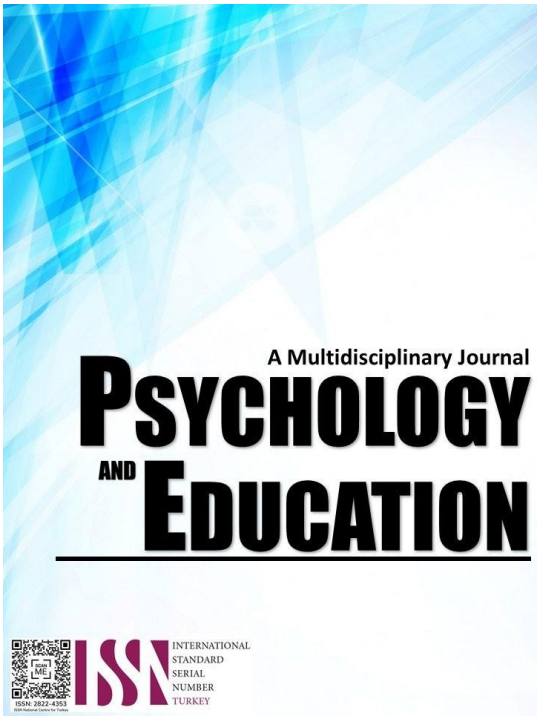
GENERAL NUTRITION KNOWLEDGE AND PHYSICAL FITNESS AS PREDICTORS OF BODY MASS INDEX (BMI) AMONG SENIOR HIGH SCHOOL STUDENTS



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Research Article

General Nutrition Knowledge and Physical Fitness as Predictors of Body Mass Index (BMI) Among Senior High School Students

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Abstract

The primary purpose of this study is to examine how general nutrition knowledge and physical fitness influence body mass index (BMI) among senior high school students. A descriptive correlational design was used, and stratified random sampling ensured fair representation of the participants. Data were gathered from selected senior high schools in Bayugan City using adapted and researcher-developed questionnaires validated by experts. The findings revealed that general nutrition knowledge is high and is often observed. Additionally, the level of physical fitness is fair, indicating moderate development. Moreover, the distribution of Body Mass Index among senior high school students reveals a varied nutritional profile within the population. Furthermore, general nutrition knowledge shows no significant relationship with body mass index; however, physical fitness does. Ultimately, when combined, general nutrition knowledge and physical fitness do not significantly influence body mass index in isolation.

Keywords: *education, general nutrition knowledge, physical fitness, body mass index, physical education, correlational research, Philippines*

Introduction

The Body Mass Index (BMI) is a widely recognized measurement used to assess an individual's nutritional status based on their weight relative to height (Safaei et al., 2021). BMI is a key indicator for determining if a person is underweight, has a healthy weight, is overweight, or is obese (Mandal, 2025). However, many individuals struggle to maintain a healthy BMI due to poor dietary habits and inadequate physical activity (Shelton et al., 2020). In recent years, the rising rates of underweight, obesity, and overweight among adolescents have become a global health concern (Sanyaolu et al., 2019; World Health Organization, 2024).

Further, the World Health Organization (2022) reported that approximately 2.5 billion young adults aged 18 years were overweight. In India, adolescents face a high prevalence of excess weight cases, ranging from 31.5 percent, as well as undernutrition, where 253 million adolescents are seriously challenged (Parida et al., 2022; Rawal et al., 2021). Moreover, the Global School-Based Student Health Survey indicates that more than 80 percent of adolescents worldwide fail to meet the recommended 60 minutes of moderate-to-vigorous physical activity daily, which may lead to energy imbalance (Westerterp, 2018; World Health Organization, 2020). Energy imbalance disrupts healthy growth patterns; for instance, when an adolescent consumes more energy than is used, the body stores excess fat, which over time may cause weight gain that can lead to higher BMI, while consuming less energy than is burned leads to weight loss and a lower BMI (Fletcher, 2025; National Heart, Lung, and Blood Institute, 2022). The prevalence of such behaviors was lowest in the Eastern Mediterranean region (4.9%) and highest in Southeast Asia (8.6%). The findings emphasized that participation in less than the recommended amount of physical activities among adolescents can result in either higher or lower BMI levels (Xu et al., 2020).

