# The Relationship between Nutritional Knowledge, Attitudes, and Breakfast Habits among Junior High School Students in Tulungagung Regency

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**Abstract**
Inadequate breakfast behavior among adolescents is a significant public health concern, contributing to decreased learning concentration and increased risk of malnutrition. Low nutritional knowledge is frequently identified as a contributing factor. This study aimed to analyze the relationship between the level of nutritional knowledge and breakfast attitude and behavior among adolescents in Tulungagung Regency. This was an analytical observational study utilizing a cross-sectional approach. The subjects consisted of 96 adolescent students selected from three Junior High Schools in the Tulungagung Regency area using a simple random sampling method. Data analysis was performed using the Pearson Product Moment and Spearman's Rank tests. The study results showed no significant relationship between the level of nutritional knowledge and breakfast attitude (p=0.991) or with breakfast behavior (p=0.084). These findings indicate that a high level of nutritional literacy does not necessarily guarantee the formation of a positive attitude and adherence to breakfast behavior among adolescents. Therefore, more applicable intervention strategies, such as implementing communal breakfast habits, are required to bridge the gap between knowledge and practice.

## 1. Introduction

Adolescence is a transitional phase from childhood to adulthood, characterized by rapid physical growth and hormonal changes. During this period, the body demands a significantly higher intake of nutrients compared to childhood, encompassing both macro and micronutrients. Adequate nutritional intake is not only essential for supporting physical growth but also critically determines students' concentration abilities and cognitive responsiveness during the learning process at school (Adriani & Wirjatmadi, 2016).

In the context of Balanced Nutrition implementation, breakfast plays a vital role. After the body rests and receives no food intake for 8 to 10 hours during the night, the body's glucose reserves deplete. Therefore, breakfast serves to replenish energy, ensuring the brain and body are ready for daily activities. Nutrition experts emphasize that, ideally, a morning breakfast should supply approximately 20-25% of an individual's total daily caloric needs (Hardinsyah & Supariasa, 2017).

However, the habit of skipping breakfast has become a common nutritional problem among adolescents. Referring to the 2018 Basic Health Research (Riskesdas) data, the rate of Indonesian residents over the age of 5 who frequently neglect breakfast remains high. Adolescents often cite various reasons, ranging from not having enough time due to rushing to school, lack of appetite in the morning, to the mistaken belief that skipping breakfast aids weight loss (Kemenkes RI, 2018). In reality, this poor habit risks causing stomach disorders, disrupting learning concentration, and triggering the double burden of malnutrition (undernutrition or obesity). The formation of healthy eating behaviors, including the breakfast routine, is highly influenced by an individual's understanding of health itself. Behavioral theory suggests that knowledge is the primary foundation for forming attitudes and actions. The better an adolescent's nutritional knowledge, the more positive their attitude toward food is expected to be, which is ultimately reflected in their daily eating behavior (Notoatmodjo, 2018).

Tulungagung Regency is an area with a sizable population of Junior High School (JHS) students. The dense school schedules and the prevalence of contemporary snacks around the school environment often lead students to disregard the importance of nutritious breakfast from home. Although this phenomenon is evident, research specifically highlighting the link between knowledge, attitude, and breakfast behavior among JHS adolescents in the Tulungagung area remains scarce. Stemming from this background, this study is crucial to delve deeper into the relationship between the level of nutritional knowledge and the breakfast attitude and behavior of JHS students in Tulungagung Regency.

## 2. Method

This research employed an analytical observational study design utilizing a cross-sectional approach. Random sampling was utilized for participant selection. The study population consisted of 96 adolescents aged 12–13 years, drawn from three specific Junior High Schools in Tulungagung Regency: MTsN 1 Tulungagung, SMPN 1 Tulungagung, and SMPN 1 Kauman. A total of 32 students were selected from each school, adhering strictly to the predefined inclusion and exclusion criteria. Inclusion criteria encompassed adolescents aged 12–13 years, active enrollment in a Junior High School, and permanent residency within the Tulungagung Regency area. Conversely, exclusion criteria targeted adolescents who were currently ill or those who declined participation or failed to complete the entire research procedure.

