HARAMAYA UNIVERSITY

Building the Basis for Development

UNDERNUTRITION AND ASSOCIATED FACTORS AMONG SECONDARY SCHOOL ADOLESCENTS IN HODAN DISTRICT, MOGADISHU, SOMALIA

MPH THESIS

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Undernutrition and Associated Factors among Secondary School Adolescent in Hodan District Mogadishu Somalia

A thesis submitted to the School of Public Health, Post Graduate Programs Directorate HARAMAYA UNIVERSITY

In Partial Fulfillment of the Requirement for the Degree of Master of Public Health in Nutrition

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I hereby certify that I have read and evaluated this thesis entitled "undernutrition and associated factors among secondary school adolescent in Hodan District Mogadishu Somalia" prepared under my guidance by Munira Isak Hussien. I recommend that it be submitted as fulfilling the thesis requirement.

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As a member of the Board of Examiners of the MPH Thesis open Defense Examination, I certify that I have read and evaluate the thesis prepared by Munira Isak Hussein and examined the candidate, I recommend that the thesis be accepted as fulfilling the thesis requirement for the degree of Master OF Public Health in Nutrition.

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STATEMENT OF THE AUTHOR

This thesis is submitted in partial fulfillment of the requirements for a Master of Public Health in nutrition at Haramaya University. By signing below, I declare and affirm that this work is my own, that I have adhered to all technical and ethical principles of scholarship in its preparation, data collection, analysis, and compilation, and that any scholarly material included in the thesis has been acknowledged through citation. The thesis has been placed in the Haramaya University Library and is accessible to borrowers in accordance with the library's policies. I certify that this thesis has not been submitted to any other university for consideration for a degree, diploma, or certificate. It is acceptable to use brief quotes from this thesis without obtaining permission as long as the source is properly and fully cited. When the head of the department or school determines that the planned use of the material is in the interest of scholarship, they may grant requests for permission to reproduce this thesis in whole or in part or to quote from it extensively. However, in every other case, consent from the thesis's author is required.

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BIOGRAPHICAL SKETCH

My name is Munira Isak Hussein, author of this thesis. I was born and raised in Balad-weyne, Hiran, Somalia in 2000. I have attended my primary and secondary school at Hiran primary and secondary school in Balad-weyne,Hiran, Somalia. After completion of my high school education. I have joined Hope University in Mogadishu, Somalia at 2018 and graduated in midwifery in 2022.

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LIST OF ABBREVIATION AND ACRONOMYS

BAZ: body mass index for age

BMI: body mass index

DALYs: disability-adjusted life years

HAZ: height for age

LMICs: low-and middle-income countries

PPS: population proportion to size

SSA: sub Saharan Africa

WHO: world health organization

ABSTRACT

Background: Adolescent undernutrition is global public health issue, especially in developing countries like Somalia. Although adolescence is considered as a second window of opportunity to interrupt the intergenerational cycle of undernutrition, small attention is given to adolescents. Evidence regarding adolescent undernutrition is limited in Somalia, particularly in the study area- Hodan District of Mogadishu.

Objective: To assess the prevalence of undernutrition and associated factors among secondary school adolescents in Hodan District Mogadishu Somalia from July 10 to August 10, 2024.

Methods: A school based cross-sectional study was carried out among, 470 randomly selected adolescents from public and private secondary schools in Hodan District of Mogadishu. Data was collected using pretested and structured questionnaire and anthropometric measurement was used to assess nutritional status of adolescent. Body mass index for age and height for age z scores were calculated and a value below -2 was used to define thinness and stunting, respectively. The characteristics of adolescents are described using frequencies, percentages and appropriate summary measures. Binary logistic regression was performed to identify the factors associated with adolescent undernutrition (thinness and stunting). Level of statistical significance was declared at p-value<0.05

Results: The study showed that 28.9% [95% CI = 24.7%, 33.2%] of the adolescents were stunted, while 24.1% [95% CI = 20.1%, 28.2%] were thin. Being male adolescent (AOR = 2.29, 95% CI: 1.38-3.79), mother with primary education (AOR= 2.36, 95% CI:1.27-4.76), father with no formal education (AOR = 2.45,95%CI:1.09-5.49) and adolescents with low dietary diversity (AOR= 4.02, 95%CI: 2.42-6.68) were significantly associated with thinness, while mother with no formal education (AOR= 2.18, 95%CI:1.04-4.59) and adolescents who eat less than three times (AOR = 2.00,95%CI:1.07-3.74) were significantly associated with stunting.

Conclusion: Secondary school adolescents face the problem of under nutrition especially with regard to stunting and thinness. Therefore, strategies to enhance the nutritional status of adolescent students including improving parental education and promoting dietary diversity and meal frequency should be given much attention in current study area.

Key words: undernutrition, Adolescent, Body mass index, household food insecurity, skipping breakfast.

1. INTRODUCTION

1.1. Background

Based on World Health Organization around 1.2 billion people worldwide are classified as adolescents (10–19 years old), with the majority living in low- and middle-income nations. Global adolescent health and diet have been inadequately assessed, and health providers have had difficulty meeting patients' needs (Lansford and Banati, 2018), In 2016, the Global Strategy report included adolescence as a necessary element for achieving the Sustainable Development Goals (Organization, 2015)

The regions of South Asia and sub-Saharan Africa (SSA) had the highest rates of undernutrition among teenage girls worldwide (Benedict et al., 2018).For example, about two in five teenage girls in South Asia suffer from malnutrition. Similarly, a secondary investigation of 11 Asian and SubSaharan African nations found that Nigeria had the greatest prevalence of undernutrition (32.9%) among teenage girls. Similarly, undernutrition among late teenage girls is more common in East African nations. Moreover, inadequate nourishment is the cause of subpar development and health effects, including as low academic performance, decreased productivity, and a higher risk of both infectious and non-infectious disorders. (Vanegas, 2018)

The primary cause of teenage disability-adjusted life years (DALYs) worldwide is iron deficiency anemia, which is followed by diarrheal illnesses, depression, lower respiratory infections, and auto accidents. One of the biggest risk factors for illness and death worldwide for teenagers, both male and female, is a poor diet. (Tunçalp et al., 2017)

Fallowing the initial year of infancy, adolescence is the second most important time for physical growth in the life cycle. It is the most crucial stage of life, during which time there are a lot of physical, physiological, behavioral, and social changes that go hand in hand with growth and development..(Gagebo et al., 2020b)

Stunting impairs brain and muscular growth, starting in pregnancy and continuing through infancy. Stunting in teenagers is linked to poorer results for female reproductive health, lower economic production, and diminished cognitive development and academic ability. It has also been documented that childhood stunting and overweight or obesity coexist. (Caleyachetty et al., 2018) Since 1991, Somalia has been ravaged by a civil conflict, and protracted droughts have

made the country's food security crisis worse. Situated in the Horn of Africa, the confluence of hostilities and calamities has destroyed its means of subsistence and resulted in severe poverty, population dislocation, and systemic food insecurity. The nation has recently gone through two famines (1992–1993) and 2011–2012, and it is currently one among the four nations at risk of famine in 2017 together with South Sudan, Nigeria, and Yemen. (Custodio et al., 2018)

Being among the world's most hazardous nations, Somalia has been without a central government that is recognized by the country's citizens since 1991. All areas of human life and development have been impacted by this protracted period of political unrest and insecurity. With one of the highest rates of maternal and infant mortality, Somalia is currently the world's fifth poorest nation. It is currently thought to have the highest rate of acute malnutrition in the world and is also ranked lowest on the food security index. (Kinyoki et al., 2015)

Teen age malnutrition is one of the biggest global public health issues, particularly in developing nations, as it impairs their capacity to study and perform at their best. The health status of the societies that include them is justified by the nutritional status of adolescents, and undernutrition is one of the major global health issues that poor nations currently confront. Low body mass index (BMI) for age is referred to as underweight, and it can be a sign of undernutrition even if it is underweight. BMI is categorized into three categories: mild, moderate, and severe. Teenagers are not always malnourished. (Khalif, 2024)

1.2. Statement of the problem

Adolescent populations are more prevalent in areas with greater rates of non-communicable diseases, undernourishment, violence, poor sexual and reproductive health, and jury duty.(Patton et al., 2016) In both affluent and developing nations, teenage malnutrition is a major epidemic as it is one of the world's primary causes of mortality and morbidity globally. Millions of youngsters die each year from diseases that are treatable and preventable. Malnutrition is the primary cause of at least half of these deaths globally.(Mengistu et al., 2013). The two areas most impacted by malnutrition are Southeast Asia and sub-Saharan Africa (Manyanga et al., 2014)

Malnutrition is still regarded as a major public health issue in underdeveloped nations because it increases a population's susceptibility to infectious diseases, poor health, early mortality, and morbidity. A high In India, there is a high prevalence of infectious diseases and malnutrition linked to a lack of food and essential nutrients, but there is also a large population suffering from a number of non-communicable diseases, such as diabetes, metabolic disorders, cardiovascular disease, and hypertension. (Vieth and Lane, 2014)

Adolescence is a phase of greater growth than any other, which means that nutrients are more important now. Adolescents can gain up to 50% of their adult weight and more than 20% of their adult height. and during this time gain 50% of their adult skeletal mass.(Organization, 2002) Adolescents are particularly prone to nutritional risks due to a variety of factors, such as their high development requirements, dietary and lifestyle choices, propensity for risk-taking, and sensitivity to environmental cues.(Organization, 2005)

Early marriage and the following pregnancy, low educational attainment, inadequate access to clean water and sanitation, a lack of teen-focused health services, ignorance of the available adolescent health services, and cultural differences. The inadequate use of family planning techniques was identified as a factor in the undernutrition of adolescents. Adolescent undernutrition can lead to a number of problems, such as poor bone mineralization, delayed growth, delayed intellectual development, goiter, increased risk of infection, blindness, and anemia. Future repercussions of stunting in teenage girls include a higher chance of unfavorable reproductive outcomes. For instance, the risk of dystocia, low birth weight, cephalo-pelvic disproportion, and cesarean delivery. Once more, low body mass in teenage girls is linked to

lower bone mass in the early years of adulthood and may cause postmenopausal osteoporosis and its aftereffects. (Duffy et al., 2015)

Adolescent is a critical time for growth and development, and it has higher nutritional needs than any other phase in life..(Croll et al., 2001) Additionally, adolescence is a crucial time for developing risk factors for chronic diseases linked to sedentary lifestyles and poor eating habits in adulthood. However, there are very few studies on the dietary and lifestyle habits of children in Sudan. Preschoolers' nutritional status has been the focus of nearly all research on nutritional issues in Sudan. While these studies demonstrated that viral illnesses and poor dietary practices caused undernutrition in Sudanese preschoolers, no research has examined lifestyle risk factors associated with long-term health issues in Sudanese schoolchildren.(Jenkins and Horner, 2005)

Any stage of adolescence experiencing poor nutritional status can have an impact on cognitive development, impairing learning capacity, focusing, and academic performance, as well as slowing growth and Sexual maturation is linked to poor reproductive health outcomes, particularly in females. A nation's economy is impacted by undernutrition both directly, as a result of lost production resulting from inadequate physical health, and indirectly, as a result of impaired cognitive function and learning capacities. Adolescent chronic undernutrition is frequently linked to poverty, inadequate maternal health and nutrition, recurrent sickness, or inappropriate feeding and early childhood care.(Tafasa et al., 2022)

There are also some arguments supporting the theory that people with low birth weights are more likely to become obese and have related chronic illnesses later in life. 12% of school-age children and 17% of older adolescent girls were obese. In the last ten years, the percentage of young adolescents who are overweight or obese (BMI > 25%) has climbed from 10% to 15% in 6% to 8% in rural areas and 6% to 8% in urban regions. (Khalif, 2024).

The gap/problem that initiated to conduct this is study is that the absence of complete details regarding the prevalence and determinants of undernutrition in this specific population. And also understanding the factors contributing to undernutrition among adolescent attending secondary school is crucial for developing targeted interventions, there is also lack of research focusing specifically on this adolescent age group living in Hodan district. Identifying the factors associated with undernutrition can inform effective strategies for enhancing the nutritional status and overall well-being of secondary school adolescents in the region.

1.3. Significant of the study

The results of this investigation will be beneficial in informing the Hodan District regarding the prevalence of undernutrition and variables related to high school students, as there was insufficient Information concerning the extent of teenage undernutrition and factors associated. teenager to determine the area of focus for their dietary intervention. Furthermore, the findings of this investigation will be used as supplementary data for relevant research and foster collaboration among the various stakeholders in the development of a long-term nutrition and health promotion program for teenagers. This study will be focused on undernutrition among secondary school adolescent.

1.4. Objectives of the study

1.4.1. General objective

• To assess undernutrition and associated factors among secondary school adolescents in Hodan District of Mogadishu Somalia from July 10 to August 10 2024

1.4.2. Specific objective

- To determine the magnitude of undernutrition (thinness and stunting) among secondary school adolescents
- To identify factors associated with undernutrition among secondary school adolescents

2. LITRATURE REVIEW

2.1. Magnitude of undernutrition among school adolescents

The magnitude of underweight was substantially greater in low-income countries (11.5%) than in high-income countries (3.5%)The highest rates of obesity (17.4%)and overweight t 38.7% were found in high-income nations. (Liu et al., 2022)

A study conducts in Tanzania, prevalence and risk factors associated with among adolescents in rural Tanzania 14% (171) of people were thin, while 4% (44) of people were extremely thin. More people (18%) had stunting than any other type of malnutrition. Among the teenagers under study, overweight and obesity were also noted, with a combined frequency of 5.23% (64). (Ismail et al., 2020b).

In Dang district, Nepal, 510 school-based descriptive cross-sectional research participants in grades 9 and 10 between the ages of 14 and 17 were studied from April to October 2017. The results show that 21.8% of the teenagers were underweight and 25.7% of the adolescents were malnourished.(Bhattarai and Bhusal, 2019).

According to a study on undernutrition and associated factors among school-age girls in MirabArmachiho District in northwest Ethiopia, the overall prevalence of stunting and wasting among the district's adolescents' schoolgirls was 10.3% and 17.3% , respectively. About 6.2% and 1.3% were severly thin and stunted (BMI for age and H/A −3 SD), (Mersha et al., 2021).

