

The Relationship Between the Implementation of Sanitation Hygiene and the Knowledge and Attitudes of School Snack Vendors in Karanganyar Regency

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ABSTRACT

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Food is a basic human need that not only serves as a source of nutrition but also has the potential to become a medium for the spread of pathogenic microbes if not managed properly. In Indonesia, street food is a popular choice for the public, but often does not meet food safety standards. Inadequate sanitation hygiene from the production process to serving can trigger serious health problems and even death. This study aims to identify and analyze factors that influence the implementation of sanitation hygiene among street food vendors, with a focus on the attitude and knowledge aspects of the vendors. The method used in this study was a quantitative approach with 146 respondents. Data were collected through questionnaires and analyzed using univariate and bivariate tests. The results of the Chi-Square test on the attitude variable showed a p-value of 0.120 and knowledge 0.137. Because this value is greater than 0.05, it can be concluded that there is no significant relationship between the attitude of vendors and the implementation of sanitation hygiene. Although the majority of vendors with poor sanitation hygiene practices have poor attitudes (56.2%), and their knowledge is also classified as poor (66.4%), attitude and knowledge are not the primary determinants of these practices.



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INTRODUCTION

Food is one of the basic human needs necessary to sustain life, in addition to clothing and housing. Besides containing nutritional value, food can also serve as a medium for the growth and reproduction of microorganisms or germs that have the potential to cause health problems for those who consume it (Astuti IA, 2020). Therefore, food hygiene is very important to ensure food safety from the production process until consumption (Kamboj S, 2020). Poorly maintained food hygiene can lead to health problems and may even result in death (Permatasari, 2021). Hygiene and sanitation efforts are measures taken to control factors related to food, humans, places, and equipment that may cause or potentially cause diseases or health disorders.

Street food is widely consumed by the community. However, not all street foods meet proper hygiene and sanitation standards. This is due to inappropriate production processes, packaging, storage, and nutritional information that do not follow proper procedures (Wijayanti, 2022). Therefore, it is necessary to distinguish between street foods that meet hygiene and sanitation standards and those that do not. Street foods that comply with hygiene and sanitation standards are produced through clean and supervised production processes. Based on the Decree of the Minister of Health of the Republic of Indonesia Number 942/MENKES/SK/VII/2003 concerning Guidelines for Hygiene and Sanitation Requirements for Street Food, food hygiene and sanitation are defined as efforts to control factors related to food, humans, places, and equipment that may cause or potentially cause diseases or health disturbances.

According to data from the Indonesian Ministry of Health, poor habits among food handlers in maintaining personal hygiene, such as improper use of personal protective equipment and the lack of training related to food safety, are among the problems identified and contribute to approximately 29% of food poisoning cases in Indonesia (Ministry of Health of the Republic of Indonesia, 2023). Regulation of the Minister of Health Number 2 of 2023 provides more comprehensive guidelines to ensure hygiene and sanitation among food vendors, including the equipment used and food storage practices to maintain food safety (Hadi, 2021).

Previous studies have found that the majority of vendors do not meet hygiene and sanitation standards. The main factors influencing food hygiene and sanitation include vendors' attitudes and knowledge levels, personal hygiene practices, equipment cleanliness, food presentation, and environmental conditions. Equipment hygiene has been identified as the most significant factor (Ismainar et al., 2021). The factors highlighted in this study are attitude and knowledge. Knowledge plays an important role in hygiene practices, as vendors with better knowledge about proper hygiene practices tend to be more careful in preparing and serving food. This study aims to investigate the influence of knowledge on vendors' attitudes and hygiene practices. Attitudes toward hygiene and sanitation can influence how vendors conduct their businesses. A positive attitude toward hygiene practices may encourage vendors to implement better preventive measures, whereas negative attitudes may lead them to neglect the importance of cleanliness. Understanding these attitudes can help develop more effective intervention programs.

Based on the problems described above, the researcher is interested in examining the relationship between hygiene and sanitation with attitude and knowledge factors among school snack vendors in Karanganyar Regency. Karanganyar was chosen as the research location because the region has a growing industrial area and serves as a center for various micro, small, and medium enterprises (MSMEs), which provides opportunities to study the hygiene and sanitation practices of snack vendors. Conducting research on sanitation and hygiene practices among school food vendors in Karanganyar Regency is relevant to identifying potential health risks that may arise from inadequate sanitation practices, such as the spread of diseases through food consumption. Awareness and knowledge of vendors regarding proper hygiene practices can provide insights into factors influencing their behavior.

