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Nutritional Status and Its Impact on The Academic Performance of Learners.

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Abstract: This study explored the relationship between nutritional status and academic performance among elementary school learners classified as wasted/severely wasted based on their BMI in the Manay North District of Davao Oriental during the 2024–2025 school year. The objectives were to identify learners' profiles, causes of malnutrition, and how these factors impact academic achievement. Using a descriptive correlational research design, the study employed survey questionnaires, anthropometric measurements, and learners' report cards as primary data sources. A total of 219 learners identified as wasted/severely wasted participated in the survey. Data analysis involved frequency distributions, weighted means, Spearman's Rho correlation, standard deviations, percentages, and the Kruskal-Wallis test. The findings showed that most respondents came from economically disadvantaged families, mainly engaged in farming and informal labor, and had parents with low education levels. Poverty (M = 3.53) and nutritional illiteracy (M = 3.52) were identified as the main causes of malnutrition, followed by poor eating habits and health conditions. Academic performance among learners showed steady improvement across three grading periods, with mean scores of 81.50, 82.70, and 83.22— all categorized as satisfactory. This consistent progress suggests that learners gradually adapted to classroom routines, improved their study habits, and benefited from teachers' reinforcement and feedback. Correlation analysis revealed a positive relationship between weight and academic performance ($r = 0.305$, $p < 0.01$), while socio-economic status showed a negative correlation ($r = -0.140$, $p < 0.05$). Furthermore, poverty and poor eating habits were found to have weak but significant associations with students' grades.

The study confirms malnutrition, mainly caused by poverty and lack of nutritional knowledge, harms students' academic performance. To improve nutrition and learning, schools should run feeding programs, educate parents, and support livelihoods. Collaboration among schools, local governments, and health agencies is vital to fight malnutrition and support student development.

Keywords: nutritional status, malnutrition, poverty, academic performance, school-based feeding program

I. Introduction

Background of the Study

Malnutrition had long been recognized as one of the most pressing health problems for children in developing countries. The Global Nutrition Report (2018) stated that every country, except China, had crossed a "malnutrition red line." These countries were suffering from either undernutrition or overnutrition. In India, approximately 60 million children were underweight. Malnutrition accounted for 22% of the country's disease burden (Akanbi, 2013). To address global challenges such as hunger and poverty, the United Nations (UN) formulated the Millennium Development Goals (MDGs). One of these goals aimed to eradicate extreme hunger and poverty. According to the UN (2005), the global goal was to halve the proportion of people suffering from hunger compared to 1990 levels.

A global study conducted by the World Food Programme (WFP, 2008) revealed that millions of children required feeding support during school hours. This finding emphasized the urgent need for nutritional interventions. Neeser (2012) reported that around 60 million children attended school hungry every day in developing countries. Policymakers and organizations worldwide have implemented various social safety net programs to address hunger and malnutrition. One example was the Food for Education (FFE) program. Lawson (2012) emphasized that FFE interventions were designed to reduce hunger among school children while improving school attendance and learning outcomes. Similarly, Bundy et al. (2009) highlighted that school meal programs provided multiple benefits. These included alleviating short-term hunger, enhancing students' attentiveness, stabilizing school attendance, and reducing dropout rates in food-insecure areas.

In Asia, the importance of school feeding programs led to their expansion in many countries. The National Family Health Survey (NFHS, 2007) reported that India was home to over 57 million undernourished children. This represented more than one-third of the world's total undernourished children. The Right to Food Campaign (2006) underscored that India's School Feeding Program (SFP) evolved primarily to address two pressing issues: the large number of children out of school and widespread undernourishment among school-aged children. As of 2004, around 15% of children aged 6 to 14 years were still out of school in India. This reflected the connection between hunger and education.

In the Philippines, the Department of Education (DepEd) has also prioritized the fight against malnutrition through school-based feeding programs. DepEd Order No. 54, s. 2013, titled *"Guidelines on the Implementation of School Feeding Programs,"* was

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issued in support of the Philippine Plan of Action for Nutrition (PPAN) approved under NNC-GB Resolution No. 1, s. 2012. DepEd's school feeding initiatives aimed to improve the nutritional status of undernourished learners, enhance attendance, and reduce dropout rates. These programs were either school-initiated or implemented through partnerships with non-governmental organizations (NGOs) and private sponsors.

At the regional level, SunStar Davao (2017) reported findings from a Food and Nutrition Research Institute (FNRI, 2015) study. The study showed that in the Davao Region, 20.7% of children under five years old were underweight, and 31.7% were stunted. The study concluded that the problem was not primarily economic but educational. Parents often lacked knowledge about proper nutrition and failed to provide balanced diets to their children.

In Davao Oriental, the Division Office initiated efforts to address low academic performance, particularly in Manay North District, where hunger and malnutrition were common challenges. The school feeding program was among the key interventions implemented to improve both nutritional status and academic outcomes. According to Demerin (2023), available data showed that hunger remained the most prevalent cause of poor academic performance among elementary learners.

Thus, this study was conducted to determine the nutritional status, causes of malnutrition, and their impact on the academic performance of elementary learners in Manay North District who are wasted or severely wasted, with the aim of providing evidence to support evidence-based interventions to improve both health and learning outcomes.

Statement of the Problem

This study aimed to determine the nutritional status, causes of malnutrition, and the impact of malnutrition on the academic performance of elementary learners with wasted/severely wasted BMI.

Specifically, this study sought to answer the following questions:

1. What is the profile of the students in terms of the following:

1.1 weight;

1.2 nutritional status;

1.3 socio-economic status;

1.4 source of livelihood; and

1.5 educational attainment of parents?

2. What is the level of causes of wasted/severely wasted Body Mass Index of the respondents in terms of:

2.1 poverty;

2.2 health condition;

2.3 eating habits; and

2.4 literacy/education on proper nutrition?

3. What is the level of academic performance of elementary learners during the First, Second, and Third Grading periods?

4. What is the significant relationship between the profile and academic performance of elementary learners with wasted/severely wasted BMI?

5. What is the significant relationship between the causes of malnutrition and the academic performance of elementary learners with wasted/severely wasted BMI?

6. Is there any significant difference in poverty, health condition, eating habits, literacy/education on proper nutrition of the learners according to the assessment of the teachers when they are grouped according to weight, nutritional status, socio-economic status, source of livelihood, and educational attainment of the parents?

Hypotheses

The following null hypotheses were tested to determine the relationships among and between the variables mentioned.

1. There is no significant relationship between the profile and academic performance of the elementary learners with wasted/severely wasted Nutritional Status.
2. There is no significant relationship between the causes of malnutrition and the academic performance of the elementary learners with wasted/severely wasted Nutritional Status.

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Objectives of the study

The main objective of this study was to determine the nutritional status, causes of malnutrition, and its impact on the academic performance of elementary learners with wasted/severely wasted BMI.

It attempted to deal with the following objectives.

1. To determine the profile of the learners in terms of the following:

1.1 weight;

1.2 nutritional status;

1.3 socio-economic status;

1.4 source of livelihood; and

1.5 educational attainment of parents.

2. To determine the level of causes of wasted/severely wasted Body Mass Index of the respondents in terms of:

2.1 poverty;

2.2 health condition;

2.3 eating habits; and

2.4 literacy/education on proper nutrition.

3. To determine the level of academic performance of elementary learners during the First, Second, and Third Grading periods.

4. To determine the significant relationship between the profile and academic performance of elementary learners with wasted/severely wasted BMI?

5. To determine the significant relationship between the causes of malnutrition and the academic performance of elementary learners with wasted/severely wasted BMI.

6. To determine the significant difference in poverty, health condition, eating habits, literacy/education on proper nutrition of the learners according to the assessment of the teachers when they are grouped according to weight, nutritional status, socio-economic status, source of livelihood, and educational attainment of the parents.

Significance of the Study

This study was focused on determining the nutritional status, causes of malnutrition, and their impact on the academic performance of elementary learners with wasted and severely wasted Body Mass Index (BMI). It was considered significant for various stakeholders, including government agencies, curriculum makers, the Schools Division Superintendent, school administrators, teachers, parents, students, and future researchers.

Government Agencies. The study further aimed to improve strategies used by agencies and local governments to promote learning and to identify alternative, affordable, and suitable approaches to enhance the sustainability and effectiveness of school feeding programs.

Curriculum Makers. Based on the findings of this study, curriculum developers were expected to strengthen the integration of school-based feeding programs into the curriculum to enhance learners' academic performance and promote quality education.

Schools Division Superintendent. The study's results served as a catalyst for stronger implementation and monitoring of the School Feeding Program to ensure improved educational outcomes.

School Administrators. The study's findings helped school heads plan and mobilize sponsors to support the effective implementation and management of feeding programs within their schools.

Teachers. The study provided valuable insights that helped teachers convey the importance of proper nutrition and its positive impact on learners' learning and academic achievement.

Parents. The results encouraged parents to support their children by providing nutritious meals at home, recognizing the connection between healthy eating and improved school performance.

Students. The study served as a source of motivation for learners to improve their academic performance by adopting healthy eating habits and understanding the importance of proper nutrition.

Future Researchers. Lastly, the study provided a valuable reference and a basis for further research on nutrition, health, and academic performance among school-age children.

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Scope and Limitations of the Study

This study was limited to assessing the nutritional status, causes of malnutrition, and their impact on the academic performance of learners in Manay North District who were wasted or severely wasted (BMI < 18.5) during the School Year 2024–2025. The variables covered in this study included learners' profiles—weight, nutritional status, socio-economic status, source of livelihood, and parents' educational attainment —as well as the causes of malnutrition and academic performance. The study was conducted over a period of four (4) months and covered all twenty (20) schools in Manay North District. Only learners with wasted or severely wasted BMI served as respondents, and their academic performance was determined from their report cards.

