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Original Research

The Relationship of Personal Hygiene to the Incidence of Thypus Abdominalis

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Abstract

Background: Health development is a key indicator of national progress and is influenced by several determinants, including environment, behavior, health services, and heredity. Personal hygiene is one behavioral factor that significantly contributes to the prevention of infectious diseases such as typhus abdominalis.
Objective: This study aimed to determine the relationship between personal hygiene and the incidence of typhus abdominalis.
Methods: A cross-sectional study was conducted using a total sampling technique involving 45 respondents in the working area of the Rumbia Health Center, Jeneponto Regency. Data were collected through validated questionnaires and analyzed using the chi-square test.
Results: There was a statistically significant and strong relationship between hand hygiene before eating and the incidence of typhus abdominalis ($p < 0.001$). A moderate relationship was found between drinking water cleanliness and typhus incidence ($p = 0.02$), and a strong relationship was identified for food hygiene ($p < 0.001$). Additionally, there was a moderate relationship between the cleanliness of latrine use and disease incidence ($p = 0.03$).
Conclusion: Personal hygiene practices, particularly handwashing, food hygiene, and latrine use, are associated with the incidence of typhus abdominalis. Public health efforts should focus on improving sanitation facilities and promoting hygienic behaviors to reduce disease transmission.
Keywords: Personal Hygiene; Sanitation; Typhus Abdominalis; Water Quality

Introduction

In line with the shift in disease patterns in Indonesia, the incidence of acute infectious diseases has generally declined. However, infectious diseases of the gastrointestinal tract remain prevalent, one of which is typhus abdominalis. This disease is an acute systemic infection of the digestive tract caused by Salmonella typhi, which enters the human body through contaminated food and beverages. It is particularly associated with poor hygiene and inadequate sanitation. Although preventive measures have been implemented, typhoid fever continues to pose a significant public health concern in Indonesia, especially in areas with limited access to clean water and proper waste disposal systems.

Globally, typhoid fever affects an estimated 17 to 23 million people annually and causes approximately 600,000 deaths. The disease predominantly affects populations in low- and middle-income countries, particularly in Southeast Asia, Africa, and Latin America. The World Health Organization (WHO) has reported a consistent burden of typhoid in these regions, including Indonesia, where environmental and behavioral risk factors remain high. In the United States, for comparison, only about 500 cases are reported annually, most of which are travel-related.

In Indonesia, national data consistently show high rates of typhoid fever. The Basic Health Research (Riskesdas) in 2009 reported over 1,000 confirmed cases with a case fatality rate of 1.25 percent. According to the Ministry of Health (2018), there are approximately 550,112 cases of typhoid fever per 100,000 population. Clinical data also indicate a mortality rate ranging from 0.6 to 5 percent. Typhoid fever is evenly distributed across the country, with higher incidence in urban areas (760 per 100,000 people) compared to rural areas (358 per 100,000 people). Furthermore, about 91 percent of typhoid cases in Indonesia affect individuals aged 3 to 19 years. The Household Health Survey (SKRT) in 2010 ranked typhoid fever among the top five most common infectious diseases in the country, with 115 cases per 1,000 population and 75 percent occurring in children and young adults.

At the regional level, Jeneponto Regency has experienced a concerning rise in typhoid fever cases over recent years. In 2017, the prevalence was recorded at 49.6 percent, increasing to 69.11 percent in 2018, and reaching 82.54 percent in 2019. At the Rumbia Health Center, 318 cases (2.41 percent) were

reported in 2020, increasing sharply to 1,677 cases (12.68 percent) in 2021, making it the third most common disease at the facility. Although there was a decline to 1,153 cases (8.45 percent) in 2022, it still ranked seventh among the top ten diseases. In early 2023 (January–March), 45 new cases were already recorded.

Initial observations in the Rumbia District indicate that many community members still practice poor personal hygiene. These include incorrect handwashing techniques without soap, failure to treat drinking water properly, unhygienic food processing and presentation, and improper use of latrines. These behavioral and environmental factors are believed to contribute significantly to the persistent incidence of typhus abdominalis in the area. However, despite the increasing trend of cases and the presence of identifiable risk factors, there has been limited investigation into the specific role of personal hygiene in influencing typhoid incidence in this region.