According to the survey, 32.2% of teenage girls in schools were underweight. This magnitude is greater than that of previous studies carried out in the following areas: Northern Ethiopia (26.1%), Adwa town (21.4%), Addis Ababa (6.2%), Ethiopia (13.6%), Zambia (13.7%), Nigeria (18.6%), seven African countries (12.6%-31.9%), Adama city (21.3%), Bale Zone (13.7%), Arbaminch (19.7%), West Harage (24.24%), and other locations. The low socioeconomic position in this research location may be the cause of this. In comparison to studies conducted in Mekelle city (37.8%) Eastern Tigray (55), Tigray (58.3%), Bangladesh (67%), and India (49%), the amount of underweight in this study is low. (Berhe and Gebremariam, 2020).

According to a community-based cross-sectional study that evaluated undernutrition and related risk factors in school-age in Addis Abbba, Ethiopia, 30.9% of the 459 children were found to be undernourished.(Degarege et al., 2015).

A study conducts in Somalia, Prevalence and associated factors of stunting and thinness among adolescent Somalian refugee girls living in eastern Somali refugee camps, Somalia regional state, Southeast Ethiopia. The BMI was found to be 18.46 ± 3.63 kg/m2. There were 110(26.5%) cases of severe, 56 (13.5%) cases of moderate, and 67(16.1%) cases of mild malnutrition, according to the WHO categorization, based on BMI. Moreover, there was a 16 (3.9%) and a 4 (1.0%) chance of being overweight or obese. (Engidaw et al., 2019).

In the Abaarso Village Western area of Hargeisa, the prevalence of stunting among adolescents was 16.7% for both sexes. Stunting was substantially correlated with the adolescents' sex (P = 0.036 95%). There is a statistically significant difference in the prevalence of stunting in boys and girls (21.5% and 11.7%) (Khalif, 2024)

2.2. Factors associated with undernutrition among secondary school adolescents

2.2.1. Socio-demographic and economics

According to a cross-sectional study that evaluated the sociodemographic factors linked to double burden of malnutrition (DBM) among Brazilian school-age adolescents, families with low maternal education levels had a lower risk of double burden malnutrition among adolescents (Uzêda et al., 2019).

A cross-sectional study aimed to assess the nutritional status of secondary school students which was conducted from Metropolitan Greater Banjul Area of The Gambia shows that factors such as sex (female: adjusted odds ratio), mother's education (secondary), physical activity level (sufficiently active) and nighttime sleep duration (<6 hours:) were significantly associated with overweight/obesity. In addition, sex (female:) and nighttime sleep duration (<6 hours: 95%) were associated with thinness (Jallow-Badjan et al., 2020b).

Nutritional status and Related Risk factors Among Adolescent Girls at Agarfa High School, Bale Zone, Oromia Region, South East Ethiopia Approximately 45 (21.23%) of the pupils come from families with less than five members. Approximately 148 kids (69.81%) have families with five to ten members, whereas 19 students (8.96%) have families with more than 10.(Mohammed and Tefera, 2015)

A study conducts in Ethiopia Socio-demographic factors associated with underweight and stunting among adolescents in Ethiopia. Adolescent father`s education had primary (42.45%) and adolescent mother`s education had no education (55.45%). (Assefa et al., 2015)

A cross-sectional study conducted in Dangila town, Northwest Ethiopia from November 1 to 15, 2015 a significant association was observed between stunting and sex, in which males were 3.1 times more likely to be stunted than girls (Demilew and Emiru, 2018).
Boy adolescents had 2.53 times higher odds of stunting than girls, according to a school-based, cross-sectional study measuring the prevalence and factors associated with stunting and thinness among adolescents conducted in Northern Ethiopia between February and March 2014.
Additionally, the risks of stunting were 2.23 times greater for adolescents aged 13 to 15 than for adolescent aged 10 to 12, and 2.15 times higher for those living in rural areas than for those in urban areas. Similarly, there was a slight correlation between stunting and the father's work, with adolescents whose fathers were farmers having twice the odds of stunting as opposed to adolescents whose fathers were employed.
(Melaku et al., 2015).

According to a school-based cross-sectional study among adolescents in Finote Selam Town, Northwest Ethiopia, using well water, having less than 1000 birr family monthly income, having 1000–2000 birr family monthly income , and being male adolescents were all significantly associated with thinness at 95% confidence interval.
(Mengesha et al., 2020b).

2.2.2. Dietary diversity

The study conducted in Erar zone somali region Ethiopia undernutrition and associated factors among adolescent girls was found 24.0% respondents have adequate dietary diversity score.(Ali et al., 2022)
In Ethiopia, a study is conducted. improved nutritional variety among school-age girls in Northwest Ethiopia's urban setting. In total, 75.4% of teenage females had a varied enough diet. Participants' average score for dietary diversity was 5.76 ± 1.81. The majority (97.7%) of teenage girls ate starchy staples, which include grains, roots, and tubers.
(Birru et al., 2018)

A community based cross-sectional study conducted abaarso village western of Hargeisa Somaliland to determine nutritional status and associated factors among adolescents was found the mean of individual dietary diversity of adolescents were 1.46. More than half (54.4%) of

participants consumed low dietary diversity and 125 (44.5%) of participants had habit of eating outside home.(Khalif, 2024)

2.2.3. Skipping breakfast

Across-sectional study conducts in china Skipping breakfast and physical fitness among schoolaged adolescents. The proportions of boys and girls who skipped breakfast were 13.2% and 11%, respectively.(Hu et al., 2020). Another study conducts in south Australia Prevalence of breakfast skipping among children and adolescents: a cross-sectional population level study. Results showed that 13.2% of males and 18.6% of females skipped breakfast on at least one occasion, while prevalence of regular skipping was less common (1.4% males, 3.8% females). (Sincovich et al., 2022). A cross-sectional school-based study was conducted among school children in Manshit El Gamal village, in Tamia district of Fayoum Governorate, Egypt found that escaping breakfast were associated factor for stunting with 2.3 (1.07–5.03) (Abdel Wahed et al., 2017). A cross-sectional study conducted study in Dangila town, Northwest Ethiopia from November 1 to 15, 2015 reveals that the frequency of food intake had association with stunting, adolescents who took food two or less times per day were 4.6 times more likely to be stunted than those who took more than two times per day (Demilew and Emiru, 2018). The study conducts in Ethiopia Breakfast skipping and its relationship with academic performance in Ethiopia school-aged children. The prevalence of breakfast skipping was found to be 38.1% in the that study. (Abebe et al., 2022)

2.2.4. Household food insecurity

A study conducts from global perspective cross UN regions, Food insecurity, state fragility and youth mental health, the prevalence of moderate or severe food insecurity ranged from 6.53 percent in Europe to 54.45 percent in Africa.

(Elgar et al., 2021). A cross-sectional study conducts in Pakistan, adolescent food insecurity in rural Sindh. Food secure households, 65.2% of boys were food insecure compared to 3% of girls. Food insecure adolescents in food-insure households were 1.2 ± 0.1 years younger and few mothers were illiterate (13.4% vs. 21.4%) in this group compared to food secure adolescents. (Sheikh et al., 2020)

A meta-analysis and systematic review of Ethiopia's transforming adolescent lives through nutrition (TALENT) program's adolescent nutrition practices. Food insecurity was positively

correlated with female adolescents, household food insecurity, a male head of household, a high dependency ratio, a household head without formal education, and non-forming land ownership. (Abera et al., 2023)

Anther conducts in Somalia, Factors associated with household food security in Somalia. 75% of Somali households were food secure or light hungry in the 2019 SHDS. However approximately 5% of households faced some type of food insecurity situations, more frequently 19% in moderate and 6$ in severe food insecurity situations. Overall the model is significant, and the results of the Wald test show that at the 5% threshold, the coefficients are significant and align with the theorical predictions. (Mohamed and Society, 2023)

As there is some study conducted in Somalia. But is it not sufficient that why I make this study. The finding of this study may be crucial in helping Mogadishu Somalia, to develop intervention plans to evaluate the nutritional status of adolescent, and the ministry of health of Mogadishu Somalia, and other collaborators will be benefits.

2.3. Conceptual Frame Work

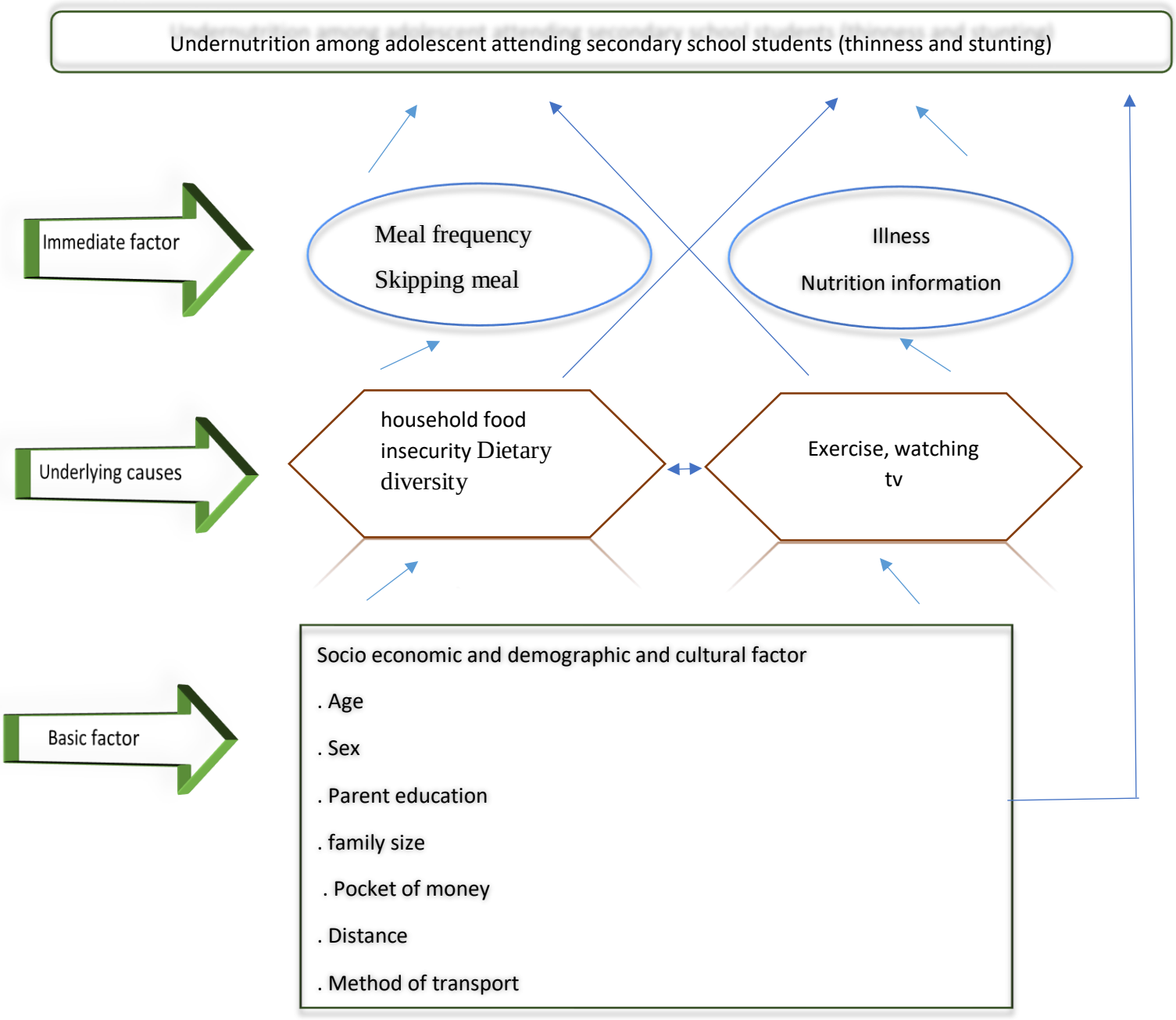

Figure 1Conceptual frame work of undernutrition and associated factor among secondary school adolescent Source: adapted from UNICEF 2013

Source: This concenptual frame work was developed after reviewing/reading many studies and the reffernce of this conceptual frame work is based on the literature review

3. METHODS AND MATERIALS

3.1. Study area/setting and period

Mogadishu the capital city of Somalia, situated on the Indian ocean coast of horn of Africa. With population two million, it is the largest city of Somalia. The city is a commercial and financial center offering a variety of goods ranging from food to electronic gadgets. Hodan districts is one of the 18 in the capital. Hodan district is divided in to 4 sub-districts, based on population density and the fact that it contains the most schools in Banadir region. Hodan district has forty-nine schools with total students 19197 and total teachers 346. The district was convenient. Hodan district is the perfect site for the study where the research was conducted among adolescent attending secondary school in hodan district from July 10 to August 10 2024.

3.2. Study design

This study was school based cross-sectional study.

3.3. Population

3.3.1. Source of the population

Each of the secondary school adolescent attending public and private secondary schools in hodan district.

3.3.2. Study population

Secondary school adolescent who attending in the selected secondary school in hodan district.

3.4. Eligibility criteria

3.4.1. Inclusion criteria

Secondary school adolescent who lived for last 6month in hodan district and attending selected secondary school.

3.4.2. Exclusion criteria

Adolescent student who have mental illness that may hinder their ability to provide accurate information or anthropometric measurement.

3.5. Sample size determination

3.5.1. Sample size determination for the first objective

The first objective sample size determination was estimated by using a single population proportion formula with the fallowing assumptions. The prevalence of stunting from the study conducted abaarso village western of Hargeisa Somaliland was 16.7%. (Khalif, 2024), 95% of confidence interval, 5% of margin of error.

n=(Z)2 p (1-p) /d 2 n = sample size required z= 1.96 p= 0.167 d= 0.05 n= (1.96)2 0.167 (1-0.167) / (0.05)2 initial sample size was 214 after adding 10% non-response rate and multiplying 2 design effect the final sample size was 470.

3.5.2. Sample size determination for the second objective

The sample size for the variables related to nutritional status was established using the double population proportion formula. Using the Statcalc of Epi Info statistical software version 7the sample size was determined for a few of the related factors gleaned from various literatures under the following presumptions: Power = 80%, confidence level =95%, and the unexposed to exposed ratio is nearly equal to 1.