Furthermore, the Non-Communicable Disease Risk Factor Collaboration (NCD-RisC, 2024) has indicated that among adolescents, there are around one billion worldwide that is living with obesity. Additionally, in India, over 24 percent of girls and 30 percent of boys are classified as underweight due to insufficient nutrition (UNICEF, 2023). Moreover, UNICEF (2019) reported that in Bangladesh, the situation is also alarming, where over 31 percent of adolescent girls are underweight. Moreover, the Global Nutrition Report (2022) revealed that in Sub-Saharan Africa, 22 percent of teenage girls in Ethiopia and 19 percent in Nigeria are underweight due to persistent challenges of limited access to health and nutrition education, resulting in low Body Mass Index levels that signify poor nutritional status. This data highlights that in most countries, overweight and obesity pose the same risk to health as underweight.

In the Philippine setting, there has been a gradually increasing trend in adolescent obesity and overweight cases (Duante et al., 2023). At the same time, many suffer from undernutrition, particularly in rural and low-income areas (The World Bank, 2021). In Metro Manila, overweight and obesity rank as the top nutrition concerns in eight cities, and within the region, 9.6 percent of adults are obese, and 28.8 percent are overweight (The Hospital at Maayo, 2023). More so, The Department of Science and Technology - Food and Nutrition Research Institute (DOST-FNRI, 2021) reported that overweight and obesity prevalence among teenagers in Taguig City increased from 11.6 percent in 2018 to 13 percent in 2021 as the consumption of energy-dense foods with low nutritional value, excessive intake of added sugars and fats, and insufficient consumption of essential micronutrients leads to elevated BMI levels among its population. More than that, undernutrition is also prevalent in Metro Manila despite better access to food markets and healthcare facilities, with a 22.3 percent national average of stunting for adolescents, higher among boys, which may lead to a distorted BMI reading as stunted individuals have a shorter stature, which can result in a standard or elevated BMI (Council for the Welfare of Children, 2024).

At the community level, the nutritional status of young people remains an immense challenge. The study of Herrera et al. (2023) showed

a high rate of malnutrition in the Caraga region, of which 12 percent were classified as stunted, 9.4 percent as thin, and 16.4 percent as obese, all of which are associated with body mass index. With these cases, the Department of Health-Center for Health Development (DOH-CHD) Caraga deemed that the country is facing a health and nutrition crisis. Statistics demonstrated that among adolescents, 22 percent have experienced stunted growth, and 13 percent are categorized as obese. Additionally, the DOST-FNRI Caraga (2016) showed that adolescents aged 10 to 19 years are challenged by both undernutrition and overnutrition, with 37.6 percent stunted, 7.8 percent wasted, and 5.5 percent overweight, highlighting abnormal BMI values as the region's ongoing struggle.

In light of the aforementioned alarming cases of undernutrition and overnutrition, various studies, such as those by Huang et al. and Saintila et al. (2022), continue to emphasize that nutrition knowledge can significantly guide an individual in making healthy food choices that can enhance BMI levels in the long run. In addition, various studies raise concern about the increasing prevalence of processed and fast food consumption, which has been linked to higher BMI values (Hillier-Brown et al., 2017; Mohammadbeigi et al., 2018). Thus, fostering healthy eating behaviors among the young is of immense importance (Tiwari & Balasundaram, 2023).

Apart from nutrition knowledge, physical fitness also needs to be considered (Guo et al., 2024). Physical fitness refers to an individual's ability to perform daily activities with the appropriate strength and endurance (Lehman et al., 2023). If a person becomes physically fit, it generally translates into better cognitive function and a better quality of life (Amin et al., 2020; Mahindru et al., 2023). However, a low or extreme BMI can also affect strength and endurance performance.

Although there was an expanding body of research on Body Mass Index (BMI) and its various predictors, there remained a scarcity of studies examining the combined influence of general nutrition knowledge and physical fitness on BMI, particularly among senior high school students. The existing literature is focused on general nutrition knowledge, physical fitness, and BMI, along with other variables (Edin et al., 2024; Steineke, 2019). However, this scope did not fully reflect the BMI status of senior high school students in Bayugan City. In general, this study aimed to bridge the gap by providing localized insights into how general nutrition knowledge and physical fitness collectively influence BMI within the identified demographic.

The findings of this study aimed to provide valuable insights for students, teachers, school administrators, and the broader community. This study supports Sustainable Development Goals (SDGs) 3 and 4, which focus on Good Health and Well-being and Quality Education. This highlights the importance of helping young people live healthy lives by keeping a normal body weight. Underweight, overweight, and obesity issues should be addressed early in life so that students will be healthier in the future. At the same time, this study also supports the goal of achieving a quality education for all. Students can develop life skills when schools effectively integrate general nutrition awareness and physical fitness into their everyday classes.. Thus, there is an urgency to conduct the study, as schools play a prime role in shaping students with a sound mind and a healthy body.