Conceptual Framework

The figure below presented the conceptual model of the study, which illustrates the variables involved. The learners' profiles included their nutritional status and the causes of malnutrition. The independent variables were associated with the dependent variable, academic performance. The independent variables (IV) in this study consisted of the profile of learners with severely wasted BMI in terms of weight, nutritional status, socio-economic status, source of livelihood, and educational attainment of parents, as well as the causes of malnutrition, such as poverty, health condition, poor eating habits, and illiteracy or lack of education about proper nutrition. On the other hand, the academic performance of elementary learners served as the dependent variable (DV) in this study. The conceptual model aimed to show the relationship between the learners' profiles and causes of malnutrition (independent variables) and their academic performance (dependent variable).

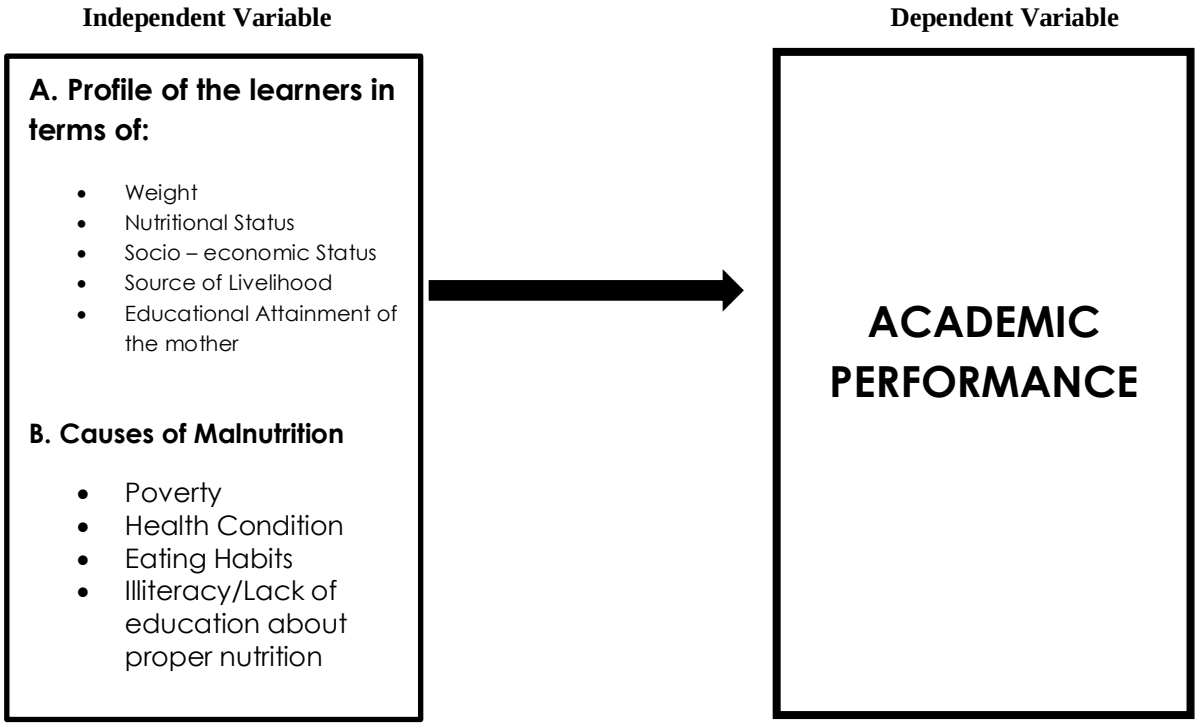


Figure 1. Hypothesized Relationship between and among the Variables of the Study

Definition of Key Terms

The terms are operationally defined for better comprehension of this proposed study.

Academic Performance. This refers to the learners' final grade, as reflected on their report card. It will be used to determine their grades in three grading periods.

Body Mass Index (BMI). This refers to a number calculated from a person's height and weight. It provides a reliable indicator of body fatness for most people and is used to screen for weight categories that may lead to health problems (CDC, 2000).

School-Based Feeding Program (SBFP). This refers to the program implemented by the schools based on the prevalence of raised malnutrition cases. This program is relevant to improving learners' health and nutritional status.

Food and Nutrition Research Institute (FNRIDOST). This refers to the Research Center of the Department of Science and Technology, guided by its mission to provide accurate data, correct information, and innovative technologies to fight malnutrition.

Malnutrition. This refers to a condition that results from a diet in which nutrients are either insufficient or excessive, leading to health problems. Malnutrition is often used specifically to refer to undernutrition, where there are not enough calories, protein, or micronutrients.

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Nutritional Status. It refers to the condition of the body in those respects influenced by the diet; the levels of nutrients in the body, and the ability of those levels to maintain normal metabolic integrity.

Undernutrition. The term is used interchangeably with malnutrition, which encompasses stunted growth (stunting), wasting, and deficiencies of essential vitamins and minerals (collectively referred to as micronutrients).

Severely Wasted. It is also known as severe acute malnutrition (SAM) and is defined by a very low weight-for-height, a low height-for-age, or both.

Wasted. It is also known as moderate acute malnutrition (MAM) and is defined by the weight-for-height indicator; it may be accompanied by micronutrient deficiencies.

Review of Related Literature and Framework

This chapter presented the related literature and studies following a thorough, in-depth search conducted by the researchers. This also presented the synthesis of the efficacy, theoretical, and conceptual frameworks to understand the research.

Weight

Evidence from a longitudinal study by Chen et al. indicates a correlation between obesity and lower academic performance among Taiwanese children, where higher body mass index (BMI) is linked to poorer academic scores (Chen et al., 2012). Similarly, Hamdani et al. and Rayyan et al. found that higher BMI is associated with lower academic achievement and grades (Hamdani et al., 2023; Rayyan et al., 2020).

While some studies noted no significant association, Suchert et al. found an inverse relationship mainly among girls and obese students (Suchert et al., 2016). Elish et al. highlighted a weak but consistent negative link between weight status and academic achievement, factoring in socioeconomic variables (Elish et al., 2023).

Underweight students also encounter academic difficulties, as Soe et al. indicated they were more likely to earn lower grades due to nutrient deficiencies (Soe et al., 2021).

The relationship between weight and academic performance varies based on factors like gender and socioeconomic status (Peterson et al., 2012). Moreover, MacCann and Roberts noted that although obese students may have lower grades, their standardized test scores are comparable to those of non-obese peers (MacCann & Roberts, 2012).

Lifestyle factors, like sleep and physical fitness, also influence how weight impacts academic outcomes (Sardinha et al., 2016; Rayyan et al., 2020).

Nutritional Status

Severe malnutrition, especially wasting, adversely affects children's cognitive skills and academic performance. Bouchefra et al. (2024) found that undernutrition significantly hampers a child's development potential, leading to lower academic achievement. Similarly, a study by Abebe et al. (2017) showed that 12.7% of primary school students with wasting perform poorly academically, highlighting the link between nutrition and educational outcomes.

Interventions targeting nutritional status have shown positive results. Lacuarin et al. (2022) reported that students in a School-Based Feeding Program (SBFP) experienced significant academic gains after nutritional improvements. Cantada-Fabros (2025) also found that feeding programs aimed at reducing malnutrition enhanced participants' learning abilities.

The long-term effects of preschool nutritional status on educational achievement are essential. Research indicates that wasting is associated with poorer academic performance among school-aged children (Abebe et al., 2017). Studies, including one by Seyoum et al. (2019), confirmed that malnourished children consistently attain lower educational outcomes.

Additionally, socioeconomic factors and maternal education levels worsen malnutrition issues. Nyinoh et al. (2023) emphasized how socioeconomic status influences child nutrition, while Aldana-Parra et al. (2019) found a connection between higher maternal education and lower rates of wasting and stunting in children.

Socio-economic Status

Socioeconomic status (SES) significantly impacts a child's educational experiences and achievements. Ali and Warfa highlight that low SES is a major factor in academic challenges, stressing the importance of home environment, parental involvement, and access to resources (Ali & Warfa, 2018). Considine and Zappalà also demonstrate how socioeconomic disadvantage leads to disparities, with variations in family income and resource access creating unequal conditions for low-income students (Considine & Zappalà, 2002).

Starr et al. show that school performance at age 16 more accurately predicts future educational attainment for low-SES students than for their high-SES peers (Starr et al., 2024). This illustrates the resource substitution hypothesis, which states that low-SES students must achieve higher academic performance to overcome disadvantages.

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School absenteeism also plays a crucial role. Klein and Sosu find a significant link between school attendance and academic achievement, with the negative effects of absences being more pronounced for students from lower SES backgrounds (Klein & Sosu, 2023). Their research aligns with the faucet theory, indicating that absenteeism disproportionately impacts disadvantaged students (Klein et al., 2022).

Regarding support systems, Williams and Bryan highlight the importance of social capital from school relationships for low-income learners, which builds resilience and boosts engagement (Williams & Bryan, 2013). Morrissey et al. note that lower family income is linked to decreased academic achievement and increased absenteeism, suggesting that financial struggles hinder engagement (Morrissey et al., 2014).

Finally, Gibb et al. emphasize the long-term influence of childhood family income on adult educational achievement, demonstrating that lower family incomes result in lower educational accomplishments later in life (Gibb et al., 2012). This illustrates the enduring effect of early socioeconomic conditions on educational success.

Malnutrition

Wanjohi (2010) in his study revealed that the main cause of malnutrition among children in the zone was a lack of enough food and a balanced diet. Poverty was also found to be one root cause of malnutrition amongst children. Regarding effects, the study found that malnutrition negatively affected children's academic performance, growth, and development.

Malnutrition is generally defined as a chronic condition resulting from over- or underconsumption of one or more essential macro- or micronutrients relative to the individual’s physiological and pathological requirements (Ecker and Nene 2012). Malnutrition is also a dangerous condition that develops when your body does not get enough nutrients to function properly. Poor nutrition can result from a lack of food or an unbalanced diet that lacks or is insufficient in one or more nutrients (Chinyoka and Naidu, 2013). Children who do not consume adequate amounts of key nutrients, including calcium, potassium, and vitamin C, may be unable to work to their full potential at school (Nabarro et al. 2012).