Table 1: Sample size determination for different factors associated with undernutrition among adolescent attending secondary school in Hodan district in Mogadishu Somalia 2024

Magnitude of undernutrition and associated factor among adolescent						
Factors	Exposed %	Nonexposed %	OR	Initial sample size	Final sample size (10%non response rate)	References
Food consumption	61.1% Good	39.4% Poor	1.02	184	202	(Suryani et al., 2020)
Hygiene personal	60.9% Good	45.8% Poor	1.32	368	404	(Suryani et al., 2020)

Dietary diversity score	26.8% Low	73.1% Adequate	2.1	44	48	(Roba et al., 2016)

The sample size for the second objective is 404 by 10% of non-response rate so that the sample size for the first objective,470 used in this study

3.6. Sampling procedure and sampling technique

The district has forty-nine schools out of these, eight (4public and 4private secondary school) school were selected by a simple random sampling method. The final sample for this study is 470, the total number of secondary students who learning in the schools, dhagaxtuur, aayatiin, sahal, ablaal, imam shafici, somali youth league, sheikh madar, and mucaasir is 110, 140, 160, 120, 130, 90, 150, 100 respectivly. Therefore, the required sample size from selected school is: dhagaxtuur 52, aayatin 66, sahal 75, ablaal 56, imam shafici 61, somali youth league 42, macalin cadow 71, maxamud mire 47. Then stratified random sampling was used select the adolescent.

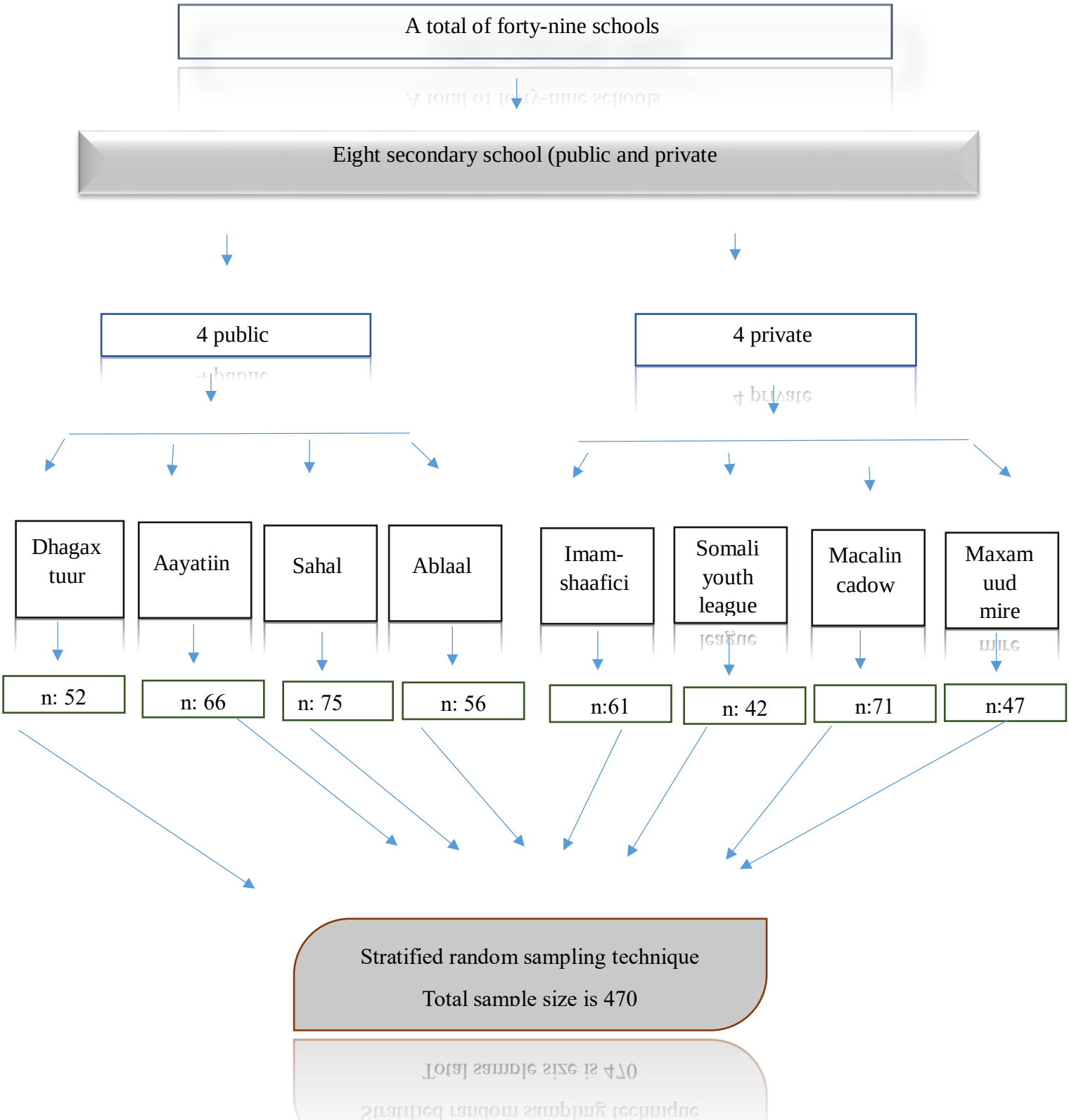

Figure 2schematic presentation of sampling procedure for assessing undernutrition and associated factor among adolescent attending secondary schools in public and private schools in Hodan district Mogadishu Somalia.

3.7. Data collection method

3.7.1. Data collection instrument

Data were collected using a pretested structured self-administered questionnaire. This questionnaire consists of sociodemographic and food security status, dietary knowledge and practice, and health care related conditions. Questionnaire is already prepared in English, then it was translated into the local language (AF Somali) by native speakers of the language. Another person, who is literate in both the local language and English, was translated the Af Somali version of the collected data back into English. After that, a comparison was performed to ensure consistency. Before the real data collecting begins, the questionnaires were pre-tested. The workers from the district's current health post, who was conversant in both the local language and the instrument. The supervisors were closely monitor if the interviewers correctly completed the surveys.

Adolescents' nutritional status was assessed using anthropometric measurements. In addition to using an adult weight scale to measure weight to the closest 100 grams, height was measured using a portal height scale to the closest 0.1cm. Weights up to 140 kg can be measured by Detecto medic.

The formula for determining BMI is weight in kilograms divided by height in meters squared (kg/m2)..(Fryar et al., 2012)

3.7.2. Data collectors

Four data collectors and two supervisors with nursing diplomas who oversee participant completion of questionnaires and ensure data completeness on the spot, together with two additional supervisors with degrees who have expertise gathering comparable data and can speak the Local language was employed. Data collectors and supervisors were received two days of training on how to purpose, benefits and risks of the study, and on how to approach participants and collect data. Following data collection, the lead investigator and immediate supervisors was reviewed each questionnaire to ensure that all the information are complete.

3.7.3. Data collection procedure

Both supervisors and data collectors were two days of training of training prior to data collection, during which they learnt how to complete the structured questionnaire and the methods that were used. Following approval from the head of the school, the data collection date is set. Additionally, obtaining informed voluntary consent from parents for adolescents under the age of eighteen and from those over the age of eighteen. They were chosen to fill out a questionnaire and have their anthropometric measurements taken in a designated room on the day of data collection. After that, they greeted everyone warmly and explained the study's goal for each portion that was chosen. They were then sent to the questionnaire completion and anthropometric measurement room after being chosen as study participants by rigorous random sampling. A selfadministered questionnaire was provided, together with the necessary guidance and explanation to help the respondents complete it. Weight and height were measured anthropometrically in between each questionnaire response. A portable height scale was used to measure height to the 0.1 cm, and an adult weight scale (digital scale) was used to assess body weight to the closest 0.1 kg. Additionally, a potential cloth will be used to weigh the pupil.

The 24-hour recall approach was used to gather dietary data in order to calculate the minimal dietary diversity consumption and the food group consumption within a 24-hour period.

3.8. Study variable

3.8.1. Dependent variable

Undernutrition among adolescent secondary school students (thinness and stunting)

3.8.2. Independent variable

Socio-demographic factors age, sex, parent education, family size, distance, method of transport

Dietary diversity, skipping meal, household food insecurity, meal frequency

Watching tv, physical exercise, nutrition information, illness

3.9. Operational definition

Undernutrition: in this study, it is nutritional problem consisting of stunting according to WHO stunting cut-offs (stunted: ≤ −2 SD) and/or thinness BMI-for-age with Z-score < −2 SD from the median value of WHO's 2006 reference data. (WHO, 2007)

Dietary diversity: is the sum of nine groups starchy staples (cereals and white tubers), dark green leafy vegetables, other vitamin A rich fruits and vegetables, other fruits and vegetables, organ meat, meat and fish, eggs, (legumes, nuts and seeds), milk and milk products eaten by the women over last 24 hours. The score range was 0-9; with the maximum score was 9 and minimum (FAO, 2016)

Thinness: defined as adolescents with BMI-for-age with Z-score < −2 SD from the median value of WHO's 2006 reference data. (WHO, 2s007)

Stunning: Height-for-age z-scores were categorized according to WHO stunting cut-offs (Stunted: ≤ −2 SD). (WHO, 2007)

Household food insecurity: categorizes households into four levels of household food insecurity (access): food secure, and mild, moderately and severely food insecure. Households are categorized as increasingly food insecure as they respond affirmatively to more severe conditions and/or experience those conditions more frequently. (Coates et al., 2007).

Food Secure Household: Experiences none of the food insecurity (access) conditions, or just experiences worry, but rarely. (Coates et al., 2007).

A Mildly Food Insecure (Access): household worries about not having enough food sometimes or often, and/or is unable to eat preferred foods, and/or eats a more monotonous diet than desired and/or some foods considered undesirable, but only rarely. But it does not cut back on quantity nor experience any of three most severe conditions (running out of food, going to bed hungry, or going a whole day and night without eating. (Coates et al., 2007)

A Moderately Food Insecure: household sacrifices quality more frequently, by eating a monotonous diet or undesirable foods sometimes or often, and/or has started to cut back on quantity by reducing the size of meals or number of meals, rarely or sometimes. But it does not experience any of the three most severe conditions. (Coates et al., 2007)

A Severely Food Insecure: household has graduated to cutting back on meal size or number of meals often, and/or experiences any of the three most severe conditions (running out of food, going to bed hungry, or going a whole day and night without eating), even as infrequently as rarely. In other words, any household that experiences one of these three conditions even once in the last four weeks (30 days) is considered severely food insecure.(Coates et al., 2007)

3.10. Data quality control

During a two-day intensive training, which cover, the study's objectives, a thorough review of the questionnaires, the use of survey instruments and instructions on how to administer the questionnaires and take anthropometric measurements, as well as ethics during fieldwork during, six data collectors and two supervisors participate. The anthropometric measure's accuracy in measuring weight and height were maintained in accordance with the global reference standard. To improve measurement accuracy, a structured questionnaire was created in English, translated into local language of Ad Somali, and then retranslated into English by teachers with experience in the language. A pre-test of the questionnaire was conducted at a different school in Hodan District on 5% of the sample size. to gauge the response's accuracy and determine how much time was required. Both before and after weighing each child, the weight scales were compared to the zero reading. To guarantee the accuracy of the data, supervisors completed daily questionnaires and verified the data collection procedure. Every day, the primary investigator was over saw the data collection team by holding meetings and verifying that the questionnaire was completed.

Double data entry was done two different data clerks.

Relative Technical Error of Measurement (percentage TEM) was calculated for both intra and inter-examiners in order to quantify the relative TEMs and evaluate random anthropometric measurement errors.

Anthropometric data was gathered by taking two measurements and averaging them. Every 20 measurements, the weight scale was calibrated using the known weight and reset to the zero label after each measurement.

3.11. Data processing and analysis

Data were collected using kobo toolbox digital platform and then exported to STATA version 17.0 and data were cleaned for inconsistencies and missing values for analysis. The adolescent's age, sex, survey date, and anthropometric data was exported to WHO Anthro plus in order to obtain HAZ and BAZ. After that, an excel sheet containing HAZ and BAZ were used to check for flags and missing values. The study participants' body mass index for age z-score was used to determine their level of thinness, those with a z-score of less than -2 were classified as thin, those with a zscore of between > - 2 and < +1 as normal weight, and those who were overweight between +1 and <+2 and above +2 as obese. Stunted adolescents were defined as those whose height for age Z score were less than -2. Tables and graphs were used to display the results. Binary logistic regression was used for both bivariate and multivariate analysis. To determine the relationship between the dependent and independent variables, bivariate analyses were performed. Variables with p-value less than 0.25 were considered for further multivariable. To account for any potential confounders, a multivariable model was applied. Using variance inflation factor (VIF), a multicollinearity was tested among the independent variables. Variables with VIF test >5 were dropped from the final model. The Hosmer Lemshowa goodness of fit test was used to evaluate the model goodness-of fit. The corresponding p-value >0.05 for the test was considered as well fitted model. Finally, adjusted odds ratio with 95% confidence interval was estimated to show the presence, strength and direction of associations. Level of statistical significance were declared at p-value less than 0.05.

3.12. Ethical consideration

The Institutional Health Research Ethics Review Committee (IHRERC) at Harmaya University Collage of Health and Medical Science granted Ethical Clearance. Each chosen participant and school where the head of school confirmed willingness and those who were granted the authority to do so provided written and signed informed voluntary consent. After the chosen schools were granted consent and cooperation, data collection got underway. The study's title, goal, methodology, and duration were all discussed in detail to the participants and school heads, along with any potential dangers or advantages. Participants who were at least eighteen years old were then asked for their individually informed, voluntary, written, and signed consent. The heads of health facilities and the parent/guardian adolescents under the age of eighteen were asked to get consent from their parents, spouses, or legal guardians. During the data collection

period, the respondents were guaranteed confidentiality by having their names withheld. They were made aware that they might completely decline to take part in the study and leave at any moment if they encountered any issues.

3.14. Plan for information dissemination

The finding of this study will be shared with Haramaya University School of Public Health in order to complete the requirement for postgraduate study. In order to prepare health projects on undernutrition among adolescent secondary schools as a public and health problem, as well as to interested and concerned organizations, the study findings were also submitted to the administrative health bureau of Hodan District in Mogadishu, Somalia. Efforts was made to publicize the project in national and international journals.

