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Comparative Analysis of Nutritional Status among 4 to 6 year old Preschool Children of Government and Private Schools in Lideta sub city, Addis Ababa

BY: EYERUSALEM GETACHEW

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A Thesis Submitted to Center for Early Childhood Care and Education in partial fulfillment of the requirements for the degree of master of Arts in Early childhood care and Education

Approval of board of Examiners

1. ADVISOR	SIGNTURE	DATE
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3. EXTERNAL EXAMINER	SIGNTURE	DATE
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DECLARATION

I Eyerusalem Getachew, the undersigned, declare that this thesis is my original work. All sources of materials used for the thesis have been duly acknowledged. I further confirm that the thesis has not been submitted either in part or in full to any other higher institution for the purpose of earning any degree.

Name

Signature

ENDORSEMENT

This thesis has been submitted to Addis Ababa University, School of Graduate Studies for examination with my approval as advisor.

Advisor _____ Signature_____

Abstract

The study aimed to assess the nutritional status of 4 to 6-year-old preschool children attending government and private preschools. Two schools were selected in Lideta sub-city by using simple random sampling technique and 30 students from government and 30 from private were also selected by using simple random sampling technique. Two data collection instruments; anthropometry measurement and questionnaire were used. Data, including height, weight, and BMI, were collected and processed using SPSS version 27. AnthroPlus software version 1.0.4, a user-friendly tool, assessed children's growth and nutritional status using standardized reference data. The analysis included descriptive stats (percentile and frequency) and inferential stats (regression and t-test), with the binary logistic model applied. Results from the anthropometry measurement reveals that more children in private schools fall within the normal weight category 25(83.3%) compared to government schools 21(70%). Private schools also have a more significant proportion of children with standard height 21(70%) than government schools 16 (53.3%). Similarly, more students in private schools have a normal BMI 28 (93.3%) compared to government school students 24 (80%). These findings indicate that children in private schools exhibit slightly better nutritional status concerning weight, height, and BMI when compared to their counterparts in government schools. Based on the data collected total monthly household income and fathers' employment status were identified as significant factors positively influencing nutritional status, particularly in weight-for-age, height-for-age, and BMI. However, it was observed that other variables, including the education level of mothers and fathers, the employment status of mothers, primary sources of parental nutrition knowledge, confidence regarding nutritional knowledge, and challenges related to providing a balanced diet, did not demonstrate a statistically significant impact on the nutritional status of children, as assessed by weight-for-age, height-for-age, and BMI measurements. On the other hand, there is no statistically difference in weight for age, height for age and body mass index (BMI) between governmental and private preschool. thus, it is recommended that future research focusing on nutritional status should incorporate a comprehensive analysis of nutrient intake. It would provide a more in-depth understanding of the factors influencing children's nutritional well-being, which can guide more targeted interventions and policies and should Conduct studies in a broader range of schools by Expanding the scope of research to encompass various school settings to conduct studies in a broader range of schools and expanding the scope of research to encompass various school settings.

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ABBREVIATIONS/ACRONYMS

WAZ weight- for-age

HAZ Height-for-age Z-score

BMI Body Mass Index

WHO World Health Organization

SPSS Statistical Package for Social Science

SES Socio economic status

SD standard deviation

HFA Height –for- age

WFH weight- for- age

EPHI Ethiopian Public Health Institute

Acknowledgment

I would like to express my deepest thankfulness to God for giving me the courage and direction I needed to finish this study. My father Getachew Workeneh has been consistently supportive and committed to this research throughout every step, and I want to express my heartfelt appreciation for that. His help when I needed someone as well as his ongoing support and encouragement were beyond praise. In addition, I thank my mother a debt of gratitude for her constant belief in me and continuous support, which gave me the courage to see this project through to the end. I sincerely thank my adviser, Dr. Fantahun Admas, for his expert advice and priceless insights, which made a major impact in the quality of this study. I would like to thank my good friend Aster and my cousin Habtamu Getenet for their advice and assistance throughout this project. Your advice and support were crucial to my success. I would especially like to thank my sister Edom Z/tsion, who has always been supportive, encouraging and whose unreserved faith in me has kept me driven during this experience. The school administrators' warmth and hospitality in letting me use their facilities and supporting my encounters with students are also appreciated.

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CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

Nutritional status is the physiological condition of an individual that results from the relationship between nutrient intake and requirements (Mahdavi et al., 2021). It is an important indicator of overall health and wellbeing. Nutritional status has been defined as "the physiological state of an individual which results from the relationship between nutrient intake and requirements and from the body's ability to digest, absorb and use these nutrients" (King and Garza, 2007). The Food and Agriculture Organization (FAO) similarly defines it as "the physiological state resulting from the relationship between nutrient intake and requirements and from the body's ability to digest, absorb and utilize nutrients" (FAO, 2013). These standard definitions encompass three main components - nutrient intake, nutrient requirements, and the body's ability to utilize nutrients. Nutritional status depends on getting adequate intake of macronutrients (protein, carbohydrates, fat) and micronutrients (vitamins, minerals) to meet metabolic, physiological and growth needs (Müller and Krawinkel, 2005). It also relies on the body's capacity to digest, absorb, transport, utilize and excrete nutrients efficiently.

Nutrition refers to the intake of food or nutrients and the process by which organisms utilize nutrients for growth, maintenance, reproduction and health (Hernández Rodríguez et al., 2021). Nutrients include macronutrients (proteins, fats, carbohydrates) that provide energy and micronutrients (vitamins, minerals) that regulate body processes though required in smaller amounts (Whitney et al., 2019). Adequate nutrition prevents malnutrition and diet-related chronic diseases. Nutritional needs vary with age, physiology, and disease state.

Nutritional status is influenced by a complex interplay of dietary, socioeconomic, environmental, and political factors (Pérez-Escamilla et al., 2018). Key internal or biological influences are genetics, metabolism, gut micro biome, disease state, and nutrient utilization. External or social factors include food availability, dietary habits, education, income, cultural beliefs, agriculture, and public policies on nutrition (Hernández Rodríguez et al., 2021). These multilevel factors lead to inequities in nutritional status across populations. Good nutrition is the cornerstone of health and well-being for all children (Rempel, 2015). The process by which living organisms obtain and use the components they need for survival, growth, and the upkeep of weakened tissues is collectively called nutrition. (Melkie,2004). It Helps to improve child survival, promote healthy growth and development, and contribute to better cognitive and economic development (Nolla et al., 2014). It is an essential aspect of one's overall health and indicates the well-being of children living in a given area (Adegun et al., 2013). Under nutrition refers to inadequate intake of energy and nutrients to meet nutritional requirements of the body. It can manifest as inadequate growth, development and function of the body due to prolonged nutritional deficiency (WHO, 2018). Undernutrition encompasses the following conditions:

Wasting - Low weight-for-height indicating acute malnutrition characterized by rapid weight loss or failure to gain weight resulting from inadequate energy intake or severe disease/infection, especially in children under 5 years old (Black et al., 2013).

Stunting - Low height-for-age reflecting chronic malnutrition starting from fetal life, inadequate nutrition over long periods and recurrent infections, leading to failure to achieve expected linear growth in children (UNICEF, 2019).