This study aims to determine the extent to which school snack vendors pay attention to hygiene and sanitation in their businesses. These efforts are important to protect school children from foodborne diseases, as children are particularly vulnerable to such illnesses (Rizky, M. A., 2024). Many school snack vendors still pay little attention to personal hygiene, equipment cleanliness, and the sanitation of their business environments. This research is expected not only to provide insights for vendors regarding proper food sanitation practices but also to offer a clear understanding of the hygiene and sanitation conditions of school snacks. Furthermore, the findings are expected to contribute to effective solutions for improving public health and creating a safer environment for future generations.

METHOD

This study used a quantitative approach. The research method applied was a cross-sectional survey (Susanto, 2024). The study was conducted among school snack vendors in Karanganyar Regency, with the population consisting of non-formal sector vendors operating within school environments in the region. The total population included 146 vendors from public schools in Karanganyar Regency. The inclusion criteria for this study were vendors who sell food within the school environment. Data collection was carried out using a questionnaire as the measurement instrument. The results of the validity test indicated that all questionnaire items were valid and suitable for use in this research (Roflin & Liberty, 2021). The reliability test showed a measurement result of 0.875, which is higher than the Cronbach's alpha threshold, indicating that the data were reliable and appropriate for analysis. The data analysis in this study consisted of

univariate and bivariate analysis (Sandilands, 2024). The Chi-square test was used for bivariate analysis to determine whether there was a significant relationship between the variables studied. The use of this statistical test helps provide a concrete understanding, based on the data, of whether relationships exist between the variables.

RESULTS

Univariate analysis was conducted to describe the characteristics of each respondent, including gender, age, and education level, using descriptive statistics such as frequency and percentage (Huzaimi & Arisetyawan, 2024; Rusydi et al., 2023).

Table 1. Respondent Characteristics

Respondent Characteristics	Category	Frequency	Percentage
Age	25-35	27	18,5%
	36-46	91	62,3%
	47-57	28	19,2%
Gender	Male	86	58,9%
	Female	60	41,1%
Education	Elementary School	18	6,8%
	Junior High School	45	19,9%
	Senior High School	83	41,8%
Total		146	100%

Based on the table, the distribution of respondent characteristics according to the age of school snack vendors shows that the majority are aged 36–46 years, totaling 91 respondents. The data also indicate that most school snack vendors are male, with 86 respondents, while 60 respondents are female. Meanwhile, the distribution of respondents based on education level shows that the largest group has a Senior High School (SMA) education, totaling 83 respondents.

Table 2. The Relationship Between Hygiene and Sanitation with the Attitudes and Knowledge of School Snack Vendors

	Poor		Good		Total	
	n	%	n	%	n	%
Hygiene Sanitation	100	68,5%	46	31,5%	146	100%
Attitude	82	56,2%	64	43,8%	146	100%
Knowledge	37	23,3%	109	74,7%	146	100%

Based on the characteristics of the respondents, the majority of school snack vendors were in the 36–46 years age group, totaling 91 respondents (62.3%), followed by those aged 47–57 years with 28 respondents (19.2%), and those aged 25–35 years with 27 respondents (18.5%). In terms of gender, most respondents were male, totaling 86 individuals, while 60 respondents were female. Meanwhile, based on education level, the majority of respondents had completed Senior High School (SMA) as their highest level of education, totaling 83 respondents (41.8%), followed by Junior High School (SMP) with 45 respondents (19.9%), and Elementary School (SD) with 18 respondents (6.8%).

respondents (6.8%), which reflects that most school snack vendors have a secondary education background.

Furthermore, bivariate analysis was conducted using the Chi-square test with a significance level of 0.05, and the results obtained are as follows.

Table 3. The Relationship Between Hygiene and Sanitation and the Attitudes of School Snack Vendors

	Poor		Good		Total		Nilai P
	N	%	n	%	n	%	
Poor	61	56,2%	39	43,8%	82	100%	0.120
Good	21	25,8%	25	20,2%	64	100%	
Total					146	100%	

The tabulation results show that respondents with poor hygiene and sanitation practices and poor attitudes totaled 61 individuals (56.2%), while respondents with poor hygiene and sanitation practices but good attitudes totaled 39 individuals (43.8%). Meanwhile, respondents with good hygiene and sanitation practices but poor attitudes totaled 21 individuals (25.8%), and respondents with good hygiene and sanitation practices and good attitudes totaled 25 individuals (20.2%). Based on the results of the cross-tabulation between hygiene and sanitation practices and the attitudes of school snack vendors, the significance value (p-value) obtained was 0.120. This value is greater than 0.05, so it can be concluded that there is no significant relationship between hygiene and sanitation practices and the attitudes of school snack vendors in the Karanganyar Regency area.

