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Factors Related to Personal Hygiene of Traditional Jamu Handler in Bantul District, Indonesia

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ABSTRACT

Background: Foodborne disease is the contamination of pathogenic bacteria that multiply in drinks. Traditional jamu handlers, people who process conventional jamu, need to implement and understand the importance of personal hygiene to avoid bacterial contamination.

Aims: This study aimed to determine the relationship between knowledge, attitude, sanitation facilities and infrastructure, participation in counseling, and level of education with personal hygiene in traditional jamu handlers in Kiringan Village, Bantul District, Yogyakarta Province, Indonesia.

Methods: This study used a quantitative approach with a cross-sectional design, involving 73 traditional jamu handlers who were selected by simple random sampling from a population of 90 handlers. The dependent variable was the personal hygiene of jamu handlers, measured using an observation checklist and categorized as "appropriate" or "not appropriate" based on an average score of 7.12. Independent variables included knowledge, attitudes, sanitation facilities and infrastructure, participation in counseling, and education level, which were assessed using questionnaires and observation sheets. Statistical analysis included identification of respondent characteristics to describe the sample and bivariate analysis to evaluate the relationship between independent and dependent variables.

Results: The finding of this study showed that the level of knowledge, attitude, availability of sanitation facilities, participation in food safety counseling, and education level had a significant relationship with personal hygiene practices in traditional jamu handlers. Higher education levels had the most significant impact on improving good hygiene practices.

Conclusion: Personal hygiene of handlers was influenced by knowledge, attitudes, sanitation facilities and infrastructure, participation in food safety counseling, and level of education. It is suggested to increase awareness and implementation of personal hygiene when processing traditional jamu and routinely attend food safety counseling to increase knowledge.

Keywords: *Personal hygiene; Traditional jamu handlers; Food safety counseling; Sanitation facilities; Education levels.*
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1. Introduction

Drinks are part of food to meet basic daily needs. Product makers create high-quality beverage innovations to meet basic needs. Beverages produced must be free from contamination of hazardous substances such as microorganisms, chemicals, and other contaminants (Avîrvarei et al., 2023). According to the World Health Organization (WHO), diarrhea cases can occur every year with a total of approximately 1.7 billion cases (World Health Organization, 2024). In Indonesia, the trend of poisoning in 2014 was a total of 186 cases, in 2015 there were a total of 153 cases of poisoning, with various causal factors, ranging from food, natural poisons, pesticides, mixtures and environmental pollution (Rhomadhoni et al., 2018). Diarrhea-causing agents such as norovirus, *Salmonella enterica, Campylobacter* and *E. coli*. The main causes of death from foodborne diseases are *Salmonella thypi, Taenia solium*, hepatitis A virus and aflatoxin (Arisanti et al., 2018). According to survey results, in Yogyakarta showed that as in the case in Yogyakarta, there was an outbreak of food poisoning in 2017 (Rokhmayanti & Heryantoro, 2017).

Traditional Indonesian drinks with basic ingredients such as turmeric (*Curcuma longa* Linn.), kencur (*Kaempferia galanga*), and temulawak (*Curcuma zanthorrhiza*) can be processed by jamu craftsmen by producing kencur, turmeric, and temulawak drinks. Jamu is a natural medicine that has been empirically proven to be safe. The jamu concoction business is a business that originates from a jamu depot owned by someone by mixing finished ingredients or natural medicines that have been sold to buyers (Sumarni et al., 2019). Food and beverage hygiene and sanitation are actions taken to monitor factors involving humans, food, the environment, and objects that have the potential to cause disease. A beverage handler is someone who is in direct contact with drinks starting from the preparation stage of ingredients to the serving stage of drinks (Schmidt & Piotter, 2020). Food safety is the steps taken to prevent contaminants such as chemical compounds, biological organisms, and materials that can harm human health, while ensuring that the food is in accordance with the religious and cultural values of the community, so that it can be consumed safely (Suryani et al., 2022). Personal hygiene means a healthy individual. Personal hygiene is the action taken to maintain a person's health and cleanliness, both physically and mentally (Lebelo et al., 2021).