A study by Connell (2010) revealed that 34 percent of low-birth-weight children were either repeating grades or placed in special education classrooms, while only 14 percent of normal birth-weight children experienced the same outcomes.

Understanding the nutritional deficiencies that can affect academic performance, parents should help their children eat adequately to succeed in class, as noted by Santanu Ghosh and Haradhan Saha (2010). This shows that nutrition is paramount for students' academic performance.

The study also revealed that statistical analysis of nutrient consumption data alongside academic achievement provides valuable insight into the role of various nutrients in students' academic achievement. It was also found that Body Mass Index and fat consumption levels are negatively correlated with academic achievement. It was mentioned that the correlation between BMI and academic achievement is weak, whereas fat consumption is strongly correlated with academic achievement. This may be because fats are a crucial part of neuronal circuitry. All other nutrients are positively correlated with academic excellence. Among the various vitamins, Vitamin C has the strongest correlation with academic status, followed by Vitamin A, Riboflavin, and Thiamine. This correlation may be due to the fact that all these vitamins are particularly important for neuronal development, connectivity, and signal processing and transmission.

Poverty

Poverty and malnutrition significantly hinder children's educational outcomes by imposing substantial barriers to learning. Empirical evidence consistently shows that lower socioeconomic status is associated with both malnutrition and diminished academic achievement (Babar et al., 2005). Families with limited resources often struggle to provide adequate nutrition (Islam et al., 2013; Wong et al., 2014; Khanam & Haque, 2021; Islam et al., 2022). This relationship is particularly pronounced in regions with limited educational opportunities, where a cycle of malnutrition, cognitive impairment, and decreased school attendance persists (Acharya et al., 2019; Amoadu et al., 2024).

Research further demonstrates that poverty and malnutrition are interconnected through maternal education. Lower maternal education, often linked to poverty, leads to higher child malnutrition. Studies find that mothers with more education have greater nutritional knowledge, supporting healthier diets for their children (Abuya et al., 2012; Galgamuwa et al., 2017; Hasan et al., 2015). In contrast, children of mothers with little education are more prone to stunting and wasting, which hampers educational progress through related cognitive deficits (Galgamuwa et al., 2017; Hasan et al., 2015).

Extreme poverty deepens the direct links between malnutrition and inadequate educational resources for children. In rural areas, disadvantaged families often lack access to essential healthcare and nutritious food, both of which are crucial for child development and learning (Evans et al., 2024; Khanam & Haque, 2021; Amoadu et al., 2024). Schools in these communities are frequently unstable, and malnutrition raises absenteeism and lowers academic performance (Acharya et al., 2019; Rockers et al., 2023).

Effective responses to malnutrition and low academic achievement must prioritize poverty reduction and improved maternal education. School-based strategies, such as the Ghana School Feeding Programme, have shown promise in reducing hunger and enhancing educational success by boosting student attendance and engagement (Kwabla et al., 2018; Appiah & Kwesi, 2024).

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Health Condition and Eating Habits

The EFA Global Monitoring Report (UNESCO 2011) states that more than a quarter of children below fifteen years of age in sub-Saharan Africa are underweight due to poor diet and malnutrition, making them more vulnerable to disease and less able to concentrate at school. Malnutrition is generally defined as a chronic condition resulting from over- or underconsumption of one or more essential macro- or micronutrients relative to the individual's physiological and pathological requirements (Ecker and Nene 2012).

Malnutrition is also a dangerous condition that develops when your body does not get enough nutrients to function properly. Poor nutrition can result from a lack of food or an unbalanced diet that lacks or is insufficient in one or more nutrients (Chinyoka and Naidu, 2013). Children who do not consume adequate amounts of key nutrients, including calcium, potassium, and vitamin C, may be unable to work to their full potential at school (Nabarro et al. 2012). A study by Connell (2010) revealed that 34 percent of low-birth-weight children were either repeating grades or placed in special education classrooms, while only 14 percent of normal birth-weight children experienced the same outcomes.

Another study also reports elevated grade repetition rates among children with low birth weight due to poor nutrition (Bray et al., 2010; Duncan et al., 2008). Knowing more about the nutritional deficiencies that can lead to learning difficulties will help families feed their children adequately to help them succeed in class. This shows that nutrition is paramount for the academic performance of grade seven children. Shrestha & Pathak (2012) as well as Brauw et al. (2012) concur that underfeeding in childhood was thought to hinder mental development solely by producing permanent structural damage to the brain.

A child's brain during the first three years of life is rapidly developing through the generation of neurons, synaptogenesis, axonal and dendritic growth, and synaptic pruning, each of which builds upon the others (Orazem et al., 2007). Any interruption in this process, such as trauma, stress, undernutrition, or lack of nutrients, can have long-term effects on the brain's structure and on the child's socio-emotional development and academic performance. Thus, research has established that poor nutrition in early life can limit long-term intellectual development (Lacour & Tissington, 2011). Implicit in the above is that children should not be exposed to malnutrition even at an early age, for it has detrimental effects on their academic performance and their holistic development.

A number of studies in Latin America, Africa, and the U.S reported that on intelligence tests, children with a history of malnutrition attained lower scores than children of similar social and economic status who were properly nourished (Fanzo 2012). Thus, protein-energy malnutrition, iron deficiency, anaemia, and Vitamin A deficiency —these poverty-related conditions — decrease resistance to disease in general.

Malnutrition, therefore, causes illness, brain damage, delayed physical growth, delayed motor skill development, and delayed intellectual development. In a project carried out by the Institute of Central America and Panama in 2008, children and young adults in Guatemala who had received nutritional supplements in infancy were studied to assess the influence of early diet and poverty on later intellectual development. Individuals who regularly consumed a highly nutritious supplement called Atole performed well on most tests. But the performance of those given the less nutritious Fresco supplement varied by poverty level (Ferguson et al. 2012).

Evidently, good nutrition early in life can help counteract the destructive effects of poverty on intellectual development. Those who consumed Atole scored significantly higher than those who received Fresco, an indication that poor nutrition in infancy can subsequently undermine the benefits of schooling. There is therefore ample evidence to support the view that early nutrition, when children are already at school, has strong beneficial effects on their ability to learn, and that, conversely, poorly fed children find it difficult to concentrate at school, which provides strong support for school feeding schemes in poor countries and communities. Against this background, this study explores the psychosocial effects of poor nutrition on the scholastic performance of grade seven learners in two primary schools in Chivi, Zimbabwe.

Despite high levels of commitment in the context of the Millennium Development Goals (MDGs) and other initiatives, most developing countries are likely to fail in achieving their nutrition-related goals, although there are large differences in nutritional achievements across countries (Stevens et al. 2012). The lack of political commitment and action by central governments may be a critical factor (or even the main reason) in the failure to reduce malnutrition, whereas in other developing countries, a functional nutrition policy in place may be the driver of success (Nabarro et al., 2012).

DepEd Order School-Based Feeding Program

The researcher also considered the DO No. 51, s. 2016 - Implementation of the School-Based Feeding Program for School Year 2016 - 2017, which states that the Department of Education (DepEd), through the School Health Division-Bureau of Learner Support Services (SHD-BLSS), shall implement the School-Based Feeding Program (SBFP) for School Year (SY) 2016-2017 to address undernutrition and short-term hunger among public school children. The program primarily aims to improve beneficiaries' nutritional status and, secondarily, to increase classroom attendance by 85% and improve children's health, nutritional values, and behavior.

High school students who belong to low-income families failed to attend classes regularly because of hunger or poor nutritional status. This situation significantly affects students' academic performance, as they are unable to focus on their studies. Thus, the SBFP should improve our children's nutritional status and their attendance and performance in our classes.

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Thus, the above study and analysis of the data generated revealed that the learner's nutritional status has a definite relationship with his/her academic achievement. In this study, the researcher believes that the parent/guardian should pay closer attention to the child's nutritional status by providing nutritious, adequate foods, as this will affect the child's academic performance. On the other hand, our goal as teachers must be to teach all children the meaning and importance of good nutrition so they can develop healthy eating habits that will support a lifetime of maximizing their full potential.

The Concept and Origin of School Feeding Program

School feeding is simply the provision of food to children through schools. According to Oyefade (2014), different countries have one or a combination of the two feeding modalities in place for various objectives. However, they can be grouped into two broad categories: in-school meals and take-home rations, where families are given food if their children attend school. Historically, in-school meals have been the most popular modality of school feeding interventions.

School feeding can be grouped into two common categories: programs that provide meals and programs that provide high-energy biscuits or snacks to generate greater impacts on school enrolment and retention rates and to reduce gender or social gaps (Akanbi, 2013). Uduku (2011) contended that there are `indications of a significant swing in thinking about school feeding and many elements of this new thinking are being promoted keenly under the rubric of "home-grown school feeding".

Tomlinson (2007) traced the emergence of school feeding programs to the 1930s in the United Kingdom and the United States of America, with a focus on improving children's growth. In 1900, the Netherlands became the first country to raise the program to a new level by incorporating school meals into national legislation. By the 1930s, the United Kingdom and the United States had also instituted the school feeding program as part of their national programs. A further account indicates that school feeding initiatives have existed since the late 1700s and originated as donor-funded projects in Europe.

The United States of America began the practice of initiating school feeding programs in Austria as an act of international aid to combat severe child malnutrition in the 1940s, following the Second World War. Since then, school feeding programs have become a key part of food assistance, relief, emergency, and development programs. The School Feeding Program is a social safety net for children, and as part of the national development goals. It provides an important new opportunity to assist poor families and feed hungry children. It provides an incentive for poor families to send their children to school and keep them there.

