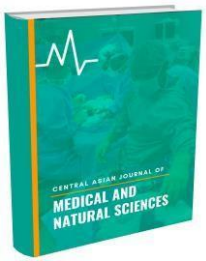

CENTRAL ASIAN JOURNAL OF MEDICAL AND NATURAL SCIENCES
https://cajmns.centralasianstudies.org/index.php/CAJMNS
*Volume: 06 Issue: 03 | July 2025 ISSN: 2660-4159*

*Article*

# An Evaluation of the Nutritional Health and Dietary Behaviors of Secondary School Students from Socioeconomically Disadvantaged Households

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**Abstract:** This study investigates the nutritional health and dietary behaviors of secondary school students from socioeconomically disadvantaged households in Najaf governorate. Using a cross-sectional, mixed-methods design, data were collected from October 9, 2023, to April 28, 2024, through structured questionnaires, 24-hour dietary recalls, anthropometric measurements, and semi-structured interviews. A purposive sample of 96 students aged 12–18 from five public schools was selected based on high rates of subsidized meal recipients. The study instruments included a validated questionnaire assessing socio-demographic characteristics and nutritional knowledge, dietary intake tools (24-hour recall and Food Frequency Questionnaire), and anthropometric indicators such as BMI and waist circumference. Results showed a significant association between low socioeconomic status and poor nutritional outcomes, including reduced intake of fruits and vegetables, increased consumption of ultra-processed foods, and higher rates of overweight and obesity. Data analysis was conducted using SPSS 2024 and Microsoft Excel 2015, employing both descriptive statistics (frequencies and percentages) and inferential statistics (Chi-square tests), with significance set at $p < 0.05$. Qualitative interviews provided further insights into the socioeconomic barriers influencing food choices. The findings highlight the urgent need for school-based nutritional interventions and comprehensive policy reforms to address disparities in adolescent health among low-income populations.

**Keywords:** Evaluation, Nutritional Health, Dietary Behaviors, Secondary School Students, Socioeconomically, Disadvantaged Households

**Citation:** Shakir W. H. and al Abedi N. F. H. An Evaluation of the Nutritional Health and Dietary Behaviors of Secondary School Students from Socioeconomically Disadvantaged Households. Central Asian Journal of Medical and Natural Science 2025, 6(3), 1162-1168.

Received: 30th Apr 2025
Revised: 14th May 2025
Accepted: 22nd May 2025
Published: 29th May 2025



## 1. Introduction

Nutritional health during adolescence plays a pivotal role in cognitive development, academic performance, and long-term well-being. However, socioeconomically disadvantaged households often face significant barriers to accessing nutritious foods, including food insecurity, limited availability of healthy options, and financial constraints. These challenges can lead to unbalanced dietary behaviors and poor nutritional outcomes among secondary school students [1].

This paper aims to evaluate the nutritional health and dietary behaviors of adolescents from low-income households. By identifying key patterns and factors influencing dietary choices, we contribute to the body of literature advocating for public health interventions tailored to vulnerable youth populations [2].

The nutritional status and eating behaviors of high school students from economically disadvantaged backgrounds represent a critical public health concern. A significant number of these students experience nutritional deficiencies and malnutrition, which adversely affect their health, academic achievement, and long-term growth. Although numerous interventions have been implemented to tackle these challenges, a comprehensive understanding of the issue and its root causes remains limited [3].

Evaluating the dietary behaviors and nutritional well-being of students from low-income households-and their implications for health and school performance is crucial. The findings can help shape specialized school nutrition interventions that not only promote better health but also foster academic improvement and long-term success [4].

The early changes in dietary habits and behaviors as children enter adolescence are heavily influenced by the food-related surroundings and experiences supplied by their parents. These early effects have a critical role in influencing adolescents' nutritional choices. Sufficient intake of key nutrients has been associated to better scholastic achievements and a lower risk of obesity and chronic illnesses later in life [5].

## 2. Materials and Methods

**Design of the study**

A cross-sectional, mixed-methods study design was employed. Quantitative data were collected via structured dietary surveys and anthropometric measurements, while qualitative insights were gathered through semi-structured interviews. The study started from October 9, 2023, to April 28, 2024.

**Setting of the study**

The study sample consisted of students attending public secondary schools in four separate locations throughout the Najaf governorate.

**Sample of the study**

A purposive, non-probability sample of 96 students between the ages of 12 and 18 was drawn from five public schools in economically underprivileged urban and rural settings. Schools were selected due to their high rates of subsidized meal recipients.