Data collection was executed via self-administered questionnaires distributed to the respondents. Three distinct instruments were employed: a Nutrition Knowledge Questionnaire consisting of 20 multiple-choice questions, a Breakfast Attitude Questionnaire featuring 20 statements with a four-point Likert-scale checklist (strongly disagree to strongly agree), and a Breakfast Behavior Questionnaire containing 20 multiple-choice items. Importantly, all three questionnaires underwent preliminary validity and reliability testing before their deployment in the main study.

For statistical analysis, the Spearman's Rank Correlation Test (Rank Spearman Correlation) was chosen. This selection was based on the nature of the data, as the variables for knowledge, attitude, and behavior were measured on an ordinal (categorical) scale. The predefined significance level for the test was set at $\alpha=0.05$. A resulting p-value $<0.05$ would lead to the rejection of the null hypothesis (H0), indicating the presence of a significant relationship between the level of nutrition knowledge and breakfast attitude and behavior.

## 3. Result and Discussion

### 3.1. General Description of Respondents

The general profile of the respondents includes age, gender, parents' occupation, family income, and pocket money. A total of 96 adolescent respondents from three Junior High Schools in Tulungagung Regency were aged between 12 and 13 years old. Based on gender data, the respondents consisted of 33 male adolescents (34.3%) and 63 female adolescents (65.6%). The majority of the respondents' parents worked as private employees, totaling 42 individuals (43.7%). Furthermore, 68 respondents (70.8%) lived with families who had an average monthly income of IDR 1,000,000 – IDR 2,000,000. Regarding respondent characteristics based on pocket money, the data showed that 74 respondents (77%) received less than IDR 10,000 per day. The detailed respondent characteristics are presented in Table 1.

Table 1. General Description of Research Respondents

| General Characteristics | Frequency | Percentage |
|---|---|---|
| **Age** | | |
| 12 | 10 | 10,4% |
| 13 | 86 | 89,5% |
| **Gender** | | |
| Laki-Laki | 33 | 34,3% |
| Perempuan | 63 | 65,6% |

| **Parents' Occupation** | | |
|---|---|---|
| Karyawan Swasta | 42 | 43,7% |
| Wiraswasta | 35 | 36,4% |
| PNS | 19 | 19,8% |
| **Family Income** | | |
| < Rp 1.000.000 | 5 | 5,2% |
| Rp 1.000.000- Rp 2.000.000 | 68 | 70,8% |
| > Rp 2.000.000 | 23 | 23,9% |
| **Pocket Money** | | |
| < Rp 10.000 | 74 | 77% |
| Rp 10.000 – Rp 20.000 | 13 | 13,5% |
| > Rp 20.000 | 9 | 9,3% |

**Source:** (Primary Data, 2022)

Table 2. Frequency Distribution of Respondents Based on Nutrition Knowledge

| **Nutrition Knowledge** | **Frequency** | **Percentage** |
|---|---|---|
| Good | 30 | 31,2% |
| Moderate | 57 | 59,3% |
| Poor | 9 | 9,3% |
| **Total** | **96** | **100%** |

**Source:** (Primary Data, 2022)

Based on the data presented in Table 2, which shows the frequency distribution of respondents according to their level of nutrition knowledge, it can be seen that the majority of respondents had a moderate level of knowledge, totaling 57 individuals (59.3%). Meanwhile, respondents with a good level of knowledge amounted to 30 individuals (31.2%), and only a small portion of the respondents, 9 individuals (9.3%), had a poor level of knowledge.