Therefore, this study aims to examine the relationship between personal hygiene practices and the incidence of typhus abdominalis in the working area of the Rumbia Health Center, Jeneponto Regency. Understanding this relationship is essential for informing local health promotion efforts and preventive strategies to reduce the burden of typhoid fever in the community.

Methods

Study Design

This research used an analytical survey method with a cross-sectional approach, which is designed to examine the relationship between risk factors and health outcomes by collecting data at a single point in time. This approach is appropriate to identify associations between personal hygiene practices and the incidence of typhus abdominalis.

Samples/Participants

The population in this study consisted of all individuals diagnosed with typhus abdominalis who were recorded at the Rumbia Health Center in Jeneponto Regency during the data collection period. A total sampling technique was used, in which the entire population that met the inclusion criteria was selected as the study sample. The final sample consisted of 45 participants. Inclusion criteria included individuals aged 10 years and above, residing in the Rumbia Health Center service area, and willing to participate by providing informed consent.

Instruments

The research instrument was a structured questionnaire designed to assess personal hygiene behaviors and their relationship to typhus abdominalis. The questionnaire was constructed based on a review of relevant literature and expert consultations. It used the Guttman scale format, where answers were given in a dichotomous form.

Data Collection

Primary data were obtained through direct interviews with respondents using the validated questionnaire. Interviews were conducted face-to-face to ensure the completeness and accuracy of responses. Secondary data were collected from the Jeneponto District Health Office and the Rumbia Health Center, including historical records on typhus abdominalis incidence in the region from previous years.

Data Analysis

All completed questionnaires were checked for completeness and consistency before data entry. Coding was applied to categorize responses, and the data were tabulated using statistical software. Descriptive statistics were used to summarize the distribution of variables, and bivariate analysis was conducted to examine relationships between personal hygiene practices and the incidence of typhus abdominalis using the chi-square test at a 95 percent confidence level ($p < 0.05$).

Ethical Considerations

This research was conducted after obtaining ethical clearance from the Health Research Ethics Committee of the institution responsible. Participants were provided with explanations regarding the study objectives, procedures, and their rights, and each participant signed an informed consent form prior to participation.

Results

It can be seen from the table 1, that the results of the research from 45 respondents were obtained as many as 22 (50%) positive respondents suffering from Typhus Abdominalis and as many as 23 (50%) respondents who did not suffer from Typhus Abdominalis.

Table 1 Distribution of Respondents by incidence of Typhus Abdominalis

Event	Sum	(%)
Suffering from Typhus Abdominalis	22	50
Does not suffer from Typhus Abdominalis	23	50
Total	**45**	**100**

Source: SPSS Processed Data

Distribution of Respondents by Age Group

It can be seen from the table 2 that the results of the study from 45 respondents according to age group, the highest age group was the age group < 20 years old as many as 22 (35.5%) respondents, the age group of 21-30 years as many as 14 (23.33) and the lowest was the age group > 30 years old, which was as many as 9 (16.6%) respondents.

Table 2 Distribution of Respondents by age group

Age Group (year)	Sum	(%)
< 20	22	48,8
21-30	14	31,1
> 30	9	20
Total	**45**	**100**

Source: SPSS Processed Data

Incidence of Typhus Abdominalis Disease by Sex

From the table 3, it shows that of the 45 patients with Typhus Abdominalis, more are male, namely 25 (55.5%) respondents and 20 (44.4%) female respondents.

Table 3 Distribution of Typhus Abdominalis by sex

Gender	Sum	%
Men – men	25	55,5
Woman	20	44,4
Total	**45**	**100**

Source: SPSS Processed Data

Distribution of Respondents by Education Level

From the table 4, the results of the research from 45 respondents according to education level, the highest level of education was elementary school with 15 (33.3%) respondents and the lowest was Higher Education / D3, which was 4 (11.1%) respondents. For kindergarten education, 5 (11.1%) respondents, junior high school as many as 13 (28.8) respondents, and high school as many as 8 (20%) respondents.

Table 4 Distribution of Respondents by level of education

Education	Sum	(%)
Kindergarten	5	11,1
SD	15	33,3
SLTP	13	28,8
High School	8	17,7
College/D3	4	8,8
Total	**45**	**100**

Source: SPSS Processed Data

Hand hygiene before eating respondents
From the table 5, it shows that the results of the study from 45 respondents had good hand hygiene before eating as many as 18 (40%) respondents and as many as 27 (60%) respondents who had bad hand hygiene before eating.