To improve the nutritional status of schoolchildren, the Federal Government of Nigeria launched the Home-Grown School Feeding and Health Program in September 2005, under the coordination of the Federal Ministry of Education. The program aimed to provide learners with adequate meals during the school day (FME, 2007).

Effects of School Feeding Program on Learners' Academic Performance

In Alabi's (2003) study, it was noted that undernutrition in children stunts their growth and mental development; thus, there is a relationship between nutrition and academic performance. Although food has classically been perceived as a means of providing energy and building materials to the body, research over the years has provided exciting evidence for the influence of dietary factors on mental function. Not only are children motivated to attend school, but they also experience significant impacts on their nutritional status, development, cognitive capabilities, and academic performance.

The research conducted by Jukes et al. (2008) stressed that the development and learning potential of beneficiaries depend on the quality and nutrient content of the food. Nutritional and health status are powerful influences on a child's learning and school performance. Children who lack certain nutrients in their diet do not have the same potential for learning as healthy and well-nourished children. According to Uduku's (2011) research, children with cognitive and sensory impairments tend to perform worse and are more likely to repeat a grade. The irregular school attendance of malnourished and unhealthy children is one of the key factors for poor performance.

Yunusa et al. (2012) noted that students in School Feeding Programs have the potential to improve their performance because it enables them to attend school regularly and study more effectively. He found that in a study conducted in Jamaica, children in Grade 2 scored higher in Arithmetic after they began being fed at school. However, the impact of the School Feeding Program on learners' academic performance has been met with mixed feelings.

It was observed that although SFPs motivate parents to enroll their children in school, their impact on academic performance is mixed and depends on various factors within the context in which the program is set. Drawing on this, Uduku (2011) opined that SFPs would best improve learners' performance when coupled with adequate learning materials, physical facilities, and teacher motivation.

School-Based Feeding Program

Based on DepEd Order No. 13 series of 2013, among the poor, there is often not enough food at home, and most schools in developing countries lack canteens or cafeterias. School meals are a good way to channel vital nourishment to poor children. Having a full stomach also helps them concentrate better on their lessons. A feeding program is a scheduled activity that provides adequate nutrition and a balanced diet to a selected group of people.

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The School-Based Feeding Program (SBFP) in the Philippines began last October 2012 to provide nutritious meals to selected learners suffering from severe malnutrition for 100 to 120 feeding days. Its objectives are to rehabilitate 70% of severely wasted beneficiaries to normal nutritional status, ensure 85% classroom attendance, and improve children's health, nutritional status, and behavior.

The SBFP developed standardized recipes using malunggay and a 20-day cycle menu featuring locally grown vegetables from school gardens. Standardized recipes are: Malunggay Delight, Misua with Malunggay Leaves, Malunggay Veggie Mix, Malunggay Fishballs, and more. Iodized salt was used to support the sustainability and effectiveness of the SBFP, as well as complementary activities such as deworming, food production, waste segregation, values development, good grooming, and Essential Health Care Programs (EHCP).

Schools not identified as SBFP beneficiaries collaborate with the local government unit, non-governmental organizations, parent-teacher associations, and other community stakeholders to implement similar feeding programs.

Deworming

Beneficiaries are dewormed before the start of the school year so that the children will get the full benefit of the nutrients in the food. In compliance with DepEd Order No. 234, all schools should plant at least 50 malunggay trees on their premises.

Conducting a training seminar on values formation and nutrition education to parents and learners for long-term effects. Good grooming. Examples of good grooming and proper hygiene include a proper haircut, wearing clean clothes, handwashing, toothbrushing, and keeping nails short and clean. Essential Health Care Programs (EHCP). A school-based health program of the DepEd in partnership with the Local Government Unit (LGU). The program advocates simple and cost-effective health interventions.

School Feeding Programs on Performance

Children are the future of any society. For this reason, they should be the starting point of any strategy that emphasizes human development. The education of young children in our country has become of primary importance to educators, parents, and society as a whole. The problem of child malnutrition continues to plague societies and affects the education of children.

The number of hungry school-age children is unknown, but it is likely to be a significant problem in various circumstances. Many factors contribute to hunger in schoolchildren: the long distances children have to travel to school, cultural meal practices that include no or small breakfasts, or a lack of family time or resources to provide adequate meals to children before and/or during the school day. Simply alleviating this hunger among schoolchildren helps them perform better. In Jamaica, providing breakfast to primary school students significantly increased attendance and arithmetic scores.

SBFPs are among several interventions that can address nutrition and health problems among school-age children. SFPs and other school-based nutrition and health programs can also motivate parents to enroll their children in school and ensure they attend regularly. The SFP has demonstrated sustained results over the years. External evaluations of the program have found that the activity produces positive results. A 2003 study by the International Food Policy Research Institute (IFPRI) found that school feeding improved academic achievement. A 2007 WFP nutritional survey found that children in schools with feeding programs are 5 times less likely to be anemic than those in schools without such programs. The average hemoglobin concentration of children from SFP is 11% higher than that of children from non-school feeding-assisted schools.

In order to develop a thorough understanding and deeper insights relevant to this proposed study, the proponent considered the K to 12 Health Curriculum, which aims to assist the Filipino Learner in attaining, sustaining, and promoting life-long health and wellness, wherein the learning experience through the program provides opportunities for the development of health literacy competencies among students and to enhance their over-all well-being.

Therefore, SFPs help prevent hunger, which helps preschoolers participate and concentrate in class and, consequently, improve performance. A well-nourished child can achieve better grades, learn all day, and still have energy left to make the most of other evening activities, like coping with pressure and stress, resisting infection, and maintaining an alert and active mind. These are positive indicators of good performance, and even beauty goes hand in hand with proper nutrition, as the skin and hair reflect your diet. To address preschoolers' health and nutritional needs, preschool institutions are advised to introduce lunch, feeding, and milk programs.

Preschool teachers should encourage parents to organize mid-morning refreshments and lunch for children who stay at school the whole day. They should be taught about nutrition food groups, nutritional deficiencies, food production, planning and preparing family meals, food hygiene, and diet for expectant mothers, babies, and pre-school children.

Interpretation Criteria Correlational Coefficient Between Malnutrition and Academic Performance

Research by Abebe et al. highlighted significant links between undernutrition—measured by weight-for-age and height-for-age z-scores—and lower academic performance among primary school students in Ethiopia (Abebe et al., 2017). Similar findings in Jordan identified malnutrition indicators such as stunting and wasting as predictors of academic achievement (The Impact of Malnutrition on Academic Achievement among Jordanian Students in Primary Schools, 2019).

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Additionally, the correlation coefficient was utilized to assess the relationship between malnutrition and learners' academic performance, especially for those with low Body Mass Index (BMI) (Sugiyono, 2012).

Eniyew et al. found that malnutrition in North-Central Ethiopia is linked to decreased academic performance, which impacts long-term educational outcomes (Eniyew et al., 2019). Additionally, a systematic review by Teni et al. demonstrated that anemia negatively affects academic performance among adolescent girls, connecting health to educational success (Teni et al., 2017).

Theoretical Framework

The theoretical framework for this study was anchored on Motivation Theory by Abraham Maslow. Maslow's theory of needs was based on a hierarchical model in which basic needs are at the bottom and higher needs at the top (physiological, safety, love, esteem, cognitive, aesthetic, self, and transcendence). The four most fundamental layers of the pyramid contain what Maslow called deficiency needs, or d needs, meaning that the individual feels nothing if they are met but feels anxious if they are not (Snowman & Biehler, 2011). On the other hand, needs beyond the D-needs are called growth needs, being needs, or B-needs. When fulfilled, they are motivated to go further.

The main point of Maslow's Hierarchy of Needs is that people need to satisfy their needs systematically, starting with basic needs and moving up the hierarchy. He believed that higher-level needs could be achieved only if lower-order needs were first satisfied. For example, a hungry student is unlikely to be motivated to self-actualize until his hunger is satisfied.

II. Methodology

This chapter presented the methodology used in the study, including the subjects, the instruments, their reliability, the data-gathering procedure, and the statistical analysis. The study was conducted to determine the nutritional status, the causes of malnutrition, and their impact on learners' academic performance. Respondents were selected based on their nutritional status. Only learners categorized as wasted or severely wasted were included, regardless of age, gender, or academic performance. Learners who were classified as normal based on the Nutritional Status Report were excluded from the selection.

Research Design

The researcher used a descriptive–correlational research design, employing a questionnaire to gather data to determine the causes of malnutrition and its impact on learners' academic performance. This approach is consistent with the principles of descriptive-correlational research, which focus on describing existing conditions and relationships without establishing causation. Specifically, the descriptive method allows researchers to characterize and explore the complexities of malnutrition in the educational context, thereby illuminating essential relationships among factors that affect academic performance (Peteros, 2021; DEMERIN, 2023). A survey was utilized as a technique of the descriptive research method, serving as a fact-finding study with adequate and accurate interpretations (Calmorin, 2005). It was used to collect demographic data about people's behaviors, practices, beliefs, attitudes, opinions, and similar aspects, and such data were analyzed, organized, and interpreted. In this study, the descriptive–correlational method described and estimated the relationship between the variables.

Sampling

Purposive sampling was employed in this study. According to Patton (2012), the purposive sampling method called for extreme or deviant case sampling. Deviant case sampling focused on cases that were rich in information because they were unusual or special in some way (Patton, 1990). The District Nurse selected the respondents with wasted or severely wasted nutritional status based on their Body Mass Index (BMI). The other respondents of this study included the parents, the class advisers, and the School Health Coordinator.