Table 3. Frequency Distribution of Respondents Based on Breakfast Attitude

| **Breakfast Attitude** | **Frequency** | **Percentage** |
|---|---|---|
| Good | 0 | 0% |
| Moderate | 80 | 83,3% |
| Poor | 16 | 16,6% |
| **Total** | **96** | **100%** |

**Source:** (Primary Data, 2022)

Based on the data presented in Table 3, which illustrates the respondents' attitude towards breakfast habits, a significant finding is observed: no respondents were found to have an attitude in the good category (0%). The majority of the respondents, totaling 80 individuals (83.3%), had attitudes categorized as sufficient, while the remaining 16 individuals (16.6%) were in the poor category.

Table 4. Frequency Distribution of Respondents Based on Breakfast Behavior

| Breakfast Behavior | Frequency | Percentage |
|---|---|---|
| Good | 55 | 57,3% |
| Moderate | 40 | 41,6% |
| Poor | 1 | 1% |
| **Total** | **96** | **100%** |

**Source:** (Primary Data, 2022)

Based on the data from Table 4, which shows the frequency distribution of breakfast behavior, the majority of respondents, totaling 55 individuals (57.3%), exhibited good breakfast behavior. Respondents with behavior categorized as sufficient amounted to 40 individuals (41.6%), and only 1 individual (1%) had poor breakfast behavior.

## 3.2. Correlation between Nutrition Knowledge and Breakfast Attitude in Junior High School Adolescents

Table 5. Relationship between Nutrition Knowledge and Breakfast Attitude Among Junior High School Adolescents

| Nutrition Knowledge | Breakfast Attitude | | | | | | | | P Value |
|---|---|---|---|---|---|---|---|---|---|
| | Poor | | Moderate | | Good | | Total | | |
| | N | % | N | % | N | % | N | % | |
| Poor | 3 | 30% | 7 | 70% | 0 | 0% | 10 | 100% | |
| Moderate | 7 | 12.5% | **49** | **87%** | 0 | 0% | 56 | 100% | **0.991** |
| Good | 6 | 20% | 24 | 80% | 0 | 0% | 30 | 100% | |
| **Total** | 16 | 16.7% | 80 | 83.3% | 0 | 0% | 96 | 100% | |

Based on the data in Table 5, the respondent distribution is dominated by the group with a moderate level of nutrition knowledge who also had a sufficient breakfast attitude, accounting for 49 respondents (87%). A similar pattern was also observed among respondents with a good level of knowledge, where the majority, 24 respondents (80%), had an attitude categorized as sufficient. Interestingly, not a single respondent achieved the Good attitude category, despite 30 respondents possessing knowledge categorized as Good.

The results of the Spearman Rank statistical test showed a correlation coefficient (rs) of 0.001 with a significance value of p=0.991. Given that the p-value is >0.05, the null hypothesis (H0) is accepted. This indicates that there is no significant relationship between the level of nutrition knowledge and the breakfast attitude of adolescents. The very low coefficient value, which approaches zero (0.001), suggests

that the variables of nutrition knowledge and breakfast attitude move independently of each other in this population. This phenomenon indicates a disconnect between the cognitive and affective domains. The high nutritional literacy among adolescents apparently does not align linearly with the formation of a strong positive attitude towards breakfast.

This finding aligns with recent evidence suggesting that high nutritional literacy does not automatically guarantee positive attitudes or dietary compliance. Naim et al. (2025) also reported similar findings in their study on adolescents, demonstrating that statistical tests often reveal no significant association between knowledge levels, attitudes, and actual nutritional behavior due to the non-linear nature of behavior change. Furthermore, Briawan et al. (2023) emphasize that for Indonesian

adolescents, food preferences and attitudes are more strongly driven by sensory appeal and the availability of fast food (hedonic factors) rather than their cognitive understanding of health. Additionally, Yurtdas Depboylu et al. (2023) highlight that while nutrition literacy is crucial, it is often insufficient to alter attitudes without a supportive environment, as external lifestyle factors often override knowledge.

This study is consistent with the research conducted by Hadi et al. (2025), which also found no significant relationship between nutrition knowledge and food choice attitudes in adolescents. In their study, statistical analysis showed that even though adolescents possessed good nutrition knowledge, their attitudes towards food were often inconsistent due to the influence of hedonistic desires (the pleasure of eating) being more dominant than health considerations (Hadi et al., 2025).

