

THE RELATIONSHIP BETWEEN NUTRITIONAL KNOWLEDGE LEVEL AND FOOD CONSUMPTION PATTERNS OF STUDENTS AT AL-AZHAR OUTSTANDING HIGH SCHOOL

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Abstract

Adolescent nutritional imbalance risks a double burden of malnutrition, where nutritional knowledge critically shapes daily food choices. This study analyzes the relationship between nutritional knowledge and food consumption patterns among 58 students at Al-Azhar Medan's flagship high school. Utilizing a cross-sectional quantitative design, data were collected via online questionnaires and analyzed using univariate and Spearman Rank bivariate tests. Univariate results show that most students have moderate nutritional knowledge (48.3%) and less balanced food consumption patterns (56.9%). The Spearman Rank test indicates a significant moderate positive correlation, demonstrating that improved nutritional understanding goes hand in hand with better eating habits.

KEYWORDS: Nutritional Knowledge, Food Consumption Patterns, Adolescents, Al-Azhar Medan High School, Spearman Rank.

INTRODUCTION:

Adolescence is a transitional phase characterized by accelerated physical growth (pubertal growth spurt), shifts in body composition, and cognitive development. During this period, adequate and balanced food intake is essential to optimize growth and development potential and maintain academic achievement (WHO, 2020). However, the phenomenon of imbalanced dietary intake often occurs in adolescents due to high consumption of energy-dense foods, sugar, salt, and fat, and low intake of fruits and vegetables (Ministry of Health of the Republic of Indonesia, 2018). According to Notoatmodjo's (2018) behavioral theory, knowledge and perception are the main predisposing factors underlying the formation of an individual's cognitive domain before it manifests in daily behavior. Students with a good understanding and awareness of nutrition tend to make rational decisions when choosing food. This study aims to identify the level of nutritional knowledge, analyze food consumption patterns, and statistically test the relationship between these two variables in students at Al-Azhar Medan's flagship high school using a structured questionnaire.

RESEARCH METHOD:

2.1 Research Design and Location

This research used a quantitative approach with an analytical observational cross-sectional study design. The study was conducted at Al-Azhar Medan's flagship high school during the even semester of the current academic year. Measurements of the independent variable (nutrition knowledge level) and the dependent variable (food consumption patterns) were conducted simultaneously at one point in time.

2.2 Population and Sample

The target population in this study was all active students in grades 10, 11, and 12 of Al-Azhar Medan's flagship high school. A total of 58 respondents who met the inclusion criteria were collected and analyzed. Sampling was conducted using an accidental/convenience sampling technique through the distribution of an online questionnaire (Google Forms).

2.3 Instruments and Data Collection

Research data was collected using a structured instrument (Google Forms) which was divided into three parts:

1. **Respondent Characteristics:** Includes name, age (15, 16, or 17 years), and gender.

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2. **Nutrition Knowledge Questionnaire:** Consisting of 10 statements regarding the importance of breakfast, balanced nutrition, limiting sugar/fat/fast food, drinking water, reading nutrition labels, and understanding anemia due to iron deficiency.
3. **Food Consumption Pattern Questionnaire:** Consisting of 10 statements regarding breakfast habits, fruit and vegetable consumption, frequency of fast food/sweet snacks/fried foods, water intake, reading nutrition labels, and the habit of bringing healthy food.

Both variables were measured using a 5-Point Likert Scale (Sugiyono, 2019):

- Strongly Agree (SS) = 5
- Agree (S) = 4
- Disagree Less (KS) = 3
- Disagree (TS) = 2
- Strongly Disagree (STS) = 1

(Note: For negative/unfavorable statements on consumption patterns, such as the habit of choosing fast food or unhealthy snacks, the score coding is reversed from STS=5 to SS=1).

2.4 Operational Definition and Categorization of Variables

The total score of each variable is calculated with a theoretical score range of 10 to 50. Variable categorization is determined based on the percentage of maximum score achievement:

- **Nutrition Knowledge Level:**
 - **Good:** Total score > 75% from maximum score (> 37,5)
 - **Currently:** Total Score 56% – 75% from maximum score (28 – 37,5)
 - **Not enough:** Total score < 56% from maximum score (< 28)
- **Food Consumption Patterns:**
 - **Balanced:** Total score $\geq$ 60% from maximum score ($\geq$ 30)
 - **Less Balanced:** Total score < 60% from maximum score (< 30)

2.5 Data Analysis

Data analysis applied univariate methods (frequency distribution and percentage) and bivariate methods through the Spearman Rank non-parametric correlation test (ρ) using a 95% confidence level ($\alpha = 0,05$).