Moreover, the researcher planned to disseminate the findings during Learning Action Cell (LAC) sessions, department meetings, division and regional fora, and conferences, as well as Parents-Teachers Association (PTA) meetings and Barangay Youth Development Program Meetings, specifically those related to health, nutrition, and fitness activities. Furthermore, the researcher intended to publish this study in reputable local and international journals to achieve a broader reach.

Research Questions

This study determined the influence of general nutrition knowledge and physical fitness on the Body Mass Index (BMI) among senior high school students in Bayugan City. Specifically, it sought answers to the following questions:

1. What is the level of general nutrition knowledge among senior high school students in terms of:
    1.1. dietary recommendations;
    1.2. sources of nutrients;
    1.3. choosing everyday foods; and
    1.4. diet-disease relationships?
2. What is the level of physical fitness among senior high school students in terms of:
    2.1. health-related fitness; and
    2.2. skill-related fitness?
3. What is the status of the Body Mass Index (BMI) among senior high school students in terms of:
    3.1. underweight;
    3.2. normal;
    3.3. overweight; and
    3.4. obese?
4. Is there a significant relationship between:
    4.1. general nutrition knowledge and BMI; and
    4.2. physical fitness and BMI?
5. Do general nutrition knowledge and physical fitness significantly influence the Body Mass Index (BMI) of senior high school students?

Methodology

Research Design

This quantitative study used a descriptive correlational research design. Quantitative research analyzes phenomena through statistical, mathematical, or computational techniques (Mamud, 2020). The same study further defines quantitative research as the application of mathematical models, theories, and hypotheses to explain phenomena and relationships (Mamud, 2020). Moreover, in this study, a descriptive design was utilized as it allowed the researcher to describe the current levels of general nutrition knowledge, physical fitness, and BMI of senior high school students without manipulating any variables.

Furthermore, this study employed a non-experimental correlational research design. A correlational research design aimed to examine the correlation between variables in a standard setting, without manipulation or control (Jhangiani et al., 2019). This design is suitable for this study, as the researcher aimed to examine whether a significant relationship existed between general nutrition knowledge, physical fitness, and BMI among senior high school students.

Respondents

The respondents in this study were 306 senior high school students from three selected schools in Bayugan City, Agusan del Sur, in the school year 2025-2026. To determine the sample size, the researcher used the Raosoft, Inc., sample size calculator, assuming a 95 percent confidence level, a 5 percent margin of error, and a 50 percent response rate.

Moreover, this study used a stratified random sampling method. The researcher formed the strata based on the grade levels across schools A, B, and C. A random sample was drawn from each stratum, which represented the total student population. The selected participants from all strata were then combined to form a representative sample of the entire population. Additionally, a randomizer was used to select the sections from each grade level included in this study.

The Grade 11 and 12 students who were officially enrolled in the first semester of the 2025-2026 academic year served as the respondents of the study. Students who were not officially enrolled or who had transferred during the data collection period were excluded from the study.

Given the age group and subject matter of the study, namely general nutrition knowledge, physical fitness, and body mass index, the respondents were considered vulnerable since they were in the developmental stage marked by identity formation.

Instrument

The researcher adapted and developed questionnaires to collect the data needed. The tools were subjected to content validity by a panel of experts and later pilot-tested to attain reliability.

General Nutrition Knowledge Tool. The researcher developed a self-made survey questionnaire for the General Nutrition Knowledge tool, which underwent pilot testing to establish its reliability and validity. This variable has the following indicators: dietary recommendations, sources of nutrients, choosing everyday foods, and diet-disease relationships. Each component comprised 15 multiple-choice items, totaling 60 items in the questionnaire. One point was given for every correct item. In interpreting the results, the researcher gets the total scores for each component. The mean and standard deviation were then calculated to assess students' general nutrition knowledge and the variability of their responses.

Moreover, the researcher conducted a pilot test and performed an item analysis to ensure the instrument's validity and reliability. The difficulty index (P) was used to categorize students' responses to each item into the following categories: too difficult (≤20), difficult (0.21-0.39), ideal difficulty range (0.40-0.59), moderately easy (0.60-0.80), and very easy (≥0.80). Meanwhile, the discrimination index (D) distinguished how each item can discriminate between the high-performing and low-performing students, with values classified as poor discrimination (≤10), weak discrimination (0.10-0.19), moderate discrimination (0.20 – 0.29), acceptable discrimination (0.30 – 0.39), and excellent discrimination (≥0.40).