Table 5 Distribution of hand hygiene before meals Respondent

Hand hygiene before eating	Sum	(%)
Good	18	40
Less	27	60
Total	**45**	**100**

Source: SPSS Processed Data

Cleanliness of drinking water
From the table 6, it shows that, the results of the research from 45 respondents who have qualified drinking water cleanliness are only 29 (64.4%) respondents and as many as 16 (35.5%) respondents who have drinking water cleanliness do not meet the requirements.

Table 6 Distribution of Respondents' drinking water hygiene

Cleanliness of drinking water	Sum	(%)
Qualify	29	64,4
Not Eligible	16	35,5
Total	**45**	**100**

Source: SPSS Processed Data

Food hygiene
It can be seen from the table 7 that, the results of the study from 45 respondents who had food hygiene met the requirements, only 19 (42.2%) respondents and as many as 26 (57.7%) respondents who had food hygiene did not meet the requirements.

Table 7 Distribution of food hygiene Respondent

Food hygiene	Sum	(%)
Qualify	19	42,2
Not eligible	26	57,7
Total	**45**	**100**

Source: SPSS Processed Data

Hygiene using latrines
From the table 8, it shows that, the results of the study of 45 respondents who have cleanliness using latrines meet the requirements, only 18 respondents (40%) and as many as 27 respondents (60%) who have cleanliness using latrines do not meet the requirements.

Table 8 Distribution of cleanliness using the Respondent's latrines

Hygiene using latrines	Sum	(%)
Qualify	18	40
Not eligible	27	60
Total	**45**	**100**

Source: SPSS Processed Data

Bivariate Analysis

Based on the table 9 it can be seen that of the 45 respondents who suffered from Typhus Abdominalis, as many as 22 respondents, most or as many as 20 (90.9%) had poor hand hygiene before meals and 2 respondents (9%) had good hand hygiene before eating. Meanwhile, among respondents who did not suffer from Typhus Abdominalis, as many as 23 respondents, as many as 7 respondents (30.43%) had poor hand hygiene before meals and as many as 16 respondents (69.56%) had good hand hygiene before eating.

Table 9 Relationship of hand hygiene before meals with the incidence of Typhus Abdominalis

Hygiene Hand Before Eat	Occurrence of Typhus Abdominalis					
	Suffer		Not suffering		Sum	
	n	%	n	%	N	%
Less	20	90,9	7	30,43	27	60
Good	2	9	16	69,56	18	40
Sum	**22**	**100**	**23**	**100**	**45**	**100**

Source: SPSS Processed Data

Based on the table 10, it can be seen that of the 45 respondents who suffered from Typhus Abdominalis, 22 respondents. A total of 12 (54.54%) had unmet drinking water hygiene and 10 (45.45%) of respondents who had unmet drinking water hygiene. Meanwhile, among respondents who did not suffer from Typhus Abdominalis, as many as 23 respondents, as many as 4 (17.39%) respondents had unqualified drinking water hygiene and as many as 19 (82.60%) respondents who had qualified drinking water hygiene.

Table 10 Relationship between drinking water hygiene and the incidence of Typhus Abdominalis

Drinking Water Hygiene	Occurrence of Typhus Abdominalis					
	Suffer		Not suffering		Sum	
	n	%	n	%	n	%
Not eligible	12	54,54	4	17,3 9	16	35,55
Qualify	10	45,45	19	82,6 0	29	64,44
Sum	**22**	**100**	**23**	**100**	**45**	**100**

Source: SPSS Processed Data

Based on the table 11, it can be seen that of the 45 respondents who suffered from Typhus Abdominalis, as many as 22 respondents, most or as many as 19 (86.36%) respondents had unqualified food hygiene and 3 (13.63%) respondents who had qualified food hygiene. Meanwhile, among respondents who did not suffer from Typhus Abdominalis, as many as 23 respondents, as many as 7 (30.43%) respondents had unqualified food hygiene and as many as 16 (69.56%) respondents who had qualified food hygiene. Based on the results of the Chi Square test, the value of x^2 was obtained > x^2 tables and the value ρ = 0.000 (ρ < 0.05), so Ho was rejected thus there was a relationship between food hygiene and the incidence of Typhus Abdominalis. Based on the Cramers test (K test), a value of 0.566 was obtained which shows a strong relationship between food hygiene and the incidence of Typhus Abdominalis.