A person's behavior is influenced by three categories of factors, namely predisposition, enablers, and reinforcers (Suyitno et al., 2024). Predisposition includes aspects such as education level, age, knowledge, occupation, and attitude. Enablers involve factors such as environmental conditions and distance to health facilities. Meanwhile, reinforcing factors include support from community leaders and family (Mubarak & Chayatin, 2019; Notoatmodjo, 2014a). Kiringan Jamu Tourism Village is a tourist attraction that has many traditional jamu craftsmen. Based on the results of preliminary study observations carried out on March 8, 2023 and June 1, 2023, there were 124 traditional jamu handlers, but 90 were still actively making jamu. Data on the number of jamu handlers was obtained from the Head of Kiringan Hamlet. The results of observations that have been carried out 2 out of 4 jamu handlers do not pay attention to hygiene in making traditional jamu. In the first case, the handler did not use PPE such as head coverings, masks, and aprons. In addition, the location for making traditional jamu is close to the bathroom. This can be a risk of contamination of traditional jamu because the bathroom is a dirty place. The second case of jamu handlers also has not implemented the use of PPE. The facilities and infrastructure owned are inadequate such as the absence of closed trash bins. But there is only an open trash bin near the jamu processing area. Jamu handlers also still use 1 place for washing equipment and washing hands which can cause contamination of equipment and hands.

Focusing on traditional herbal medicine artisans as a potential source of contamination is an under-explored research gap, as previous studies have more often discussed the benefits or composition of herbal medicine. This study provides unique insights into the cultural relationships, local customs, and personal hygiene of artisans in Bantul, an area with a strong tradition of herbal medicine consumption. In addition, the multidisciplinary approach that includes public health, cultural anthropology, and microeconomics adds strategic value to this study, especially in supporting the development of public health policies and improving the quality and safety of herbal medicine through training and certification of artisans.

2. Methods

Study design/ Research procedures

This study uses a quantitative approach with a cross-sectional method. The research sample was 73 traditional jamu handlers in Kiringan Village, Bantul District, Yogyakarta Province, Indonesia. The sample was selected by applying the Simple Random Sampling Technique form 90 traditional jamu handlers. The inclusion criteria of the respondents of this study were people who work as traditional jamu sellers, both male and female. living in Kiringan village for the past 6 months when the study was conducted, willing to be respondents and not having time, physical, and communication limitations when the study was conducted. The exclusion criteria for this study are as follows: individuals who are not employed as traditional jamu sellers, those who have not resided in the Kiringan Village for at least six months prior to or during the study period, individuals who are unwilling to participate as respondents, and those who experience physical, communication, or time constraints that may prevent them from effectively engaging in the research process.

Measurements

Dependent variable in this study was personal hygiene of traditional jamu handler. This variable aims to determine whether traditional jamu handlers implement personal hygiene when processing traditional jamu. Measurement using a nominal scale with scores against the personal hygiene standards of traditional jamu handlers is reduced to; not appropriate, if <mean (7.12) and appropriate, if ≥mean (7.12). Data collected by observation checklist.

Independent variables were knowledge, attitudes, sanitation facilities and infrastructure, outreach participation, and education level. Data was collected by administering questionnaires for the knowledge and attitude variables about personal hygiene practices of respondents collected by interview. The variable knowledge that traditional jamu handlers have regarding personal hygiene is measured using a nominal and categorical scale; "Not Good" if the score is < mean (7) and "Good" if the score is ≥ mean (7). The variable attitude that traditional jamu handlers have regarding personal hygiene is measured using a nominal and categorical scale; "Not Good" if the score is < mean (58) and "Good" if the score is ≥ mean (58). On the other hand, the sanitation facilities and infrastructure (Not Good: If the mean score is <6 and good: If the score is ≥ mean 6), participation in counseling (never attended food safety counseling and have attended food safety counseling), and education level (Low if junior high school ≤ and high if high school ≥), variables used observation sheets.

Based on the results of the validity test on the knowledge statement about personal hygiene of traditional jamu handlers from 20 statements after being tested, 12 statements were eliminated so that 8 statements remained. Then on the attitude statement from 20 attitude statements after being tested, 4 statements were eliminated so that 16 statements remained. The statements that were eliminated were caused by the t-value being less than or equal to the r-table value (0.361). The results of the reliability test on the knowledge statement were 0.638 so that it was > 0.060 and the results of the attitude statement were 0.912 so that it was > 0.060 reliable statements. Thus, 8 knowledge statements and 16 attitude statements were valid and reliable so that they could be used in the questionnaire instrument.