Results on the item analysis showed that all items across the four components were retained. For Dietary Recommendations, the 15 items had difficulty indices ranging from 0.41 to 0.79, which fall within the ideal to moderately easy range, and the discrimination indices ranged from 0.21 to 0.49 (acceptable to excellent). For Sources of Nutrients, the 15 items showed difficulty indices between 0.43 and 0.78 (ideal to moderately easy) and discrimination indices (0.24 to 0.47), acceptable to excellent. In Choosing Everyday Foods, the 15 items recorded difficulty indices ranging from 0.45 to 0.80 (ideal to moderately easy) with discrimination indices between 0.23 and 0.50, also acceptable to excellent. Lastly, for the Diet-disease Relationship, all 15 items were retained, with difficulty indices ranging from 0.44 to 0.77 (ideal to moderately easy) and discrimination indices ranging from 0.26 to 0.52, with most falling under the excellent category.

Physical Fitness Tool. Moreover, the tool for physical fitness was adapted based on the Revised Physical Fitness Test (PFT) Manual of the Department of Education (2019). This standardized tool assessed both health-related and skill-related components of fitness.

Health-related components consisted of flexibility, cardiovascular endurance, and muscular strength. For flexibility, the zipper test and

sit-and-reach test will be administered. The zipper test was assessed by recording the distance between the fingertips to the nearest 0.1 centimeters, and the sit-and-reach test was measured by recording the farthest distance between the two trials to the nearest 0.1 centimeters. Moreover, cardiovascular endurance was measured using the 3-Minute Step Test, with the participant's heart rate counted during the 60-second recovery period. Muscular strength was assessed using the push-up test, which counted the number of push-ups performed. The Basic Plank Test measured core strength by recording the duration the position is held, with a maximum of 90 seconds for both male and female students.

Another fitness component is skill-related fitness, comprising speed, power, agility, reaction time, coordination, and balance. Speed was measured in the 40-meter sprint, with times recorded to the nearest second. Power was assessed using the Standing Long Jump, with the best distance measured in meters to the nearest 0.1 centimeter. Agility was measured using the Hexagon Agility Test, in which the time for two revolutions was recorded and averaged. Reaction time was evaluated using the Stick Drop Test, and the median score across three trials was used as the final result. Coordination was tested through a juggling activity, and the highest number of consecutive hits was recorded. Lastly, balance was assessed using the Stork Balanced Stand Test, in which the time held in each foot was recorded, and the average score across both attempts was calculated.

Body Mass Index Tool. The third instrument, body mass index, was patterned after the obesity classifications following the Asia-Pacific guidelines (Lim et al., 2018). The participants measured their weight and height, then calculated their body mass index by dividing their weight in kilograms by the square of their height in meters. Then the participants checked their BMI using the checklist, which indicates: (1) Underweight = BMI is less than 18.5, (2) Normal Weight BMI is from 18.5-22.9, (3) Overweight BMI is from 23.0-24.9, and (4) Obese BMI is 25.0 and above.

Procedure

The researcher followed systematic procedures in conducting this study. Firstly, the researcher obtained a letter of permission to gather data from the Dean of the Graduate School. The researcher then submitted the manuscript to the UIC Research Ethics Committee (UIC-REC) to ensure compliance with ethical standards. After the issuance of a Certificate of Compliance from UIC-REC, the data collection commenced.

Next, the researcher sought approval from the Schools Division Superintendent of Bayugan City and the school heads of the identified research locales to administer the study. After permission was granted, the researcher personally distributed and administered the validated research instruments to ensure complete data collection. The researcher conducted a brief orientation session with the participants to explain the study's nature. Participants were given ample time to read the Informed Consent Form (ICF) and have it signed by their parents or legal guardians. After the parents had signed the ICF, the respondents signed the assent form to indicate their voluntary agreement to participate in the study. During the process, the respondents were fully informed of their rights to ask questions, to refuse to answer any part of the survey, and to withdraw from the study at any time without penalty or negative consequences.

An assessment of General Nutrition Knowledge and a Physical Fitness Test, aligned with the Department of Education standards, was conducted. Firstly, the researcher administered a survey questionnaire in a designated area within the school vicinity. Secondly, after completing the survey, the respondents underwent a physical fitness assessment with the physical education teacher to ensure safety, proper execution, and accurate recording of the results. Thirdly, the respondents' Body Mass Index (BMI) was calculated using the standard Asian formula.

