.ህፃኑ የቤት ስራ ባለመስራቱ በመምህሩ ይቀጣል?

ሀ/ ይቀጣል ለ/ አይቀጣም

4.መቼ ነው የምታጠናው?

ሀ/ ማታ ለ/ እኩለ ሌሊት ሐ/ ጠዋት

5.ሁል ጊዜ ታጠናለህ እንዴ?

ሀ/ አዎ ለ/ አላጠናም

6.ከትምህርት ቤት ትቀራለህ?

ሀ/ አዎ ለ/ አልቀርም

7.አማካኑ ውጤት

ሀ/ አማርኛ_____ ለ/ ሂሳብ_____

ሐ/ እንግሊዘኛ_____ መ/ አካባቢ ሣይንስ----------

ክፍል አራት; ግለሰባዊ እና አካባቢያዊ ምክንያት መተመለከተ መረጃ

4.1 የህፃኑ መረጃ በተመለከተ

1.በቤታቸሁ ውስጥ አትክልት እና ፍራፍሬ አለ?

ሀ/ አለ ለ/ የለም

2.ትምህርት ቤት በመሄድህ ደስተኛ ነህ ወይ?

ሀ/ አዎ ለ/ አይደለሁም

3.በቤት ውስጥ በምታጠናበት ወቅት ደስተኛ ነህ ወይ?

ሀ/ አዎ ለ/ አይደለሁም

4.የት በምታጠናበት ወቅት ነው ደስተኛ የምትሆነው?

ሀ/ ቤት ውስጥ ለ/ ቤተ-መጽሀፍት

5.በምታጠናበት ወቅት የምትጠቀምበት የሀይል አማራጭ?

ሀ/ በመብራት ለ/ በኩራዝ

ሐ/ በሶላር መ/ በሻማ

4.2 ጠቅለል ያለ ስለ ቤተሰባዊ፣ ግለሰባዊ እና አካባቢያዊ ሁኔታ መረጃ በተመለከተ

1.ስነ ምግብ እጥርት ታውቃለህ?

ሀ/ አላቅም ለ/ አቃለሁ

2.መልስህ አዎን ከሆነ ስነ ምግብ እጥርት መንስኤ ምንድነው?

ሀ/ የምግብ ማነስ ለ/ ንፅህና ባለመጠበቅ ሐ/ መንስኤውን አላውቅም

3.የመጠጥ ውሀ የሚጠቀሙት የትኛውን ነው?

ሀ/ የወንዝ ለ/ የምንጭ

ሐ/ የጉድጓድ መ/ ከሌላ

4.በቤቶ መጸዳጃ አለ ወይ?

ሀ/ አዎ ለ/ የለም

5.የሚመገቡት ምግብ ላይ አዮዲን ያለው ጨው ይጠቀማሉ?

ሀ/ እጠቀማለሁ ለ/ አልጠቀምም

6.የቤት እንስሳ አለ?

ሀ/ አዎ ለ/ የለም

7.ለመጠጥነት የምትጠቀመው ውሀ የተጣራ ነው?

ሀ/ አዎ ለ/ አይደለም