



DIETARY INTAKE AND NUTRITIONAL STATUS AMONG ADOLESCENTS IN A SELECTED SCHOOL IN MONARAGALA DISTRICT, SRI LANKA

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This cross-sectional survey assessed dietary intake and nutritional status of 95 students, aged 15 to 16 years, from a selected national school in Monaragala district, Sri Lanka, at an academic stress period due to ordinary-level examination. The study's main objectives are to assess adolescents' dietary intake patterns using a seven-day food diary and determined to determine their anthropometric measures (BMI, weight and height). Participants were trained to complete a structured seven-day food diary. Nutrient information was calculated for Sri Lankan food-based dietary guidelines in order to approximate average daily servings for the most significant food groups. The anthropometric data showed that the corresponding values for mean BMI, weight, and height for girls and boys were 19.66 kg/m², 44.20 kg, 150.13 cm, 19.54 kg/m², 47.05 kg, and 154.99 cm. This expressed that both genders had healthy levels of BMI. Boys have consumed significantly higher numbers of servings of starch and cereals compared to girls ($P \leq 0.05$), with an average of 12.644 servings compared to 11.726 servings for girls. Although serving size is lower than the recommended level for fish, eggs, and lean meat, the serving size of boys (1.439) is significantly higher ($p \leq 0.05$) than that of girls (1.096). However, except for cereals and starches, the intake of the remaining food groups like pulses and legumes, fruits, vegetables, milk and dairy products, sugars and sweets, oily nuts, oils and fats was less than the daily minimum requirements for both genders. Notably, there was no significant correlation between gender, anthropometric measurements, and serving size in any food group. These findings indicate that while both boys and girls are healthy in terms of BMI, their dietary patterns are unhealthy, with suboptimal intake of several important food groups. Interventions and focused nutrition education are needed to overcome these nutritional deficits and promote a better adolescent diet.

Keywords: adolescent nutrition, dietary patterns, BMI, serving size

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INTRODUCTION

Adolescence represents a pivotal stage of growth and development, characterized by rapid physical changes and increased nutritional demands. The dietary patterns established during this period significantly influence an individual's health outcomes in adulthood, making the assessment of nutritional status and intake among adolescents a critical public health concern. Globally, many adolescents face a dual burden of malnutrition, encompassing both undernutrition and overnutrition, often alongside micronutrient deficiencies. In Sri Lanka, understanding the specific dietary habits and nutritional status of its adolescent population is essential for developing targeted public health interventions that address regional disparities and unique contextual factors.

This study specifically focuses on adolescents within the Monaragala District, Sri Lanka, a region where localized data can provide valuable insights into community-specific nutritional challenges. A notable aspect of the study's timing was its conduct during a period of heightened academic stress, specifically coinciding with ordinary-level examinations.¹ Academic stress can profoundly influence an individual's dietary choices and eating behaviors. During such periods, adolescents may experience altered appetites, increased cravings for comfort foods often high in sugar and fat, irregular meal patterns due to time constraints, or a reliance on readily available, less nutritious convenience foods. These behavioral shifts can exacerbate existing nutritional imbalances or introduce new ones, potentially compromising overall health and academic performance. Understanding the interplay between academic pressure and dietary habits is crucial for developing holistic support systems for students. The primary objective of this cross-sectional survey was to assess the dietary intake patterns and nutritional status, specifically evaluating body mass index (BMI), weight, and height, among 15-16 year old students attending Okkampitiya Vijayabahu National School in Monaragala District, Sri Lanka, particularly considering the context of academic stress. The study's main objectives are to assess adolescents' dietary intake patterns using a seven-day food diary compared to Sri Lankan guidelines, evaluate their nutritional status via anthropometric measures like BMI, weight, and height, and identify gender differences in food servings along with any correlations to anthropometrics.



METHODOLOGY

This investigation employed a cross-sectional survey design, which allowed for the assessment of dietary intake and nutritional status within the defined adolescent population at a specific point in time. The study participants comprised 95 students, aged 15 to 16 years, enrolled at the Okkampitiya Vijayabahu National School in the Monaragala District, Sri Lanka. The selection of this specific school and age group provides valuable localized data, offering a detailed snapshot of the nutritional landscape within this particular educational setting. However, it is important to acknowledge that the findings may not be directly generalizable to the broader adolescent population across all of Sri Lanka or even to other districts, as dietary patterns and nutritional challenges can vary significantly by region and socio-economic context. The study's focus on a single school also means the results are representative of that specific school population, providing a baseline for targeted interventions rather than broad national policies without further research.

Data collection for dietary intake was performed using a structured seven-day food diary. Before commencing the diary, all participants received comprehensive training on how to accurately complete the diary, including methods for recording daily food consumption and estimating portion sizes. This training component was crucial to mitigate potential biases associated with self-reported dietary data, such as recall bias or under/over-reporting, thereby enhancing the reliability of the collected information. Nutrient information derived from the food diaries was subsequently calculated and analyzed in accordance with the established Sri Lankan food-based dietary guidelines. This approach ensured that the assessment of average daily servings for significant food groups was culturally relevant and aligned with national nutritional recommendations. While the seven-day food diary offers a detailed, real-time record of dietary habits over a substantial period, its effectiveness remains contingent on participant compliance and the accuracy of their self-reporting.