4. RESULT

4.1 Socio demographic characteristic of the study participant

In this study, a total of 470 secondary school adolescent were participated (respond rate 97%), Two hundred fifty-eight (56.58%) of the adolescents were males. The mean age (±SD) of the adolescents was 17.02(SD=1.38) years, 394(86.40%) of them fell into the age group 16-19 years. One hundred four (22.81%) of the adolescents' mother did not attend formal education. One hundred ninety-two (42.10%) of the adolescent father attend college and above. Three hundred forty-three (75.22%) of the adolescents' family sizes were 5-10 with the mean (±SD) of 7.99(SD=2.17). About three-fourth (76.36%) of the adolescents were receiving pocket money. Adolescents who reached the school on foot was two hundred and eleven (46.27%) and those who use taxi was one hundred ninety-two (42.11%). Most of the student were distance from home to school 15-32 min was two hundred nine (45.83%) and the mean (±SD) of the distance was 4.05 (SD=1.92). Table 2. Socio demographic characteristic of secondary school adolescent in Hodan distric Mogadishu Somalia, 2024.

Variables	Category	Frequency
Age in yrs	13-15	62
	16-19	394
Sex of adolescents	Male	258
	Female	198
Educational status of adolescent's mother	No formal education	104
	Primary	64
	Secondary	96
	College or above	192
Educational status of adolescent's father	No formal education	52
	primary	113
	Secondary	139
	College and above	152
Family size	<5	51
	5-10	343
	11-15	62
Packet money	Yes	348
	No	108

Method to transport	On foot	211
	Taxi	192
	Both	53
Distance from home to school	<10 Min	134
	15-32 Min	209
	>40 Min	113

4.2. Adolescent dietary diversity and meal consumption

4.2.1. Meal consumption

This study shows that three hundred seventy-eight (82.89%) of the adolescents respond that they usually eat less three times per day. Seventy-eight (17.11%) of adolescents reported as they do not skip any meal, while 227 (49.78%) of them skip break-fast. One hundred sixteen (25.44%) of the adolescent students were skipped their meal due to lack of time, while one hundred fourteen (25.00 %) of them skip due to lack of appetite. Those who eat snacks, two hundred ninety-six (64.91%) of them were eat in between breakfast and lunch. One hundred eighty (39.47%) of the adolescent were eating other snacks like (*sambuusa, kebab, and bajiyo*). Two hundred and three (44.52%) of the study participants were eat the meal with their completely family. Adolescents those mostly obtain nutrition information from their parents were one hundred forty-one (30.92%), while those obtain from school were eighty-three (18.20%). In this study majority of the adolescents one hundred eighty-eight (41.23%) responded that they spend their free time on physical exercise, one hundred fifteen (25.22 %) of them spent on reading books, and ninety-five (20.83%) on watching tv. Sixty-five (14.25%) of the adolescents had illness during last two weak of which twenty-four (36.92%) respond that they had fever.

Table 3. Meal consumption of secondary school adolescent in Hodan district Mogadishu Somalia, 2024

Variable	Category	Frequency
Meal frequency (per day)	Less than three times	378
	Three times and above	78
Skipping meal	Yes	378
	No	78
Type of skipped meal	Breakfast	227
	Lunch	74
	Dinner	77
Reason for skipping meals	Lack of appetite	114
	Lack of time	116
	No meal available	99
	To minimize weight and shape	49
Time of snacks	Between breakfast and lunch	296
	Between lunch and dinner	160
Type of snacks	Fruit and vegetables	126
	Chips	61
	Bread	34
	Juice	55
	Others *	180
Way of meal consumption	With completely family	203
	Alone	188
	With friends	22
	Others*	43

Source of nutrition information	Parents	141
	From health worker	67
	Friends	60
	Media	75
	From school	83
	Others*	30
Activities in free time	Physical exercise	188
	Shopping	11
	Listening to music	47
	Watching TV	95
	Reading book	115
Illness in the last two weeks	Yes	66
	No	390
Symptoms of the illnesses	Coughing	18
	Fever	24
	Headache	18
	Others*	5

Others * sambuusa, bejiyo, kebab, others*neighbor, outside other*dancing, sleeping. Others*itching, swallowing

4.2.2. Dietary diversification practice of the participant

Based on the 24hr dietary recalls the mean (± SD) of dietary diversity score (DDS) of adolescent student in the study area was 5.17(±1.73) food groups and 218(47.81%) did not met the minimum requirement for dietary diversity (<5 food groups). Among the participants almost 427(93.64%) of them consumed starchy and staple foods group fallowed by meat fish and poultry 374(82.02%).

Consumption of legumes or nuts and seeds was relatively low with 154(33.77%) **(Figure 3).**

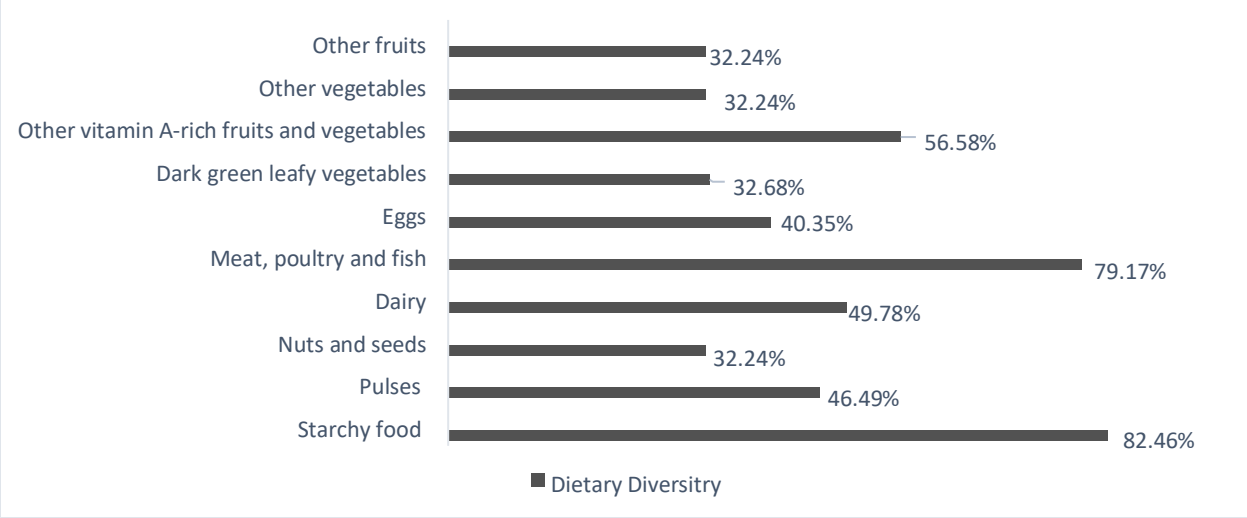

Figure 3:dietary diversity of adolescent secondary school at Hodan district Mogadishu Somalia 2024

4.3. Household food insecurity

Concerning household food security, 115(25.22%) of the household were severely food insecure, while 128(28.07%) were food secured during one month before the study **(Figure 4).**

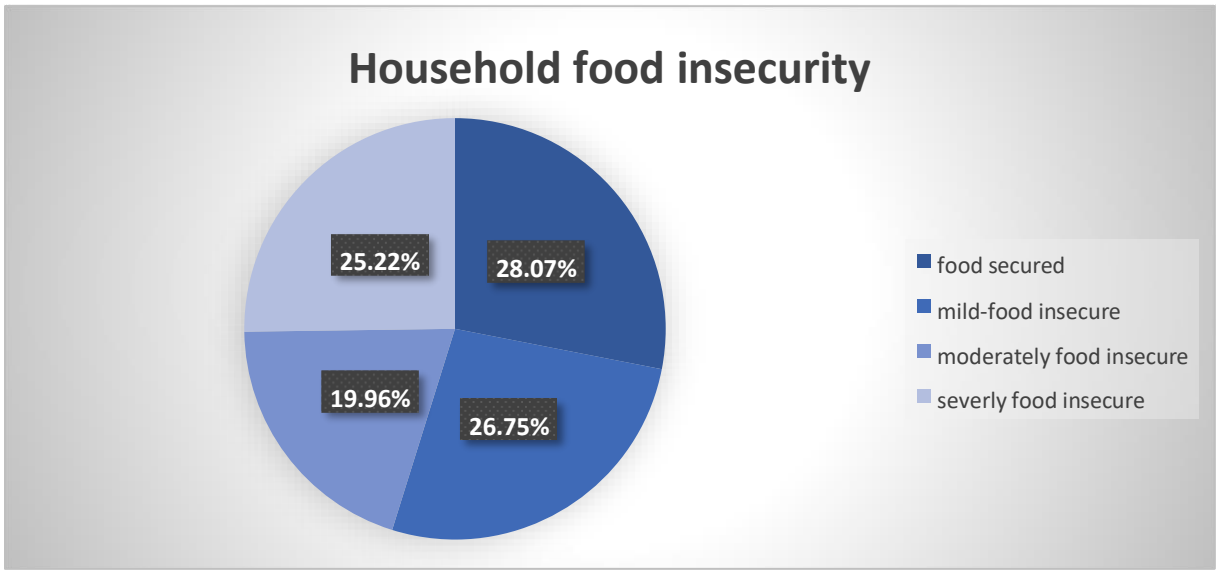

Figure 4: household food insecurity assessment of secondary school adolescent in Hodan district Mogadishu Somalia 2024.

4.4. Nutritional status of adolescents

The mean (±SD) of the height-for-age of the adolescents was -1.46(1.12). One hundred thirty-two (28.9%, 95 CI :24.7%, 33.2%) of the adolescents were stunted and 42 (9.2%,95 CI:6.4%, 12%) were severely stunted. Stunting was found to be higher in female and in the age group 120-179 months, 33.3% (0%_79.4%). The mean (±SD) of the BMI-for-age was -1(1.4) and 110 (24.1%, 95% CI: 20.1%, 28.2%) of them thin and 33 (7.2%, 95% CI: 4.7%, 9.7%) severely thin. Thinness was found to be higher in males and in an age group 180-228 months, 30.7(24.7%, 36.7%). The prevalence of overweight was 37 (9%, 95% CI: 6.3%, 11.7%) while obesity was 4 (0.9%, 95% CI: 0%, 1.8%). The overall prevalence of undernutrition was 242 (53.07%), while the proportion of adolescents having both thinness and stunting 20 (4.38%). The proportion of adolescents both having stunting/overweight and obesity was 173(37.9%). **(Table 4)**

4:Anthropometric measurement of secondary school adolescent in Hodan district Mogadishu Somalia

Age group in (months)	Sex	Height-for-age (z-score with 95% CI)			BMI-for-age (z-score with 95% CI)				
		N	% < -3SD	% < -2SD	N	% < -3SD	% < -2SD	% > +1SD	% > +2SD	% > +3SD
(120-179)	Female	6	33.3(0%,79.4%)	50(1.7%,98.3%)	6	0(0%, 8.3%)	0(0%, 8.3%)	33.3(0%, 79.4%)	0(0%, 8.3%)	0(0%, 8.3%)
	Male	14	14.3(0%,36.2%)	28.6(1.3%, 55.8%)	14	7.1(0%, 24.2%)	28.6(1.3%,55.8%)	28.6(1.3%,55.8%)	7.1(0%,24.2%)	7.1(0%, 24.2%)
	Total	20	20(0%, 40%)	35(11.6%, 58%)	20	5(0%,17.1%)	20(0%, 40%)	30(7.4%, 52.6%)	5(0%, 17.1%)	5(0%,17.1%)
(180-228)	Female	192	10.4(5.8%, 15%)	24.5(18.1%, 30.8%)	192	1(0%, 2.7%)	16.1(10.7%,21.6%)	13.3(8%,18%)	1.6(0%,3.6%)	0 (0%, 0.3%)
	Male	244	7.4(3.9%, 10.9%)	32(25.9%, 38%)	244	12.3(8%, 16.6%)	30.7 (24.7%,36.7%)	4.1 (1.4%, 6.8%)	0(0%, 0.2%)	0(0%, 0.2%)
	Total	436	8.7 (6%, 11.5%)	28.7 (24.3%, 33%)	436	7.3(4.8%, 9.9%)	24.3 (20.2%,28.5%)	8(5.4%, 10.7%)	0.7 (0%, 1.6%)	0 (0%, 0.1%)

All ages (120-228)	Female	198	11.1 (6.5%, 15.7%)	25.3(18.9%, 31.6%)	198	1(0%, 2.7%)	15.7 (10.3% ,21%)	13.6(8.6 %, 18.7%)	1.5 (0%, 3.5%)	0(0%, 0.3%)
	Male	258	7.8(4.3%, 11.2%)	31.8 (25.9%, 37.7%)	258	12(7.9 %,16.2 %)	30.6 (24.8% ,36.4%)	5.4(2.5 %, 8.4%)	0.4 (0%, 1.3%)	0.4 (0%, 1.3%)
	Total	456	9.2 (6.4%, 12%)	28.9 (24.7%, 33.2%)	456	7.2(4.7 %, 9.7%)	24.1(20 .1%,28. 2%)	9(6.3%, 11.7%)	0.9 (0%,1. 8%)	0.2 (0%, 0.8%)

4.5. Factor associated with undernutrition among school adolescent

4.5.1. Factor associated with thinness and stunting during bivariate logistic analysis

In bivariate logistic analysis variables such as gender, age, mother education, father education, distance, pocket of money, activities and dietary diversity were associated with thinness adolescents at p<0.25 and considered as candidates for multivariable analysis **(Table 5)**. In multivariable logistic regression analysis. Gender, mother education, father education, dietary diversity was statistically significant at a p-value <0.05 **(Table 7).**

Mother education, meal frequency, source of nutrition information, household food insecurity and dietary diversity were associated with stunting adolescents. at p<0.25 and considered as candidates for multivariable analysis **(Table 6).** In multivariable logistic regression analysis. Mother education, meal frequency was statistically significant at a *p*-value < 0.05 **(Table 8).**

Table 5. Bivariate analysis of factors associated with thinness among secondary school adolescents in Hodan District, Mogadishu, Somalia, 2024.