Statistical techniques

This study was used three analysis technique; respondent characteristics identification and bivariate analysis. The purpose of characteristics identification of respondent is to provide a detailed picture of the characteristics of respondents, such as demographic, socio-economic, or other attributes relevant to the study. By understanding the respondent profile, a better context can be obtained for the data being analyzed. Bivariate analysis aims to evaluate the relationship between two variables, namely the independent and dependent variables. Through this approach, researchers can find out whether there is a significant statistical relationship between the two, thus helping to understand the relationship between variables in the study.

Ethical Clearance

This research has obtained research approval from the Research Ethics Commission of Ahmad Dahlan University (KEP UAD) with number 012307111. Each respondent was given an explanatory script and consent form before information was collected from each respondent.

3. Results

The majority of respondents were aged between 55-64 years (31.5%), with other age groups ranging from 25-84 years. Most respondents had a good level of knowledge (71.2%), good attitudes (78.1%), and had attended food safety counseling (74.0%). In terms of sanitation facilities and infrastructure, more than half of respondents (56.2%) had good facilities, while the education level of the majority of respondents was high (65.8%). However, personal hygiene practices are still a concern, with the majority of respondents (74.0%) having poor practices. These data indicate a gap between good knowledge and attitudes and the implementation of appropriate hygiene practices.

Table 1. Respondent's Characteristics

Variables	Freq.	Percent
Age group		
25-34	5	6.8
35-44	22	30.1
45-54	15	20.5
55-64	23	31.5
65-74	7	9.6
75-84	1	1.4
Level of knowledge		
Poor	21	28.8
Good	52	71.2
Attitude		
Poor	16	21.9
Good	57	78.1
Sanitation facilities and infrastructure		
Poor	32	43.8
Good	41	56.2
Participation in counseling		
Never attended food safety counseling	19	26.0
Have attended food safety counseling	54	74.0
Level of education		
High	48	65.8
Low	25	34.2
Personal hygiene practice		
Poor	54	74.0
Good	19	26.0

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Table 2. Bivariate analysis

Variable	Personal hygiene practice		Crude OR & CI (95%)	p value
	Poor	Good		
Level of knowledge			1.46(1.17-1.81)	0,019
Poor	21	28.8		
Good	52	71.2		
Attitude			1.50 (1.25-1.80)	0.018
Poor	16	21.9		
Good	57	78.1		
Sanitation facilities and infrastructure			1.60 (1.22-2.10)	0.002
Poor	32	43.8		
Good	41	56.2		
Participation in counseling			1.54 (1.26-1.87)	0.007
Never attended food safety counseling	19	26.0		
Have attended food safety counseling	54	74.0		
Level of education			2.99 (1.68-5.31)	0.0001
High	48	65.7		
Low	25	34.3		

The results of the bivariate analysis showed that all independent variables had a significant relationship with personal hygiene practices. Respondents with a good level of knowledge tended to have better hygiene practices (COR = 1.46; 95% CI: 1.17-1.81; p = 0.019). Good attitudes also increased the likelihood of good hygiene practices (COR = 1.50; 95% CI: 1.25-1.80; p = 0.018). The availability of adequate sanitation facilities and infrastructure showed a significant effect on personal hygiene practices (COR = 1.60; 95% CI: 1.22-2.10; p = 0.002). Participation in food safety counseling also improved hygiene practices (COR = 1.54; 95% CI: 1.26-1.87; p = 0.007). In addition, higher education level had the most significant impact on personal hygiene practices (COR = 2.99; 95% CI: 1.68-5.31; p = 0.0001).

4. Discussion

Analysis with the Chi Square test on the knowledge variable is known to have a p-value = 0.019 (p <0.05). So there is a relationship between knowledge and personal hygiene in traditional jamu handlers. The theory of Lawrence Green which states that behavioral factors influence a person's behavior. One of these factors is predisposition such as knowledge. A person's behavior can be seen from the knowledge they have [8]. Knowledge can influence a person's behavior because a lot of good information is absorbed so that they can behave in a positive direction. A person with high knowledge means they tend to do positive things.

Factors that influence a person's knowledge can be seen from the last education a person has. Education can be interpreted as guiding someone to realize certain ideals with the aim of filling a safe, comfortable and happy life. Higher education gets more information so that it will make a person aware of their behavior (Rukmansyah S et al., 2022). Another similar study concluded that in a statistical test, there was a correlation between knowledge and implementation of personal hygiene practices in street food vendors (Endriana Amiruddin et al., 2021). Other studies also indicate that the results of knowledge and cleanliness of food handlers in the canteen (Madrdhatillah, 2019).

