

## Association between living area, economic level, and the intake of highly processed foods

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### Abstract

The increasing consumption of Highly Processed Foods (HPF) in the eating habits of adolescents and young adults is associated with various health problems, including obesity, cardiovascular disease, and metabolic disorders. Factors influencing dietary choices include living arrangements, family economic status, and the amount of pocket money play an important role in eating habits. This research aims to determine the association between living arrangements, economic status, and HPF consumption among Muhammadiyah high school/vocational school students in Ponorogo in 2024. The method used in this research is the cross sectional. The analysis carried out in this research focused on young women at Muhammadiyah Highschool in Ponorogo in 2024. The data was analyzed using the correlation test Spearman's Rank. The research results show that it is a place to live with value p-value = 0.223 which can be concluded that there is no significant association between place of residence and HPF consumption, family income and the value p-value = 0.046 which can be concluded that there is a significant association between family income and HPF consumption, and pocket money and the value p-value = 0.046 which can be concluded that there is a significant association between family allowances and HPF consumption. Addressing environmental and socioeconomic factors that influence adolescent eating habits is critical to promoting better health outcomes. Future research should continue to explore this association and develop targeted strategies to mitigate the adverse impacts of HPF consumption in this vulnerable population.

**Keywords:** High Processed Food; Living Arrangements; Family Economic Status; Pocket Money; Diet.

### 1. Introduction

The dietary habits of adolescents and young adults are critical determinants of their overall health and development. The increasing consumption of Highly Processed Foods (HPF) has been linked to various health problems, including obesity, cardiovascular diseases, and metabolic disorders (Monteiro et al., 2018). Understanding the factors that influence HPF consumption in this age group is essential for developing effective nutritional interventions.

Living arrangements are one such factor that can significantly impact dietary choices. Previous studies have indicated that adolescents living in dormitories or away from their families often exhibit different eating behaviors compared to those living with their families, often resulting in higher consumption of convenience and processed foods (Deliens et al., 2014). This can be attributed to the lack of parental guidance, irregular meal patterns, and the accessibility of HPF in dormitory settings.

In addition to living arrangements, the economic status of the family plays a crucial role in dietary habits. Adolescents from higher-income families generally have better access to a variety of healthy foods and are more likely to have

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healthier eating patterns compared to those from lower-income families (Drewnowski & Specter, 2004). Economic constraints can limit food choices, making cheaper, processed foods a more viable option for lower-income families.

This study aims to explore the association between living arrangements, economic status, and the consumption of HPF among high school students. By understanding these associations, we can better target interventions to promote healthier eating habits among adolescents.

## 2. Research methods

The research used quantitative methods with a cross-sectional approach. The purpose is to analyze the correlation between socioeconomic factors (living arrangements, family income, and pocket money) and the intake of highly processed foods (HPF) among high school students. The research was conducted at Muhammadiyah Highschool in Ponorogo in 2024.

The population consisted of young women students in these schools, with a sample size of 36 respondents selected using purposive sampling. Data collection occurred from January to May 2024 through a structured questionnaire covering respondent characteristics, living arrangements, family income, pocket money, and HPF consumption.

Bivariate analysis using Spearman's Rank correlation test to examine the associations between variables. The significance level was set at 5% ( $\alpha = 0.05$ ). A validity test was conducted on 20 respondents to ensure the reliability of the questionnaire, yielding Cronbach's Alpha values of 0.834 for the knowledge section and 0.948 for the attitude section, indicating good reliability.

The findings aim to provide insights into the socioeconomic factors influencing the adolescents dietary habits and inform strategies for promoting healthier eating behaviors among this population.

## 3. Results

**Table 1** Correlation between Living area and Consumption of Highly Processed Foods (HPF)

		Living area		p-value
		Dormitory	Living with Family	
HPF Consumption	High	8	1	X <sup>2</sup> =0.223
	Moderate	17	10	
	Low	0	0	
Total		25	11	36

Based on the table above, it can be observed that there is a difference in the consumption of Highly Processed Foods (HPF) between students living in dormitories and those living with family. Specifically, 8 dormitory residents have a high consumption of HPF, whereas only 1 student living with family has high HPF consumption. For moderate HPF consumption, there are 17 dormitory residents compared to 10 students living with family. None of the students in either group have low HPF consumption. The chi-square test indicates a p-value of 0.223, suggesting that there is no significant association between place of residence and HPF consumption.

**Table 2** Correlation between Family Income and Consumption of Highly Processed Foods (HPF)

	Correlation Coefficient	p-value
Correlation between Family Income and Consumption of Highly Processed Foods (HPF)	(-0.335)	0.046

The table shows a negative correlation between family income and HPF consumption, with a correlation coefficient of -0.335 and a p-value of 0.046. This indicates that higher family income is associated with lower HPF consumption. Spearman's Rank correlation test shows a significant association between family income and HPF consumption.