**The Study Instrument**

An evaluation instrument was utilized to measure students' knowledge and assess their nutritional status. Revisions were made to the questionnaire based on expert feedback and recommendations, resulting in a finalized tool comprising two main components:

a. **Part (1): Demographic Characteristics Form:** This section gathers essential socio-demographic information, including age, gender, family structure, average family size, birth order, parental marital status, current living arrangement, mother's occupation, and monthly household income. The headings and core questions align with those in the original questionnaire.
b. **Part (2) Nutritional Information:** This section of the questionnaire comprised 17 items. In the first section, all 17 items were included, while the second section contained 4 selected items from the same set.

**Data Collection**

Instruments used for data collection comprised: a 24-hour recall to assess dietary intake, a Food Frequency Questionnaire (FFQ) to evaluate habitual consumption patterns, measurements of body mass index (BMI) and waist circumference, a survey to determine household socioeconomic status, and interviews with students and their parents by using the Arabic questionnaire version.

**Statistical analysis**

In this study, the data were analyzed by using SPSS 2024 and Microsoft Excel (2015). Below are the statistical data analysis methods to analyze the study result: Descriptive Data Analysis (frequencies and percentages. inferential Data Analysis (Chi-Square test ($X^2$)

for measuring the association between the studies variables according to its type. The significant was accepted at p-value less than 0.05.

## 3. Results

**Table 1.** Statistical distribution of study subjects by their demographic data.

| Demographic Data | Rating And Intervals | Frequency | percentage |
|---|---|---|---|
| Age | <= 15 | 60 | 62.5 |
| | 16 - 18 | 15 | 15.6 |
| | 19+ | 21 | 21.9 |
| Sex | Male | 46 | 47.9 |
| | Female | 50 | 52.1 |
| Number of family | <= 5 | 30 | 31.3 |
| | 6 – 10 | 59 | 61.5 |
| | 11+ | 7 | 7.3 |
| Type of family | A family consisting of only father, mother and children | 83 | 86.5 |
| | A common family of parents, grandparents, uncles or uncles | 13 | 13.5 |
| Parent marital status | Married | 84 | 87.5 |
| | Separate | 2 | 2.1 |
| | Only one of the parents | 8 | 8.3 |
| | Parents' Orphans | 2 | 2.1 |
| Currently living with | My family | 94 | 97.9 |
| | Relatives | 2 | 2.1 |
| Mother's education level | Illiterate | 11 | 11.5 |
| | Elementary school | 31 | 32.3 |
| | Secondary school | 32 | 33.3 |
| | Preparatory school | 9 | 9.4 |
| | Diploma | 6 | 6.3 |
| | Master's degree | 4 | 4.2 |
| | Doctorate | 3 | 3.1 |
| Father's education level | Illiterate | 10 | 10.4 |
| | Elementary school | 30 | 31.3 |
| | secondary school | 25 | 26.0 |
| | preparatory school | 13 | 13.5 |
| | Diploma | 5 | 5.2 |
| | master's degree | 9 | 9.4 |
| | Doctorate | 4 | 4.2 |
| Mother's job | Employed | 14 | 14.6 |
| | Self-Employed | 3 | 3.1 |
| | Homemaker | 79 | 82.3 |
| Father's job | Employed | 39 | 40.6 |
| | Self-Employed | 43 | 44.8 |
| | Homemaker | 14 | 14.6 |
| Monthly income | Adequate | 27 | 28.1 |
| | Somewhat Adequate | 40 | 41.7 |
| | Not Adequate | 29 | 30.2 |
| Maintain a healthy weight | Yes | 79 | 82.3 |
| | No | 17 | 17.7 |
| BMI | Underweight | 62 | 64.6 |
| | Normal weight | 28 | 29.2 |
| | Overweight | 4 | 4.2 |
| | Obesity | 2 | 2.1 |
| | Total | 96 | 100.0 |

Table 1 and Figure 1 is display the statistical distribution of the study subjects based on socio-demographic data, and they describe that the samples' subgroup has the highest

percentage of: participants ages were (<= 15) 62.5% and (52.1%)of them were female students with family size ranged between 6 and 10(61.5%) and 97.9% of them were lived with their family and the family consisting of father, mother and children(86.5%) and 87.5% of their parents were married. Mother's education (33.3%) was Secondary school and Father's education level was Elementary school (31.3%); Mother's job was homemaker (82.3%) and Father's job 44.8% was Self-Employed; those who are intended to Maintain a healthy weight (82.3%) and those with underweight average of BMI were (64.6%)and those with Somewhat Adequate incomes(41.7%).

