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Factors related to food safety behavior in the safe food village program in Yogyakarta

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Abstract

Purpose: Food safety is a prerequisite that must be met to prevent foodborne diseases. The Indonesian Food and Drug Authority has initiated the Safe Village Food Program in rural communities as one of the solutions to address food safety issues. The objective of this research is to investigate the relationship between knowledge, attitudes, community origin, and sociodemographic factors (age, marital status, gender, level of education) with food safety behaviors. **Methods:** This study uses secondary data with a cross-sectional design. The number of samples analyzed was 737 respondents. **Results:** The results show that the variables of community origin and attitude are associated with food safety behavior among the total respondents. **Conclusion:** The determining factors of behavior that need to be considered in the formulation of programs related to food safety are community characteristics and strengthening positive attitudes to encourage appropriate food safety behaviors.

Keywords: attitude; behavior; food safety; knowledge; safe village food program

INTRODUCTION

Food is a fundamental human necessity. Food consumed must adhere to food safety standards to ensure that it is not a health hazard. According to the Law of the Republic of Indonesia No. 18 of 2012 concerning Food, “food safety is a condition and effort needed to prevent food from possible biological, chemical, and other contaminants that can interfere with, harm, and endanger human health and do not conflict with the religion, beliefs, and culture of the community so that it is safe for consumption".

The ease and broad reach of food distribution contribute to the potential for foodborne illnesses that have a wide impact on health; therefore, food management must be conducted safely [1]. Food safety issues persist in Indonesia. Cases of foodborne disease outbreaks in Indonesia are still being reported [2]. Diarrhea/vomiting has been reported in 1,585 villages in Indonesia [3]. With an estimated 31 types of foodborne hazards causing 600 million cases of foodborne diseases and 420,000 deaths, the majority of which were due to diarrhea in 2010, foodborne disease is rapidly becoming an international emergency due to the speed and reach of food distribution and impacts not only health but also economics and trade [4].

Foodborne diseases are closely related to food management behaviors that are not in accordance with food safety principles. Interventions through food safety programs are expected to increase community participation in realizing safe food through behavioral changes. Food safety behavior is an action taken to keep food safe until it is consumed. Consistent food safety behavior can ensure food safety from the supply side, namely producers, to the demand side, namely individual consumers.

The Indonesian Food and Drug Authority initiated a community empowerment-based program through the development of the Safe Food Village Program in all provinces in Indonesia. The program is implemented in all provinces in Indonesia through interventions on the supply side, namely, mentoring processed food producers, and on the demand side, through capacity building for the community. Yogyakarta is one of the provinces that participated in the Safe Food Village Program. As a tourist destination and home to many students, food safety is essential to ensure public health while supporting the economic climate.

A comprehensive understanding of the issues and the relationships between various contributing phenomena as part of the system is necessary to address public health problems [5]. The issue of food safety is a scientific health problem related to economics and other social interconnections; thus, it cannot be determined at a single level universally accepted by society [6]. Therefore, an approach that considers sociodemographic and economic aspects in food safety interventions is needed. This study is essential to understand whether knowledge, attitude, number of media sources of information, location of residence, community background, and socio-demographic factors are determinants of food safety behavior in the National Safe Food Village Program. The results of this study will provide an understanding of the determinants of food safety behavior, serving as a basis for recommendations in food safety policy formulation to minimize health issues caused by unsafe food.

METHODS

This research employs a quantitative approach through secondary data analysis, utilizing a cross-sectional research design. Data obtained from the results of the implementation of the 2021 and 2022 Safe Food Village Program by the Indonesian Food and Drug Authority. This research sample was taken as a total sampling and obtained 737 respondents. The respondents were categorized into several groups, including housewives, street food vendors, home industries, food retailers, youth, and school communities.

The criteria for housewives are married women who do not work in the formal sector. Street food vendors are men or women who prepare and sell ready-to-eat foods from food stalls and catering services. The home industrial community refers to individuals who process low-risk packaged food at home, typically with a shelf life exceeding 7 days. The criteria for food retailers include men or women who own or work in the food retail sector, such as food stalls, supermarkets, and minimarkets. The school community is a group of school canteen vendors and teachers who are involved in managing school canteens in areas where the Safe Food Village program intervenes. The youth community consists of men and women who are not married or are still active in the Karang Taruna organization. The data in this study were collected using six instruments based on community origin. Socio-demographic characteristics, aspects of food safety knowledge, and attitudes were collected using the respondent's self-identity questionnaire. Food

Safety behavior aspects were collected using the respondent's self-identity questionnaire and the results of observations by the Indonesian Food and Drug Authority officers. This study received ethical approval from the Medical and Health Research Ethics Committee of the Faculty of Medicine, Public Health and Nursing, Gadjah Mada University under number KE-FK-0124-EC-202.