RESULTS AND DISCUSSION

3.1 Respondent Characteristics

This study involved 58 respondents from Al-Azhar Medan's leading high school. A description of the distribution of respondent characteristics is presented in Table 1.

Table 1. Distribution of Respondent Characteristics (n = 58)

Respondent Characteristics	Frequency (n)	Percentage (%)
Gender		
Man	25	43,1
Woman	33	56,9
Age (Years)		
15 years	13	22,4
16 years	30	51,7
17 years	15	25,9
Total	58	100,0

3.2 Overview of Respondents' Nutrition Knowledge Level

Referring to the total score of the ten questions regarding nutritional knowledge, the level of students' nutritional understanding is depicted as presented in Table 2.

Table 2. Frequency Distribution of Respondents' Nutrition Knowledge Level (n = 58)

Nutrition Knowledge Level	Frequency (n)	Percentage (%)
Good	21	36,2
Currently	28	48,3
Not enough	9	15,5
Total	58	100,0

Based on item-by-item analysis, students' awareness was very high regarding the importance of breakfast for concentration and drinking enough water. However, students' agreement/understanding was lowest for items regarding the importance of reading nutrition labels on food packaging and limiting excessive fat consumption.

3.3 Overview of Respondents' Food Consumption Patterns

The distribution of food consumption pattern categories is presented in Table 3.

Table 3. Frequency Distribution of Respondents' Food Consumption Patterns (n = 58)

Food Consumption Patterns	Frequency (n)	Percentage (%)
Balanced	25	43,1
Unbalanced	33	56,9
Total	58	100,0

The majority of respondents, 33 students (56.9%), had unbalanced eating patterns. In-depth analysis showed that the dominance of the unbalanced category was driven by high frequency of unhealthy snack consumption (fried foods and sweets), a high tendency to choose fast food, and a low habit of reading nutrition labels before purchasing food and bringing healthy food from home.

3.4 Relationship between Nutrition Knowledge Level and Food Consumption Patterns

Cross-tabulation analysis and Spearman Rank correlation test were conducted to examine the relationship between nutritional knowledge levels and dietary patterns, with details of the results contained in Table 4.

Table 4. Cross Tabulation and Spearman Rank Correlation Test between Nutrition Knowledge and Food Consumption Patterns (n = 58)

Nutrition Knowledge Level	Food Consumption Patterns		Total		p-value	Correlation Coeff. (r)
	Balanced	Unbalanced				
	n (%)	n (%)	N	%		
Good	15 (71,4%)	6 (28,6%)	21	100,0		

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Nutrition Knowledge Level	Food Consumption Patterns		Total		p-value	Correlation Coeff. (r)
Currently	9 (32,1%)	19 (67,9%)	28	100,0	0,001	0,428
Not enough	1 (11,1%)	8 (88,9%)	9	100,0		
Total	25 (43,1%)	33 (56,9%)	58	100,0		

Based on statistical test calculations using the Spearman Rank correlation, a significance level of was obtained $p = 0,001$. Given that this value p is below the significance level, it is H_0 rejected and H_a accepted, indicating a meaningful relationship. On the other hand, the correlation coefficient r value 0,428 reflects a positive correlation direction with a moderate level of strength.

CONCLUSION AND SUGGESTIONS

4.1 Conclusion

Referring to the findings and discussion above, the following conclusions can be formulated:

1. The majority of students at Al-Azhar Medan's leading high school have a moderate level of nutritional knowledge (48.3%), followed by good (36.2%), and not enough (15.5%). The lowest level of understanding is the habit of reading nutrition labels on packaging.
2. Most high school students (56.9%) have a food consumption pattern in the unbalanced category, which is characterized by a high frequency of buying sweet/fried/fast food snacks and a low habit of bringing healthy food.
3. Based on statistical tests, it was proven that there was a significant positive relationship between the level of nutritional knowledge and food consumption patterns of high school students ($\rho = 0.001$; $r = 0.428$).

4.2 Suggestions

- **For Schools:**
 - Improving applied nutrition literacy, such as providing education on how to read nutrition facts (nutrition labels) on food packaging and optimizing the role of healthy school canteens.
- **For Students:**
 - Cultivate personal awareness to practice the Fill My Plate guidelines in daily activities while reducing the intake of processed foods or snacks that are high in sugar, salt, and fat.
- **For Further Researchers:**
 - It is hoped that further research can be conducted by adding other confounding variables such as duration of social media use, exposure to food advertisements, pocket money, and the influence of family eating patterns.
 - Applying multiple-choice cognitive tests to measure nutritional knowledge and using the Food Record or SQ-FFQ method directly to present absolute nutrient intake data.

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