Table 1. Respondents Distribution by School

Name of School (Manay North District)	Population (N)
Gregorio Moralizon Central Elementary School I	25
Gregorio Moralizon Central Elementary School II	20
S. Taming Elementary School	8
Francisco E. Lahora Sr. Integrated School	12
Jose Antop Sr. San Isidro IS	10
Concepcion Integrated School	12
Mabini Elementary School	5
BOTATI Elementary School	5

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Mabasa Integrated School	11
J. Mapayo Elementary School	8
San Fermin Elementary School	9
Cudada Elementary School	7
Catabuanan Primary School	5
Caipoc Primary School	5
Cayawan Elementary School	15
H. Atog Elementary School	19
R. Sumambot Elementary School	5
Capasnan Elementary School	7
G. Casanaan Elementary School	11
Jose Bitac Integrated School	20
Total	**219**

Collection or Data Gathering Procedure

A formal permission letter was secured from the Schools Division Superintendent to conduct the study through the recommendation of the Graduate School Head of Davao Oriental State College of Science and Technology. A letter of recommendation was obtained from the office of the Schools Division Superintendent (SDS) and was presented to the Public Schools District Supervisor (PSDS) for the researcher to be allowed to conduct the study. After obtaining permission from the authority, the District Nurse, who had consolidated data on nutritional status, was informed of the study's brief background and asked to provide the researcher with the necessary data before proceeding to the target schools. During the conduct in each school, the school head was informed of the consent from the Schools Division Superintendent, along with the reasons and importance of the study. Parents of the learners were given a brief orientation about the study, and teacher-advisers of the respondents were also informed.

The respondents were briefed on the study's purpose, and all information they provided was kept confidential. The researcher clearly stated and explained all instructions to obtain reliable and valid results. All data for this study were collected from learners in Manay North District. The survey questionnaires were distributed in July, 2025 to determine the nutritional status, causes of malnutrition, and their impact on the academic performance of elementary learners with wasted or severely wasted BMI.

Reliability of the Instrument

The researcher used the test-retest method to assess the questionnaire's reliability. The questionnaire was administered to 60 non-respondents of the study. After a week's interval, the same set of questionnaires was administered again to the same respondents. The researcher used the Spearman Rank Correlation Coefficient to compute the questionnaire's reliability.

Data Collection

In the conduct of this study, the following data collection procedures were employed:

Anthropometric Test

Instrument 1 used to assess students' nutritional status, based on the format provided by the Department of Education (DepEd Order No. 37, Series of 2014). The subjects' height and weight were recorded using a weighing scale calibrated at the beginning of the weighing period. All the anthropometric measurements were taken following the standard techniques recommended by Lohman et al. The BMI was calculated as per WHO norms. It was computed as the weight in kilograms divided by the square of the height in meters (kg/m^2). The BMI was age-independent and the same for both sexes:

$$\text{Body Mass Index} = \frac{\text{Body weight in kg}}{\text{Body height in m}^2}$$

Administration of the Questionnaire

Instrument 2 was the researcher's adapted questionnaire, composed of two parts. Part I included the profiles of the selected learners with wasted/severely wasted BMI in Manay North District, covering weight, nutritional status, socio-economic status, source of livelihood, and parents' educational attainment. Part II included factors determining malnutrition, including poverty, poor health,

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poor eating habits, and illiteracy or lack of education about proper nutrition, adapted from Beredo (2017). The researcher sought the School Principal's permission to distribute the questionnaires to the respondents. The questionnaires were personally administered to the respondents with wasted/severely wasted nutritional status.

In this study, the researcher considered the following scale:

Table 2. Likert Scale

Range	Interpretation	Descriptive Rating
4.50 – 5.00	Very Often	This means that the causes of malnutrition is always observed.
3.50 – 4.49	Often	This means that the causes of malnutrition is often observed.
2.50 – 3. 49	Sometimes	This means that the causes of malnutrition is sometimes observed.
1.50 – 2.49	Seldom	This means that the causes of malnutrition is seldom observed.
1.00 – 1.49	Never	This means that the causes of malnutrition is never observed.

Academic Performance Review

Instrument 3 is the students' report cards. The academic record of the students during the first, second and third grading is obtained from their respective class advisers. The average grades in the report cards for the 3 grading periods would determine the academic performance with the following classification based on DepEd Order No. 8 s. 2015.

90-100 Outstanding

85-89 Very satisfactory

80-84 Satisfactory

75-79 Fairly Satisfactory

below 75 Did not meet expectations

An unstructured, informal interview with teacher-advisers and parents was conducted to obtain reliable information which was done simultaneously during the administration of the survey questionnaires. After gathering the data, the researcher tabulated, presented, analyzed, and interpreted the data.

Statistical Treatment of Data

The data were analyzed using descriptive statistics, including frequency and weighted mean. To test the significance of the relationship, Spearman's Rho was used. Results were analyzed and interpreted.

Data Analysis

Each questionnaire was carefully examined with regard to the responses provided for each item. The data gathered from learners and teachers in Manay North District Schools on nutritional status and the causes of malnutrition served as the independent variables, while academic performance served as the dependent variable. The data were collected from the independent variables and processed using appropriate statistical tools in line with the study's objectives.

The analysis of the collected data was anchored in the study's specific objectives. Six specific objectives were formulated, and appropriate statistical tools were used to address each.

For Objective 1, Relative Frequency was used to answer Sub-problem 1. A survey questionnaire was developed to collect personal information from respondents, including weight, nutritional status, socio-economic status, source of livelihood, and parents' educational attainment.

For Objective 2, the mean and standard deviation of responses were computed to determine the general level of nutritional status, the causes of malnutrition, and their impact on the academic performance of elementary learners with wasted/severely wasted BMI.

For Objective 3, the first, second, and third grading results were gathered from the respondents' advisers to assess the general level of nutritional status, causes of malnutrition, and their corresponding impact on academic performance.

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For Objective 4, the significant difference between learners' profiles and academic performance was examined and analyzed through the Chi-Square Test or Spearman's Rho.

For Objective 5, the significant difference between malnutrition and academic performance was analyzed using the Chi-Square Test or Spearman's Rho.

For Objective 6, Pearson's r was employed to determine the significant relationships between the variables presented in Sub-problems 1, 2, and 3. All computations were analyzed using Stata version 15.

Ethical Issues

The researcher asked permission from the School Principal to conduct the study. Upon approval, the researcher also secured consent from the advisers and parents to conduct interviews with the subjects. The subjects and other participants were informed that their participation in the study was voluntary. They were also assured of confidentiality and anonymity in the research report, and that all information gathered would be treated with the utmost privacy and used solely for academic purposes.

Results and Discussions

This chapter presented the findings and thoroughly discussed the information generated from the responses of 219 learners from various elementary schools in Manay North District, Davao Oriental Division.

The results obtained from the responses of the 219 learners were analyzed using a non-parametric test. The non-parametric statistical method was used since the data were not assumed to come from prescribed models determined by a small number of parameters.

Profile of the learners

Understanding the learners' background is essential in interpreting the results of the study and in identifying possible factors affecting their academic progress. The profile includes information on their weight, nutritional status, socio-economic status, source of livelihood, and the educational attainment of their parents. These variables provide a holistic view of the learners' living conditions and serve as a basis for designing appropriate interventions and support programs that address their specific needs.

According to Bronfenbrenner's Bioecological Theory (1979), a child's development is shaped by the multiple environments surrounding them, including the family, community, and economic conditions. Therefore, examining the learners' background provides a basis for interpreting their learning outcomes and identifying potential areas for intervention.

Table 3. Profile of the learners

Variable	Indicator	Sex		Total	Percent
		Male	Female		
	Severe Thinness	57	48	105	48%
	Underweight	25	13	38	17%
Weight	Normal Weight	12	9	21	10%
	Overweight	4	8	12	5%
	Obese	25	18	43	20%
Nutrition Status	Severly Wasted	26	30	56	26%
	Wasted	97	66	163	74%
Socio-Economic Status	Class E	49	47	96	44%
	Class D	68	41	109	50%
	Class C	6	8	14	6%
Livelihood	Construction	22	13	35	16%
	Kahayupan./Manokan	10	4	14	6%
	Pagpangisda	10	6	16	7%

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	Pagpanguma	53	41	94	43%
	Uban pa	28	32	60	27%
Educational Attainment	College Graduate	13	5	18	8%
	College Level	13	5	18	8%
	Elementary Graduate	49	48	97	44%
	High Sch Graduate	22	16	38	17%
	High Level	26	22	48	22%

Weight

The data in Table 3 show that almost half of the learners (48%) are severely thin, while 17% are underweight. Only 10% fall within the normal weight range, 5% are overweight, and 20% are obese. This pattern reflects a double burden of malnutrition, where both undernutrition (65%) and overnutrition (25%) coexist in the population.

According to the World Health Organization (2020), this double burden is a growing concern in developing countries where poor dietary diversity and limited access to nutritious food coexist with the rising intake of processed and energy-dense foods. Similarly, Popkin, Corvalan, and Grummer-Strawn (2020) emphasize that rapid shifts in food environments and lifestyle contribute to both underweight and overweight conditions among children.

These findings suggest that many learners are experiencing nutritional imbalances due to poor dietary intake and irregular eating habits, often influenced by the household's economic status. As noted by Victora et al. (2021), malnutrition in childhood has long-term effects on physical growth, cognitive development, and academic performance, making it a critical concern for both educators and policymakers.

Nutritional Status

The results also indicate that a majority of the learners are suffering from malnutrition, with 26% classified as severely wasted and 74% as wasted. This high prevalence of undernutrition implies that food insecurity and insufficient dietary intake are prevalent among the respondents.

According to Adair et al. (2017), undernutrition during childhood can lead to stunting and delayed cognitive development, which adversely affect learning outcomes. Likewise, UNICEF (2019) reports that malnourished children are more likely to experience absenteeism, low concentration, and reduced school performance. The link between malnutrition and poverty has been well documented, with FAO, UNICEF, WHO, and WFP (2023) stressing that food insecurity in low-income households remains a major determinant of poor nutritional outcomes.