RESULTS

Table 1 shows, of the 733 respondents, 149 were housewives (20.22%), 193 were 35-44 years old (26.19%), 564 were married (76.53%), 614 were female

Table 1. Respondents characteristics

Variables	n (%)
Community origin	
Housewives community	149 (20.22)
Street food vendors	120 (16.28)
Home-industries vendors	117 (15.88)
Food retailers community	117 (15.88)
Youth community	120 (16.28)
School community	114 (15.47)
Age (years old)	
≤24	154 (20.90)
25-34	140 (19.00)
35-44	193 (26.19)
45-54	185 (25.10)
≥ 55	65 (8.82)
Marital status	
Unmarried	173 (23.47)
Married	564 (76.53)
Gender	
Male	123 (23.47)
Female	614 (83.31)
Level of education	
Basic education	194 (26.32)
Senior secondary education	397 (53.87)
Higher education	146 (19.81)
Level of knowledge	
Poor	338 (45.86)
Good	339 (54.14)
Level of attitude	
Poor	345 (46.81)
Good	392 (53.19)
Level of food safety behavior	
Poor	325 (44.10)
Good	412 (55.90)

(83.31%), 397 were senior secondary education (53.87%), 339 had a good level of knowledge (54.14%), 392 had a good level of attitude (53.19%), and 412 had a good level of food safety behavior (55.90%).

The results of the bivariate analysis, presented in Table 2, indicate that community origin, age, marital status, and attitude level (p-value <0.05) have a statistically significant relationship with food safety behavior.

Table 2. Bivariate analysis results

Variables	Food safety behavior		PR (95% CI)
	Poor	Good	
Community origin			**0.0001*** (p-value)
School community	80 (70.18)	34 (29.82)	1
Housewives	39 (26.17)	110 (73.83)	2.48(1.84-3.33)*
Street food vendors	55 (45.83)	65 (54.17)	1.82(1.31-2.52)*
Home-industries	64 (54.70)	53 (45.30)	1.52(1.08-2.14)*
Food retailers	50 (42.74)	67 (57.26)	1.92(1.39-2.65)*
Youth community	37 (30.83)	83 (69.17)	2.32(1.71-3.15)*
Age (years old)			**0.007***(p-value)
≤24	106 (68.83)	48 (31.17)	1.40(1.07-1.83)*
25-34	74 (52.86)	66 (47.14)	1.07(0.80-1.44)
35-44	106 (54.92)	87 (45.08)	1.12(0.84-1.47)
45-54	94 (50.81)	91 (49.19)	1.03(0.78-1.37)
≥ 55	32 (49.23)	33 (50.77)	1
Marital status			**0.031***(p-value)
Unmarried	64 (36.99)	109 (63.01)	1
Married	261 (46.28)	303 (53.72)	0.85(0.74-0.98)*
Gender			**0.052** (p-value)
Male	59 (47.97)	64 (52.03)	1
Female	353 (57.49)	261 (42.51)	1.20(0.98-1.46)
Level of education			**0.402** (p-value)
Basic education	103 (53.09)	91 (46.91)	1
Senior secondary education	231 (58.19)	166 (41.81)	1.10(0.94-1.28)
Higher Education	78 (53.42)	68 (46.58)	1.01(0.82-1.23)
Level of knowledge			**0.183** (p-value)
Poor	180 (46.75)	158 (53.25)	1
Good	232 (58.15)	167 (41.85)	1.09(0.96-1.24)
Level of attitude			**0.005***(p-value)
Poor	174 (50.43)	171 (49.57)	1
Good	238 (60.71)	154 (39.29)	1.20(1.06-1.37)*

PR (Prevalence Ratio); CI (Confidence Interval); *(p-value <0.05)

The data were analyzed using multivariate methods, and the results of the analysis are presented in Table 3. The result of multivariate analysis showed that a good attitude has an adjusted PR value of 1.22 (1.08-1.39), indicating that a good attitude is associated with a 1.22 times higher likelihood of food safety behavior compared to respondents with a poor attitude. The community of home industry vendors has an adjusted PR value of 1.50 (95% CI: 1.05-2.14), indicating that home industry vendors are 1.5 times more likely to carry out food safety behavior than the school community. Adolescents have an adjusted PR value of 1.99 (1.33-2.99), indicating they behave in food safety 1.99 times more appropriately than the school community. Street food vendors have an adjusted PR value of 1.81 (1.30-2.52), indicating that their food safety behavior is 1.81 times more appropriate than that of the school community. Food retail vendors have an adjusted PR value of 1.98 (1.42-2.74), indicating they are 1.98 times more likely to exhibit appropriate food safety behavior compared to school communities. Housewives have an adjusted PR value of 2.49 (1.83-3.39), indicating they are 2.49 times more likely to exhibit appropriate food safety behavior compared to the school community.