Analysis with the Chi Square test on the attitude variable is known to have a p-value = 0.018 (p <0.05). From the result, it is noted that there is a relationship between attitude and personal hygiene in traditional jamu handlers. Lawrence Green's theory states that individual behavior can be influenced by various factors, including predisposing factors, such as attitude (Pakpahan et al., 2021). Attitude has 3 main components, namely behavior, awareness, and feelings. Attitude can reflect how a person reacts when involved with the cognitive component that will determine the attitude of the affective component (Notoatmodjo, 2014b). Attitude can determine the behavior and awareness of traditional jamu handlers to practice personal hygiene. High awareness will have an influence on good personal hygiene. In addition, sufficient knowledge will influence the attitudes of traditional jamu handlers. Another similar study found that the results showed a correlation between attitudes and personal hygiene practices of food and beverage handlers (Sanlier et al., 2020). Other

research that is in line also shows the results a relation between the attitudes and cleanliness and sanitation of street food vendors (Akabanda et al., 2017).

Analysis with the Chi Square test on the sanitation facilities and infrastructure variable is known to have a p-value = 0.002 (p <0.05). This means that Ho is rejected and Ha is accepted. So there is a relationship between sanitation facilities and infrastructure and personal hygiene in traditional jamu handlers. Lawrence Green's theory, enabling factors are sanitation facilities and infrastructure or sanitation facilities. Enabling factors consist of resources or organizations to realize environmental change (Pakpahan et al., 2021). Food traders must have sanitation facilities and infrastructure such as hand washing facilities, clean water, trash bins, toilets, waste disposal, fly and rat control facilities (Dewi et al., 2019). Adequate sanitation facilities and infrastructure will have an impact on good personal hygiene. If sanitation facilities and infrastructure are inadequate, it will bring in many vectors and diseases. The results of other studies indicate a correlation between supporting facilities and infrastructure with the implementation of hygiene practices by food handlers in Elementary Schools (Kyaw et al., 2018; Pitri et al., 2020).

Analysis with Chi Square test on the variable of participation in counseling is known to have a p-value = 0.007 (p <0.05). So there is a relationship between participation in counseling and personal hygiene in traditional jamu handlers. Lawrence Green's theory, counseling is included in the reinforcing factor. Counseling can influence someone or receive positive feedback. Counseling can change a person's behavior towards health problem. One of the important requirements for handlers who handle food is to have a food hygiene and sanitation training certificate (Palupi et al., 2024). Food safety counseling can increase knowledge insight for traditional jamu handlers. Another study indicated that training on food hygiene and sanitation can improve understanding of aspects such as personal hygiene, equipment cleanliness, and sanitation facilities in respondents who have participated in the training (Cataluna & Rukmini, 2024). The results of another study stated a correlation between hygiene training for food handlers (Insfran-Rivarola et al., 2020).

Analysis with the Chi Square test on the education level variable is known to have a p-value = 0.000 (p <0.05). This means that Ho is rejected and Ha is accepted. So there is a relationship between and personal hygiene in traditional jamu handlers. Education level is one component of the predisposition factor. Education level can influence an individual's tendency to take certain actions. The higher a person's education level, the greater their ability to receive information, so that their knowledge can be broader (Pakpahan et al., 2021). Education level plays a key role in an individual's learning experience, because a high level of education will provide a lot of information. This information includes aspects such as hygiene and sanitation in food processing which aims to improve food safety (Hamsiati et al., 2024). Another study showed that the results a correlation between education level and food handler behavior in food processing in restaurants (de Andrade et al., 2019). Another study did not support the findings of this study, showing that the results there was no significant correlation between the level of education and personal hygiene of street food vendors (Akbar et al., 2023).

5. Conclusion

In sum, this study on factors related to personal hygiene of traditional jamu handlers in Kiringan Village, Bantul, concluded that personal hygiene of handlers was influenced by knowledge, attitudes, sanitation facilities and infrastructure, participation in food safety counseling, and level of education. It is suggested to increase awareness and implementation of personal hygiene when processing traditional jamu and routinely attend food safety counseling to increase knowledge. Further researchers are expected to explore new factors that may affect personal hygiene, such as length of work experience and income level. Jetis II Health Center is suggested to routinely provide counseling, monitor, and evaluate the personal hygiene practices of traditional jamu handlers to ensure the sustainability of its implementation.

Conflict of Interest

There is no conflict of interest.

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