Underweight - Low weight-for-age indicating both acute and chronic under nutrition, identified by weighing children against expected weights for their age based on growth standards (de Onis & Blössner, 1997). Micronutrient deficiencies - Lack of key vitamins (e.g. vitamin A, folate) and minerals (e.g. iron, zinc) caused by inadequate intake, poor absorption or utilization. It impairs body functions and immune response (Allen et al., 2006). Under nutrition significantly impacts growth, development, and infectious disease susceptibility. A study in Africa revealed that 35% of child fatalities under the age of five that could have been prevented were due to under nutrition (Brits et al., 2020). Improving the nutritional status of children is crucial because their nutritional status results in a healthy and productive future generation (Mussie et al., 2015). According to Mussie (2015), In the long run, healthy nutritional status leads to a strong labor force produced by a population with a high nutritional state, which benefits economic growth. Factors Affecting Nutritional Status includes Socioeconomic status (SES), Dietary Habit: **,** Nutritional knowledge, Health condition, Healthcare access, Cultural and social factors, Food security. Inadequate food intake, Poor feeding practices, Infectious diseases, Poor sanitation and hygiene, Lack of knowledge are the Causes of low nutritional status in school children in developing countries. According to a study by Laghari et al. (2015), there is growing evidence that most children worldwide are underweight. It stated that Children must start eating a weaning diet after six months of age to meet their nutritional needs. Malnutrition refers to "deficiencies, excesses or imbalances in a person’s intake of energy and/or nutrients" (WHO, 2021). It constitutes both under nutrition and over nutrition. Under nutrition includes wasting, stunting, underweight and micronutrient deficiencies. Over nutrition represents overweight, obesity and diet-related no communicable diseases (WHO, 2021). Malnutrition impairs physical growth, immune function, and cognitive development. Under nutrition is estimated to contribute to nearly half of all child deaths globally (Black et al., 2013).

A study by Nolla et al. (2014) that examined the nutritional status of preschoolers in the Bangang rural community in Cameroon concluded that malnutrition is a significant issue among children.

Melkie (2004) stated that Depending on economic, ecological, social, and other reasons, malnutrition differs from nation to nation. The most severe nutritional issues currently facing Ethiopia are primarily caused by a poor intake of foods overall. Children's under nutrition is still a significant public health issue in underdeveloped nations like Ethiopia. Over the past ten years, Ethiopia has made encouraging strides in lowering under nutrition levels (Ahmed. A. et al., 2017)

UNICEF promotes and supports laws, plans, and initiatives that ensure a healthy food environment and early childhood nutrition. It includes helping governments enact laws and rules that increase the accessibility and affordability of healthy foods and prevent children from consuming fatty foods and beverages (UNICEF, 2019). To maintain global nutrition momentum, a sharp focus on nutrition investments, policies, and programs on outcomes that truly matter will help accelerate Progress toward the well-being of children in disadvantaged communities (Leroy & Frongillo, 2019).

In Lalibela Town, Northern Ethiopia, a study by (Birara et al., 2014) of children aged 6 to 59 months proposed malnutrition. Stunting, underweight, and wasting affect 44%, 29%, and 10% of young children in Ethiopia and 52%, 33.4%, and 9.9% in the Amhara National Region.

A study by Melkie (2007) in a remote part of Northwest Gumbrit surveyed preschoolers to evaluate their nutritional status. The results revealed a significant malnutrition problem in the area, with 28.5% of children being underweight, 24% stunted, and 17.7% wasted. The study found low household income was the only socioeconomic factor linked with malnutrition. Therefore, in rural areas, children's nutritional status is affected by a lack of family income (Melkie, 2007).

1.2 Statement of The Problem

The nutritional status of individuals is a critical determinant of overall health and well-being. Despite global efforts to address malnutrition, there persists a significant challenge, particularly in vulnerable populations. Factors such as socioeconomic disparities, dietary habits, limited nutritional knowledge, and barriers to healthcare access contribute to the complex landscape of nutritional issues. In addition, insufficient understanding of the contextual factors influencing nutritional status in specific populations, such as school children in developing countries, hinders the development of targeted and effective interventions. Consequently, there is a pressing need to comprehensively investigate and understand the multifaceted determinants of nutritional status, identify specific challenges within different demographic groups, and develop evidence-based strategies to improve nutritional outcomes and promote public health. According to UNICEF (2019), the growth and development of children are severely harmed by malnutrition; children and societies will struggle to realize their full potential if it is not addressed. This challenge will be overcome only by tackling malnutrition at every stage of a child's life and by placing children's specific nutritional needs at the center of food systems and the systems that support them in health, water and sanitation, education, and social protection. It also stated that many of our children and young people do not consume the foods they require, which compromises their ability to reach their full potential in terms of development, growth, and learning. As UNICEF (2020) stated, the expected increases in childhood stunting and wasting, obesity, and chronic diseases linked to food are intolerable and will harm human capital. It also stated that Diets are not becoming healthier for people or the environment. Ermiyas and Bezatu (2017) stated that child malnutrition and food insecurity are the main issues in Ethiopia. However, how much food insecurity affects children's nutritional condition has yet to be understood entirely. The study also revealed that over the past ten years, Ethiopia has steadily increased its economy and

expanded its healthcare system. However, among kids under the age of 5, undernutrition continues to be a severe public health issue. Slow child development is a sign of poor nutrition, which means the child's nutritional intake is insufficient to meet the body's needs for nutrients, particularly those for the brain. It will impede the child's development. (Ishud & Romadona, 2020). Therefore, this study aims to further explore the associated factors that contribute to children's nutritional status. Socioeconomic considerations strongly influence children's nutritional status differences in public and private schools. Children who attend private schools mostly come from higher-income households and have better access to nutritional foods, according to research by Carter et al. (2022), while children in public schools may experience financial difficulties and have restricted access to healthy food options. However, this study aims to address by measuring anthropometry measurement and examining if there are additional factors beyond income. the education levels of both the mother and father, the employment status of both parents, the primary sources of parental knowledge about nutrition, their confidence in this knowledge, challenges they face in providing a balanced diet. In addition, to compare if there is difference in nutritional status between the two school settings.

According to a study by Mekonnen et al. (2021), children who attend private schools frequently come from wealthier households and have better access to nutritious foods. In contrast, public school students may experience financial difficulties and need more access to healthy food options. In order to determine the causes of these differences, a thorough study that compares and analyzes the nutritional condition of children attending government and private schools must be conducted. Understanding these variations can help shape targeted programs and policies to enhance schoolchildren's nutritional results and advance general health and well-being.

This study aims to assess the nutritional Status among 4- to 6-year-old Preschool Children in government and Private Schools in lideta sub-city.

1.3 Objectives

1.3.1 General objective

The general objective of this study was to evaluate the nutritional status of preschool children aged 4 to 6 years attending both government and private schools in the Lideta sub-city.

1.3.2 Specific objectives

- To conduct an anthropometric survey on a specific age group (4-6) year children regarding the weight for age, height for age and body mass index.
- To determine if there is a significant weight for age, height for age, and BMI difference between government and private preschool children.
- To identify the determinant factors that affect the nutritional status of government and private preschool children.

1.4 Research Questions

1. What are the anthropometric measurements of children (ages 4-6) enrolled in government and private preschools?
2. Is there a significant weight for age, height for age, and BMI difference between government and private preschool children?
3. What are the associated factors that affect the nutritional status of government and private preschool children?

1.5 Significance of the study

a) The findings of the study can offer important insights into preschoolers' nutritional status, which is essential for public health planning and interventions. Targeted interventions to

enhance children's nutritional outcomes and general health can be informed by knowledge about the incidence of malnutrition and variations among school types.

b) Policymakers can find inequities and create evidence-based strategies to address nutrition-related issues in both school types by contrasting the nutritional condition of children in public and private schools.
c) The findings of the research may also be important to school administrators and teachers. The development of school-based nutrition education programs.
d) The study can be used as a reference point for ongoing investigations of the nutritional status of preschool children in the study area.

1.6 Delimitations (Scope of the study)

This study focuses on preschool children who are between the ages of 4 and 6 who attend both government and private schools. As the main method of assessing nutritional status, the study involves anthropometric measurements, such as weight-for-age, height-for-age, and Body Mass Index. The sample size consists of 60 preschoolers in total (30 from each of the two schools—one government and one private).

1.7 Limitation of the study

The study's focus on only two schools, one private and one government, within the Lideta sub city is acknowledged as a limitation. The inherent diversity among preschools in the entire sub city may not be fully captured with this restricted selection. This limitation is primarily attributed to budget and time constraints. It is essential to interpret the findings within the context of this limited school representation, recognizing that a more comprehensive understanding of preschoolers' nutritional status across the entire sub city would require a broader selection of schools, which was constrained by the available resources and time frame.