Table 3. Multivariate analysis results

Variables	PR (95% CI)
Community origin	
School community	1
Housewives	2.49 (1.83-3.39)*
Street food vendors	1.81 (1.30-2.52)*
Home-industries	1.50 (1.05-2.14)*
Food retailers	1.98 (1.42-2.74)*
Youth community	1.99 (1.33-2.99)*
Age (years old)	
≤24	1.03 (0.73-1.45)
25-34	0.87 (0.64-1.19)
35-44	0.96 (0.72-1.28)
45-54	0.93 (0.70-1.25)
≥ 55	1
Marital status	
Unmarried	1
Married	0.92 (0.71- 1.20)
Gender	
Male	1
Female	1.12 (0.91-1.36)
Level of knowledge	
Poor	1
Good	1.12 (0.99-1.27)
Level of attitude	
Poor	1
Good	1.22 (1.08-1.39)*

PR (Prevalence Ratio); CI (Confidence Interval)

DISCUSSION

Food safety is fundamental to food security, nutrition, and human health. Unsafe food has the potential to create food insecurity, malnutrition, and impair health [7]. Community origin is a variable associated with food safety behavior. The community is a group of people who share similar life experiences and interact with one another. In this study, the community reflects the similarity of work, which is the daily activity of the respondents. The prevailing norms influence individual behavior in the community [8].

Food safety behavior among home-industry vendors is 1.5 times more appropriate than that of respondents in the school community, with an adjusted PR value of 1.5 (95% CI: 1.05-2.14; p-value: 0.025). In the street food vendors, the adjusted PR value is 1.81 (95% CI:

1.33-2.99; p-value: 0.0001), indicating that food safety behavior among street food vendors' respondents is 1.81 times more appropriate than that of respondents in the school community. The adjusted PR value of the food retail business community is 1.98 (95% CI: 1.42-2.74; p-value: 0.0001), indicating that food safety behavior in food retail business respondents is 1.98 times more likely than in respondents from the school community. Home industries, street food, and food retail vendors are communities that work in food processing every day, so they may have experience with safe food management. The majority of home industries have an appropriate behavior category, which is also in line with the research by Sihombing et al. [9].

The adjusted PR value in the housewife community was 2.49 (95% CI: 1.83-3.39; p-value: 0.0001), indicating that the housewife community was 2.5 times more likely to be suitable than the school community. The adjusted PR value of the housewife home community was the highest among the other communities. The probability of appropriate safety behavior in the housewife community may be attributed to the frequency of cooking, which in turn affects food safety knowledge and behavior [10]. Behavioral differences between communities are attributed to the behavioral characteristics of organizational members, as well as the structure and interactions that occur between group members [11]. Groups can influence individual behavior. Through group support, individuals can be encouraged to collaborate in groups that drive change [12]. This is in line with the research of [13] that community characteristics determine differences in factors related to food safety behavior of the Safe Food Village Program intervention in DKI Jakarta Province. Research on the implementation of the Safe Food Village Program in Yogyakarta Province [14] also showed similar results, that the characteristics of the local village community influenced food safety behavior.

Age is not related to food safety behavior. This finding aligns with research [13], which indicates that food safety behavior among respondents who have received Safe Food Village Program interventions in DKI Jakarta does not correlate with age characteristics; instead, other factors are more closely related to food safety behavior. Research also states that age does not correlate with consumer behavior in Oman in applying food safety principles [15].

Attitude is a variable associated with food safety. The adjusted PR value is 1.22 (95% CI: 1.08-1.39; p-value: 0.0001), indicating that respondents with good attitudes are 1.22 times more likely to exhibit food safety behavior than those with poor attitudes. This finding aligns with [16] research on public elementary school snack food vendors in South Tangerang City and [17] research, which also stated that attitude is a predisposing factor for food safety behavior. In recipients of the Safe Food Village Program in Bolaang Mongondow, attitude is a determinant of food safety behavior [18]. This finding is also consistent with research on communities in Bum-Bum Island, Sabah, which suggests that attitudes can positively influence food safety behavior [19].

Marital status is not associated with food safety behavior. Research on food handlers in Malaysia [20], as well as studies by Abid et al [21] and Hossen et al [22] on the street vendor community in Bangladesh, provide similar results indicating that marital status is not a factor associated with food safety behavior. This study is also in line with the research of [23] on food handlers in Ethiopian restaurants, which states that marital status is not associated with food safety behavior.

The majority of respondents were female. This can be explained by the fact that women are more often involved in matters related to food management than men [24]. Gender is not associated with food safety behavior. This finding aligns with the research [13] indicating that gender is not a predictor of food safety behavior in the Safe Food Village Program in Jakarta. Research in Thailand [24] also showed that there was no difference between food hygiene practices during food preparation between women and men.

Education level is not a factor associated with food safety. This finding aligns with the research of [18], which indicates that food safety practices in Bolaang Mongondow do not correlate with education level. Research [15] also stated that education level did not correlate with food safety behavior among consumers in Oman. Knowledge is not a variable associated with food safety behavior. This finding aligns with the research [18], which indicates that food safety practices in Bolaang Mongondow do not correlate with food safety knowledge. According to Tomaszewska et al [24], this may be because people usually learn basic food hygiene techniques by observing food preparation in the family home, often without other sources of knowledge about food hygiene.

CONCLUSION

The results of this study indicate a relationship between community origin and attitudes toward food safety behavior. Variables of age, marital status, gender, level of education, and level of knowledge are not related to the food safety behavior among intervention recipients of the safe food village program

in Yogyakarta. Future research is needed involving a wider range of independent variables to find out the determinants of food safety behavior more comprehensively.

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