Table 4. The Relationship Between Hygiene and Sanitation and the Knowledge of School Snack Vendors

	Poor		Good		Total		Nilai P
	n	%	n	%	n	%	
Poor	62	66,4%	38	33,6%	97	100%	0.137
Good	35	30,6%	11	15,4%	49	100%	
Total					146	100%	

The distribution of respondents shows that respondents with poor hygiene and sanitation practices and poor knowledge totaled 62 individuals (66.4%), while respondents with poor hygiene and sanitation practices but good knowledge totaled 38 individuals (33.6%). Meanwhile, respondents with good hygiene and sanitation practices but poor knowledge totaled 35 individuals (30.6%), and respondents with good hygiene and sanitation practices and good knowledge totaled 11 individuals (15.4%). The results of the cross-tabulation analysis between hygiene and sanitation practices and the knowledge of school snack vendors showed a significance value (p-value) of 0.137. This value is greater than 0.05, indicating that there is no significant relationship between hygiene and sanitation practices and the knowledge of school snack vendors.

DISCUSSION

The implementation of hygiene and sanitation among school snack vendors plays a very important role because it directly determines food safety and consumer health, especially for school children who are vulnerable to diseases caused by contaminated food. A study by Amirah et al. (2023) involving 61 food vendors in Patumbak Village showed that although some vendors already had sufficient knowledge about food hygiene, the hygiene and sanitation practices carried

out were still not optimal, thereby potentially increasing the risk of food contamination and health problems. The study also emphasized that vendors' attitudes had a significant relationship with the implementation of hygiene and sanitation ($p < 0.05$), indicating that behavioral consistency and concern for cleanliness are important factors in ensuring food safety (Amirah et al., 2023).

This finding is supported by research conducted by Jannah and Asyfiradayati (2024) involving 85 food vendors in the traditional markets of Surakarta, which found a significant relationship between the level of vendors' knowledge and hygiene sanitation behavior ($p < 0.05$), where vendors with good knowledge tended to apply safer hygiene practices in the process of food processing and serving (Brutu, 2021). Based on these two studies, it can be concluded that hygiene sanitation is very important because the implementation of good hygiene practices has been proven to play a role in preventing food contamination, reducing the risk of foodborne diseases, and maintaining the quality and safety of snacks consumed by the community, particularly school children.

The importance of implementing food hygiene and sanitation is also in line with the provisions of the Decree of the Minister of Health of the Republic of Indonesia Number 2 of 2023 concerning the Implementation of Food Hygiene and Sanitation, which emphasizes that every food provider must comply with hygiene and sanitation standards to prevent food contamination that can endanger human health. The regulation explains that hygiene sanitation implementation includes the cleanliness of food handlers, equipment hygiene, food safety, availability of clean water, and environmental management of food processing and serving areas. This regulation is highly relevant in the context of school snack vendors because the food provided is consumed by children who belong to a vulnerable group to foodborne diseases. Therefore, the implementation of hygiene and sanitation in accordance with the Decree of the Minister of Health of the Republic of Indonesia Number 2 of 2023 represents the responsibility of school snack vendors in ensuring food safety as well as efforts to prevent diseases and protect public health.

Furthermore, the attitudes of school snack vendors are an important component in the implementation of hygiene and sanitation because they directly influence hygiene behavior in the process of food processing and serving. Research conducted by Sari et al. (2022) on elementary school snack vendors in Pekanbaru City showed that 51.4% of vendors still had low levels of hygiene sanitation, and statistical analysis results indicated a significant relationship between vendors' attitudes and the implementation of hygiene sanitation ($p < 0.05$). The study also revealed that equipment cleanliness, which reflects vendors' attitudes toward sanitation, was the most dominant factor in determining the quality of food hygiene sanitation with a value of 8.400, indicating that vendors who have a positive attitude toward cleanliness are more likely to implement good sanitation practices.

This finding is supported by research conducted by Wulandari and Fitriani (2023) on elementary school snack vendors in Tanjung Raja District, Ogan Ilir Regency, which stated that vendors with poor attitudes toward cleanliness tend not to meet hygiene sanitation standards, especially in aspects of food handler hygiene and equipment cleanliness, which can increase the risk of contamination in school snack foods. Based on the results of these two studies, it can be concluded that vendors' attitudes play a very important role because they represent the main behavioral factor that determines the consistency of hygiene sanitation implementation, thereby contributing to the prevention of food contamination and the protection of school children's health.