During the assessment, the researcher anticipated that some students might experience minor discomfort, particularly during the physical fitness test. With this, respondents were given sufficient time to complete the test. The respondents' privacy was also strictly maintained to minimize, if not avoid, any potential discomfort.

Lastly, after successful retrieval of the questionnaires, data were organized, collated, and tabulated. Appropriate statistical tools were utilized to interpret and analyze the data. By following the Data Privacy Act of 2012, the researcher ensured strict confidentiality throughout the research process. The data collected were encoded and assigned unique codes to remove personally identifiable information. Only the researcher had access to the raw data. Physical copies of the survey questionnaire were stored in a locked cabinet, while digital files were stored in a password-protected folder. Data were not shared with any third party. Upon completion of the study, all personal data and records were securely disposed of, including digital files.

Data Analysis

The following were the statistical tools used in analyzing the data gathered:

Mean. This was used to determine the level of general nutrition knowledge, physical fitness, and Body Mass Index (BMI) as perceived by senior high school students.

Standard Deviation. This was used to determine how the data in general nutrition knowledge, physical fitness, and BMI levels are distributed from the mean.

Pearson r Correlation. This study used inferential statistics to examine the relationships among general nutrition knowledge, physical fitness, and Body Mass Index (BMI) among senior high school students.

Multiple Regression Analysis. This study determined the domains of general nutrition knowledge and physical fitness that best predict Body Mass Index (BMI) among senior high school students.

Ethical Considerations

The researcher was committed to upholding the highest ethical standards throughout the research process. The research protocol was submitted for review and approval by the UIC Research Ethics Committee (UIC-REC). To ensure compliance with institutional and ethical guidelines and to confirm that it poses no potential harm, risk, or danger to the participant, and to validate and check the contents of the research for erroneous or falsified data embedded in the study.

Moreover, the researcher is competent and qualified to conduct the study, having earned a Bachelor's degree in Physical and Health Education and completed formal research training during her graduate studies. More so, the researcher conducted this research under the close guidance of her committed and competent thesis adviser. Furthermore, the study abides by the standards of scientific integrity and ethical responsibility under the oversight of the thesis panel members. Additionally, the researcher was provided with easy remote access to the university library and online academic databases, as well as relevant literature, to ensure the credibility and rigor of the research process.

Results and Discussion

This section covers the presentation, analysis, and interpretation of data.

Level of General Nutrition Knowledge among Senior High School Students

Table 1 shows that the overall level of general nutrition knowledge among senior high school students is 3.78, which is considered high, indicating that students generally demonstrate this knowledge. This result suggests that senior high school students have a strong foundation in nutrition concepts.

Table 1. *Level of General Nutrition Knowledge among Senior High School Students*

Domains	*Mean*	*SD*	*Description*
Dietary Recommendations	3.48	1.04	High
Sources of Nutrients	3.47	1.36	High
Choosing Everyday Foods	4.01	1.11	High
Diet-disease Relationships	4.15	1.12	High
Overall Mean	3.78	.93	High

Additionally, the overall standard deviation is 0.93, which is less than one, indicating that the respondents' ratings are clustered closely around the mean. This finding supports the study by Catapang (2022), which found that senior high school students in Tondo, Manila, also demonstrated high levels of nutrition knowledge. Furthermore, a study by the University of the Philippines-Los Baños found that 63.6 percent of undergraduate students had a high level of awareness of nutritional concepts (Amante, 2022). Similarly, the study by Belogianni et al. (2021) revealed that nursing students in the United Kingdom have high scores in general nutrition knowledge, thus indicating that students today are becoming more informed about nutrition.

Dietary Recommendations. It reveals a category mean of 3.48, which is described as high, and a standard deviation of 1.04. This suggests that senior high school students possess knowledge of dietary recommendations, which is often observed. This knowledge accords with the recommended intake of fruits, vegetables, water, and a balanced diet, as outlined in the Nutritional Guidelines for Filipinos (2012) and the World Health Organization (2020).

Moreover, the result aligns with the study by Olatunji et al. (2024), which found that approximately 93.5 percent of migrant students in the West Midlands, United Kingdom, demonstrated a good understanding of dietary recommendations. Likewise, a study by Yahia et al. (2016) reports that university students are highly aware of dietary standards. Thus, indicating that young adults today exhibit a strong understanding of the dietary guidelines.

Sources of Nutrients. This dimension has a category mean of 3.47 (high) and a standard deviation of 1.36. These findings indicate that senior high school students often know the sources of nutrients. This strong factual knowledge indicates that students recognize the importance of both macro- and micronutrients, as well as the foods that provide them.