The results in this study reinforce these findings, suggesting that the learners' nutritional challenges may stem from limited access to nutritious food and a lack of parental knowledge regarding proper nutrition.

Socio-Economic Status

Half of the learners (50%) belong to Class D, while 44% come from Class E, the lowest socio-economic group. Only 6% belong to Class C. This shows that the majority of the learners come from economically disadvantaged families. Families from these income brackets often struggle to provide balanced meals, access healthcare, or sustain educational expenses, contributing to the persistent cycle of poverty and malnutrition.

According to the Philippine Statistics Authority (2023), the poverty incidence in rural areas remains high, directly affecting children's nutrition and educational access. In a related study, Angeles, Santos, and Bautista (2019) found that Filipino children from low-income families exhibit higher rates of stunting and lower school participation rates compared to those from middle-income households.

This economic deprivation not only limits the learners' physical well-being but also affects their academic performance, as financial hardship can lead to irregular attendance and lack of school materials. Addressing poverty is therefore crucial in promoting both health and learning equity among students.

Source of Livelihood

The findings reveal that farming is the primary source of livelihood (43%), followed by informal work (27%), construction (16%), fishing (7%), and poultry/livestock raising (6%). The dominance of farming reflects the community's reliance on agricultural labor, which is often seasonal, unstable, and low-paying.

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According to Ballon and Hidalgo (2020), rural families engaged in agriculture are more prone to economic insecurity due to unpredictable weather conditions and fluctuating crop prices. This instability affects their purchasing power and ability to provide consistent nutrition and educational support for their children. Similarly, FAO (2023) emphasizes that rural livelihoods in developing countries are highly vulnerable to poverty cycles, especially when access to alternative income sources is limited.

These results suggest that the learners' households face economic constraints that may contribute to food insecurity, undernutrition, and limited educational opportunities. Strengthening community livelihood programs could therefore play a vital role in improving both family welfare and children's learning outcomes.

Educational Attainment of Parents

The results show that 44% of parents are elementary graduates, 22% reached high school, 17% are high school graduates, and only 16% attained or pursued higher education. This indicates that most parents have low educational attainment, which may affect their awareness of proper nutrition, child care, and educational support.

According to Glewwe and Muralidharan (2016), parents with higher educational attainment are more likely to promote positive learning environments, provide educational materials, and value academic success. In contrast, limited education can lead to poor nutritional decisions and reduced health literacy, as observed by Napitupulu, Yuliana, and Supriyadi (2022), who found that parental education strongly correlates with children's nutritional and academic outcomes.

The low educational level of parents in this study reflects a potential barrier to both nutrition and learning. Hence, community-based interventions that include parent education programs and nutrition awareness training are essential to empower families to support their children's development effectively.

The overall profile of the learners reveals a critical situation marked by nutritional imbalance, poverty, and low parental education. The coexistence of undernutrition and overnutrition highlights the need for urgent intervention, while the socio-economic and educational backgrounds of families emphasize the structural barriers that perpetuate poverty and poor learning outcomes. These findings suggest that comprehensive and multi-sectoral interventions—such as school-based feeding programs, nutrition education, and livelihood support projects—are essential to improve both the health and academic performance of learners.

Level of causes of wasted/severely wasted Body Mass Index of the respondents

This section presented the results and discussion on the causes of wasted and severely wasted Body Mass Index (BMI) among the respondents in terms of poverty, health condition, eating habits, and literacy on proper nutrition. According to the World Health Organization (2020) and UNICEF (2019), undernutrition is largely caused by inadequate food intake, poor health, and low household income. Frequent illnesses and poor eating habits further aggravate the problem (FAO, UNICEF, WHO, & WFP, 2023; Popkin et al., 2020). Moreover, limited nutrition knowledge among parents often leads to poor dietary choices (Napitupulu et al., 2022). Understanding these factors helps explain the learners' nutritional deficiencies and guides the development of appropriate school and community interventions.

Table 4. Level of Causes of Wasted/Severely Wasted Body Mass Index

Variable	Std. Deviation	Mean
Poverty	0.768	3.53
Health Condition	0.774	3.28
Eating Habit	0.640	3.42
Illiteracy	0.744	3.52

The results presented in Table 4 reveal that the primary causes of wasting and severe wasting among learners are influenced by multiple interrelated factors, with poverty and nutrition illiteracy emerging as the most dominant. The analysis shows that poverty obtained the highest mean (M = 3.53, SD = 0.768), indicating its strong impact on children's access to adequate and nutritious food. According to UNICEF (2019), poverty remains the most persistent driver of undernutrition, as financially constrained households often rely on low-cost, nutrient-poor foods. Similarly, Angeles, Santos, and Bautista (2019) emphasize that children from low-income families are more likely to experience food insecurity, leading to chronic malnutrition and poor academic outcomes. These findings confirm that economic deprivation directly limits both the quality and quantity of food available to learners, heightening their vulnerability to wasting.

The second highest factor is illiteracy on proper nutrition, with a mean of 3.52 (SD = 0.744). This result highlights the lack of parental knowledge about balanced diets, proper feeding schedules, and the nutritional value of different food groups. According to Napitupulu, Yuliana, and Supriyadi (2022), low nutrition literacy among parents is strongly associated with unhealthy food choices and poor dietary practices, which contribute to children's malnutrition. Glewwe and Muralidharan (2016) also found that parents with higher educational attainment are more likely to promote healthy eating behaviors and ensure better nutritional

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outcomes for their children. Thus, inadequate nutrition education at the household level perpetuates the cycle of malnutrition and poverty.

Eating habits ranked third with a mean of 3.42 (SD = 0.640), suggesting that irregular meal patterns and consumption of unbalanced or processed food contribute significantly to the problem. Popkin, Corvalan, and Grummer-Strawn (2020) explain that poor dietary behaviors, such as skipping meals, consuming energy-dense foods, and lack of dietary diversity, are common among children from economically disadvantaged families. Moreover, World Health Organization (2020) stresses that maintaining regular, balanced meals is crucial to prevent both undernutrition and micronutrient deficiencies. The findings in this study affirm that unhealthy eating habits, when combined with poverty and low nutrition awareness, exacerbate the incidence of wasting.

Finally, health condition obtained the lowest mean (M = 3.28, SD = 0.715), indicating that while it contributes to malnutrition, it is perceived as less influential compared to socio-economic and educational factors. Frequent infections, parasitic infestations, and other illnesses can lead to nutrient loss and reduced appetite, which worsen undernutrition (FAO, UNICEF, WHO, & WFP, 2023). Adair et al. (2017) likewise reported that poor health and hygiene conditions increase vulnerability to wasting, particularly in environments with limited sanitation and health services. Although ranked lowest, health conditions remain an important dimension that interacts with poverty and nutrition education in shaping children's nutritional outcomes.

Overall, the results suggest that addressing malnutrition requires a multidimensional approach. Interventions should not only focus on improving health and nutrition services but also tackle the root causes of poverty, strengthen parental education on nutrition, and promote healthy eating behaviors both at school and at home. These findings align with Bronfenbrenner's Bioecological Theory (1979), which emphasizes that children's development is shaped by the interaction of personal, familial, and environmental factors. Therefore, combating wasting among learners demands collaborative action from families, schools, and community stakeholders to break the cycle of malnutrition and poverty.

Level of academic performance of elementary learners during the First, Second and Third Grading periods.

The results and discussion section presented the level of academic performance of the elementary learners during the First, Second, and Third Grading periods. This part aims to analyze the learners' progress across the three grading periods to determine trends in their academic achievement and identify possible factors influencing their performance. By examining their grades over time, the study seeks to assess whether there were improvements, declines, or consistent patterns in learning outcomes, which may be linked to instructional strategies, learner motivation, or external factors such as socio-economic conditions and nutritional status.

Table 5. Level of Academic Performance of Learners

Variable	Std. Deviation	Mean	Classification
First Grading	4.88	81.50	Satisfactory
Second Grading	4.85	82.70	Satisfactory
Third Grading	5.37	83.22	Satisfactory

The findings presented in Table 5 reveal that the academic performance of elementary learners across the first three grading periods consistently falls within the satisfactory level, with a gradual upward trend. The highest mean was recorded in the Third Grading Period (M = 83.22, SD = 5.37), followed by the Second Grading Period (M = 82.36, SD = 5.12), and the lowest mean in the First Grading Period (M = 81.50, SD = 4.86). This steady improvement suggests that learners gradually adapt to classroom routines, enhance study habits, and benefit from teachers' reinforcement and feedback as the school year progresses.

According to Garcia and Reyes (2021), consistent academic improvement across grading periods can be linked to learners' growing familiarity with instructional expectations and cumulative learning experiences. Similarly, Bandura's (1997) Social Cognitive Theory supports that repeated academic exposure and self-efficacy development contribute to better performance outcomes over time.

However, the increase in standard deviation by the third grading period indicates a widening gap among learners' performances, implying that while some learners improved significantly, others struggled to keep pace. This finding echoes Tomlinson's (2014) assertion that diverse learner needs require differentiated instruction to prevent academic disparities. Moreover, De Guzman and Ocampo (2020) emphasize that socio-economic background and nutritional status remain underlying factors influencing learners' cognitive development and academic consistency.

Overall, while the results reflect a positive trajectory in academic performance, they highlight the importance of sustained academic support, individualized instruction, and continuous monitoring to ensure equitable learning progress among all learners.

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Significant relationship between the profile and academic performance of elementary learners with wasted/severely wasted BMI

The following section presents the results and discussion on the significant relationship between the profile and academic performance of elementary learners with wasted or severely wasted Body Mass Index (BMI). This analysis aims to determine whether demographic and socio-economic factors such as nutritional status, family income, parental education, and source of livelihood are significantly associated with learners' academic outcomes. Understanding these relationships is essential, as previous studies have established that malnutrition and poverty can negatively affect cognitive development, attention span, and school performance (Florencio, 2019; Tan & Gonzales, 2021). This section also explains the interpretation criteria for the correlation coefficient used by Sugiyono (2012).