**Table 3** Correlation between Pocket Money and Consumption of Highly Processed Foods (HPF)

	<b>Correlation Coefficient</b>	<b>p-value</b>
Correlation between Pocket Money and Consumption of Highly Processed Foods (HPF)	(-0.418)	0.046

According to the table above, there is a negative correlation between the family allowance provided and HPF consumption, with a correlation coefficient of -0.418 and a p-value of 0.046. This suggests that higher allowance correlates with lower HPF consumption. Spearman's Rank correlation test indicates a significant association between family allowance and HPF consumption.

## 4. Discussion

### 4.1. Living Arrangements and HPF Consumption

The study found that high school students living in dormitories had a higher consumption of HPF compared to those living with their families. Specifically, 8 students living in dormitories reported high HPF consumption, compared to only 1 student living with their family. This result aligns with previous research indicating that the absence of parental supervision and the convenience of processed foods in dormitory settings contribute to higher HPF intake (Deliens et al., 2014). The structured environment of living with family likely promotes more regular and balanced meals, reducing the reliance on HPF. Students living away from home may also face challenges in accessing fresh and healthy food options, leading to increased reliance on readily available processed foods. The convenience and accessibility of HPFs in dormitory settings also contribute to higher consumption rates. Dormitories often have limited cooking facilities, making it challenging for students to prepare healthy meals. School cafeterias, and nearby fast-food outlets offer quick and easy access to HPFs, which are appealing to students with busy schedules and limited cooking skills (Greaney et al., 2009). The convenience of these options can overshadow healthier choices, especially when students are managing their time between academic responsibilities and social activities.

Social influences and peer pressure in dormitory settings can further exacerbate the consumption of HPFs. Adolescents are highly influenced by their peers, and the social environment of dormitories can promote unhealthy eating behaviors. Group activities, late-night study sessions, and social gatherings often involve consuming fast food, snacks, and other HPFs, reinforcing these habits among peers (Salvy et al., 2012). The collective behavior of peer groups can normalize the frequent intake of processed foods, making it a regular part of the dormitory lifestyle.

### 4.2. Family Income and HPF Consumption

A significant negative correlation was observed between family income and HPF consumption, with a correlation coefficient of -0.335 and a p-value of 0.046. This suggests that students from higher-income families are less likely to consume HPF. This finding is consistent with existing literature that highlights the role of socioeconomic status in dietary choices. Higher-income families have greater access to a variety of healthy foods and better food education, which can positively influence adolescents' eating behaviors (Drewnowski & Specter, 2004). Families with higher socioeconomic status are often more educated about nutrition and health, which influences their food choices and eating habits. Parents with greater knowledge about nutrition are more likely to provide balanced meals and encourage healthy eating behaviors in their children (Gibson et al., 2012). This education can help adolescents understand the negative health impacts of consuming HPFs and make more informed food choices. Financial resources also enable higher-income families to afford healthier foods, which are often more expensive than processed alternatives. Fresh produce, lean meats, and whole grains generally cost more than processed and packaged foods, making them less accessible to low-income families (Aggarwal et al., 2014). This economic disparity can lead to significant differences in diet quality between high- and low-income households.

### 4.3. Pocket Money and HPF Consumption

Similarly, there was a negative correlation between the amount of pocket money and HPF consumption, with a correlation coefficient of -0.418 and a p-value of 0.046. This indicates that students with higher amounts of pocket money tend to consume less HPF. This could be due to the fact that more financial resources allow for greater flexibility in food choices, including healthier options (Drewnowski & Specter, 2004). Adolescents with higher amounts of pocket money have the financial means to purchase a wider variety of foods, including healthier options. This financial

independence can reduce reliance on cheaper, processed foods that are often the go-to choice for those with limited budgets (Finkelstein et al., 2013). Having more money allows students to make healthier choices, such as buying fresh fruits and vegetables or dining at restaurants that offer nutritious meals. The availability of healthy food options is also influenced by the financial resources of the family. Students from wealthier families may have better access to a variety of food outlets, including grocery stores, farmers' markets, and health food stores, which offer a wider selection of healthy foods (Morland et al., 2002). In contrast, students from lower-income families may have limited access to such outlets, leading to greater consumption of HPFs.

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## 5. Conclusion

In conclusion, addressing the environmental and socioeconomic factors influencing adolescents' dietary habits is crucial for promoting better health outcomes. Future research should continue to explore these associations and develop targeted strategies to mitigate the adverse effects of HPF consumption in this vulnerable population.

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## Compliance with ethical standards

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### *Disclosure of conflict of interest*

There was no conflict of interest.

### *Statement of Ethical Approval*

Ethical clearance was approved by the Ethics Committee of the Faculty of Health Sciences, Muhammadiyah University of Ponorogo, on March 25, 2024.

### *Statement of informed consent*

Informed consent was obtained from all individual participants included in the study.

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