The next aspect is the knowledge of school snack vendors, which has a significant influence on the implementation of food hygiene sanitation because it forms the basis for understanding the principles of cleanliness and food safety. Research conducted by Ismainar et al. (2022) on elementary school snack vendors in Pekanbaru City showed that 51.4% of vendors still had low levels of hygiene sanitation, and statistical test results indicated a significant relationship between vendors' knowledge and the implementation of hygiene sanitation ($p \leq 0.05$). These findings indicate that vendors with better levels of knowledge tend to have greater opportunities to implement food sanitation practices according to standards, especially in terms of equipment

cleanliness and food serving processes. In addition, research conducted by Serli et al. (2023) in Buntusu Village, Makassar City, also found that most school snacks sold did not meet health requirements due to limited vendor knowledge regarding food hygiene and sanitation principles. Based on the results of these two studies, it can be concluded that vendors' knowledge plays an important role in determining the quality of hygiene sanitation implementation, because a lack of understanding regarding contamination risks and safe food handling can increase the potential for food contamination and the risk of foodborne diseases among school children (Yusmianti, 2020).

The results on the analysis of the relationship between hygiene sanitation and the attitudes of school snack vendors showed that there was no significant relationship between vendors' attitudes and the implementation of hygiene sanitation ($p=0.120$; $p>0.05$). Descriptively, although most respondents had positive attitudes toward the importance of hygiene sanitation, the implementation of proper hygiene sanitation practices was still relatively low. This finding indicates that positive attitudes only reflect an individual's mental readiness or intention but are not sufficient to encourage behavioral change without support from external factors such as the availability of sanitation facilities, long-standing work habits, and continuous guidance and supervision.

The results of this study are in line with research conducted by Amirah et al. (2023) in Patumbak Village, involving 61 food vendors, where most respondents had fairly good attitudes, but no significant relationship was found between attitudes and the implementation of hygiene sanitation ($p=0.556$), so the expected hygiene practices had not been fully achieved. Similar findings were also reported in research on angkringan vendors in Karawang, which showed that although 63.3% of vendors had good knowledge and 36.7% had good attitudes, as many as 70% of vendors still applied poor hygiene sanitation practices, and there was no significant relationship between knowledge and hygiene sanitation practices ($p>0.05$). These similar patterns strengthen the conclusion that good attitudes or knowledge alone are not sufficient to produce optimal hygiene sanitation practices but must be supported by adequate sanitation facilities, changes in work habits, and consistent guidance so that hygiene sanitation behavior can be implemented sustainably (Yuris et al., 2023).

The results of the analysis of the relationship between hygiene sanitation and knowledge showed that there was no significant relationship between the level of vendor knowledge and the implementation of hygiene sanitation, with a p -value of 0.137 ($p>0.05$). Descriptively, most respondents were found to have a moderate to good level of knowledge regarding hygiene sanitation principles, but this condition was not fully reflected in consistent hygiene practices. This finding indicates that knowledge as a cognitive aspect representing individual understanding and insight does not necessarily translate directly into actual behavior.

This may occur because the implementation of hygiene sanitation is influenced not only by knowledge but also by various other constraints, such as limited sanitation facilities (for example, the availability of clean water and handwashing facilities) (Kesumastuti et al., 2023), high work activity pressure, and the lack of continuous guidance and supervision. The results of this study are consistent with the findings of Amirah et al. (2023) involving 61 food vendors in Patumbak Village, where no significant relationship was found between knowledge and hygiene sanitation practices ($p= .556$), although respondents' knowledge was relatively good. The study emphasized that good knowledge does not automatically produce good hygiene sanitation practices if it is not supported by motivation, adequate facilities, and a supportive environment. However, different results were reported by Jannah and Asyfiradayati (2024) involving 85 vendors in the traditional markets of Surakarta, which found a significant relationship between knowledge and hygiene sanitation behavior ($p=0.000$). This difference in findings indicates that the influence of knowledge on hygiene sanitation practices is highly affected by the research context, particularly the support of the work environment, the availability of facilities, and access to information, which allow vendors with high knowledge to implement hygiene sanitation more optimally.

CONCLUSION

The results of the study indicate that there is no significant relationship between the implementation of hygiene and sanitation and the attitudes and knowledge of school snack vendors, therefore a more comprehensive approach is needed to improve hygiene and sanitation practices in the school environment. Accordingly, relevant parties, particularly the health authorities and school administrators, need to strengthen guidance and supervision through continuous educational programs accompanied by direct practical assistance. In addition, the availability of adequate sanitation facilities and infrastructure needs to be improved in order to support the optimal implementation of hygiene and sanitation practices.

AUTHOR'S DECLARATION

Authors' contributions and responsibilities

SYA : Conceptualization, Data Collection and Investigation, Manuscript Drafting and Revision,
Data Analysis and Interpretation

DPF : Research Design, Supervision and Validation, Final Approval of Manuscript

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Availability of data and materials

All data and supporting materials for this study are available and can be requested directly from the corresponding author.

Competing interests

The authors declare that they have no competing interests related to this study

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