Independent variables	Category	Thinness		COR (95% CI)	Pvalue
		Yes N (%)	No N (%)		
Gender	Male	79(71.82)	179(51.73)	2.37(1.49-3.78)	**0.000**
	Female	31(28.18)	167(48.27)	1.00	1
Age	16-19	100(90.91)	294(84.97)	1.76(0.86-3.61)	**0.117**
	13-15	10(9.09)	52(15.03)	1	1
Mother-education	No formal education	14(12.73)	90(26.01)	0.55(0.28-1.07)	**0.080**
	Primary	42(38.18)	150(43.35)	1.87(1.00-3.47)	0.047
	Secondary	32(29.09)	64(18.50)	1.78(1.03-3.07)	0.037
	College	22(20.0)	42(12.14)	1	
Father education	No education	20(18.18)	32(9.25)	2.73(1.31-3.05)	**0.07**
	Secondary	27(24.55)	112(32.37)	1.05(0.56-1.98)	**0.08**
	College	42(38.18)	110(31.79)	1.67(0.92-3.02)	0.89
	Primary	21(19.09)	92(26.59)	1	
Family size	5-10	84(76.36)	259(74.86	0.94(0.48-1.86)	0.877
	≥) 11	13(11.82)		0.77(0.33-1.86)	0.570
	<5	13(11.82)	49(14.16)	1	1
			38(10.98)		
Distance	<40	32(29.09)	102(29.48)	0.64(0.34-1.21)	0.374
	15-32	59(53.64)		1.25(0.76-2.06)	**0.173**
	>10	19(17.27)	150(43.35	1	1

			)		
			94(27.17)		
Pocket money	No	31(28.18)	77(22.25)	1.37(0.84-2.22)	**0.204**
	Yes	79(71.82)	269(77.75)	1.00	1.00
Meal Frequency p/day	Less than 3time	92(83.64)	286(82.66)	1.07(0.60-1.90)	0.81
	3 times and above	18(16.34)		1	1
			60(17.34)		
Time of snacks	Between breakfast and lunch	70(23.65)	226(76.35)	0.92(0.59-1.45)	0.748
		40(25.00)		1	1
	Between lunch and dinner		120(75.00)		
Source of nutrition information	Parents	37(26.24)	104(73.76)	1.19(0.635-2.26)	0.576
	From health worker	18(26.87)		1.23(0.58-2.60)	0.575
	Friends	15(25.00)	49(73.13)	1.12(0.51-2.44)	0.770
	Media	14(18.67)	45(75.00)	0.77(0.35-1.67)	0.515
	Others	7(23.33)	61(81.33)	1.02(0.38-2.75)	0.961
	From school	19(22.89)	23(76.67)	1	1
			64(77.11)		
Activities in free time	Physical exercise	45(23.94)	143(76.06)	0.85(0.50-1.45)	0.556
	Shopping	3(27.27)		1.01(0.25-4.07)	0.982
	Listening to music	8(17.02)	8(72.73)	0.55(0.23-1.32)	**0.183**
	Watching TV	23(24.21)	39(82.98)	0.86(0.46-1.61)	0.651
	Reading book	31(26.69)	72(75.79)	1	1
			84(73.04)		

Household food secure	Food secured	33(25.78)	95(74.22)	1.03(0.57-1.83)	0.92
	Mild-FI	29(23.77)	93(76.23)	0.92(0.51-1.67	0.79
	Moderate-FI	19(20.88)	72(79.12)	0.78(0.40-1.51)	0.46
	Severe-FI	29(26.36)	86(24.86)	1	
Dietary diversity score	Inadequate	78(70.91)	206(59.54)	3.58(2.25-5.70)	**0.000**
	Adequate	32(29.09)	140(40.46)	1	

Table 6 Bivariate analysis of factors associated with stunting among secondary school adolescents in Hodan District, Mogadishu, Somalia, 2024.

Independent variables	Category	Stunting		COR (95% CI)	Pvalue
		Yes N (%)	No N (%)		
Gender	Male	82(31.78)	176(68.22)	1.37(0.91-2.08)	0.128
	Female	50(25.25)	148(74.75)	1	1
Age	16-19	111(28.17)	283(71.83)	0.76(0.43-1.35)	0.359
	13-15	21(33.87)	41(66.13)	1	1
Mothereducation	No-education	38(36.54)	66(63.46)	1.88(0.93-3.79)	**0.078**
	Secondary	27(28.13)	69(71.88)	1.27(0.61-2.65)	0.510
	College	52(27.08)	140(72.92)	1.21(0.62-2.34)	0.566
	Primary	15(23.44)	49(76.56)	1	1

Father education	No-education	14(26.92)	38(73.08)	0.75(0.36-1.56)	0.453
	Secondary	38(27.34)	101(72.66)	0.77(0.44-1.32)	0.351
	College	43(28.29)	109(71.71)	0.81(0.47-1.37)	0.435
	Primary	37(32.74)	76(67.26)	1	1
Family size	5-10	103(30.03)	240(69.97)	1.39(0.70-2.77)	0.342
	≥11	17(27.42)	45(72.58)	1.22(0.52-2.88)	0.638
	<5	12(23.53)	39(76.47)	1	1
Distance	<40	32(29.09)	102(29.48)	1.07(0.62-1.87)	0.792
	15-32	59(53.64)	150(43.35)	1.01(0.61-1.69)	0.941
	>10	19(17.27)	94(27.17)	1	1
Pocket money	No	33(30.56)	75(69.44)	1.10(0.69-1.77)	0.673
	Yes	99(28.45)	249(71.55)	1	1
Meal frequency (per day)	Less than 3time	117(30.95)	261(69.05)	1.88(1.03-3.44)	**0.040**
	3 times and above	15(19.23)	63(80.77)	1	1
Time of snacks	Between breakfast and lunch	90(30.41)	206(69.59)	1.22(0.79-1.88)	0.351
	Between lunch and dinner	42(26.25)	118(73.75)	1	1
Source of nutrition information	Parents	40(28.37)	101(71.63)	1.09(0.59-2.02)	0.763
	From health worker	24(35.82)	43(64.18)	1.54(0.77-3.10)	**0.220**
	Friends	16(26.67)	44(73.33)	1.00(0.47-2.13)	0.983
	Media	22(29.33)	53(70.67)	1.15(0.57-2.30)	0.692
	Others	8(26.67)	22(73.33)	1.00(0.39-2.59)	0.986
	From school	22(26.51)	61(73.49)	1	1

Activities in free time	Physical exercise	59(31.38)	129(68.62)	1.23(0.74-2.07)	0.414
	Shopping	3(27.27)	8(72.73)	1.01(0.25-4.07)	0.982
	Listening to music	8(17.02)	39(82.98)	0.55(0.23-1.32)	**0.183**
	Watching TV	31(32.63)	64(67.37)	1.31(0.72-2.37)	0.370
	Reading book	31(26.96)	84(73.04)	1	1
Household food secure	Food secured	39(30.47)	89(69.53)	1.5(0.84-2.67)	**0.168**
	Mild-FI	38(31.15)	84(68.85)	0.54(0.86-2.76)	**0.140**
	Moderate-FI	29(31.87)	62(68.13)	1.60(0.86-2.97)	**0.137**
	Severe-FI	26(22.61)	89(77.39)	1	1
Dietary diversity score	Inadequate	54(24.77)	164(75.23)	0.67(0.44-1.01)	**0.060**
	Adequate	78(32.77)	160(67.23)	1	1

COR= crude odd ratio

4.5.2. Factor associated with thinness and stunting during multivariate analysis

In multivariate logistic analysis, males were 2.29 times (AOR = 2.29, 95% CI: 1.38-3.79), more likely to be thin when compared to the females. Adolescent born from mothers with secondary education were 2.16 times (AOR=2.16, 95%CI:1.16-4.00) more likely to be thin compared to those with educational of college and above level. And also, adolescent born from mothers with primary 2.36 times (AOR= 2.36, 95% CI:1.27-4.76) more likely to be thin then compared to those with educational of collage and above level. Adolescents who were from not formally educated father were 2.45 times (AOR = 2.45,95%CI:1.09-5.49) more likely to be thin then compared to those born from father of college and above level education. Additionally, adolescent students who had inadequate dietary diversity in 24 hours were 4.02 times (AOR= 4.02, 95%CI: 2.42-6.68) more likely to be thin compared to those with adequate dietary diversify their meal **(Table 7).**

Adolescents who born from mothers who have no formal education were 2.18 times (AOR= 2.18, 95%CI:1.04-4.59) more likely to be stunted than those from mothers of primary level of education. Regarding meal frequency and eating habits, those adolescents who eat less than three times were 2.00 times (AOR = 2.00,95%CI:1.07-3.74) are more likely to be stunted compared to those eat more than three times and above (**Table 8).**

Table 7. Multivariate analysis of factors associated with thinness among secondary school adolescents in Hodan District, Mogadishu, Somalia, 2024

Independent variables	Category	Thinness		AOR (95% CI)	Pvalue
		Yes N (%)	No N (%)		
Gender	Male	79(71.82)	179(51.73)	2.29(1.38-3.79)	**0.001**
	Female	31(28.18)	167(48.27)	1	
Age	16-19	100(90.91)	294(84.97)	1.72(0.79-3.75)	0.170
	13-15	10(9.09)	52(15.03)	1	1
Mothereducation	No-education	14(12.73)	90(26.01)	0.69(0.33-1.41)	0.314
	Secondary	32(29.09)	64(18.50)	2.16(1.16-4.00)	**0.014**
	Primary	42(38.18)	150(43.35)	2.36(1.27-4.76)	**0.016**
	College	22(20.0)	42(12.14)	1	1
Father education	No-education	20(18.18)	32(9.25)	2.45(1.09-5.49)	**0.029**
	Secondary	27(24.55)	112(32.37)	0.80(0.39-1.61)	0.536
	College	42(38.18)	110(31.79)	1.61(0.84-3.11)	0.149
	Primary	21(19.09)	92(26.59)	1	
Distance	>40	32(29.09)	102(29.48)	0.56(0.27-1.15)	0.117
	15-32	59(53.64)	150(43.35)	1.23(0.70-2.14)	0.460
	<10	19(17.27)	94(27.17)	1	
Pocket money	No	31(28.18)	77(22.25)	1.53(0.86-2.70)	0.144
	Yes	79(71.82)	269(77.75)	1	

Activities in free time	Physical exercise	45(23.94)	143(76.06)	0.81(0.44-1.49)	0.509
	Shopping	3(27.27)	8(72.73)	0.93(0.19-4.53)	0.929
	Listening to music	8(17.02)	39(82.98)	0.65(0.25-1.72)	0.395
	Watching TV	23(24.21)	72(75.79)	0.84(0.41-1.70)	0.633
	Reading book	31(26.69)	84(73.04)	1	
Dietary diversity score	Inadequate	78(70.91)	206(59.54)	4.02(2.42-6.68)	**0.000**
	Adequate	32(29.09)	140(40.46)	1	1

AOR= Adjusted odd ratio

Table 8. Multivariate analysis of factors associated with stunting among secondary school adolescents in Hodan District, Mogadishu, Somalia, 2024

Independent variables	Category	Stunting		AOR (95% CI)	Pvalue
		Yes N (%)	No N (%)		
Mothereducation	No-education	38(36.54)	66(63.46)	2.18(1.04-4.59)	**0.039**
	Secondary	27(28.13)	69(71.88)	1.45(0.67-3.13)	0.333
	College	52(27.08)	140(72.92)	1.34(0.67-2.68)	0.397
	Primary	15(23.44)	49(76.56)	1	1
Meal frequency (per day)	Less than 3time	117(30.95)	261(69.05)	2.00(1.07-3.74)	**0.029**
	3 times and above	15(19.23)	63(80.77)	1	1
Source of nutrition information	Parents	40(28.37)	101(71.63)	1.04(0.54-2.00)	0.879
	From health worker	24(35.82)	43(64.18)	1.63(0.79-3.37)	0.185
	Friends	16(26.67)	44(73.33)	0.83(0.38-1.84)	0.659
	Media	22(29.33)	53(70.67)	1.02(0.48-2.14)	0.953
	Others	8(26.67)	22(73.33)	1.10(0.40-3.02)	0.841
	From school	22(26.51)	61(73.49)	1	1

Activities in free time	Physical exercise	59(31.38)	129(68.62)	1.39(0.80-2.41)	0.231
	Shopping	3(27.27)	8(72.73)	1.35(0.31-5.75)	0.683
	Listening to music	8(17.02)	39(82.98)	0.55(0.22-1.34)	0.192
	Watching TV	31(32.63)	64(67.37)	1.38(0.74-2.59)	0.301
	Reading book	31(26.96)	84(73.04)	1	1
Household food secure	Food secured	39(30.47)	89(69.53)	1.50(0.82-2.76)	0.187
	Mild-FI	38(31.15)	84(68.85)	1.47(0.79-2.71)	0.217
	Moderate-FI	29(31.87)	62(68.13)	1.55(0.80-3.00)	0.185
	Severe-FI	26(22.61)	89(77.39)	1	1
Dietary diversity score	Adequate	78(32.77)	160(67.23)	1.44(0.93-2.23)	0.094
	Inadequate	54(24.77)	164(75.23)	1	1

AOR= Adjusted odd ratio

5. DISCUSSION

Adolescents are particularly vulnerable to undernutrition due to their high macro and micronutrient demand as well as their fast growth and development (Das et al., 2017). Additionally, adolescence is a time to form dietary habits that will sustain generations' nutritional well-being (Yallew et al., 2022). Therefore, this study aimed to assess the prevalence of undernutrition and associated factors among secondary school adolescents in Hodan district of Mogadishu Somalia. Accordingly, the prevalence of thinness and stunting were 24.1% (95% CI:20.1%, 28.2%) and 28.9% (95% CI: 24.7%, 33.2%), respectively. Gender, maternal education, father education and dietary diversity were significantly associated with thinness, while meal frequency and maternal education were significantly associated with stunting.

In the present study, the magnitude of thinness was 24.1% and this finding is consistent with results from studies conducted in India (25.70%) (Bhattacharyya and Barua, 2013), Seychelles (27.2%) (Bovet et al., 2011) Northern Ethiopia (26.1 %) (Melaku et al., 2015), South west Ethiopia Bedele town (25.5%) (Weres et al., 2015). In contrast, it is lower than studies conduct in Bangladesh (42.4%) (Rahman and Karim, 2014) and Ethiopia 37.8% (Gebremariam et al., 2015). However, greater than reports from Nepal (4.48%)(Chaulagain, 2020), Afghanistan (19.5%) (Rahimi et al., 2024), Tanzania (14%) (Ismail et al., 2020a), Gambia (13.69%) (Jallow-Badjan et al., 2020a) and Ethiopia like Dangila Town (7.1%) (Demilew and Emiru, 2018) and Somali Region (15.2%) (Engidaw and Gebremariam, 2019). The possible reason for this discrepancy might be due to Socioeconomic and sociodemographic variations across the various study locations, as well as parental education levels about dietary interventions. It might also be due to geographical characteristics of study area, cultural difference in dietary habit, and care practices.