This study gives valuable insights into the nutritional status of preschool children using anthropometric measurements. However, it would be beneficial to include dietary and nutrient intake data for a more comprehensive understanding of nutritional status. These additional factors provide a deeper insight into the nutritional profiles of the children. Unfortunately, budgetary restrictions limit this investigation to anthropometry measurements mainly. Evaluating nutrient intake would provide a more thorough understanding of the children's nutritional status. However, it requires more extensive and resource-intensive methods, such as dietary assessments and nutrient analysis, which were beyond the scope and budget of this study.

1.8 Assumptions

This study operates under the assumption that various factors, socio economic factors such us, total monthly household income, education level of parents, employment status of parents, primary sources of knowledge of parents about nutrition, Confidence about nutritional knowledge of parents and Challenges providing a balanced diet. collectively influence the nutritional status of 4- to 6-year-old preschool children in both government and private schools within the Lideta sub-city. The assumption further posits that understanding and analyzing these factors will provide insights into the complexities of nutritional challenges in this specific demographic group.

CHAPTER TWO

LITERATURE REVIEW

2.1 Nutritional Status

Nutritional status refers to the physiological condition of an individual that results from the relationship between nutrient intake and requirements (Mahdavi et al., 2021). It is an important indicator of overall health and wellbeing. Nutrition is The process through which living things obtain and use the components they need for existence, growth, and the maintenance of damaged tissues collectively called nutrition (Melkie, 2004). The field concerns how food interacts with an organism to maintain and advance health and well-being (Koirala, 2018). The capacity of the body to utilize nutrients properly and consume enough of them to meet metabolic needs for health and fitness is the fundamental concept of nutritional status. (Adegun et al., 2013).

According to WHO recommendations, a child's nutritional status can be evaluated using three different methods: weight for age, height for age, body mass index and weight for height (Shrestha et al., 2020).Early childhood is a crucial time for growth and development. Nutrition is essential for children to achieve their full developing potential throughout this window. (Black et al., 2013; WHO, 2022). In order to prevent both under nutrition and over nutrition, it is essential to establish appropriate eating habits throughout the early preschool years (WHO, 2022).

Poor nutritional status, including under nutrition and micronutrient deficiencies, remains highly prevalent among children under five in low- and middle-income countries. Recent estimates indicate that 149 million children are stunted, and 50 million are wasted globally (UNICEF, 2019). Under nutrition during childhood impairs growth, immune function, and cognitive development, with long-term impacts on health and human capital (Black et al., 2013). Factors influencing nutritional status include poverty, food insecurity, inadequate infant and young child

feeding practices, poor sanitation, and recurring infections (Akombi et al., 2017). Studies consistently show higher rates of stunting, underweight, and micronutrient deficiencies among children in rural versus urban areas and those attending government versus private schools (Avula et al., 2017; Prakash et al., 2010). Targeted interventions, including nutrition education, micronutrient supplementation, deforming, and school feeding programs, have proven effective at reducing under nutrition and promoting child health (Lassi et al., 2013).

2.1.1 Factors Affecting Nutritional Status

1. **Socioeconomic status (SES):** Socioeconomic status significantly influences a person's ability to access proper nourishment. (Smith et al., 2019). The likelihood of experiencing food insecurity and having limited access to fresh produce, vegetables, and other necessary nutrients is higher for people with lower incomes (Brown & Carter, 2020). According to studies (Smith et al., 2019), low-income People are more vulnerable to food insecurity and have limited access to fresh vegetables and other essential nutrients.
2. **Dietary Habit:** Malnutrition, obesity, and other diet-related disorders can result from poor dietary decisions, such as eating a diet high in processed foods, sugar, and unhealthy fats (Gibney et al., 2016). A healthy whole grains, fruits, and vegetables diet improves overall nutritional status. (Mozaffarian & Ludwig, 2017).
3. **Nutritional knowledge:** When populations lack sufficient nutritional knowledge, they are more likely to consume poor diets that increase risk of obesity, heart disease, diabetes, and other conditions (Torres-McGehee et al., 2012).
4. **Health condition:** Underlying medical issues can negatively affect nutritional status. (Dudek, 2016). Malnutrition can result from nutrient deficiencies caused by long-term diseases, infections, and gastrointestinal problems (Wardlaw et al., 2019).

5. **Healthcare access:** Access to healthcare services and nutritional guidance can greatly influence nutritional status. (Krishnan et al., 2017). According to Krishnan(2017), Regular checkups and screenings can spot early indications of malnutrition or nutritional deficiencies, enabling prompt monitoring and intervention.
6. **Cultural and social factors:** Dwivedi and Bailur (2016) claim that some cultural practices may encourage or discourage the consumption of particular foods, affecting dietary intake and nutritional status.
7. **Food security:** Malnutrition can result from a lack of access to food, especially in populations that are already at risk, such as children and pregnant women (Jones et al., 2020).

2.1.2 Causes of low nutritional status in school children in developing countries

1. **Inadequate food intake:** Children in developing countries often need more access to a diverse range of foods, leading to a limited intake of essential nutrients (Bhutta et al., 2013). According to Bhutta (2013), Poverty and food insecurity, which can limit access to the availability of nutritious foods, make this situation worse. Inadequate food intake is the primary cause of low nutritional status in school-aged children.(Gomez et al., 2019).
2. **Poor feeding practices:** Poor feeding practices can bring on undernutrition in children, such as giving supplemental meals too early, feeding them infrequently, and not nursing them. (Salam et al., 2013).
3. **Infectious diseases:** Viral diseases, including diarrhea and respiratory infections, can decrease appetite and promote nutrient malabsorption, leading to low nutritional status in children in less developed nations. (Black et al., 2013).

4. **Poor sanitation and hygiene:** Lack of access to sanitary facilities and clean water could decrease preschoolers' nutritional status and raise their risk of contracting infectious diseases (UNICEF, 2021).
5. **Lack of knowledge:** Caregivers' insufficient training and knowledge regarding proper feeding methods for newborns and early children can also contribute to malnutrition in preschool-aged children. (Goudet et al, 2020).

2.1.3 Empirical studies on Nutritional status

Studies from various nations have examined the nutritional status of preschoolers aged 3-6 in public versus private schools, including India, Malaysia, Lebanon, and Kenya. According to studies by Mamidi et al. (2011) and Zalilah et al. (2000), under nutrition rates are higher among children attending government schools from lower-income families.

A research conducted by A study in urban India found that 4-6-year-old children in private preschools had slightly higher height-for-age and weight-for-age Z-scores than children in government Anganwadi centers. However, many differences were not statistically significant. The authors concluded that private school children may have marginally better nutrition overall. (Singh & Mukherjee, 2018).

A study in urban slums of India assessed the nutritional status of children aged 3-6 years enrolled in Integrated Child Development Services centers run by the government and private preschools (Devadas et al., 2016). Anthropometric measurements were taken, including height, weight, and mid-upper arm circumference. It resulted in no significant difference in the prevalence of under nutrition indicated by stunting, wasting and underweight between children in government versus private preschools. The authors concluded that the urban slum environment and underprivileged background of families contributed to poor nutrition regardless of whether children attended

government or private centers. In a study done in rural areas in Southern Ethiopia, preschool-aged children (ages 3-5) had their nutritional status and related determinants investigated (Gebru et al., 2018). Children attending government health center preschools and private preschools were compared in terms of anthropometric measurements, such as height-for-age, weight-for-age, and BMI-for-age Z-scores. The study found that children in private preschools had significantly higher weight for age and height for age than those in government preschools. The authors suggested higher socioeconomic status of families sending children to private preschools was a likely factor leading to better nutrition.

From April to August 2012, Wong conducted a case-control study in the maternal and child health clinics in five districts of Terengganu, Malaysia. The case was a child with moderate to extreme malnutrition. The malnourished child in the control group was the same age as the case. Two hundred seventy-four students in total, 137 cases, and 137 controls were enrolled. The interviewees were all Malaysians. Among the cases, a higher percentage from low-income households was present: Childhood malnutrition linked to lower socioeconomic status, household food insecurity, and inadequate childcare practices, and the study recommended that in addition to implementing programs aimed at reducing poverty, community-based nutrition and hygiene education with extensive family planning and de-worming programs should intensify to improve both mother and child's nutritional status. Sabely et al.'s (2013) Comparative Study of the nutritional condition and eating habits of children Attending Public and Private Primary Schools in Zagazig City, Egypt, demonstrates that there are statistically significant variations between the two participating student groups in terms of their body mass index. as well as their socio-demographic information. Parents of the two investigated groups showed a statistically significant difference in educational attainment (For mothers, 53.8%, 78.3%, and for fathers,

23.6%, 57.1%). Parents of students attending private schools had greater educational levels than parents of students attending public schools.