Moreover, this finding supports the study of Geist et al. (2024), which found that students at Southwestern University in the United States generally demonstrated a good understanding of which foods are significant sources of nutrients. In addition, the same study suggests that information about sources of nutrition came from word of mouth among family and friends, as well as from social media.

However, Belogianni et al. (2021) refute this finding, arguing that knowledge of nutrient sources was the lowest-scoring category among university students in the United Kingdom. This implies that there is variation in knowledge of nutrient sources when comparing the current respondents in this study with those in previous research.

Choosing Everyday Foods. This category has a high mean rating of 4.01 and a standard deviation of 1.11. This result indicates that students' knowledge regarding daily food choices is often observed. Furthermore, this suggests that students are aware of the importance

of consuming a variety of foods in the right proportions and can make healthy decisions in their daily eating habits.

Consequently, the high level of knowledge among senior high school students regarding food choices reflects their awareness of the World Health Organization's emphasis on the importance of choosing nutrient-dense foods, such as fruits, lean proteins, and whole grains, and minimizing discretionary foods, most particularly in excessive consumption of salt, sugar, and saturated fats.

Furthermore, the finding aligns with the study by Guine et al. (2023), which showed that university students in Portugal exhibit strong food literacy, particularly in food choice. Comparable findings were reported by Falconet et al. (2025), who found that food choice motives among college students are high, suggesting that students are aware of how to make mindful, nutritious food selections.

Diet-disease Relationships. Analysis of this dimension reveals a category mean of 4.15, described as high, indicating that students' knowledge is often observed. The standard deviation is 1.12, which is slightly greater than one, thus indicating a moderate spread of responses around the mean. The findings imply that students possess a strong foundational understanding of the connection between food and health.

Additionally, the students' strong understanding of the diet-disease relationship reflects their awareness of the potential health risks associated with excessive sugar and sodium intake, as emphasized by Endy et al. (2023). Not only that, but also students acknowledge that excessive intake of alcohol can result in liver damage, as well as frequent consumption of red meat raises the risk of colorectal cancer, as stipulated in the study of Zouiouich et al. (2025).

Despite the high level of students' awareness, the study of Deng et al (2024) does not reflect the same. The same study revealed that although 60 percent of the university students in China had average nutritional knowledge, their understanding of the diet-disease relationship still needs improvement.

Level of Physical Fitness among Senior High School Students

Table 2 presents the level of physical fitness among senior high school students. It has an overall mean of 2.53, which is considered fair, indicating that the students' physical fitness is moderately developed.

Table 2. *Level of Physical Fitness among Senior High School Students*

	Mean	*SD*	*Description*
Health-related Fitness			
Cardiovascular Endurance	1.38	.91	Needs Improvement
Strength	2.78	1.20	Good
Push-up	2.39	1.47	Fair
Basic Plank	3.17	1.55	Good
Flexibility	3.03	.82	Good
Zipper Test	2.83	1.12	Good
Sit and Reach	3.24	1.17	Good
Category Mean	2.40	.57	Fair
Skill-related Fitness			
Coordination (juggling)	1.55	1.00	Needs Improvement
Agility	3.68	.84	Very Good
Speed	2.14	1.29	Fair
Power	3.21	.83	Good
Balance	1.68	.99	Needs Improvement
Reaction Time	3.75	.85	Very Good
Category Mean	2.66	.40	Good
Overall Mean	2.53	.38	Fair

This indicates that while students possess a basic level of strength, flexibility, and skill-related fitness, there are still significant areas, particularly cardiovascular endurance, balance, and coordination, that need improvement. Additionally, the study has a standard deviation of 0.38, which is less than one, indicating that the ratings are clustered near the mean. This means that most students performed consistently, with only slight variations in their fitness levels.

Moreover, the physical fitness, which was displayed at a fair level, is supported in a systematic review by Hollis et al. (2017), which reported a decline in fitness levels over time. Additionally, the longitudinal study of O'Brien et al. (2022) reveals a downward trend in physical fitness among Canadian students over the past years. Similarly, the study of Unger et al. (2024) reveals a decline in the fitness levels among students attending sports schools. These studies highlight the importance of adopting and maintaining an active and healthy lifestyle.

Health-related Fitness. This component of fitness had a category mean of 2.40, indicating fair performance. This indicates that the health-related fitness of senior high school students is moderately developed. The mean ratings range from 1.38 to 3.17. Notably, cardiovascular endurance has a mean rating of 1.38, while flexibility has a mean of 3.03. The results reveal that senior high school students demonstrate good flexibility and moderate strength but struggle with cardiovascular endurance.