In the current study the overall prevalence of stunting was 28.9% which is in agreement with reports from studies conducted in Ethiopia 28.5 % (Melaku et al., 2015), 24.8 % (Demilew and Emiru, 2018). However, it is much higher as compared to findings reported from Nepal 17.20% (Chaulagain, 2020), Tanzania 18% (Ismail et al., 2020a), Nigeria 12.1% (Omotoso et al., 2022) and Ethiopia (9.7%) (Engidaw and Gebremariam, 2019). In contrast the findings of this study was lower than different studies in Bangladesh 46.6%) (Rahman and Karim, 2014), Afghanistan 47.4% (Rahimi et al., 2024) and Nigeria g (41.6%) (Ayogu et al., 2018). This discrepancy may

be due to differences of socioeconomic conditions, nutrition, inadequate dietary intake as well as maternal health. Additionally, Cultural factors such as feeding practices and dietary habits, as well as public health policies and programs also may impact stunting rates in different study areas.

A logistic regression analysis of the current study significant association was found between Gender and thinness. Being male is 2.37 times more likely prone to thinness, this is in agreement with studies conducted from Ethiopia (Gebremariam et al., 2015), (Melaku et al., 2015) and (Mengesha et al., 2020a). which reported that males are more likely to be thin than girls. This may be because of the fact that biological (e.g. males tend to have more muscle mass, while females tend to have more body fat, so males typically have higher basal metabolic rates than females), behavioral, and sociocultural mechanisms have been proposed for the gender differences. Additionally, this might also be because males and girls mature at different rates, with girls reaching maturity earlier than boys.

This study indicates clear association between thinness and the adolescent mothers' level of education. Adolescent born from mothers with primary and secondary education were more than 2 times more likely to be thin as compared to those with educational of collage and above level. This finding is consistence with studies conducted in Finland (Mason et al., 2017) and United Kingdom (Whitfield et al., 2023) which reports that low maternal education level increases the risk of thinness. It is also consistent with study conducted in Ethiopia (Mengesha et al., 2020a).this might be because high educated mothers are more knowledgeable about feeding infants and early children and enhancing the nutritional health of adolescents, which can significantly reduce the likelihood of adolescents becomes thin. Additionally, if the level of education of the mother is low, her decision-making and her contribution to the family's overall income will be low, which puts the family at risk of not being able to satisfy their basic needs, including their nutritional needs.

Current study identified that father's educational status was associated with thinness. Adolescents who were from not formally educated father were 2.45 times more likely to be thin then compared to those born from father of collage and above level of education. This is in line with study in Ethiopia (Gagebo et al., 2020a). this might be explained by that father's high level of education could increase his income and may imply a higher availability of food and

household resources. Additionally, it may have a beneficial correlation with improved child care and increased nutritional understanding.

Dietary diversity score has significant association with thinness among adolescent in this study. Adolescent students who had inadequate dietary diversity were four times more likely to be thin those with adequate dietary diversity score. This findings is consistence with reports i from Addis Ababa Ethiopia which revealed that adolescents with insufficient dietary diversity were 4.8 times thinner than those with adequate dietary diversity (Getahun et al., 2023). Also consistence with study conducted from Aksum Ethiopia which showed that adolescent girls who used inadequate dietary diversity were 3.9 times more likely to be thin as compared as compared to their counterpart (Amha and Girum, 2018). This could be explained by the fact that poor communities in the developing world suffer greatly from a lack of dietary diversity, where diets are mostly consisting on starchy staples with few or no animal products and mainly seasonal fruits and vegetable (Doustmohammadian et al., 2020). Diverse diets may provide essential micronutrients as well as adequate energy. Eating a varied diet increases the probability that adolescents will satisfy their nutritional requirements.

According to this study, adolescents' stunting was significantly correlated with their mother's level of education. The odds of stunting were 2.18 times higher for adolescents whose mothers had only completed primary school than for those whose mothers had completed formal education. This is similar with studies conducted from Ethiopia (Lisanu Mazengia and Andargie Biks, 2018), (Argaw et al., 2022) and Nigeria (Senbanjo et al., 2011). This could be that educated mother have better understanding on nutrition and health. She may also have greater authority in the home and be able to increase output to better the nutritional state of their family and children. Additionally, she would be better off using childhood survival techniques like adequate breastfeeding, immunizations, and family size restriction. Literate mothers often use limited resources wisely for the benefit of their children than illiterate mother who have more resources. Therefore, educating girls would be an appropriate approach to reduce the magnitude of stunting (Lisanu Mazengia and Andargie Biks, 2018).

Regarding meal frequency and eating habits, current study revealed that those adolescents who eat less than three times were two times more likely to be stunted compared to those eat more than three times and above. Which is in line with a study conducted in the Gondar Town,

Northwest Ethiopia (Tamrat et al., 2020). Adequate meal frequency indeed accelerates a linear growth of adolescents since it provides them with enough vital nutrients for their physical size. Additionally, socioeconomic factors, such as food insecurity, may play a significant role in meal frequency and overall nutrition. Ultimately, inadequate meal consumption during adolescence can hinder physical growth, emphasizing the importance of ensuring regular and balanced dietary intake to prevent stunting.

5.1 Strength of the study

- Information bias was minimized giving brief orientation for the adolescents during data collection.
- Anthropometric measurement was minimize by intensive training given for data collectors, standardization of anthropometric measures was done and the instrument was calibrated.
- Recall bias was minimized by giving brief orientation for the study participants during data collection.

5.2 Limitation of the study

- Limitation of the study could be information about age of the adolescent that was filled by themselves on self-administered structured questionnaire
- Anthropometric measurement error is also other limitation
- Recall bias may be one of the limitations of the study on 24hrs DD and household food insecure

6. CONCLUSION AND RECOMMENDATION

6.1. Conclusion

Under nutrition (stunting and thinness) remains widespread among secondary adolescents throughout the study area. This study shows that around six out of twenty adolescents still face problem of stunting. Moreover, approximately five out of twenty adolescents face the problem of thinness. This raises serious public health concerns due to the increased risk of stunting and thinness among adolescents. Stunting among adolescents has been observed to be associated with the meal frequency and maternal education. Similarly, thinness among adolescents has been associated with Gender, maternal education, father education and dietary diversity of the adolescents**.**

6.2. Recommendation

Based on the findings of current study the following recommendations are forwarded**.**

- **For the District**

- To implementation of community-based adult literacy initiatives aimed at mothers with little to no formal education is the goal. Collaborate with neighborhood associations and community facilities to provide easily accessible classes.
- To produce and give out parenting classes and materials that emphasize the value of education and offer useful methods for promoting kids' learning at home.
- The establishment of community liaison officers would enable them to interact with families and offer tailored support and direction for navigating the educational system.

- **For schools**

- To establish customized learning programs for children whose moms have little formal education, offering extra help where it might be most needed.
- To develop mentorship programs that match kids with accomplished people or senior citizens who can offer social and academic support.

To plan parent-teacher conferences with the express purpose of include moms with little formal education and offering a friendly and encouraging setting for dialogue.

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7. ANNEX

7.1 participant information sheet and informed voluntary consent form for school directors

Introduction: My name is Munira Isak Hussien I am a principal investigator of this study to be conducted in this school. I am studying for my master's degree at Haramay University, the college of health and medical science in Ethiopia, and I kindly request that you give me your attention so that I can explain to you about the study and why your school was selected as the study setting.

The study title is "undernutrition and associated factor among secondary school adolescents in hodan district, Mogadishu, Somalia"

Purpose of the study: the aim of the study is to write a thesis as a partial requirement for the fulfillment of master's program in public health nutrition for the principal investigator. The finding will be crucial in helping the Hodan district develop intervention plans to evaluate the nutritional status of adolescents in your school and other related aspects.

Procedure and duration: Data collectors will give you a structured questionnaire for randomly selected adolescents, that provide important information that is helpful for the study. The data collection will take about 30 to 50 minutes, so kindly request you to give me attention for this interview.

Risks and benefits: there will be a limited minimal harm that may face the participant when participating in this study which will be take about few minutes from their time. There will not be a direct payment for participating this study, the finding of this study may reveal important information for the local health planners and implementers.

Confidentiality: the information that the participant provides to us will be confidential. There will be no information that will individual identify participant in particular. The findings of this study will be general for the study community and will not reflect anything particular of individual person or housing. The questionnaire will be coded to exclude showing names. No reference will be made in oral or written reports that could link participants to the research.

Rights:

participation in this study is fully voluntary, participants have the right to participate or not in the study, if they decide to participate, they have the right to withdraw from the study at any time and will not label them for any loss of benefits, which they otherwise are entitled they do not have to answer any question that they do not want to answer. The public and private schools have also the right to stop this study from being conducted if any misdeeds and unethical procedures are observed during the data collection process in the public and private schools

Contact address: If there any question or inquires at any time about the study or procedure, please contact principal investigator: Munira Isak Hussien phone number + 252617587139 or +2521927504000 Email isackmandira@gmail.com Institutional Health Research Ethics Review Committee (IHRERC) at office phone (+251) -0254662011 or P.O. Box 235, Harar Ethiopia

Declaration of informed voluntary consent

I have read the participant information sheet, I have a clearly understood the purpose of the study, the procedures, the risks and benefits, issues of confidentiality, the right of participating, and the contact address for any queries, Iam also informed that the school has the right to stop this study from being conducted if any misdeeds and unethical procedures are observed during the dat collection process in the school's premises. Therefore, I declare may voluntary consent on behalf of this school management to allow this study to be conducted in the school with my initial(signature)

Name and signature of school directors_____Date_____

Name of data collectors_____Date_____

7.2. Participant information sheet and informed voluntary consent form for adolescent aged 18years and above

My name is _____I am working as data collector for the study being conducted by Munira Isak Hussien who studying her master's degree at Haramaya University, Collage of Health Science. I kindly request you to lend me your attention to explain you about the study and institution being selected as a study setting

The study title is "undernutrition and associated factor among secondary school adolescent in hodan district, Mogadishu, Somalia"

Purpose of the study: the aim of the study is to write a thesis as a partial requirement for the fulfillment of master's program in public health nutrition for the principal investigator. The finding will be crucial in helping the Hodan district develop intervention plans to evaluate the nutritional status of adolescents in your school and other related aspects.

Procedure and duration: You will be provided a self-administrared questionnaire and you will fill the answer to provide me the pertinent data that is helpful for the study. Filling of the question will take about 35 minutes. Finally, we will take measurement of your height and weight with minimum clothing. This will not take more than 10 minutes. So, I kindly request you to spare me this time for the data collection

Risks and benefits: there will be a minimal harm that may face you when participating in this study which will be take about few minutes from your time. There will not be a direct payment for participating this study, the finding of this study may reveal important information for the local health planners and implementers.

Confidentiality: the information you will provide us will be confidential. There will be no information that will identify you in particular. The findings of this study will be general for the study community and will not reflect anything particular of individual person or housing. The questionnaire will be coded to exclude showing names. No reference will be made in oral or written reports that could link participants to the research.

participation in this study is fully voluntary, you have the right to participate or not in the

Rights:

study, if you decide to participate, you have the right to withdraw from the study at any time and will not label you for any loss of benefits, which you otherwise are entitled. You do not have to answer any question that you do not want to answer.

Contact address: If there any question or inquires at any time about the study or procedure, please contact principal investigator: Munira Isak Hussien phone number + 252617587139 or +2521927504000 Email isackmandira@gmail.com Institutional Health Research Ethics Review Committee (IHRERC) at office phone (+251) -0254662011 or P.O. Box 235, Harar Ethiopia

Declaration of informed voluntary consent

I have read the participant information sheet, I have clearly understood the purpose of the study, the procedures, the risks and benefits, and issues of confidentiality, the right of participating, and the contact address for any queries, I have been given the chance to ask questions about anything that may have been unclear. Iam also informed that I have the right to withdraw from the study at any time or not answer any question that I do not want. Therefore, I declare may voluntary consent to participate in this study with my initial (signature) as stated below.

Name and signature of participant_____Date_____

Name of data collectors_____Date_____

7.3 Participant information sheet and informed voluntary consent from of parents/guardian for adolescent aged less than 18years.

My name is_____I am working with Munira Isak Hussein who is doing the research for partial fulfillment of the requirement master degree in public health nutrition of Haramaya University, MPH program. Your child has been selected randomly to participate in this study. Since your child is under age 18, as a parent/guardian your child participation in the study will be based on your willingness so you need to be aware of every detail information regarding the study to declare your agreement concerning the study.

The study title is "undernutrition and associated factor among secondary school adolescent in hodan district, Mogadishu, Somalia"

Purpose of the study: the aim of the study is to write a thesis as a partial requirement for the fulfillment of master's program in public health nutrition for the principal investigator. The finding will be crucial in helping the Hodan district develop intervention plans to evaluate the nutritional status of adolescents in his/her school and other related aspects.

Procedure and duration: I will ask your child a structured questionnaire and she/he will fill the answer to provide me the pertinent data that is helpful for the study. Filling of the question will take about 35 minutes. Finally, we will take measurement of her/his height and weight with minimum clothing. This will not take more than 10 minutes. So, I kindly request your child to spare me this time for the data collection

Risks and benefits: there will be minimal harm that may face your child when participating in this study which will take about few minutes from your child's time. There will not be a direct payment for participating this study, the finding of this study may reveal important information for the local health planners and implementers.

Confidentiality: the information your child will provide us will be confidential. There will be no information that will identify his/her in particular. The findings of this study will be general for the study community and will not reflect anything particular of individual person or housing. The questionnaire will be coded to exclude showing names. No reference will be made in oral or written reports that could link participants to the research.

Rights:

participation in this study is fully voluntary, your child has the right to participate or not

in the study, if he/she decides to participate, he/she has the right to withdraw from the study at any time and will not label him/her for any loss of benefits, which him/her otherwise is entitled. He/she does not have to answer any question that she/he does not want to answer.