According to a comparative study conducted by Agbozo et al. (2016) between government and private schools in Hohoe Municipality, Ghana, nutrition and over nutrition were prevalent among schoolchildren. However, overweight appeared primarily driven by high SES and urbanization, whereas under nutrition was associated with low SES and rural residency. Interventions targeting school children should aim at reducing poverty and hunger as these factors remain as underlying causative factors.

2.1.4 Nutritional status in different contexts (government vs. private schools)

According to several researches from low- and middle-income nations, there are differences in nutritional status between preschoolers enrolled in public versus private schools (Mamidi et al., 2011). According to research conducted in India by Mamidi et al. (2011), children at public preschools experience much higher rates of under nutrition than those in private preschools, including stunting, underweight, and wasting. Zalilah et al. (2000) reported similar results in Malaysia. Preschoolers in public schools had a 50% greater prevalence of stunting and underweight than private school students. The government school group included parents with significantly lower levels of education. Overall, the evidence demonstrates that socioeconomic considerations influence the lower nutritional status of public school preschoolers compared to private school students. However, the prevalence of bad eating habits across all school types highlights the need for nutrition interventions among all preschoolers, regardless of school type.

2.1.5 School feeding program in Ethiopia

The government of Ethiopia launched a multiyear Education Sector Development Program (ESDP) in 1997 as part of a twenty-year education sector indicative plan, which has been translated into a series of national ESDPs. This ESDP aims to increase access to education while

also improving equity and educational quality using different strategies. One of the significant programs to implement ESDP and achieve the country's education needs is the provision of the School Feeding Program (WFP, 2008).

In Ethiopia, SFP started with the support of WFP in 1994 with an initial pilot project in war-affected zones in the Tigray region and then expanded to chronically food-insecure districts in six regional states (Afar, Amhara, Oromia, SNNPR, Somali, and Tigray). After that, SFP continued to expand in many regions of the country, where food shortages were significant problems. In 2008, WFP provided food for 915 schools with 482,000 children who benefited from SFP. Since then, SFP has been prioritized, and many stakeholders have contributed to the implementation.

In 2009, the World Food Program moved away from a project approach to integrating school feeding programs into the broader system of government policies in the education and social protection sectors. The policy included a renewed importance on government ownership by focusing on local solid procurement, a link with smallholder farming, and a commitment to more nutritious food hampers. This emphasis was to create the modality called the Home Grown School Feeding Program (HGSFP) (WFP, 2013). The program aims to increase children's school performances, such as attention, attendance, enrollment, and retention rate (Bundy et al.; Songa, 2011).

Ethiopian school health strategy also emphasizes the importance of good nutrition to fully understand children's learning potential and capitalize on returns on educational investments. Similarly, malnutrition studies show that nutrition affects a child's attentiveness, concentration, aptitude, and overall performance and harms school attendance and dropout. Thus, the strategy recommended that schools promote good nutrition practices implemented by different

government and non-governmental bodies by integrating nutrition interventions, including the School Feeding Program, to reach most children and youth (MOE, 2012).

Though many families in Addis Ababa could not provide adequate meals for their school-age children, SFP started in 2015. (UNDP, 2000). At the start, Addis Ababa SFP was run by a local NGO, "YenatWeg," in two sub-cities. Later on, other stakeholders joined the program. According to Addis Ababa Regional Education Bureau (AAREB), in the 2016/17 school year, 30,252 students became beneficiaries of SFP. It was observed by implementing SFPs in 206 (93%) government primary schools in Addis Ababa.

School Feeding programs are beneficial for disadvantaged children. Which can be seen in the improvement of physical growth and intellectual abilities. (Lawson, T.M., 2012). Other than reducing under nutrition, school feeding programs also improved school enrollment rates. However, the effects of school feeding programs on nutrition and education remain controversial. Some studies indicate that SFP has a positive outcome on both, whereas others failed to see the significant effect of SFP on reducing school dropouts and increasing class attendance. (Dheressa DK, 2017)

Even though short-term hunger can be addressed through school feeding, its effect on growth might be less. Some studies also showed that it might be too late to witness the impacts because, by the time children reach school age, it will be too late to catch up or recover from growth decline (Buttenheim A, Alderman H, Friedman J., 2011).

According to the Ministry of Education, School feeding programs across the country are benefiting around 1 million students. In the 2019/20 school year. AAEB was planning to engage 300,000 children in the school feeding program. (ENA, 2019a).

2.1.6 Nutritional status of preschool children in Ethiopia

Early Childhood malnutrition is a significant public health issue in many Low-income countries, including Ethiopia (Fikadu et al., 2020). Early childhood malnutrition could have long-term effects on a child's health, cognitive development, and academic success (Black et al., 2013). Therefore, it is crucial to understand the prevalence and determinants of malnutrition in this population in order to develop effective interventions and policies (Fikadu et al., 2020).

Prevalence of Malnutrition: A more recent study by Demissie et al. (2021) reported a slightly lower prevalence of stunting (33.5%) but a higher prevalence of wasting (17.2%) and underweight (30.4%) in a sample of preschool children from Amhara region of Ethiopia.

Several factors were to be determinants of malnutrition in Ethiopia's preschoolers. These include having access to sanitary facilities and water, household income, and feeding practices for mothers. (Teshome and Demissie et al., 2021). For example, a study by Gultie and Hailu (2018) found that children of mothers with no formal education were more likely to be stunted, wasted, and underweight compared to those whose mothers had at least secondary education.

According to (EPHI and UNICEF, 2020), various areas of Ethiopia showed diverse nutritional conditions in 2020. The survey found regional variations, with some regions having more cases of malnutrition than others. For instance, Addis Ababa had the lowest frequency of stunting (13%), while the Amhara area had the most significant prevalence (46%), followed by the Afar region (43%).

According to Girum et al. (2015), the Ethiopian government has implemented several programs to address the nutritional issues preschoolers confront. These initiatives include encouraging only breastfeeding, offering supplemental feeding programs, providing micronutrient supplements, improving water and sanitation facilities, and educating caregivers about nutrition.

2.1.7 Nutritional status indicators

a) **underweight :** Low body weight in relation to height is a defining characteristic of underweight (WHO, 2020).
b) **Stunting**: The term "stunted" When a child's growth is stunted, their height is significantly less than what is typical for someone of that age (WHO, 2006).
c) **Wasting:** Acute malnutrition, commonly referred to as wasting, is a condition marked by a low weight-to- Height ratio (WHO, 2006).
d) **Overweight:** The term "overweight" describes an excessive buildup of body fat, typically brought on by a calorie intake that is higher than calorie expenditure. (WHO,2020)

   The following table explains the cut-off points for underweight, stunting, wasting and thinness. Interpretation of cut-off points.

2.1.8 Anthropometric Measurements

Anthropometry scientifically measures the human body's physical characteristics, proportions, and composition (Gupta, 2018). Involve various factors, such as height, weight, body mass index (BMI), waist, hip, and limb lengths, and different body segment lengths (Dehghan et al., 2018).

Weight for age is one of the leading indicators the World Health Organization uses to detect under nutrition in children. (WHO, 2019).

The WHO uses two classifications to determine a child's weight-for-age status. If a child's weight-for-age measurement is less than two standard deviations (-2SD) below the median weight-for-age of the reference population, then they are termed underweight. Severely underweight is a weight-for-age measurement with less than three standard deviations (-3SD) below the median (WHO, 2019).