Moreover, the standard deviation is 0.57, which is less than 1, indicating that the respondents' ratings are clustered closely around the mean. While the present study found that the cardiovascular endurance of the students needs improvement, this result contrasts with that of Palma et al. (2024), which reported high cardiovascular endurance among junior high school students in Bacolod City.

Meanwhile, the present study's findings showed a reasonable level of flexibility. Santiago (2023) reveals that students scored at an average level on sit-and-reach and zipper tests. This implies that flexibility is a well-developed component of health-related fitness.

Skill-related Fitness. Its category mean is 2.66, described as good, with ratings ranging from 1.55 to 3.68. This indicates that students' skill-related fitness is adequately developed. Moreover, the standard deviation is 0.40, which is less than 1, indicating that the ratings are clustered closely around the mean.

The findings of this study revealed that agility is well developed. This is also reflected in the study by Canto et al. (2020), which found that adolescents who engage in physical performance have better agility.

However, the alarming results of this study also revealed that students' coordination and balance are underdeveloped. This finding contrasts with that of Bunjumea et al. (2015), which found that a high percentage of students, particularly girls, exhibited perfect coordination. Furthermore, the study by Suveren et al. (2024) yielded different findings, revealing that 40.7 percent of students in Turkey were classified as very good on a balance test. This implies that the present study may require targeted interventions to enhance these components of skill-related fitness.

Status of the Body Mass Index among Senior High School Students

Table 3. *Status of Body Mass Index among Senior High School Students*

	Frequency	*Percentage, %*
BMI Classification		
Underweight	98	32.0
Normal	164	53.6
Overweight	26	8.5
Obese	18	5.9
Over-all Mean	306	100.0

Table 3 presents the body mass index status among senior high school students. The mean percentages for the BMI categories range from 5.9% to 53.6%. The findings revealed that 53.6 percent of the students are generally within the normal range, 32 percent are underweight, 8.5 percent are overweight, and the least percentage of 5.9 percent were obese. This means that most students have maintained a healthy weight relative to their height.

Moreover, this finding corroborates Silguera's (2024) study, which also found that students in Davao City fall within the normal weight category. Similarly, the study by Alhazmi et al. (2021) demonstrated that a high proportion of students in Saudi Arabia had a normal BMI. Such findings substantiate the results of the present study, indicating a positive trend among adolescents with healthy BMI levels.

Significance of the Relationship of General Nutrition Knowledge, Physical Fitness and Body Mass Index

Table 4. *Significance of Relationship of General Nutrition Knowledge, Physical Fitness, and Body Mass Index*

	r	*p-value*	*Remarks*
General Nutrition Knowledge and Body Mass Index	.08	.26	Not Significant
Physical Fitness and Body Mass Index	.31	.00	Significant

The correlation of the variables is presented in Table 4. It is shown that general nutrition knowledge has a weak positive relationship with body mass index, with an R-value of 0.08 and a p-value of 0.26, which is greater than the alpha set at 0.05. The minimal relationship is not statistically significant.

This means that as general nutrition knowledge increases, there is no significant increase in body mass index among senior high school students. This suggests that although students may be aware of healthy eating and proper nutrition, this knowledge does not automatically translate into healthy weight management. This finding aligns with Shahsanai et al. (2018), who found that nutritional knowledge does not translate into a healthy body weight.

However, physical fitness shows a significant, albeit weak, positive relationship with body mass index ($r = .31$, $p < .05$). This suggests that as physical fitness increases, body mass index also increases. This implies that students with better physical fitness were more likely to have BMI values within the normal range. This implies that actual participation in physical fitness activities plays a more crucial role in weight regulation than knowledge alone. This finding aligns with Chen et al. (2022) and Wu et al. (2024), who found that better physical fitness is associated with a healthy BMI.

Significance of the Influence of the General Nutrition Knowledge and Physical Fitness on Body Mass Index

Table 5 shows the results of the multiple regression analysis. In terms of singular capacity, motivation factors show a p-value of .27, which is greater than the .05 level of significance (2-tailed) with a positive standardized beta value ($\beta = .06$). It shows that general

nutrition knowledge as a standalone independent variable is not a significant predictor of body mass index of senior high school students. It means that for every unit increase in the level of general nutrition knowledge, there is a corresponding increase of 0.06 in body mass index, which is considered not significant due to a very weak effect.