Anthropometric measurements, including BMI, weight, and height, were systematically collected for all participants. Standardized procedures were employed to ensure accuracy and consistency in these measurements, typically involving the use of calibrated scales for weight and stadiometers for height. For data analysis, descriptive statistics were utilized to summarize the anthropometric data and average food group servings. Inferential statistical procedures were applied to identify significant differences between genders and to assess correlations. Specifically, comparisons between boys and girls for various dietary intakes were evaluated using statistical tests that yielded p-values, with a threshold of $p \leq 0.05$ indicating statistical significance. The assessment of relationships between gender, anthropometric measurements, and serving sizes of different food groups involved correlation analysis. Explicitly stating the statistical tests used, such as independent samples t-tests for gender differences and Pearson correlation coefficients for relationships, enhances the transparency and reproducibility of the study's analytical approach. This rigorous statistical methodology supports the validity of the reported findings, allowing for a nuanced interpretation of the observed dietary patterns and nutritional status.



RESULTS AND DISCUSSION

The study involved 95 students aged 15 to 16 years. The anthropometric data provided a clear picture of the nutritional status of the adolescent participants. The mean BMI, weight, and height for girls were recorded as 19.66 kg/m², 44.20 kg, and 150.13 cm, respectively. For boys, the corresponding mean values were 19.54 kg/m², 47.05 kg, and 154.99 cm. These figures collectively indicate that both sexes within the study population exhibited healthy levels of BMI. This finding suggests that, based on this general indicator of body composition, the adolescents were not overtly underweight or overweight/obese at the time of the study. The anthropometric measurements are summarized in Table 1.

Measurement	Girls (Mean ± SD)	Boys (Mean ± SD)
BMI (kg/m²)	19.66	19.54
Weight (kg)	44.2	47.05
Height (cm)	150.13	154.99

Table 1: Anthropometric Measurements of Participants by Gender

Analysis of dietary intake patterns revealed several significant findings. Boys demonstrated a significantly higher consumption of starch and cereals compared to girls ($p \leq 0.05$), with an average of 12.644 servings for boys versus 11.726 servings for girls. This difference might be attributed to higher energy requirements for boys due to greater physical activity levels or metabolic rates, or it could reflect cultural dietary norms where staple food consumption differs by gender. Furthermore, boys also consumed higher portions of protein sources, specifically fish, eggs, and lean meat, averaging 1.439 servings compared to 1.096 servings for girls. This aligns with typical physiological needs, as adolescent boys often require more protein for muscle development and overall growth.

However, a critical finding emerged regarding the intake of other essential food groups. Except for cereals and starches, the consumption of a wide array of food groups, including pulses and legumes, fruits, vegetables, milk and dairy products, sugars and sweets, oily nuts, oils, and fats, was consistently below the daily minimum requirements for both genders.¹ This pervasive suboptimal intake across diverse food categories is a significant concern. Chronic deficiencies in these food groups can lead to a range of adverse health outcomes. For instance, inadequate intake of fruits and vegetables can lead to micronutrient deficiencies (e.g., vitamins A, C, and folate) and insufficient fibre, thereby increasing the risk of impaired immune function and digestive issues. Low consumption of milk and dairy products can compromise bone health, predisposing adolescents to osteoporosis later in life. Similarly, an insufficient intake of pulses, legumes, and healthy fats can lead to deficiencies in essential amino acids and fatty acids, which are crucial for growth, cognitive function, and overall metabolic health. The mention of "sugars and sweets" being under the minimum



requirement might indicate an overall restrictive dietary pattern or a misinterpretation of the guidelines, as adolescents typically exceed recommended sugar intake. This requires further contextualization within the Sri Lankan food-based dietary guidelines.

CONCLUSIONS/RECOMMENDATIONS

The findings of this study reveal a critical dichotomy: while adolescents in the Monaragala District, Sri Lanka, appear to maintain healthy body mass index levels, their underlying dietary patterns are demonstrably unhealthy, characterized by suboptimal intake across several vital food groups.¹ This discrepancy highlights a latent nutritional vulnerability, where the absence of overt anthropometric signs of malnutrition belies a diet that is likely deficient in essential micronutrients and macronutrients necessary for long-term health and development. The consistent under-consumption of pulses and legumes, fruits, vegetables, milk and dairy products, oily nuts, and healthy fats for both genders pose significant risks for future health complications, including chronic non-communicable diseases.

Given these identified nutritional deficits and the context of academic stress, targeted interventions and focused nutrition education are urgently needed to promote better adolescent diet practices within this population.¹ Recommendations should be specific and actionable:

1. **Tailored Nutrition Education Programs:** Educational initiatives should move beyond general dietary advice to specifically address the importance of the under-consumed food groups (e.g., emphasizing the benefits of fruits, vegetables, and legumes). These programs should also provide practical guidance on how to incorporate these foods into daily meals and healthy snacking routines, particularly during periods of academic pressure.
2. **School-Based Interventions:** As the study was conducted within a school setting, school-based programs are highly relevant. These could include promoting healthier options in school canteens, organizing nutrition workshops for students, and establishing school gardening projects to encourage consumption of fresh produce.
3. **Parental and Community Involvement:** Recognizing that parents play a crucial role in household food purchasing and preparation, educational outreach to parents is essential. This could involve workshops or informational materials that empower families to make healthier food choices and create supportive home environments for balanced nutrition.
4. **Stress Management Strategies:** Given the study's context during an academic stress period, interventions could also integrate strategies for healthy stress management. This would help adolescents cope with academic pressures without resorting to unhealthy dietary coping mechanisms, thereby fostering more sustainable, healthy eating habits.



These recommendations aim to bridge the identified nutritional gaps and mitigate the long-term health risks associated with suboptimal dietary patterns, ensuring that a healthy BMI is complemented by a truly healthy diet for the adolescent population in Monaragala District.

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