Height for Age: Height-for-age is a commonly used measure of growth and nutritional status among children. According to the World Health Organization (WHO), The most sensitive

indication of long-term nutritional status and development failure in children is height for age. (WHO, 2006).When the height-for-age distance from the reference population's median is more than two standard deviations, it is used to determine the prevalence of stunting. Stunting is a significant issue for public health, affecting an estimated 149 million children worldwide in 2020 (UNICEF et al., 2021).Addressing stunting requires a multispectral approach, including improving maternal and child nutrition, access to clean water and sanitation, and providing quality healthcare and education services (UNICEF et al., 2021).

Body mass index (BMI): The Body Mass Index (BMI) widely evaluates nutritional health, particularly in young children, evaluate nutritional health, particularly in young children. It helps assess general nutritional well-being because it is determined by comparing a person's weight to height (WHO, 2006). According to de Onis et al. (2007), the BMI categorization, which includes categories like "underweight" and "normal weight," has proved a helpful tool for identifying children who may be at risk of malnutrition. It is essential to understand that there are better measurements than BMI. BMI broadly considers the weight-to-height ratio and might not give a complete picture of a child's nutritional status. If a child's weight is in proportion to their height, even those with mild stunting or shorter stature may still have a BMI within the normal range (de Onis et al., 2007).

2.2 Malnutrition

Malnutrition is the effect of insufficient, excessive, or improper calorie and nutrient intake (Koirala, 2018). It remains a serious worldwide health problem with a high prevalence and substantially contributes to child morbidity and mortality (Musa et al., 2021). Today, nearly one in three people worldwide experience some form of malnutrition, including stunting, wasting, vitamin and mineral deficiencies, overweight or obesity (WHO,2016). In underdeveloped

nations, significant public health issues that many developing nations, including Ethiopia, deal with (Temam. B. et al., 2022).

2.2.1 Types of malnutrition

1. **Under nutrition:** is a diet lacking in nutrient-rich foods. A low body mass index (BMI) indicates that a person is undernourished because individuals experiencing under nutrition have low body fat reserves (Wakim & Grewal, 2021). Stunting and wasting brought on by under nutrition during the preschool years can have negative health implications that last a lifetime, including cognitive and academic impairment, decreased economic productivity, and an increased risk of chronic diseases linked to poor nutrition (Black et al., 2013). Under nutrition is most prevalent among children under five in low- and middle-income countries, with nearly 150 million children affected by stunting globally (UNICEF, 2019). Under nutrition impairs physical growth, immune function, and cognitive development. Key risk factors include poverty, food insecurity, inadequate dietary intake, suboptimal feeding practices, and repeated infections (WHO, 2022).
2. **Over nutrition** is an excessive or abnormal fat accumulation in the adipose tissue that may impact people's health (Mohammed,2020). Over nutrition results in overweight, obesity, and diet-related non-communicable diseases like diabetes and heart disease. It is rising among all age groups, including children, especially in urban settings and wealthier households (WHO, 2022). Changes in food systems, food environments, and lifestyles are driving over nutrition. Contributing factors include increased consumption of ultra-processed foods high in fat, salt, and sugar and reduced physical activity.

2.2.2 Cause of malnutrition

Malnutrition has a variety of causes that can change over time and location (Tariku, 2022). A single element or multiple factors can cause it. (Ijarotimi, 2013). Disease and insufficient dietary

intake of energy, protein, and micronutrients are the primary causes of poor nutritional condition in children. Malnutrition is caused, in part, by an imbalance between the nutrients that the body needs and the nutrients that are consumed or assimilated by the body (Tariku, 2022). *Poverty* is the primary barrier preventing low-income households from accessing enough food (Drammeh, 2021). Young child feeding relies on what the child eats and the quality of the caregiver-child interaction (Mwase, 2015).

Poor feeding, opportunistic infections, or a combination of the two are also major contributors to malnutrition in most children and a lack of food availability. Similar to how diarrhea, pneumonia, measles, and malaria degrade children's nutritional state, these infections are frequent and persistent (Bhatta, 2011).

Poverty and food insecurity at the household and community levels are major underlying determinants of malnutrition among children globally (UNICEF, 2019). Children from low-income families are disproportionately affected by under nutrition. Low income limits families' ability to access and purchase diverse, nutritious foods to meet dietary requirements. This results in inadequate intake of calories, protein, vitamins, and minerals needed for proper growth and development in children (Black et al., 2013). At the national level, poverty leads to inadequate food systems and deficiencies in health, water, sanitation, and other services that exacerbate malnutrition. Low-income countries face more significant challenges in improving child nutrition outcomes (IFPRI, 2016). Food insecurity at household and national levels further impairs access to sufficient, nutritious foods. This includes availability, economic and physical access, and food utilization.

CHAPTER THREE

RESEARCH DESIGN AND METHODOLOGY

3.1 Research Design

This study utilized a comparative research design, which assessed differences and similarities in weight-for-age, height-for-age, and body mass index (BMI) among children in selected government and private preschools in the Lideta sub city. Comparative studies involve analyzing and comparing two or more groups, treatments, or populations on a given variable or outcome (Goodrick, 2014). Comparative designs allow researchers to identify differences between groups and investigate the potential factors that may contribute to those differences (Burt, 2014). The research aimed to discern variations in nutritional indicators and associated factors by comparing these two settings. This design provided the framework for collecting data, conducting analyses, and drawing meaningful conclusions about the nutritional status of these students.

3.2 The Study Area

The study took place in the government and private preschools Golabirhan and Ruhama, respectively, in the Lideta sub city of Addis Ababa, Ethiopia. Government schools often serve a diverse demographic, including children from lower socioeconomic backgrounds. Private schools, on the other hand, may attract students from relatively higher socioeconomic strata. This dichotomy allows for a nuanced examination of nutritional status across diverse socioeconomic contexts, providing a comprehensive understanding of the factors influencing the health and well-being of preschool children in this specific urban setting. The inclusion of both types of schools enhances the study's ability to capture a holistic picture of nutritional disparities and potential contributing factors in the selected age group.

3.3 Study Population

This study which was conducted in the Lideta sub-city of Ethiopia's capital, Addis Ababa, has a total of 18 government and 23 private preschools. A simple random sampling technique was used to randomly select two government and private preschools, and to study the nutritional status of preschoolers between the ages of 4 and 6 with a sample size of 30 children being selected using stratified sampling technique from each of the selected schools and 60 general samples.

With regard to the nutritional status of students in Addis Ababa's government and private schools, there is a critical gap that the current study fills. There haven't been many researches that specifically examined the eating patterns and nutritional requirements of preschool-aged children, despite the importance of early childhood nutrition on growth and development. This study intends to shed light on the nutritional difficulties faced by children between the ages of 4 and 6 and how their eating practices vary across various school environments by concentrating on this age group. Overall, studying preschool between the ages of 4 and 6 offers valuable insight on their nutritional needs, eating habits and growth patterns that may be used to guide targeted interventions and policies aimed at enhancing the health and wellbeing of this vulnerable age group.

3.4 Study variables

The dependent variable in this study is nutritional status of children and the independent variables are parents specific factors and socio economic factors such us, total monthly household income, education level of parents, employment status of parents, primary sources of knowledge of parents about nutrition, Confidence about nutritional knowledge of parents and Challenges providing a balanced diet.

3.5 Sample and sampling techniques

Stratified sampling was employed in this study to ensure the selection of a representative sample from both private and government preschools while considering gender distribution. The following provides the sampling technique's explanation.

From the total 112 private preschool students, 30(26.7%; M=16(14.24), F=14(12.46)) students were selected. In addition, from the total 235 government preschool students, 30(12.7%; M=16(6.7%), F=14(12.46)) were also selected. The sample size is taken depend on the guideline for such studies one should at least select 10-20% of the accessible population for the sample (Yogefh, 2006).

Therefore, a sample of 60 children was selected for the study, equally distributed between private and government schools and with a gender distribution. This approach allows one-on-one correspondence for insightful comparisons between the two school types possible.