Table 6. Interpretation Criteria Correlation Coefficient (Sugiyono, 2012)

Interval	Relationship Level
± 0.00 - ± 0.19	Very Weak
± 0.20 - ± 0.39	Weak
± 0.40 - ± 0.59	Strong Enough
± 0.60 - ± 0.79	Strong
± 0.80 - ± 1.00	Very Strong

By examining the correlation between the learners' profile and their academic achievement, this section seeks to identify which aspects of the learners' background most strongly influence their learning success, thereby providing a basis for targeted interventions to support nutritionally at-risk learners.

Table 7. The Significant Relationship Between the Profile and Academic Performance of Learners

No.	Variable	1	2	3	4	5	6
1	Weight						
2	Nutrition Status	0.009					
3	Socio-Economic Status	-.190**	0.061				
4	Livelihood	0.022	0.081	0.07			
5	Educational Attainment	-0.081	-0.132	-0.02	-0.071		
6	Academic Performance	.305**	-0.1	-.140*	0.077	-0.11	
**. Correlation is significant at the 0.01 level (2-tailed).							
*. Correlation is significant at the 0.05 level (2-tailed).							

The findings presented in Table 7 reveal that among the profile variables, weight and socio-economic status demonstrated significant relationships with the academic performance of learners with wasted or severely wasted BMI, while other factors such as nutritional status, type of livelihood, and parents' educational attainment showed no significant correlation.

The strong relationship was observed between weight and academic performance ($r = .305$, $p < .01$), indicating that learners with healthier body weights tend to achieve higher academic outcomes. This supports the findings of Florencio (2019), who reported that undernourished children often exhibit reduced attention span, lower cognitive processing, and poor school performance due to energy deficiency. Similarly, Santos et al. (2020) emphasized that maintaining adequate nutritional intake enhances concentration and classroom participation, both of which are vital for academic achievement. These results reinforce the notion that nutritional well-being directly contributes to learners' cognitive and academic development, suggesting that school-based feeding and health monitoring programs can play a crucial role in improving learners' performance.

The second significant relationship was found between socio-economic status and academic performance ($r = –.140$, $p < .05$), showing a negative correlation suggesting that learners from low-income families tend to perform worse academically. This aligns with the study of Tan and Gonzales (2021), which established that children from impoverished households often face food insecurity, limited access to educational materials, and stressful home environments that impede learning. Reyes and De Guzman (2020) also highlighted that socio-economic disadvantage is one of the strongest predictors of malnutrition and academic underachievement, as financial constraints affect both nutrition and educational engagement.

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Meanwhile, other profile variables such as nutritional status, source of livelihood, and parents' educational attainment did not yield statistically significant correlations with academic performance. This finding suggests that while these factors influence overall well-being, their direct effect on learners' grades may be mediated through broader conditions like income level and nutritional adequacy.

Overall, the results highlight that nutritional health and economic stability are the most critical determinants of academic performance among wasted and severely wasted learners. Therefore, interventions should focus on integrated nutrition support programs and poverty alleviation initiatives, as improving learners' physical well-being and household conditions can create a more equitable foundation for learning success.

Significant relationship between the causes of malnutrition and academic performance of elementary learners with wasted/severely wasted BMI.

The following section presents the results and discussion on the significant relationship between the causes of malnutrition and the academic performance of elementary learners with wasted or severely wasted Body Mass Index (BMI). This part aims to determine whether factors such as poverty, health condition, eating habits, and literacy or education on proper nutrition significantly influence learners' learning outcomes. Understanding these relationships is vital since malnutrition has been widely associated with poor school attendance, low concentration, and decreased cognitive performance (Florencio, 2019; Tan & Gonzales, 2021). By identifying which causes of malnutrition most strongly affect academic achievement, this analysis provides a foundation for developing targeted interventions that address both the nutritional and educational needs of at-risk learners.

Table 8. The Significant Relationship Between the Causes of Malnutrition and Academic Performance Learners

No.	Variable	1	2	3	4	5
1	Poverty					
2	Health Condition	.412**				
3	Eating Habit	.161*	0.124			
4	Illiteracy	.268**	0.098	.211**		
5	Academic Performance	.160*	0.004	.154*	0.021	1
**. Correlation is significant at the 0.01 level (2-tailed).						
*. Correlation is significant at the 0.05 level (2-tailed).						
No. Cases: 219						

The findings presented in Table 8 reveal that among the identified causes of malnutrition, poverty and eating habits showed significant but weak positive correlations with the academic performance of wasted and severely wasted learners, while health condition and illiteracy on nutrition were not significantly related.

The significant correlation was found between poverty and eating habits but weak positive correlations with the academic performance ($r = .160$, $p < .05$), indicating that learners from impoverished households tend to have lower academic outcomes. Poverty limits access to adequate food, learning materials, and health care—factors essential for effective learning. According to Tan and Gonzales (2021), poverty is a major determinant of malnutrition and educational underachievement, as financially constrained families often prioritize survival needs over education. Similarly, Reyes and De Guzman (2020) emphasized that economic hardship leads to food insecurity and frequent school absenteeism, both of which negatively affect learners' academic engagement and cognitive development. Furthermore, poverty was found to be significantly associated with health condition ($r = .412$, $p < .01$) and illiteracy on nutrition ($r = .268$, $p < .01$), confirming its central role in perpetuating poor nutrition and low learning performance among children.

The second significant correlation was observed between eating habits and academic performance ($r = .154$, $p < .05$). This suggests that learners with irregular or unhealthy eating patterns—such as skipping meals or consuming nutritionally poor foods—are more likely to experience difficulty focusing and performing academically. Santos et al. (2020) noted that children with inadequate or unbalanced diets often display decreased concentration, fatigue, and slower information processing, which hinder their classroom performance. Likewise, Florencio (2019) found that consistent and nutritious meal patterns improve attention span and participation, leading to better academic outcomes.

Meanwhile, health condition ($r = .004$, not significant) and illiteracy on nutrition ($r = .021$, not significant) were not significantly correlated with academic performance. Although these factors did not show direct statistical relationships, their effects may operate indirectly through poverty and eating behavior. For instance, Garcia and Reyes (2021) observed that poor health often results from sustained nutritional deprivation and economic disadvantage rather than immediate illness alone, while Ocampo (2020) highlighted

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that nutrition illiteracy among parents typically stems from low socio-economic status, influencing the quality and variety of meals provided to children.

Overall, the results indicate that poverty remains the root cause of both malnutrition and academic underperformance among wasted and severely wasted learners, while unhealthy eating habits serve as a reinforcing factor. Interventions should therefore prioritize poverty alleviation programs, school-based feeding initiatives, and nutrition education campaigns to address these interconnected issues holistically and enhance learners' overall learning outcomes.

Table 9. Kruskal Wallis Analysis on Significant Difference Proverty, Health Condition, Eating Habits, and Illiteracy Grouped According to Students' Profiles

Grouping Variable	Variable	Chi-square	df	Asymp. Sig.	Remark
Weight	Poverty	16.43	4	0.002	Significant
	Health Condition	6.36	4	0.174	Not Significant
	Eating Habit	1.67	4	0.797	Not Significant
	Illiteracy	13.31	4	0.010	Significant
Nutritional Status	Poverty	0.95	1	0.330	Not Significant
	Health Condition	0.06	1	0.809	Not Significant
	Eating Habit	0.24	1	0.627	Not Significant
	Illiteracy	1.62	1	0.203	Not Significant
Socio-economic Status	Poverty	14.31	2	0.001	Significant
	Health Condition	12.27	2	0.002	Significant
	Eating Habit	12.01	2	0.002	Significant
	Illiteracy	4.58	2	0.101	Not Significant
Livelihood	Poverty	6.08	4	0.193	Not Significant
	Health Condition	3.27	4	0.514	Not Significant
	Eating Habit	1.47	4	0.832	Not Significant
	Illiteracy	3.22	4	0.522	Not Significant
Educational Attainment	Poverty	9.11	4	0.058	Not Significant
	Health Condition	16.01	4	0.003	Significant
	Eating Habit	3.73	4	0.444	Not Significant
	Illiteracy	5.46	4	0.243	Not Significant
No. Cases: 219					
Significant Level at 0.05					

Significant difference on poverty, health condition, eating habits, literacy/education on proper nutrition of the learners according to the assessment of the teachers

The following section presents the results and discussion on the significant difference in the causes of malnutrition—specifically poverty, health condition, eating habits, and literacy or education on proper nutrition—based on the teachers' assessment when learners are grouped according to their weight, nutritional status, socio-economic status, source of livelihood, and educational attainment of parents. This analysis aims to determine whether these profile variables influence teachers' perceptions of the underlying factors contributing to learners' malnutrition.

Understanding these variations is important, as previous studies have shown that socio-economic background, parental education, and household livelihood significantly shape children's nutritional well-being and learning outcomes (Florencio, 2019; Reyes & De Guzman, 2020; Tan & Gonzales, 2021). By identifying which groups exhibit significant differences, the study provides valuable

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insights for designing more targeted school- and community-based nutrition interventions tailored to the specific needs of learners from different backgrounds.

The results presented in Table 9 show the Kruskal–Wallis analysis on the significant differences in poverty, health condition, eating habits, and illiteracy on proper nutrition among learners, as assessed by teachers when grouped according to weight, nutritional status, socio-economic status, source of livelihood, and educational attainment of parents. The findings reveal that learners' demographic and socio-economic profiles significantly influence the underlying causes of malnutrition, underscoring the multifaceted nature of the problem.