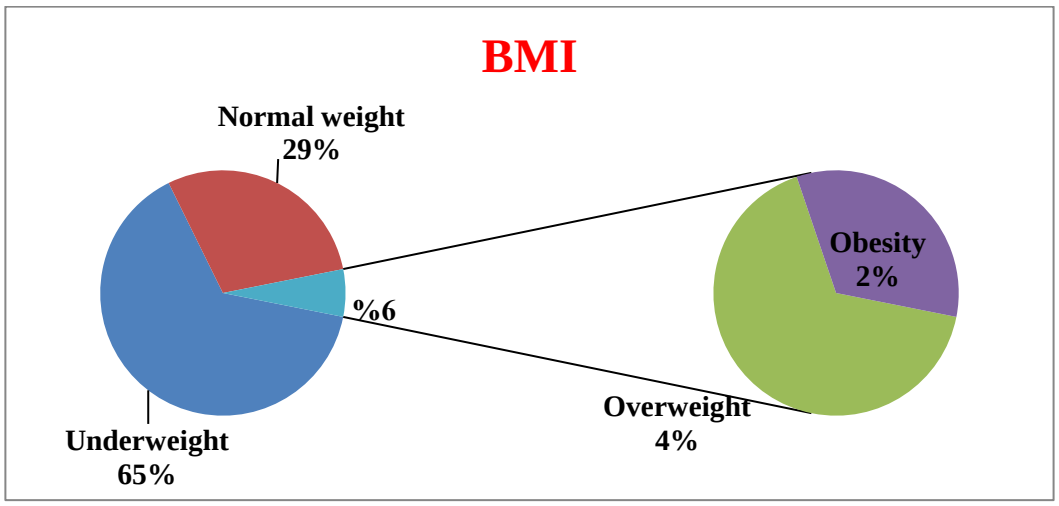


**Figure 1.** Statistical distribution of study sample according to Body Mass Index.

**Table 2.** Descriptive statistics and assessment of Eating Habits of secondary school students.

| Items | Rating | Frequency | Percent |
|---|---|---|---|
| I often eat my food | Alone | 17 | 17.7 |
| | With family | 79 | 82.3 |
| Meal size | Small | 12 | 12.5 |
| | Medium | 68 | 70.8 |
| | Large | 16 | 16.7 |
| Fast and packaged foods as a meal | Yes | 22 | 22.9 |
| | No | 28 | 29.2 |
| | Sometimes | 46 | 47.9 |
| Meal during school | Yes | 41 | 42.7 |
| | No | 55 | 57.3 |
| | Total | 96 | 100.0 |

Table 2 provides the assessment of Eating Habits of secondary school students. It shows that the students who eat with family were (82.3%) with meal size 70.8% was medium size, those who sometimes Fast and packaged foods as a meal were 47.9% and those who weren't eat meal during school 57.3%.

**Table 3.** The relationships between eating habits of secondary school students and their demographic characteristic.

| Items | Chi-Square | Degree of freedom | P-value (Sig.) |
|---|---|---|---|
| Age | 17.019 | 12 | 0.149 |
| Sex | 11.571 | 6 | 0.072 |
| Type of family | 6.020 | 6 | 0.421 |
| Number of family | 24.486 | 12 | 0.017* |

| | | | |
|---|---|---|---|
| Student Sequence | 65.364 | 42 | 0.012* |
| Parent marital status | 45.015 | 18 | 0.000* |
| Currently living with | 24.219 | 6 | 0.000* |
| Mother's education level | 24.070 | 36 | 0.936 |
| Father's education level | 23.515 | 36 | 0.946 |
| Mother's job | 32.565 | 12 | 0.001* |
| Father's job | 10.535 | 12 | 0.569 |
| Monthly income | 24.140 | 12 | 0.019* |
| Maintain a healthy weight | 5.704 | 6 | 0.457 |
| BMI | 16.799 | 18 | 0.537 |

* Significant at P<0.05

Table 3 demonstrates the relationship between eating habits of study subjects and their demographic characteristic. It indicates that there is significant relationship between eating habits of study subjects and their demographic characteristic(Number of family, Student Sequence, Parent marital status, Currently living with, Mother's job and Monthly income) while others parameters were not significant at (P>0.05).