3.6 Data collection instruments

3.6.1 Anthropometry measurement

in order to measure the anthropometry measurement

a. Height: With the line of sight straight to the horizontal surface, a stadiometer was used to measure the children's height. Children were required to stand on a height board without shoes, with their feet clasped together and parallel to the ground and their heels and buttocks touching the wall. It was ensured that the hands were held tightly at the sides and the head was maintained upright. The child's height was calculated to the closest tenth of a centimeter.

b. Weight: With minimal clothing and no shoes, weight was determined using an electronic digital weighing scale that reads to the closest 0.1 kg. Each child's weight was measured before and after by setting the scale to zero.

3.6.2 Questionnaire

The questionnaire utilized in this study was adapted and modified from a validated and reliable source in the field of child nutrition assessment. The adjustments were made to ensure the relevance and appropriateness of the questions for the specific context of assessing the nutritional status of 4- to 6-year-old preschool children in the Lideta sub-city. This approach allowed for the incorporation of established and well-tested measures, enhancing the questionnaire's validity and reliability in capturing pertinent information related to the factors influencing nutritional status.

3.7 Pilot test

To ensure the reliability of the research tool and eliminate any ambiguity or misinterpretation of the questions, we conducted a pilot test among school children. Initially prepared in English, the questionnaire was administered to 15% of the sampled schoolchildren, which amounted to 15 participants based on the sampling plan. After the pretesting phase, any items that were found to be unclear, misleading, or inaccurately interpreted were identified and removed. The questionnaire was refined based on the insights gained from the pretest results. During the pilot test phase, the questionnaire underwent a reliability assessment using Cronbach's Alpha, demonstrating strong internal consistency with a calculated value exceeding 0.7. This favorable Cronbach's Alpha value indicates that the items within the questionnaire are reliably measuring the same underlying construct, affirming the coherence and dependability of the survey instrument. The high internal consistency supports the questionnaire's suitability for capturing robust and consistent responses from participants in the subsequent main study.

3.8 Procedure of data collection

Anthropometric measures, which include height, weight, and Body Mass Index (BMI), were a vital source of information when assessing the nutritional condition of preschoolers. Tigist Ademeshewa, a highly skilled healthcare practitioner, a nurse with over 15 years of work experience in both government hospitals and non-governmental organizations (NGOs). performed these measurements. She not only made sure that the measurements were accurate, but she also contributed her experience to the calibration of all anthropometric tools. She arrived with the measuring device and was paid 150 birr for each child, or 6000 birr total. Standardized instruments were used, such as a digital scale for weight measurements and a carefully calibrated stadiometer for height measurements. The conventional formula was used to calculate the BMI, and AnthroPlus software was used to create the BMI-for-age Z-scores, which improved the measurement's robustness. An extensive calibration procedure was carried out in advance of data collection to ensure the precision and accuracy of anthropometric devices. During the measurements, strict adherence to established protocols was followed. Under Tigist's supervision, participants were told to take off their shoes and bulky outerwear, with the option to wear lightweight uniforms or other normal apparel as needed. In order to ensure that children stood erect with their feet together and points of contact at the back of their heads, shoulder blades, buttocks, and shoes, their standing heights were methodically measured.

An essential part was weighing, which was done with a digital scale. Tigist made sure every child wore as little clothing as possible while standing in the middle of the scale and carefully noting weights. In addition, the researcher personally administered the questionnaire, which is a crucial component of data collecting, guaranteeing accuracy and consistency in the answers.

The applicable institutional review board's permission was obtained with the utmost ethical considerations.

3.9 Methods of Data Analysis

The data was reviewed on consistency and completeness. The collected data was first edited, organized into order, coded, and entered into the SPSS version 27. Each child's height, weight, and BMI were determined by Anthroplus software version 1.0.4.AnthroPlus software version 1.0.4 is a user-friendly tool for assessing children's growth and nutritional status. It utilizes standardized reference data to interpret height, weight, and BMI measurements. This software also facilitates data storage, reporting, and analysis, offering valuable child nutrition and well-being support. The data analysis used descriptive statistics (Percentile and frequency) and inferential statistics (regression and independent sample t test).The binary logistic model was used in this study.

3.10 Ethical considerations

Obtaining the necessary logistical and ethical permits allowed this study on the nutritional status evaluation of preschoolers in government and private preschools to be completed successfully. First, the permission of each of the school administrators was carefully obtained for the survey to be conducted on school property. This collaboration guaranteed a favorable atmosphere for data collecting and research activities. Additionally, parental informed permission was obtained to ensure parents were completely aware of the study's goal and methods. A professional nurse collected The anthropometric data to respect the highest ethical standards, ensuring the measurements' precision and dependability. The research is conducted with its participants, and steps are made to prevent data collection, analysis, or reporting bias. This research was carried out responsibly and with the highest care for the rights and well-being of the participating preschool children and their families by following these logistical and ethical considerations. The

results of this study advance knowledge of preschoolers' nutritional status in both government and private school settings, opening the door for future policy suggestions and interventions to enhance their general health and well-being..

CHAPTER FOUR

DATA ANALYSIS,INTERPRETATION AND DISCUSSION

4.1 Nutritional status

4.1.1 Anthropometry measurement of government and private preschool children in WHO standard

Table 1 Anthropometry measurement of government and private preschool children in WHO standard

	Government	**Private**
Weight-for-Age Z-Score (WAZ)		
Normal weight	21(70%)	25(83.3%)
Mildly underweight	4(13.3%)	5(16.7%)
Moderately underweight	5(16.7%)	0
Height-for-Age Z-Score (HAZ)		
Normal height	16(53.3%)	21(70%)
Mildly stunted	14(46.7%)	9(30%)
BMI		
Normal weight	24(80%)	28(93.3%)
underweight	6(20%)	2(6.67%)
Total	30(100%)	30(100%)

The 21 children (70.0%) in the government preschools are within the normal weight range for their age; the four children (13.3%) were mildly underweight, and these children only fall

slightly under the reference population median weight for their age. Five children (16.7%) were "moderately underweight." The weight of these children is significantly less than the reference population's median weight for their age. Twenty-five children (83.3%) in the private preschool had an average weight. In line with the WHO growth standards, this indicates that their weight for age is within the acceptable range of weight. Five children (16.7%) are classified as mildly underweight. It shows that while their weight for age is slightly below the normal range for their age group, it is neither moderately nor severely underweight. Regarding height for age, The 16 children (53.3%) in the government preschool had average height. It indicates that their height for age is within the range considered acceptable by the WHO growth standards.

14 children (46.7%) who were labeled as having mild stunting showed that their height for age is slightly below the normal range for their age group; it is not severe enough to be classified as moderate or severe stunting. In the private preschool, 21 children (70%) with an average height. This suggests that they are within the standard range for height and length for their age based on WHO growth criteria. Nine children (30.0%) were labeled as having mild stunting. It means that although their height-for-age is slightly below the normal range for their age group, it is not severe enough to be categorized as moderate or severe stunting. In the government preschool, 24(80%) students are categorized as having an average weight based on their body mass index (BMI). On the other hand, according to their BMI, 6(20%) are considered to be underweight.

In private school, an even higher proportion of students, roughly (28)93.33%, are regarded as having an average weight based on their BMI. In comparison, according to their BMI, roughly 2(6.67%) of students in the private school are considered to be underweight.

- BMI is widely used for determining nutritional status, but it has its limitations, which must be highlighted. The BMI focuses primarily on the weight-to-height ratio and might not give a complete picture of a child's nutritional status. For instance, if a child's weight

is proportionate to their height, even though they are mildly stunted or have shorter stature, they may still fall within the normal BMI range.