Table 5. *Significance of the Influence of General Nutrition Knowledge and Physical Fitness on Body Mass Index*

Singular Influence of the Predictors	*Standardized Coefficients*	*t*	*p-value*	*Remarks*
General Nutrition Knowledge	.06	1.10	.27	Not Significant
Physical Fitness	-.006	-.109	.91	Not Significant
Combined Influence of the Predictors				
R	06			
R2	.004			
F	.605			
p	.547.			Not Significant

Likewise, in a singular capacity, the independent variable, respondents' physical fitness, shows a negative standardized beta of -.006 and a p-value of .91, which is greater than the .05 level of significance (2-tailed). This means that, in a singular capacity, physical fitness is not a significant predictor of body mass index among senior high school students. This means that for every unit increase in physical fitness, there is a corresponding decrease of 0.006 in students' body mass index, which is not significant.

In addition, the combined influence of the two independent variables, general nutrition knowledge and physical fitness, on the body mass index is not significant ($p < .05$). Meanwhile, the model explains .004 percent of the body mass index based on the combined influence of the two independent variables included in this study, as indicated by $R2 = .004$. This means that 99.996 percent of the variance in respondents' body mass index is attributable to factors other than general nutrition knowledge and physical fitness.

This finding is reflected in previous studies by O'Brien & Davies (2006), which reported that while nutrition knowledge is important, it does not automatically translate into changes in BMI. Moreover, studies of Capoccia et al. (2025) revealed that even students with high levels of nutrition knowledge often fail to apply it in practice.

Finally, the results of the study support Bandura's (1986) Social Cognitive Theory, which posits that knowledge alone is not enough to change behavior unless reinforced by self-efficacy, the environment, and social support.

Conclusions

Based on the findings, the following conclusions were drawn: The level of general nutrition knowledge among senior high school students is often observed, implying that the students are aware of the importance of shaping healthy habits and further implying a potential need for nutrition education to address gaps and ensure that young people make informed choices. The level of physical fitness among senior high school students is moderately developed, and the results reveal that some students improve their fitness; however, others show lower levels in certain aspects, highlighting the need for more targeted physical fitness activities to promote overall health and well-being. The distribution of BMI among senior high school students shows how varied the nutritional status is within the group, with the majority falling within the normal BMI range, suggesting healthy weight maintenance, while those classified as underweight highlight significant concern regarding potential nutritional deficiencies or underlying health issues that may require targeted interventions, and the combined percentage of students who are overweight or obese indicates elevated BMI levels and a need for increased awareness and support for healthier eating habits among this minority group. The absence of a significant link between nutrition knowledge and BMI suggests that awareness alone may not directly influence body weight; however, physical fitness and BMI show a significant relationship, indicating that fitter students tend to have slightly higher BMI, highlighting the importance of examining how various aspects of physical fitness contribute to maintaining a healthy body composition. The results indicate that neither general nutrition knowledge nor physical fitness has a significant influence on the Body Mass Index of senior high school students, and the combined predictive power of these variables is statistically insignificant, suggesting that other factors beyond nutrition knowledge and physical fitness may play a more substantial role in determining students' BMI.

Based on the findings and conclusions, the following recommendations were drawn: Since the result is high, indicating that the level of general nutrition knowledge among senior high school students is often observed, school administrators should strengthen and integrate comprehensive nutrition education into the curriculum to reinforce existing awareness, address knowledge gaps, and empower students to make healthier lifestyle choices. Since the results are fair, indicating that the level of physical fitness among senior high school students is moderately developed, school administrators should strengthen engagement in physical fitness initiatives aligned with the curriculum and ensure free access to sports facilities to improve students' fitness levels and encourage an active lifestyle. Since the findings reveal that the majority of the senior high school students fall within the normal BMI range, while a notable proportion are underweight. A smaller percentage overweight or obese, school administrators should reinforce curriculum-based nutrition programs, regulate healthy food options in the school canteen, and organize fitness activities to promote healthy food choices and encourage fitness habits. Since the findings revealed no significant link between general nutrition knowledge and BMI but showed a significant relationship between physical fitness and BMI, school administrators should strengthen canteen regulation and other practical nutrition

measures while enhancing physical fitness routines in PE classes to empower students to promote healthy eating behaviors and sustain active lifestyles. Since the findings indicated that neither general nutrition knowledge nor physical fitness significantly influences BMI, whether independently or combined, school administrators should continue to promote and strengthen comprehensive nutrition education programs and physical fitness initiatives in the curriculum to help students achieve desired weight goals and healthier lifestyle choices, and future researchers are encouraged to investigate other variables not addressed in this study to contribute to a more comprehensive understanding of BMI outcomes.

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