**Table 4.** The relationships between Nutritional Status of secondary school students and their demographic characteristic.

| Items | Chi-Square | Degree of Freedom | P-value (Sig.) |
|---|---|---|---|
| Age | 13.167 | 6 | 0.040* |
| Sex | 3.157 | 3 | 0.368 |
| Type of family | 1.013 | 3 | 0.798 |
| Number of family | 3.471 | 6 | 0.748 |
| Student Sequence | 13.003 | 21 | 0.909 |
| Parent marital status | 5.291 | 9 | 0.808 |
| Currently living with | 1.168 | 3 | 0.761 |
| Mother's education level | 33.883 | 18 | 0.013* |
| Father's education level | 25.207 | 18 | 0.119 |
| Mother's job | 6.570 | 6 | 0.362 |
| Father's job | 16.922 | 6 | 0.010* |
| Monthly income | 3.975 | 6 | 0.680 |
| Maintain a healthy weight | 7.784 | 3 | 0.041* |
| BMI | 6.168 | 9 | 0.723 |

* Significant at P<0.05

Table 4 advances the relationship between Nutritional Status of study subjects and their demographic characteristic. It indicates that there is no significant relationship between Nutritional Status of study subjects and their demographic characteristic at (P>0.05), except age, Mother's education level, Father's job and Maintain a healthy weight they were statistically significant.

## 4. Discussion

Adolescence represents a pivotal window for establishing long-term health trajectories, the capacity to secure nutrient-dense foods is often hindered by limited household resources. In our study, students from low-income families reported significantly lower intakes of fruits, vegetables, and whole grains, placing them at heightened risk for micronutrient shortfalls-particularly iron, calcium, and vitamins (A and D). Such deficits can compromise not only growth and immune function but also neurocognitive processes that underlie learning, memory, and attention [6].

Moreover, the data reveal a troubling feedback loop: food insecurity and poor dietary quality correlate with increased school absenteeism and reduced classroom engagement. When basic nutritional needs go unmet, students are more likely to experience fatigue, dizziness, or concentration lapses, which in turn undermine academic achievement. These findings echo prior research linking socioeconomic barriers to both physical development and scholastic outcomes, suggesting that interventions must operate on multiple fronts-improving food access while integrating nutrition education into the school environment. [7].

Financial strain deeply shapes adolescents' dietary choices. With limited household funds, families often purchase the cheapest, calorie-dense items that lack key vitamins and minerals. Over time, this budget-driven approach leads to a nutritional mismatch: young people may eat enough or too many-calories yet still miss essential micronutrients. This so-called "dual burden" of malnutrition, combining under nutrition with overweight, raises the likelihood of stunted growth and early obesity. Such adolescents face elevated risks for chronic issues-from weakened immunity and poor bone health to metabolic diseases like type 2 diabetes and heart conditions. Addressing this requires initiatives that lower the cost of nutrient-rich foods (for example, subsidized fruits and vegetables in schools) and provide families with guidance on stretching their food dollars for better nutrition [8].

School-based nutrition programs emerge as a critical buffer against the nutritional inequities faced by students from economically disadvantaged backgrounds. Initiatives such as the School Breakfast Program (SBP) and the National School Lunch Program (NSLP) play a dual role: they fill immediate gaps in students' diets and foster an environment in which children can better engage with classroom learning. Research indicates that regular participation in these programs correlates with improved concentration, memory retention, and overall cognitive performance. Nevertheless, the effectiveness of SBP and NSLP is often undermined by uneven rollout across districts, variability in meal quality, and budget shortfalls that limit menu diversity and outreach. Addressing these weaknesses will require standardized monitoring, stable funding streams, and ongoing collaboration between schools, local suppliers, and community organizations to ensure that every eligible student receives consistent access to wholesome, appealing meals [9].

An equally important point in the discussion is how education can foster healthier eating patterns. The study highlights the necessity of embedding nutrition lessons within the school curriculum so that students gain the skills to choose foods wisely. By teaching the principles of a balanced diet, schools have the potential to fundamentally influence adolescents' eating behaviors [10].

The considers the wider impacts of our findings, emphasizing that closing nutritional gaps among low-income students yields lasting academic and social advantages. Enhancing youths' dietary health not only boosts their learning and classroom engagement but also helps narrow broader health disparities and advance social justice. This study offers an in-depth exploration of the obstacles and prospects tied to improving the nutrition and eating patterns of secondary schooners' from financially strained households. It advocates for a comprehensive strategy-melding policy reform, community partnerships, and school-based education-to cultivate an environment where all students, regardless of economic status, can flourish [11].

## 5. Conclusion

This research confirms that socioeconomic disadvantage profoundly affects adolescents' nutritional health, often manifesting as both micronutrient deficiencies and elevated body mass index (BMI) leading to obesity. Adolescence is a critical window for physical and cognitive development, yet students from low-income families frequently

face barriers to accessing balanced, nutrient-dense foods, resulting in a "dual burden" of under nutrition and overweight.

**Recommendations**

Based on the study's conclusions, the researcher recommends the following: Integrate Practical Nutrition Education schools must weave comprehensive nutrition instruction into their curricula, emphasizing interactive lessons on reading food labels, meal planning on a budget, and hands-on cooking demonstrations; this approach has been shown to improve students' food choices and establish lifelong healthy habits.

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