Contact address: If there any question or inquires at any time about the study or procedure, please contact principal investigator: Munira Isak Hussien phone number + 252617587139 or +2521927504000 Email isackmandira@gmail.com Institutional Health Research Ethics Review Committee (IHRERC) at office phone (+251) -0254662011 or P.O. Box 235, Harar Ethiopia

Declaration of informed voluntary consent

I have read/was read to me the participant information sheet, I have clearly understood the purpose of the study, the procedures, the risks and benefits, and issues of confidentiality, the right of participating, and the contact address for any queries, I have been given the chance to ask questions about anything that may have been unclear. Iam also informed that I have the right to withdraw my child from the study at any time he/she does not answer any question that he/she does not want. Therefore, I declare may voluntary consent my child to participate in this study with my initial (signature) as stated below.

Name and signature of parent's /guardian _____ Date_____

Name of data collectors _____Date _____

NB: this is signed face to face in the presence of the data collector. Please provide a copy of signed consent to participant

7.4. Participant information sheet and informed voluntary consent form for adolescent aged 18years and above "afsomali"

Hordhac: magaceydu waa _____ waxaan ka shaqeeynayaa xog aruuriye ahaan daraasadda ay wado Munira Isak Hussein oo baraneeysa heerka labaad ee daraasadda ku baraneeysa Haramaya kuliyada barashada caafimaadka. Waaxan si naxariis leh kaga codsanayaa inaad I amaahiso dareenkada si aan kugu qeexo ahmiyada daraasadda.

Daraasadda: 'Nafaqada darada iyo waxyabaha la xiriira dhalinyarada dhigata iskuulada saree e ku nool dagmada hodan ee Mogadishu Somalia'

Ujeeddoyinka: muhiimada darasadan ayaa ah in loo qorro buuk kaas oo qeyb ahaan looga bahanyahy buuxinta heerka labaad ee waxbarashada nafaqada, daweynta dadweynaha ee mamulaha daraasadan. Sidoo kale waxay noqon kartaa mid muhiim u ah cawinta dagmada hodan iyo hormarinta qorsheynta dhex galaka ah si loo qimeeyo xalada nafaqada ee da'yarta dhigata dugsigaan iyo waxyabaha kale ee la xiriira

Nidaamka io muddada: waxaan ku weeydiin doonaa xog aruurin habeysan waxaadna buuxin doonta jawaabaha si aad ii siiso xogta waxtarka leh ee muhiimka u ah daraasaddan. Buuxinta sualahaan waxeey qadadan doonaan 35 daqiiqo. Ugu danbeeyn waxaan qadadeynaa cabirka dhirirgada io miisankada adoo wadatid dhar macquul ah. Ma qaadan donto wax ka badan 10daqiiqo. Sidaaz darted waxaa si naxariis leh kaga codsanaa inaad igala qeyb qadato waqtiga xog aruurinta.

Khataraha iyo faaidoyinka: khatarta ka qayb galka daraasaddan waa mid aad u yar, lkn kaliya daqiiqado ka qaadandoonta ardayda. Ma jiro wax lacag bixin toos ah oo loogu talagalay kaqaybgalka daraasaddan. Lakiin natiijoyinka ka soo baxay cilmi baaristan ayaa laga yaaba inay muujiyaan macluumaad muhiim u ah qorshayaasha caafimaadka deegaanka.

Qarsoodi: macluumadka aad na siisaan waxeey noqon donaan kuwo qarsoon. Ma jiri doonaan macluumaad si gaar u aqoosan doono ka qeybqataha. Natiijoyinka darasaddaan ayaa noqon doonto mid guud oo loo talagalay bulshada mana ka turjumeeyso wax gaar ah qof ama guri.foomka xog aruurinta waxaa lagu calaamadeyn doonaa si looga reebo magacyo

Rights:

muujinaya.wax tixraac ah lama sameyn dono warbixino afka ah ama qoraal ah oo ku xiri kara ka qaybgalayaasha cilmi barista..

Xuquuqda: kaqaybgalka daraasaddan waa ikhtiyaar ikhtiyaari ah. waxaad xaq uleedahay inaad ku dhawaaqdo inaad ka qaybqaadato ama aanad kujirin daraasaddan. Hadii aad go,aansato inaad ka qayb qaadato, waxaad xaq u leedahay inaad ka noqoto. laga soo bilaabo daraasadda waqti kasta iyo tan ayaan kugu calaamadeyn doonin luminta waxtarada oo aad si kle xaq ugu leedahay. ma aha inaad ka jawaabto suaal kasta oo aadan rabin inaad ka jawaabto.

Ciwaanka lala xiriiro: hadii ay jiraan suaalo ama wax laga waydiiyo waqti kasta oo ku saabsan daraasadda ama nidaaamka, fadlan la xiriiro adreeska soo socda. Baraha guud ms. Munira Isak Hussien taleefanka: +252617587139 ama +2521927504000 Email isackmandira@gmail.com Guddiga Dib u-eegista Anshaxa Cilmi baarista Caafimaadka ee Hayadda (IHRERC) Taleefanka xafiiska: 0254662011 ama PO.BOX:253, Harar, Ethiopi.

Bayaanka ogolaanshaha ikhtiyaariga ah ee la wargeliyay

Waan akhriyay/waa lay akhriyay xaashida macluumaadka ka qaybgalaha. waxaan si cad u fahmay ujeedada cilmi barista, habraacyada, halista iyo faaidooyinka, arimaha sirta, xuquuqda kaqeybgalka iyo cinwaanka xiriirka wixii suaalo ah. Waxaa la isiiyay fursad aan ku waydiiyo suaalo waxyaabo aan cadayn Karin.waxaa la igu wargeliyay in isbitaalada iyo xarunta caafimad ay xaq u leeyihiin inay joojiyaan daraasadan in lasameeyo hadii wax khaladaad ah iyo hanaan anshax xumo ah lagu arkay inta lagu gudo jiro hawsha xog aruurinta ee dhismaha isbitaalada.
Magaca iyo saxiixa ka qaybgalka: _____ Taariikh _____

Magaca iyo saxiixa xog aruurinta: _____Taarikh_____

7.5. Participant information sheet and informed voluntary consent from of parents/guardian for adolescent aged less than 18years “af somali”

Hordhac: magaceygu waa_____waxaan la shaqeeyaa Munira Isak Hussein oo sameyneyso cilmibaarista si ay qeyb ahaan u buuxiso heerka labaad ee waxbarashada ee nqeybta nafaqada cafimaadka, ee jaamacad Haramaya. Ilmahaga ayaa si aan kala sooc leheen ayaa loo doortay inuu ka qeyb qaato daraasaddan. Madama uu ilmahaga ka yaryahy 18sano, waalid ahaan/masuul ahaan ka qeyb qadashada ilmahaga waxa uu ku saleynsanan doonaa rabitaankada marka waxaad u baahantahay macluumad kasta oo faahfaahsan oo ku saabsan daraasadda si aad u cadeyso hishiiska ku saabsan daraasadda

Daraasadda: ‘Nafaqada darada iyo waxyabaha la xiriira dhalinyarada dhigata iskuulada saree e ku nool dagmada hodan ee Mogadishu Somalia’

Ujeeddoyinka: muhiimada darasadan ayaa ah in loo qorro buuk kaas oo qeyb ahaan looga bahanyahy buuxinta heerka labaad ee waxbarashada nafaqada, daweynta dadweynaha ee mamulaha daraasadan. Sidoo kale waxay noqon kartaa mid muhiim u ah cawinta dagmada hodan iyo hormarinta qorsheynta dhex galaka ah si loo qimeeyo xalada nafaqada ee da’yarta dhigata dugsigaan iyo waxyabaha kale ee la xiriira

Nidaamka io muddada: waxaan weeydiin doonaa ilamahaaga su’aalo habeysan isaga/iyada ayaa buuxin doona jawaabaha si ay ii siiyaan xogta muhiimka ah ee waxtarka u leh daraasadda. Suuxinta sualaha waxeey qaadan doonan 35daqiiqo. Ugu danbeyn waxaa la cabiri doonaa asiga/iyada dhirirgoda iyo miisaankoda ayagoo dhar macquul ah wata tani ma qaadan doonto wax ka badan 10 daqiiqo. Marka waxaa si naxariis leh kaga codsanaa inaad waqti igu tudhid xog aruurintaan

Khataraha iyo faaidoyinka: khatarta ka qayb galka daraasaddan waa mid aad u yar, lkn kaliya daqiiqado ka qaadandoonta ardayda. Ma jiro wax lacag bixin toos ah oo loogu talagalay kaqaybgalka daraasaddan. Lakiin natiijoyinka ka soo baxay cilmi baaristan ayaa laga yaaba inay muujiyaan macluumaad muhiim u ah qorshayaasha caafimaadka deegaanka.

Qarsoodi: macluumadka aad na siisaan waxeey noqon donaan kuwo qarsoon. Ma jiri doonaan macluumaad si gaar u aqoosan doono ka qeybqataha. Natiijoyinka darasaddaan ayaa noqon doonto mid guud oo loo talagalay bulshada mana ka turjumeeyso wax gaar ah qof ama guri

foomka xog aruurinta waxaa lagu calaamadeyn doonaa si looga reebo magacyo muujinaya.wax tixraac ah lama sameyn dono warbixino afka ah ama qoraal ah oo ku xiri kara ka qaybgalayaasha cilmi barista.

Xuquuqda: kaqaybgalka daraasaddan waa ikhtiyaar ikhtiyaari ah. waxaad xaq uleedahay inaad ku dhawaaqdo inaad ka qaybqaadato ama aanad kujirin daraasaddan. Hadii aad go,aansato inaad ka qayb qaadato, waxaad xaq u leedahay inaad ka noqoto. laga soo bilaabo daraasadda waqti kasta iyo tan ayaan kugu calaamadeyn doonin luminta waxtarada oo aad si kle xaq ugu leedahay. ma aha inaad ka jawaabto suaal kasta oo aadan rabin inaad ka jawaabto.

Ciwaanka lala xiriiro: hadii ay jiraan suaalo ama wax laga waydiiyo waqti kasta oo ku saabsan daraasadda ama nidaaamka, fadlan la xiriiro adreeska soo socda. Baraha guud ms. Munira Isak Hussien taleefanka: +252617587139 ama +2521927504000 Email isackmandira@gmail.com Guddiga Dib u-eegista Anshaxa Cilmi baarista Caafimaadka ee Hayadda (IHRERC) Taleefanka xafiiska: 0254662011 ama PO.BOX:253, Harar, Ethiopi.

Bayaanka ogolaanshaha ikhtiyaariga ah ee la wargeliyay

Waan akhriyay/waa lay akhriyay xaashida macluumaadka ka qaybgalaha. waxaan si cad u fahmay ujeedada cilmi barista, habraacyada, halista iyo faaidooyinka, arimaha sirta, xuquuqda kaqeybgalka iyo cinwaanka xiriirka wixii suaalo ah. Waxaa la isiiyay fursad aan ku waydiiyo suaalo waxyaabo aan cadayn Karin.waxaa la igu wargeliyay in isbitaalada iyo xarunta caafimad ay xaq u leeyihiin inay joojiyaan daraasadan in lasameeyo hadii wax khaladaad ah iyo hanaan anshax xumo ah lagu arkay inta lagu gudo jiro hawsha xog aruurinta ee dhismaha isbitaalada.

Magaca iyo saxiixa ka qaybgalka: _____Taariikh_____

Magaca iyo saxiixa xog aruurinta: _____Taarikh_____

7.6 Questionnaire

Part one: socio demographic factors		
Code	Questions	Response
101	sex	1. Male 2. Female
102	How old are you?	---------- years
103	What is the mother's education level?	1. No formal education 2. Primary 3. Secondary 4. Collage and above
104	What is the father's education level?	1. No formal education 2. Primary 3. Secondary 4. Collage and above
105	What is your family size?	---------- number
106	Did you get a packet money in a week or month?	1. Yes 2. No
107	Distance of school from your home?	1. _____ minutes
108	Which method do you use for transport to school?	1. Taxi 2. Walks 3. Both

Part two: meal consumption frequency questions			
Code	Questions	Response	Skip
201	Usually for how many times do you consume your regular meal with in a day?	1. Less than 3times 2. Three times and above	
202	Did you skip any meal?	1. Yes 2. No	
203	Most of the time, which type did you skip?	1. Breakfast 2. lunch	
		3. dinner 4. not skip	
204	Why did you skip any type of your meal?	1. No meal availability 2. To minimize weight and shape 3. Lack of appetite 4. Lack of time 5. Not skip	
205	What time of snacks mostly eats?	1. Between breakfast and lunch 2. Between lunch and dinner	

206	Your snacks mainly on what type of food?	1. Fruit and vegetables 2. Chips 3. Bread 4. Juice 5. Other specify	
207	With whom did you eat your meal mostly?	1. Alone 2. With completely family 3. With friends 4. Other specify	
208	Where did you mostly obtain nutrition information?	1. Friends 2. Media 3. Parents 4. From school 5. From health worker 6. Other specify	
209	What did you prefer to do during free time?	1. Physical exercise 2. Shopping 3. Listening to music	
		4. Watching TV 5. Reading book	
210	Have you ever ill with in last week?	1. Yes 2. No	

211	If yes of Q10 what type of illness?	----------	

Part three: dietary diversification practice within 24 hrs.		
301	Yesterday during the day and night, did you eat porridge, bread, rice, pasta, biscuit or any food made from cereals and grains?	[0] No [1] Yes
302	Yesterday during the day and night, did you eat potato, sweet potato or any other food made of tubers or roots?	[0] No [1] Yes
303	Yesterday during the day and night, did you consume foods made from beans, peas, lentils or other pulses?	[0] No [1] Yes
304	Yesterday during the day and night, did you consume foods made from groundnut/peanut, or certain seeds, or nut/seed butters or pastes, including plumpy nut?	[0] No [1] Yes
305	Yesterday during the day and night, did you consume m*ilk, cheese, yoghurt or other milk products but not including butter, ice cream, cream or sour cream?*	[0] No [1] Yes
306	Yesterday during the day and night, did you consume *liver, kidney or other organ meats?*	[0] No [1] Yes
307	Yesterday during the day and night, did you consume b*eef, lamb, goat, chicken or other meat/poultry?*	[0] No [1] Yes
308	Yesterday during the day and night, did you consume *fresh or dried fish?*	[0] No [1] Yes
309	Yesterday during the day and night, did you consume eggs?	[0] No [1] Yes
310	Yesterday during the day and night, did you consume *any medium-to-dark green leafy vegetables such as spinach and lettuce?*	[0] No [1] Yes
311	Yesterday during the day and night, did you consume *pumpkin, carrots, squash or sweet potatoes that are yellow or orange inside?*	[0] No [1] Yes
312	Yesterday during the day and night, did you consume fruits such as ripe papaya or mango?	[0] No [1] Yes
313	Yesterday during the day and night, did you consume other vegetables?	[0] No [1] Yes
314	Yesterday during the day and night, did you consume other fruits?	[0] No [1] Yes