## 3.3. Correlation between Nutrition Knowledge and Breakfast Behavior in Junior High School Adolescents

Table 6. Relationship between Nutritional Knowledge and Breakfast Habits among Junior High School Students

| Nutrition Knowledge | Breakfast Behavior | | | | | | | | P Value |
|---|---|---|---|---|---|---|---|---|---|
| | Poor | | Moderate | | Good | | Total | | |
| | N | % | N | % | N | % | N | % | |
| Poor | 0 | 0% | 2 | 20% | 8 | 80% | 10 | 100% | |
| Moderate | 1 | 1.8% | 22 | 39.3% | 33 | 58% | 56 | 100% | **0.084** |
| Good | 0 | 0% | 16 | 53.3% | 14 | 46% | 30 | 100% | |
| Total | 1 | 1% | 40 | 41.7% | 55 | 57.3% | 96 | 100% | |

The data in Table 6 reveals a unique variation in the distribution of breakfast behaviors. Interestingly, respondents with 'Moderate' nutritional knowledge exhibited the highest proportion of 'Good' breakfast behavior (58.9%; n=33). This stands in contrast to respondents with 'Good' nutritional knowledge, who demonstrated a lower proportion of 'Good' behavior (46.7%; n=14). Moreover, more than half of the respondents with 'Good' knowledge (53.3%) only practiced 'Fair' breakfast habits. Cumulatively, the respondents' breakfast behaviors were clustered primarily within the 'Good' (57.3%) and 'Fair' (41.7%) categories, with only a single recorded instance of 'Poor' behavior.

The Spearman Rank statistical test yielded a p-value of 0.084 (p>0.05) with a negative correlation coefficient (rs) of -0.177. These results confirm that there is no statistically significant relationship between the level of nutritional knowledge and breakfast behavior. Although not statistically significant, the negative coefficient offers an interesting insight into a potential inverse trend, suggesting that increased

nutritional knowledge is not necessarily followed by improved breakfast habits and may even be associated with a slight decline. This finding reflects the 'Knowledge-Practice Gap' phenomenon.

This disconnect is corroborated by recent findings; for instance, Handayani et al. (2025) reported that despite possessing high nutritional knowledge, a significant number of adolescents still exhibit poor eating patterns, confirming that knowledge acts as a predisposing factor but not a direct predictor of action. Furthermore, external barriers often override cognitive understanding. Aneley et al. (2024) identified that practical constraints—such as lack of time and loss of appetite—are more dominant factors in breakfast skipping than educational background alone. Similarly, broader lifestyle patterns play a critical role; Romero-Blanco et al. (2025) emphasized that factors like sleep duration, screen time, and adherence to specific dietary patterns (such as the Mediterranean diet) are stronger determinants of breakfast habits than nutritional awareness.

This study aligns with the research of Sukoco et al. (2022), which reported no relationship between nutritional knowledge and breakfast habits among adolescent girls (p=0.127). That study concluded that adolescent breakfast behavior is more strongly influenced by body image perception and waking habits; therefore, interventions relying solely on knowledge education are not sufficiently effective in changing their breakfast behaviors.

## 4. Conclusion

Based on the research findings and data analysis regarding the relationship between nutritional knowledge, breakfast attitudes, and breakfast behaviors among senior high school adolescents in Tulungagung Regency, the following conclusions can be drawn:

1. There is no significant relationship between the level of nutritional knowledge and adolescents' attitudes toward breakfast (p-value=0.991>0.05). The results indicate that high nutritional knowledge scores do not guarantee the formation of a positive attitude towards breakfast.
2. There is no significant relationship between the level of nutritional knowledge and adolescents' breakfast behaviors (p-value=0.084>0.05). A good level of nutritional literacy does not necessarily translate into adherence to daily breakfast practices.

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