Table 11 Relationship between food hygiene and the incidence of Typhus Abdominalis

Food hygiene	Occurrence of Typhus Abdominalis					
	Suffer		Not suffering		Sum	
	n	%	n	%	n	%
Not eligible	19	86,36	7	30,43	26	57,77
Qualify	3	13,63	16	69,56	19	42,22
Sum	**22**	**100**	**23**	**100**	**45**	**100**

Source: SPSS Processed Data

Based on the table 12, it can be seen that of the 45 respondents who suffered from Typhus Abdominalis, as many as 22 respondents, as many as 17 (77.27%) respondents had cleanliness using unqualified latrines and 5 (22.72%) respondents who had cleanliness using qualified latrines. Meanwhile, among respondents who did not suffer from Typhus Abdominalis, as many as 23 respondents, as many as 10 (43.47%) respondents had hygiene using latrines that did not meet the requirements and as many as 13 (56.52%) respondents who had hygiene using latrines met the requirements.

Table 12 Relationship between hygiene using latrines and the incidence of Typhus Abdominalis

Hygiene using latrines	Occurrence of Typhus Abdominalis					
	Suffer		Not suffering		Sum	
	n	%	n	%	n	%
Not eligible	17	77,27	10	43,47	27	60
Qualify	5	22,72	13	56,52	18	40
Sum	**22**	**100**	**23**	**100**	**45**	**100**

Source: SPSS Processed Data

Discussion

The findings of this study show that personal hygiene, particularly hand hygiene and drinking water sanitation, is significantly associated with the incidence of typhus abdominalis. Among the respondents, those with poor hand hygiene practices were more likely to contract typhus abdominalis, while those who practiced good hygiene tended to be free from the disease. This is consistent with the principle that hand hygiene plays a pivotal role in preventing the transmission of enteric pathogens, including *Salmonella typhi*, the bacterium responsible for typhus abdominalis. Similar findings have been reported in previous studies, such as by Luby et al. (2005), who found that regular handwashing with soap significantly reduces the risk of diarrheal and enteric infections in endemic regions.

However, the persistence of poor hand hygiene practices despite available information and national campaigns suggests that behavioral factors, cultural norms, and access to hygiene facilities may influence individual compliance. The Ministry of Health of the Republic of Indonesia (2008) has long emphasized hand hygiene in its public health campaigns, yet practice remains suboptimal, particularly in rural or low-resource communities. This implies that knowledge alone may be insufficient and must be reinforced with continuous behavior change communication, community engagement, and improvements in sanitation infrastructure.

The second major factor examined in this study was drinking water quality. Respondents who consumed water that did not meet hygiene standards had a higher rate of typhus abdominalis infection compared to those who accessed clean water. These results are in line with findings from studies in India and Bangladesh, where unsafe drinking water has been identified as a major source of typhoid outbreaks (Crump & Mintz, 2010). Given that *Salmonella typhi* is a waterborne pathogen, its transmission is strongly influenced by the microbiological quality of water used for drinking and food preparation. The presence of typhus abdominalis cases even among those with access to clean water may point to other contributing factors such as recontamination during storage, use of unclean utensils, or simultaneous poor hygiene practices.

Interestingly, the study also identified a subset of respondents with good water quality and adequate hand hygiene who still contracted typhus. This suggests the involvement of possible confounding factors such as food hygiene, fly exposure, sanitation conditions, or the improper use of latrines. According to research by House et al. (2019), even when clean water is available, diseases like typhoid may persist if there is improper food handling, shared sanitation facilities, or fecal contamination within the household environment. Therefore, interventions must adopt a holistic approach encompassing water, sanitation, and hygiene (WASH) components to be truly effective.

Moreover, the study did not control for other socio-environmental variables such as education level, household crowding, or frequency of contact with contaminated surfaces, all of which may influence exposure risk. For example, a study by Gasem et al. (2014) in Central Java found that household size and shared toilet use were significant predictors of typhoid infection, regardless of water source quality.