Part three: questions to assess household food insecurity		
401	Is the past four weeks, did you worry that your household would not have enough food?	Yes= 1 No= 0
401	If yes, how often did this happen?	1. Rarely (1 or 2 times) 2. Sometimes (3 to 10 times) 3. Often (>10 times)
402	In the past four weeks, were you or any household member not able to eat the kinds of foods you preferred because of lack of resources?	Yes=1 No= 0
402	If yes, how often did this happen?	1. Rarely (1 or 2 times) 2. Sometimes (3 to 10 times) 3. Often (>10 times)
403	In the past four weeks, did you or any household member have to eat a limited variety due to lack of resources?	Yes= 1 No=0
403	If yes, how often did this happen?	1. Rarely (1or 2 times) 2. Sometimes (3 to 10 times) 3. Often (>10 times)
404	In the past four weeks, did you or any household member have to eat some foods that you really did not want to eat because of a lack of resources to obtain other types of food?	Yes =1 No =0

404	If yes, how often did this happen?	1. Rarely (1 or 2 times) 2. Sometimes (3 to 10 times) 3. Often (>10)

405	In the past four weeks, did you or any household member have to eat a smaller meal than you felt you needed because there was not enough food?	Yes= 1 No =0
405	If yes, how often did this happen?	1. Rarely (1 or 2 times) 2. Sometimes (3 or 10times) 3. Often (>10 times)
406	In the past four weeks, did you or any other household member have to eat fewer meals in a day because there was not enough food?	Yes= No =0
406	If yes, how often did this happen?	1. Rarely (1 or 2 times) 2. Sometimes (3 or 10 times) 3. Often (>10times)
407	In the past four weeks, was there ever no food to eat of any kind in your household because of lack of resources to get food?	Yes =1 No =0
407	If yes, how often did this happen?	1. Rarely (1 or 2 times)

		2. Sometimes (1 to 10 times) 3. Often (>10 times)
408	In the past four weeks, did you or any household member go to sleep at night hungry because there was not enough food?	Yes =1 No = 0
408	If yes, how often did this happen?	1. Rarely (1 or 2 times) 2. Sometimes (1 to 10 times) 3. Often (>10 times)
409	In the past four weeks, did you or any household member go a whole day and night without eating anything because there was not enough food?	Yes =1 No =0
409	If yes, how often did this happen?	1. Rarely (1or 2 times)
		2. Sometimes (1 to 10 times) 3. Often (>10 times)

Part five: anthropometric measurement		
501	Height in centimeter	----------cm
502	Weight in kg	----------kg

7.7. Questionnaire Somali version AALADAHA

URURINTA XOGTA

A. SU'AALO TAYO LEH

Qaybta kowaad: astamaha asalka ah

Lambarka	Su'aalaha	Jawaabah	
101	Waa maxay jinsigaga?	1. Ragg 2. Dumar	
102	Imisa sanno ayaa jirta?	---------- lambar	

103	Sheeg heerka aqooneed ee waalidka?	1. Waxna aan qorin waxna aan akhrin 2. Iskool hoose 3. Iskool sare 4. Koleej mise wixii ka sareeya	
104	Waa imisa tirada qoyskaaga?	--------- ambar I	
105	Waa maxay diintadu?	1. Islaam 2. Kiristaan 3. Diimaha kale	
106	Ma hesha wax lacag ah asbuucii ama bishii?	1. Haa 2. May	
107	Iskoolku inte kuu jiraa?	1. In ka yar 30 daqiiqo 2. Hal saac 3. In ka badan hal saac	

Qeybta labaad: imisa weeye isticmalka cuntada			
Numbarka	Su'aalaha	Jawaabaha	Kaboodid

201	Imisa jeer baad maalintii si joogta wax u cunta?	1. In ka yar 3 jeer 2. 3 jeer maalintii 3. 3 jeer iyo in kabadn	
202	Inta badan cuntadee ka tagta?	1. Quraacda 2. Qadada 3. Cashada 4. Midna	
203	Sabab baad uga tagtaa cuntooyinka qaar?	1. Cunto la'aan 2. Si an u yareeyo miisabka 3. Abateetka oo iga xiran 4. Midna	
204	Waqtigee cuntada fudud cuntaa inta badan?	1. Inta u dhaxeysa quraacda iyo qadada 2. Inta u dhaxeysa qadada iyo cashada	

205	Qaybtee cuntada fudud qaadata inta badan?	1. Khudaar iyo miro 2. Jibiska 3. Sharaab 4. Waxyaalo kale	

206	Yaa cuntada la cuntaa inta badan?	1. Kaligeey 2. Ehelka oo dhan 3. Saaxibadeey 4. Dad kale	
207	Xagee ka heshaa xogta cuntada nafaqada leh?	1. Saaxibadeey 2. Idaacada 3. Waalidkeey 4. Iskuulka 5. Bahda caafimaadka 6. Cidnah	
208	Maxaad qabata xiliyada aad firaaqada tahay?	1. Waxan sameeya jimicsi 2. Suuqa kasoo adeegta	

		3. Heesaha ayan dhegaysta 4. Talefishinka daawada 5. Buugta akhriyaa	
209	Maxaad ku aada iskuulka?	1. Lugtayda 2. Bajaaj 3. Gaari 4. Mooto 5. Noocyo kale	
210	Ma xanuunsatay asbuucii u danbeeyey?	1. Haa may 2.	
211	Hadey jawaabtadu tahay haa xanuunkee kugu dhacay?	----------	

Qaybta saddexaad: ku dhaqanka kala duwanaanshaha cuntada 24 saac gudahood.		
301	Shalay habeenkii iyo maalintii ma cuntay Boorash, Rooti, Bariis, Baasto, Buskud ama wax kasta oo cunto ah oo laga sameeyay badarka?	[0] Maya [1] Haa
301	Shalay habeenkii iyo maalinti, ma cuntay baradho, baradho macaan ama cunto kasta oo ka samaysan xidid?	[0] Maya [1] Haa

303	Shalay maalintii iyo habeenkii, miyaad isticmaashay cuntooyinka laga sameeyay digirta, misirta ama miraha kale?	[0] Maya [1] Haa
304	Shalay maalintii iyo habeenkii, miyaad isticmaashay cuntooyinka laga sameeyay lawska/ lawska, ama iniinaha qaarkood, ama subagga lowska/iniinta?	[0] Maya [1] Haa
305	Shalay maalintii iyo habeenkii, miyaad isticmaashay caano, farmaajo, caano fadhi ama wax kale oo caano ah laakiin aan lagu darin subag ama labeen?	[0] Maya [1] Haa
306	Shalay habeen iyo maalin, ma cuntay beerka, kelyaha ama hilibka kale ee xubnaha?	[0] Maya [1] Haa
307	Shalay maalintii iyo habeenkii, ma cuntay hilib lo'aad, ido, ari, digaag ama hilib kale?	[0] Maya [1] Haa
308	Shalay maalintii iyo habeenkii, ma cuntay kalluunka cusub ama qallalan?	[0] Maya [1] Haa
309	Shalay maalintii iyo habeenkii, ma cuntay ukun?	[0] Maya [1] Haa
310	Shalay maalintii iyo habeenkii, miyaad isticmaashay khudaar cagaaran oo dhexdhexaad ah ama madow ah sida isbinaajka iyo salaar?	[0] Maya [1] Haa
311	Shalay maalintii iyo habeenkii, miyaad isticmaashay bocorka, karootada ama baradhada macaan ee gudaha jaalaha ah ama liimiga ah?	[0] Maya [1] Haa
312	Shalay habeen iyo maalin ma cuntay y miraha sida babayga bislaaday ama canbaha?	[0] Maya [1] Haa
313	Shalay maalintii iyo habeenkii, miyaad isticmaashay khudaar kale?	[0] Maya [1] Haa
314	Shalay maalintii iyo habeenkii, miyaad isticmaashay midho kale?	[0] Maya [1] Haa

Qaybta Afarad sida lagu cabrio hooyada uurka leh aqoonteeda nafaqada

401	Afartii sbucii lasoo dhaafay marna welweshay inadan haysan cunto kugu filan?	1. Haa 2. May	
401	Hadey tahay jawaabtadu haa imisa jeer bay dhacday?	1. In yar (1 ilaa 2 jeer) 2. Wey soo noqnoqotay (3 ilaa 10 jeer) 3. In badan (>10 jeer)	
402	Afartii asbuucii lasoo dhaafay qof kamida xafaada inuu cuno cuntada qayb kamid sababtoo ah waxa jirtay dhaqaali yari?	1. Haa 2. May	
402	Hadey tahay jawaabtadu haa imisa jeer bay dhacday?	1. In yar (1 ilaa 2 jeer) 2. Wey soo noqnoqotay (3 ilaa 10 jeer) 3. In badan (>10 jeer)	
403	Afarrtii asbuucii lasoo dhaafay majirta inaad	1. Haa 2. May	

	canteen cunto xadidan dhaqaalo la'aan?		
403	Hadey tahay jawaabtadu haa imisa jeer bay dhacday?	1. In yar (1 ilaa 2 jeer)	
		2. Wey soo noqnoqotay (3 ilaa 10 jeer) 3. In badan (>10 jeer)	
404	Afartii asbuucii lasoo dhaafay ma cuntay cuntada qaybta ka mid aadan rabin sababto ah lama haysan cunto inaku filin?	1. Haa 2. May	
404	Hadey tahay jawaabtadu haa imisa jeer bay dhacday?	1. In yar (1 ilaa 2 jeer) 2. Wey soo noqnoqotay (3 ilaa 10 jeer) 3. In badan (>10 jeer)	

405	Afartii asbuucii lasoo dhaafay ma canteen cunto yar idinkoo cunto kale u baahan?	1. Haa may 2.	
405	Hadey tahay jawaabtadu haa imisa jeer bay dhacday?	1. In yar (1 ilaa 2 jeer) 2. Wey soo noqnoqotay (3 ilaa 10 jeer) 3. In badan (>10 jeer	
406	Afartii asbuuc lasoo dhaafay ma canteen intii laga rabay cuntada in ka yar sababto ah cunto kugu filan ma haysan?	1. Haa 2. May	

406	Hadey tahay jawaabtadu haa imisa jeer bay dhacday?	1. In yar (1 ilaa 2 jeer) 2. Wey soo noqnoqotay (3 ilaa 10 jeer)	

		3. In badan (>10 jeer	
407	Afartii asbuuc lasoo dhaafay waxba ma idiin cunin sabatoo ah waxa weydeen cunto iyo dhaqaale lagu soo gato?	1. Haa 2. May	
407	Hadey tahay jawaabtadu haa imisa jeer bay dhacday?	1. In yar (1 ilaa 2 jeer) 2. Wey soo noqnoqotay (3 ilaa 10 jeer) 3. In badan (>10 jeer	
408	Afartii asbuuc lasoo dhafay mar aad ku seexateen gaajo sababto ah cunto idinku filan ma haysan?	1. Haa may 2.	
408	Hadey tahay jawaabtadu haa imisa jeer bay dhacday?	1. In yar (1 ilaa 2 jeer) 2. Wey soo noqnoqotay (3 ilaa 10 jeer)	

		3. In badan (>10 jeer	
409	Afartii asbuuc lasoo dhaafay maalin dhan ilaa habeenkii ineydan wax cunin sababto ma'ydan haysan cunto idinku filan?	1. Haa 2. May	
409	Hadey tahay jawaabtadu haa imisa jeer bay dhacday?	1. In yar (1 ilaa 2 jeer) 2. Wey soo noqnoqotay (3 ilaa 10 jeer) 3. In badan (>10 jeer	

Qaybta shanaad: cabirka miisanka iyo dhererka		
501	Dhererka oo cabirkiisu yahay cm	----------cm
502	Miisaanka oo cabirkiisu yahay kg	------- kg

7.8 Curriculum Vitae (CV)

Name : Munira Isak Hussein Tel : +252 617587139 or +2521927504000

Email : isackmandira@gmail.com

Address : hawlwadaag/Mogadishu/Somalia

Major Achievements

Over the past four years, i have been engaged variety of activities, primarily midwifery related issues over the past three years, Additionally, I willingly participated in the emergencies such as draughts and floods that has taken place in Beledweine in 2016 and 2018, throughout my tenure in working within Midwifery duties i provided massive awareness for pregnant childbearing mothers to consult with doctors and contact for nearby health posts, I also encouraged pregnant mothers to avoid unskilled traditional midwives during delivery aimed to reduce HIV transmission and pregnant related complications, preventing maternal and infant deaths.

Personal Details

Nationality : Somali

Date of birth : 24 Oct 2000

Resident : Mogadishu

Passport **:** Available

Educational background

2009-2018: AL-Imra Secondary School

2013-2012: Diploma in English at Universal School

2018-2020: Diploma degree of Mogadishu Midwifery Training Institute

2020-2022: Bachelor degree of Midwifery from Hope University

Candidate: For master degree at haramaya university (MPH Nutrition)

Work Experience

2019-2020: worked at Banadir Maternity hospital as internship

2018-2019: Worked at SOS hospital as internaship

Jan 2020 – September 2021: worked for MERCY-USA at Negeyle Health Centre (Karaan District-Banadir).

Responsibilities:

- examining and monitoring at –risk pregnant patients
- creating care plans for patients
- monitoring and caring for several pre-term infants after birth
- performing tests on and administering mediciation to infants

2021-2022: worked at Yardameli Hospital as Midwife **Responsibilities:**

- providing antenatal, birthing, postnatal and special care in the hospital maternity ward and nursery settings.
- providing perinatal care at pre-term gestations in calming patients and providing a high level of care in high-pressure and emergency medical situations.
- caring for expectant parents and babies throughout all stages of their pregnancy and following birth.

Computer and Typing Skills

Excellent working knowledge of Microsoft Office applications

Languages Spoken

English : Fluent

Arabic : Fluent

Somali : Native

Referees

1. Isak Hussein Mohamed

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