The weight grouping revealed significant differences in poverty ($p = 0.002$) and illiteracy on proper nutrition ($p = 0.010$). This suggests that learners with lower body weight are more likely to come from economically disadvantaged households with parents who have limited knowledge of proper nutrition. According to Florencio (2019), underweight children often belong to families struggling with food insecurity and poor dietary diversity. Likewise, Ocampo (2020) emphasized that parents' lack of nutrition literacy leads to inappropriate feeding practices, further worsening children's nutritional status. These findings indicate that interventions for underweight learners must address both economic and educational barriers within the household.

On the other hand, nutritional status grouping showed no significant differences across all variables, suggesting that both wasted and severely wasted learners share similar experiences of deprivation and nutritional inadequacy. This aligns with the study of Santos et al. (2020), which found that children suffering from various levels of malnutrition are often exposed to the same systemic causes—mainly poverty and limited access to nutritious food—rather than individual or biological differences.

The socio-economic status grouping yielded the most significant results, with poverty ($p = 0.001$), health condition ($p = 0.002$), and eating habits ($p = 0.002$) all showing notable differences. This indicates that learners from lower economic classes experience poorer health and less nutritious eating habits. Tan and Gonzales (2021) found that low-income families often rely on inexpensive, energy-dense but nutrient-poor foods, leading to both undernutrition and poor health outcomes. Similarly, Reyes and De Guzman (2020) argued that financial limitations restrict families' ability to afford medical care and balanced meals, perpetuating the cycle of malnutrition and poor academic performance.

In contrast, livelihood type did not yield significant differences, implying that malnutrition transcends occupational boundaries. Whether families rely on farming, fishing, or informal labor, their shared experience of low and unstable income contributes to nutritional vulnerability. This supports the findings of Garcia and Reyes (2021), who noted that malnutrition persists across various livelihood types in rural areas due to inadequate income and limited access to diverse food sources.

Finally, the grouping by parents' educational attainment revealed a significant difference in health condition ($p = 0.003$). learners whose parents had higher educational backgrounds generally showed better health, suggesting that educated parents possess greater awareness of hygiene, disease prevention, and proper nutrition. Ocampo (2020) and Florencio (2019) both noted that parental education strongly influences children's health outcomes, as educated parents are more likely to implement effective health and feeding practices.

Overall, the results affirm that malnutrition is primarily driven by poverty, poor eating habits, and low nutrition literacy, and these issues are further compounded by socio-economic inequalities. Thus, addressing malnutrition among learners requires a holistic approach—combining poverty reduction programs, nutrition education for parents, and school-based feeding interventions—to break the intergenerational cycle of poor health and low academic performance.

III. Summary, Conclusions, and Recommendations

This chapter presents a summary of the findings. It provides an assertion and recommendations on

Summary

The study examined the nutritional and socio-economic factors affecting the academic performance of elementary learners with wasted and severely wasted Body Mass Index (BMI). The results across the six objectives provide a holistic understanding of how malnutrition, poverty, and related conditions interact to influence learners' growth and educational outcomes.

The findings revealed that a large proportion of learners were undernourished, with 48% classified as severely thin and 17% underweight, while only 10% fell within the normal range. Most learners belonged to low-income households (Class D and E), where farming and informal labor were the primary sources of livelihood. Additionally, nearly half of the parents were elementary graduates, indicating limited education. These results align with Florencio (2019) and Reyes & De Guzman (2020), who emphasize that malnutrition is strongly linked to poverty and low parental education, which restrict access to nutritious food and health care.

Among the identified causes, poverty ($M = 3.53$) and illiteracy on nutrition ($M = 3.52$) emerged as the most influential, followed by eating habits ($M = 3.42$) and health condition ($M = 3.28$). This suggests that economic deprivation and lack of nutrition knowledge are the leading factors contributing to malnutrition. Tan and Gonzales (2021) assert that food insecurity caused by poverty limits dietary diversity, while Ocampo (2020) notes that inadequate parental nutrition literacy worsens improper feeding practices among children.

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Learners' academic performance showed a gradual upward trend, increasing from 81.50 in the first grading to 83.22 in the third grading, reflecting satisfactory performance. The improvement indicates that learners adjusted to academic routines and benefited from cumulative learning exposure. However, the increased variability in scores (SD = 5.37) by the third grading implies that performance gaps widened, necessitating differentiated teaching approaches. These findings support Bandura's (1997) theory that self-efficacy and repeated learning experiences enhance academic performance, though Tomlinson (2014) highlights the importance of addressing individual learning differences.

A significant positive correlation was found between weight and academic performance ($r = .305$, $p < .01$), and a negative correlation with socio-economic status ($r = –.140$, $p < .05$). This means that healthier learners performed better academically, while those from poorer households performed worse. Florencio (2019) and Santos et al. (2020) both observed that adequate nutrition enhances focus and cognitive function, while Reyes & De Guzman (2020) reported that economic deprivation reduces academic opportunities.

Results revealed significant but weak positive correlations between poverty ($r = .160$, $p < .05$) and eating habits ($r = .154$, $p < .05$) with academic performance. Learners suffering from economic hardship and poor eating patterns exhibited lower academic outcomes. Health condition and nutrition illiteracy were not significantly related but were indirectly affected by poverty. These findings confirm Tan & Gonzales (2021) and Santos et al. (2020), who stressed that poverty-driven poor eating practices hinder children's learning abilities and school performance.

The Kruskal–Wallis analysis revealed significant differences across key variables. Learners grouped by weight differed significantly in poverty ($p = .002$) and illiteracy ($p = .010$), while socio-economic status influenced poverty ($p = .001$), health condition ($p = .002$), and eating habits ($p = .002$). Moreover, parental education significantly affected health condition ($p = .003$). These results highlight that malnutrition is largely rooted in economic inequality and limited parental knowledge, consistent with Ocampo (2020) and Florencio (2019), who linked parental education and income to children's nutritional and health outcomes.

The overall findings affirm that malnutrition among learners is a multidimensional issue driven primarily by poverty, poor dietary habits, and low nutrition literacy, which in turn negatively impact academic performance. Socio-economic disadvantages not only reduce food access but also limit parental ability to support children's learning and health. Addressing these challenges requires integrated school-based feeding programs, nutrition education for parents, and livelihood support for families to break the cycle of malnutrition and poor academic achievement.

Conclusion

The study aimed to determine the factors affecting the nutritional status and academic performance of elementary learners with wasted and severely wasted Body Mass Index (BMI) through six specific objectives. Based on the findings, the following conclusions were drawn.

First, the profile of the learners in terms of weight, nutritional status, socio-economic status, source of livelihood, and educational attainment of parents revealed that most of the respondents came from low-income families with limited parental education, which are major contributors to poor nutritional outcomes.

Second, poverty, poor health condition, unhealthy eating habits, and low literacy on proper nutrition were identified as leading causes of wasting and severe wasting among learners, with poverty emerging as the most influential factor.

Third, the learners' academic performance across the first, second, and third grading periods remained within the satisfactory level, showing a slight upward trend as the school year progressed, suggesting that consistent support and adjustment to learning routines improve performance.

Fourth, there was a significant relationship between the learners' profile and their academic performance, particularly in terms of weight and socio-economic status, indicating that malnutrition and poverty hinder learning capacity.

Fifth, the study also revealed a significant relationship between the causes of malnutrition especially poverty and eating habits—and the academic performance of learners, confirming that poor nutrition and limited access to quality food negatively impact cognitive and academic functioning.

Lastly, the differences in poverty, health condition, eating habits, and literacy on proper nutrition were significantly influenced by learners' weight, socio-economic status, and parents' educational attainment, underscoring that malnutrition is rooted in broader socio-economic disparities.

The findings conclude that poverty, poor nutrition practices, and low parental education are the key determinants of both malnutrition and academic underachievement among elementary learners, highlighting the need for targeted interventions that combine nutritional support, parental education, and poverty reduction strategies.

Recommendation

Based on the findings and conclusions drawn from the six research objectives, the following recommendations are proposed:

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Schools and local government units should strengthen data monitoring on learners' weight, nutritional status, socio-economic background, and parents' educational attainment. This will help in identifying at-risk learners early. Collaboration with the Department of Health (DOH) and Department of Social Welfare and Development (DSWD) is recommended to provide regular health screening and family profiling to ensure timely interventions for undernourished learners.

Since poverty and poor nutrition literacy were identified as major causes of wasting and severe wasting, it is recommended that livelihood programs and community-based nutrition education campaigns be intensified. Parents should be trained on affordable yet nutritious meal preparation, while schools should coordinate with local organizations to provide supplementary feeding programs and garden-based learning initiatives.

Teachers should adopt differentiated instruction and remediation programs to address learning gaps among malnourished learners. Continuous formative assessments and individualized support plans can help sustain the gradual improvement in performance across grading periods. Moreover, integrating nutrition awareness into classroom lessons can reinforce both learning and health outcomes.

Given that weight and socio-economic status significantly affect academic performance, schools should establish partnerships with government agencies and NGOs to provide nutrition support, school feeding, and scholarship programs. Guidance counselors and teachers should also monitor learners' progress and provide academic interventions for those struggling due to health or financial challenges.

Programs addressing poverty and unhealthy eating habits should be prioritized. Schools may implement feeding programs with balanced meals and nutrition education sessions for both learners and parents. Local stakeholders can help provide livelihood assistance to families to ensure food security and stable income sources, which can, in turn, improve learners' health and learning outcomes.

Since socio-economic status, weight, and parents' educational attainment significantly influence malnutrition, multi-sectoral collaboration is necessary. Local government units, schools, and barangay officials should implement integrated health, education, and livelihood initiatives targeting families with low income and low educational backgrounds. Continuous parental engagement through seminars and family development sessions can promote healthier household practices.

To effectively combat malnutrition and its impact on academic performance, a holistic approach must be adopted combining health and nutrition programs, parental education, and poverty alleviation measures. Schools should act as the central hub for implementing these initiatives, ensuring that every pupil receives equal opportunities for good health and academic success.

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