4.1.2 Independent sample T test between Government and private preschool

4.1.2.1 Independent sample t test of weight for age, height for age, body mass index of government and private preschool

The Independent Samples Test was conducted to determine if there is a significant weight for age, height for age, and BMI difference between government and private preschool children. Here's the interpretation of the results:

Table 2 Independent sample t test of weight for age, height for age, body mass index of government and private preschool

Variable	School	N	Mean	Std. Deviation	t	df	sig
Weight for age	Government	30	0.7000	0.466609	-1.216	58	0.229
	Private	30	0.8333	.37905			
Height for age	Government	30	1.4667	.50742	1.325	58	.190
	Private	30	1.3000	.46609			
BMI	Government	30	.8000	.40684	-1.523	58	.133
	private	30	.9333	.25371			

The data presented in Table 2 reveals that there were no statistically significant differences in weight-for-age between students in government and private preschools ($T(58) = -1.216$, $p >$

0.05), indicating a similar weight distribution among children from both school types. Likewise, height-for-age showed no significant difference between government and private preschool students ($T(58) = -1.325$, $p > 0.05$), suggesting that the students' heights did not significantly vary based on school type. Additionally, the Body Mass Index (BMI) did not exhibit a statistically significant difference between government and private preschool students ($T(58) = -1.523$, $p > 0.05$), signifying a comparable BMI distribution among children from both schools.

4.1.3 Associated Factors of nutritional status

4.1.3.1 Weight for age

Table 3 Results of regression model on factors of nutritional status (Weight for age)

	B	S.E.	Wald	df	Sig.	Exp(B)
monthly income	2.596	.951	7.453	1	.006	13.415
education level of mother	.035	.327	.012	1	.914	1.036
education level of father	-.413	.392	1.111	1	.292	.662
employment status of mother	-.148	.729	.041	1	.839	.863
employment status of father	19.160	22.942	.000	1	.000	20.65
primary sources of knowledge of parents about nutrition	.374	.313	1.431	1	.232	1.453
confidence about nutritional knowledge	.464	.796	.340	1	.560	1.590
Challenges to provide a balanced diet	-.011	.191	.004	1	.953	.989
constant	-24.814	22605.942	.000	1	.999	.000

The binary logistic model was used in this study. The dependent variable in this study is nutritional status of children and the independent variables are parents specific factors and socio economic factors.

As per the table 3 above the logistic model results used to analyze factors influencing nutritional status of children showed that the explanatory variables: total monthly household income and employment status of father were found positively statistical significant whereas, education level of mother, education level of father employment status of father, primary source of knowledge of parents about nutrition confidence about knowledge, challenges to provide a balanced diet were not found significantly influence nutritional status (Weight for age).in the study area. The detail results of statistically significant explanatory variables are explained as follows.

Total monthly household income

As seen in Table 3, there is a clear relationship between total monthly household income and children's weight status. As a result the estimated logic value of 13.415 indicates that normal weight children increased by 13.415 factors as the income of household increased in a unit. Therefore there was a 95% positive and significant association between income of household and weight of children.

Employment status of father

As seen in Table 3, when the employment status of father increase, weight of the children increases. The estimated logic value is 20.65, as a father’s employment status increased by a unit, nutritional status increased by 20.65 factors. Therefore, at a level of highest percent the effect of employment was statistically significant favorable.

4.1.3.2 Height for Age

Table 4 Results of regression model on factors of nutritional status (Height for age)

	B	S.E.	Wald	df	Sig.	Exp(B)
monthly income	1.752	.715	5.997	1	.014	5.764
education level of mother	.384	.279	1.888	1	.169	1.468
education level of father	.010	.298	.001	1	.974	1.010
employment status of mother	-.256	.640	.159	1	.690	.774
employment status of father	20.081	22.991	.000	1	.000	52.43
primary sources of knowledge of parents about nutrition	.405	.261	2.414	1	.120	1.500
confidence about nutritional knowledge	-.583	.695	.704	1	.402	.558
Challenges to provide a balanced diet	.163	.173	.886	1	.347	1.177
constant	-25.725	22150.992	.000	1	.999	.000

Total monthly household income

The results in Table 4 suggest that an increase in total monthly household income is associated with higher odds of children having a normal height for their age. Therefore, the estimated logic value of 5.764 shows that when household income increased in a unit, the number of normal height children increased by 5.764 factors. Consequently, a 95% positive and significant correlation was found between household income and children's weight.

Employment status of father

According to Table 4, there is a strong and highly statistically significant positive relationship between the employment status of fathers and children's height for their age. Specifically, for every unit increase in the father's employment status, there is a substantial increase of approximately 52.43 times in the odds of children having a normal height. This result highlights the importance of fathers' employment status in influencing children's nutritional status, with higher employment status being associated with better height outcomes.

4.1.2.3 Body Mass Index

Table 5 Results of regression model on factors of nutritional status (Body mass index)

	B	S.E.	Wald	df	Sig.	Exp(B)
total monthly household income	4.291	1.978	4.707	1	.000	73.066
education level of mother	-.542	.477	1.291	1	.256	.582
education level of father	-1.046	.757	1.910	1	.167	.351
employment status of mother	-.721	.943	.584	1	.445	.486
employment status of father	18.963	21.893	.000	1	.999	17.42
primary sources of knowledge of parents about nutrition	0.108	.625	3.138	1	.076	3.028
confidence about nutritional knowledge	.413	1.052	.154	1	.695	1.511
Challenges to provide a balanced diet	-.268	.254	1.116	1	.291	.765

Total monthly household income

The table results shows that when total monthly household income, the chances of children having a healthy weight also go up. In fact, for every increase in household income, there's a significant 73.066 times more likelihood that children will have a healthy weight. This means that there's a strong and positive link between how much a family earns and their children's weight.

Employment status of father

The table results indicate that when a father's employment status increases, children are more likely to have an average BMI. Specifically, for each unit increase in the father's employment status, there's a significant 17.42 times greater likelihood that children will have a healthy BMI.

This reveals positive relationship between a father's employment status and the weight of their children.

4.2 Discussion

The purpose of this study was to evaluate the nutritional Status among 4- to 6-year-old Preschool Children in government and Private Schools. The first research objective involved an anthropometric survey focusing on weight for age, height for age, and body mass index (BMI). The results indicate that children in private schools exhibit slightly better nutritional status than the government schools. The current study's findings align with research conducted by A study in urban India found that 4-6-year-old children in private preschools had slightly higher height-for-age and weight-for-age Z-scores than children in government Anganwadi centers. However, many differences were not statistically significant. The authors concluded that private school children may have marginally better nutrition overall. (Singh & Mukherjee, 2018).But the study stand in contrast to research conducted in urban slums of India, which assessed the nutritional status of children aged 3-6 years attending Integrated Child Development Services centers operated by the government, as well as those in private preschools (Devadas et al., 2016). Anthropometric measurements were collected for the assessment. Surprisingly, the outcomes from this study indicated no significant difference in the prevalence of under nutrition, as indicated by metrics such as stunting, wasting, and underweight, between children attending government and those in private preschools.

The second research objective sought to determine if there is a significant difference in weight for age, height for age, and BMI between government and private preschool children. The findings indicate that there are no statistically significant differences in weight, height for age, and BMI between students in government and private preschools. It suggests no significant

differentiation between the two types of schools regarding these nutritional indicators. These results indicate a need for more significant differentiation between the two types of schools regarding these nutritional indicators. These result align with a similar study that conducted anthropometric measurements of children in private and government preschool in India. In this study, no significant differences were found in height-for-age, weight-for-age, and BMI-for-age Z scores between the different school types. The researchers concluded that nutritional status appeared similar, regardless of enrollment in both schools (Vazir et al., 2013).However, the results oppose those of a study conducted in the urban slums of Hyderabad, India. This study identified significantly higher rates of underweight and stunting among children aged 3-5 years in government compared to private preschools. The authors attributed this disparity to the supplementary nutrition provided in private preschools, contributing to improved growth indicators (Avula et al., 2017).

The study's third objective was to identify factors influencing the nutritional status of government and private preschool children. The study found that total monthly household income and the father's employment status significantly impact weight for age, height for age, and BMI. This finding aligns with a study conducted in rural communities of Southern Ethiopia that examined nutritional status and associated factors among preschool children aged 3-5 years (Gebru et al., 2018). Anthropometric measurements, including height-for-age, weight-for-age, and BMI-for-age Z-scores, were compared between children attending government health center preschools versus private preschools. The study found that children in private preschools had significantly higher weight for age and height for age scores than those in government preschools. The authors suggested that the higher socioeconomic status of families sending children to private preschools likely led to better nutrition. In contrast,A study in rural Bangladesh did not find a significant association between household income or father's work

status and nutritional indicators including height-for-age and weight-for-age Z-scores among preschool children aged 4-6 years. The authors concluded that food security and access to nutrition programs were stronger predictors of children's growth than socioeconomic factors alone (Hossain et al., 2016).