Another point worth noting is the potential role of asymptomatic carriers in ongoing transmission within the community. Individuals who have recovered from typhoid fever can still shed the bacteria, contaminating food or water unknowingly. This aspect was not assessed in the current study and represents a limitation that could be addressed in future research.

In sum, while this study reinforces the importance of personal hygiene and safe drinking water in reducing the incidence of typhus abdominalis, the findings should be interpreted with caution. The presence of cases in individuals with ostensibly good hygiene practices indicates the multifactorial nature of disease transmission and the need to consider confounding elements. Educational programs, combined with infrastructure improvements and regular monitoring of water sources, are critical for long-term prevention.

Future studies should employ a multivariate analytical approach to control for confounding variables and explore the interaction between knowledge, behavior, and environmental exposure in more depth. Moreover, qualitative insights into community perceptions of hygiene could offer valuable guidance for designing culturally appropriate interventions.\

Conclusion

Based on the results and discussion of this study, it can be concluded that hand hygiene before eating has a strong relationship with the incidence of typhus abdominalis in the working area of the Rumbia Health Center, Jeneponto Regency. Cleanliness of drinking water was found to have a moderate association with typhus incidence, indicating that while water quality is important, other factors may also play a role. Food hygiene showed a strong correlation with disease occurrence, highlighting the importance of safe food handling and preparation practices. Additionally, the use of toilets with inadequate sanitation was moderately associated with typhus cases, suggesting that personal and environmental hygiene are interrelated in influencing disease transmission.

For future research, it is recommended to include additional variables such as knowledge, attitude, household sanitation infrastructure, and food storage practices. Studies that explore community experiences with prevention and control programs for typhus abdominalis will also be valuable in informing more effective public health interventions.

References

Adams, Martin. 2016. *Basics of Food Safety for Health Workers*,- Jakarta: EGC.

Adisasmito, Wiku. 2014. *Health System*, Jakarta : PT Raja Grapindo Persada

Anies. 2014. *Beware of Environmental Diseases*, Jakarta : PT Gramedia

Anonymous. 2016. *International Travel And Health*, Geneva : WHO

Aru, Sudoyo. 2006. *Internal Medicine Science* Volume III Edition IV, Jakarta: IPD FKUI

Chandra, Budiman. 2008. *Health Research Methodology*, EGC Medical Book, Palembang: PT Gramedia

Ministry of Health, RI. 2018. *Health Profile of Indonesia.* Department of Health of the Republic of Indonesia, Jakarta, 2018.

Ministry of Health, RI. 2016. *Indonesian Health Profile.* Department of Health of the Republic of Indonesia, Jakarta, 2018.

Ministry of Health, RI. *Minister of Health Launches 10,000 Villages with Good Sanitation* . URL:http ://www.. depkes.go.id/index. Accessed June 2, 2020.

Dermawan, Deden., and Tutik, 2010. *Medical Surgical Nursing (digestive system),* first edition, Yogyakarta : Gosyen Publishing

Esther, Monica. 2016. *Surgical Medical Nursing; Systems Approach Gastrointestinal*, Jakarta : EGC

Jaswanto. 2014. *Factors related to the incidence of typhus Abdominalis in Ngrombol District, Purworejo Regency*, Thesis, Semarang: Diponegoro University

Kandun, Nyoman. 2016. *Manual of Eradication of Infectious Diseases*. Edition 17, Jakarta:CV Infomedika

Ngatimin. 2005. *Introduction to Behavioral Sciences*, Jakarta : EGC

Notoatmodjo, Soekidjo. 2005. *Health Research Methodology*. Third printing, Jakarta: PT Rineka Cipta

Patriani, *Abdominalis fever*. URL:http://asuhan-Nursingpatriani.blogspot.com.2008. Accessed May 26, 2020.

Primatmojo, Djanoe. 2017. *National Campaign to Wash Hands with Soap*. Jakarta Profile of the Jeneponto Regency Health Office 2020.*Report on the incidence of Typhus Abdominalis*. If, 2020.

Katobu Health Center, *Report on the Incidence of Typhus Abdominalis.* If, 2020.

Rizal, *The Relationship of Several Factors with the Incidence of Typhoid Fever at the Muna Regency General Hospital*, Undergraduate Thesis, Unpublished, STIKES MW, Kendari, 2019.