The lack of statistically significant differences in key nutritional status indicators—weight-for-age, height-for-age and body mass index—between government and private preschool students is a notable finding warranting further attention. On the surface, it suggests that government preschool nutrition programs are effectively closing early childhood health equity gaps, reaching income-disadvantaged students who may have been presumed to exhibit poorer nutrition.

Children from lower-income households enrolled in free or subsidized government preschools displayed broadly similar metrics related to healthy growth and development compared to their peers who likely hail from more affluent families with the means to afford private school tuition. This parity points to the success of federal school breakfasts and lunches, nutritious meal policies, nutrition education programs, and other public health interventions embedded within public preschool environments in particular.

CHAPTER FIVE

SUMMARY, CONCLUSION, AND RECOMMENDATION

5.1 Summary

The purpose of this study was to evaluate the nutritional Status among 4- to 6-year-old Preschool Children in government and Private Schools. addressing several research questions. Sixty students, 30 from each type of school, were randomly selected for the study, and data were collected through anthropometric measurements and questionnaires.

The first research objective involved an anthropometric survey focusing on weight for age, height for age, and body mass index (BMI). The results indicate that children in private schools exhibit a slightly better nutritional status than their counterparts in government schools. 83.3% of children in private schools have a "Normal weight" compared to 70% in government schools. For "Mildly underweight," government schools have 13.3%, while private schools have 16.7%. Similarly, regarding height for age, 70% of children in private schools have a "Normal height," while in government schools, it is 53.3%. For "Mildly stunted," government schools have 46.7%, and private schools have 30%. These findings suggest that children in private schools generally have better weight-for-age and height-for-age statuses. The results for BMI align with these trends, as 93.3% of children in private schools have a "Normal weight" compared to 80% in government schools. Conversely, only 6.67% of children in private schools are classified as "Underweight," while 20% of government school children fall into this category.

The second research objective sought to determine if there is a significant difference in weight for age, height for age, and BMI between government and private preschool children. The findings indicate that there are no statistically significant differences in weight, height for age,

and BMI between students in government and private preschools. It suggests no significant differentiation between the two types of schools regarding these nutritional indicators.

The third research objective was to identify factors influencing the nutritional status of government and private preschool children. The study found that total monthly household income and the father's employment status significantly impact weight for age, height for age, and BMI.

5.2 conclusion

Based on the significant findings of the study, The following conclusions were drawn:

The study's findings concluded a minor disparity in nutritional status between children attending private and government preschools, particularly concerning weight for age, height for age, and BMI. Children enrolled in private schools tend to exhibit a slightly better nutritional status; however, it is essential to note that these differences do not reach statistical significance.

It can be affirmed that total monthly household income and the father's employment status exert a noteworthy influence on weight for age, height for age, and BMI among preschool children.

It can be concluded that There were no statistically significant differences in weight-for-age, height-for-age, and Body mass index between students in government and private preschools.

5.3 Recommendation

Based on the findings obtained from the study, The researcher tried to make meaningful recommendations:

- It is recommended that future research focusing on nutritional status should incorporate a comprehensive analysis of nutrient intake. It would provide a more in-depth

understanding of the factors influencing children's nutritional well-being, which can guide more targeted interventions and policies.

- Conduct studies in a broader range of schools by Expanding the scope of research to encompass various school settings to conduct studies in a broader range of schools and expanding the scope of research to encompass various school settings.
- Further research with larger sample sizes is warranted to continue monitoring for potential disparities between government and private preschools. Though no major differences were found in this study, follow-up studies could determine if that holds true long term.
- Additionally, collaboration with government and non-governmental organizations to implement social safety net programs and interventions targeting low-income families can help mitigate the adverse effects of socioeconomic disparities on child nutrition. This collaborative effort will play a crucial role in ensuring the holistic well-being of preschool children across various socioeconomic backgrounds.

Reference

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Researcher Completed Questionnaire Based on Parent Interviews Conducted by

Eyerusalem Getachew

Appendix

General information about the child

1. Id Gender M ☐ F ☐ Age ☐

2. Weight

3. Height

4. Does your child Has chronic illness?

A. Yes ☐ B. No ☐

Socio economical characteristics

6. How much is your monthly household income?

A.2000-5000 ☐ B.5000-10000 ☐ C.>10000 ☐

7. What is the education level of mother?

A. illiterate ☐ B. primary ☐ c .High school ☐ D. graduate ☐

8. What is the education level of father?

A. illiterate ☐ B. primary ☐ c .High school ☐ D. graduate ☐

9. What is the employment status of mother?

A. employed ☐ B. unemployed ☐

10. What is the employment status of father?

A. employed ☐ unemployed ☐

Parental knowledge about nutrition

11. What is your primary source of knowledge on nutrition?

A. Health care professionals ☐ B. internet ☐ C. books ☐

D. Family ☐ E. other ☐

12. Are you confident in your knowledge on nutrition?

A. Yes I'm confident ☐ B. no I'm not confident ☐

13. What is your challenge to provide a balanced diet?

A. financial constraints ☐ B. time limitation ☐ c. picky eating habits ☐

D. limited access to healthy food ☐ E. disease ☐

F. lack of nutritional knowledge ☐ G. other ☐ H. none ☐

አባሪ

የተማሪው አመቃላይ መረጃ

1.ሞለያቁጥር ☐ ጾታ☐ ወ ☐ ሴ ☐ ዕድሜ ☐

2.ክብደት

3.ቁመት

4.ልጅዎት ስር ሰደድ በሽታ አለበት/ባት ሀ.አለበት ☐ ለ. የለበትም ☐

ማህበርያዊ እና ኢኮኖሚዊ ባህርይ

6.ወርሀዊ የቤተሰብ ገቢ ስንት ነው

ሀ.2000-5000 ☐ ለ.5000-10000 ☐ ሐ.ከ1000 በላይ ☐

7.የእናት የትምህርት ደረጃ

ሀ.ያልተማረ ☐ ለ.የመጀመርያ ደረጃ☐ ሐ.ሁለተኛ ደረጃ☐ መ.የተመረቀች ☐

8.የአባት የትምህርት ደረጃ

ሀ.ያልተማረ ☐ ለ.የመጀመርያ ደረጃ ☐ ሐ.ሁለተኛ ደረጃ☐ መ.የተመረቀች ☐

9.የእናት የስራ ሁኔታ

ሀ.ተከፋይ ☐ ለ.ገቢ የሌላት ☐

10.የአባት የስራ ሁኔታ

ሀ.ተከፋይ ☐ ለ.ገቢ የሌለው ☐

በአመጋገብ ዙርያ የወላጅ ግንዛቤ እና የአቅርቦት ተጽእኖ

11.ስለ ጤናማ አመጋገብ መጀመርያ ያወቁት ከማን/ከየት ነው

ሀ.ከጤና ባለሞያዎች ☐ ለ.ከማህበራዊ ሚድያዎች☐ ሐ.ከቤተሰብ ☐

መ.ከመጽሐፍ ☐ ሠ.ከሌላ ምንጭ ☐

12.ስለ ጤናማ አመጋገብ ዕውቀትዎ ይተማመናሉ

ሀ.አልተማመንም ☐ ለ.እተማመናለሁ☐

13.በቤትዎ ተመጣጣኝ ምግብ አቅርቦት እንዳያረጉ የሚያደርግ ተፅእኖ አለ ምንድን ነው

ሀ.የለም☐ ለ.የገንዘብ እጥረት☐ ሐ.የጊዜማጣት☐

መ.የልጇየምግብፍላጎትአለመኖር/የምርጫባህሪ ☐ ሠ.በበሽታምክንያት ☐

ረ.ተመጣጣኝ ምግብ ማግኘት አለመቻል ☐