

NASKAH PUBLIKASI (MANUSCRIPT)

**HUBUNGAN TINGKAT PENGETAHUAN DAN PERILAKU MASYARAKAT
TERHADAP PENERAPAN *WATER, SANITATION AND HYGIENE* (WASH)
PADA MASYARAKAT BANTARAN SUNGAI KARANG MUMUS
KECAMATAN SAMARINDA KOTA**

***RELATIONSHIP BETWEEN LEVEL KNOWLEDGE AND BEHAVIOR OF
WATER, SANITATION AND HYGIENE (WASH) APPLICATION IN
THE COMMUNITIES ON THE KARANG MUMUS RIVER
SAMARINDA DISTRICT AREA***

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FAKULTAS KESEHATAN MASYARAKAT
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Hubungan Tingkat Pengetahuan dan Perilaku Masyarakat Terhadap Penerapan *Water, Sanitation and Hygiene (WASH)* pada Masyarakat Bantaran Sungai Karang Mumus Kecamatan Samarinda Kota

Relationship Between Level Knowledge and Behavior of Water, Sanitation and Hygiene (WASH) Application in the Communities on the Karang Mumus River Samarinda District Area

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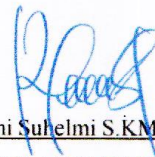
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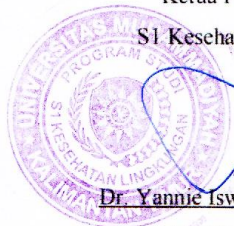
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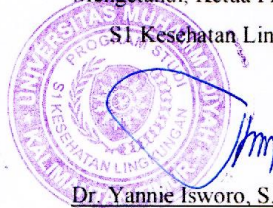


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RELATIONSHIP LEVEL KNOWLEDGE AND BEHAVIOR OF WATER, SANITATION, AND HYGIENE (WASH) IN THE COMMUNITIES ALONG THE KARANG MUMUS RIVERSIDE

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ABSTRACT

Background: Only 20% of households lack access to soap and water facilities for handwashing at home. A recent study indicates that nearly 70% of 20,000 household drinking water sources tested in Indonesia are contaminated with fecal waste, which is also a leading cause of diarrhea and infant mortality. The implementation of Water, Sanitation, and Hygiene (WASH) practices stands as a tangible step in transforming community behavior and aligns with the clean and healthy living patterns.

Materials and Methods: This study employed a cross-sectional study design with the target population being all households in Sungai Pinang Luar Subdistrict, Samarinda Kota. The sample size consisted of 90 households, selected using the Stratified Random Sampling.

Result: The results of univariate analysis revealed that the majority of the community had a moderate level of knowledge at 50%, while the behavior of the community fell into the low category at 54%, and the application of WASH was also categorized as low at 78%. The bivariate analysis results conducted on the relationship between knowledge and WASH application yielded a p-value of 0.880, while for behavior and WASH application, the obtained p-value was 0.916.

Conclusion: The test results indicate that there is no correlation between the level of knowledge and behavior towards the implementation of WASH among the communities living along the Karang Mumus River banks in the Samarinda Kota Subdistrict. It is hoped that the community can enhance their knowledge, behavior, and pay more attention to cleanliness as well as the implementation of WASH in their daily lives.

Keywords : Behavior, Communities, Knowledge, Riverside, WASH

1.0 Introduction

Although Indonesia has made progress in improving the quality of basic sanitation, less than 8% of households have a septic tank and clean it regularly at least every five years. Consequently, feces are not properly disposed of, leading to contamination of the surrounding environment and water sources (1). Based on data collected up to October 2020, only one city in Indonesia, D.I. Yogyakarta, has been declared Open Defecation Free (ODF). Meanwhile, access to proper sanitation facilities in Indonesia reached 79.12% as of October. Furthermore, only 20% of households lack access to handwashing facilities with soap at their homes (2). From a study conducted among the communities along the Tapajós River, Brazil, it was found that the residents in that area use water from artesian wells (68.8%), and 51.8% admitted to not treating the water at all (3). Only 11.8% of households have a safe treated water supply route. In a recent study, approximately 70% of the 20,000 household drinking water sources tested in Indonesia were found to be contaminated with fecal matter, which is also the leading cause of diarrhea, the main contributor to child mortality (4). The household drinking water quality survey by the Ministry of Health in 2020 indicated that 7 out of 10 households in Indonesia use drinking water containing *Escherichia coli* (E-coli) microorganisms for consumption. The study revealed that 31% of households in Indonesia consume refillable bottled water, 15.9% use water from protected dug wells, and 14.1% obtain water from drilled wells or pumps. Approximately 10% of households lack access to safe drinking water (2).

Water, Sanitation, and Hygiene (WASH) is a joint monitoring program by the World Health Organization (WHO) and the United Nations International Children's Emergency Fund (UNICEF) aimed at achieving the targets and indicators of Sustainable Development Goal 6 (SDG6). The goal is to ensure that communities achieve universal access to clean water and sanitation by the year 2030 (Indeks WASH, 2021). Poor WASH services can undermine the healthcare system, jeopardize health security, and burden the economy. The implementation of WASH, including adequate access to clean water, proper sanitation, and appropriate hygiene practices, significantly contributes to improving public health, reducing disease risks, and enhancing environmental quality (WHO, 2020).

The implementation of WASH within the community represents a novel approach and effort that can alter societal behavior and aligns with clean and healthy living patterns (6). The implementation of WASH also serves as the beginning of infection prevention, leading to the improvement and maintenance of mental well-being and social welfare (7). The provision of clean water, sanitation, and hygiene is one of the crucial behaviors for public health. Riverbanks are one of the areas vulnerable to sanitation and hygiene issues. The behavior of communities living along riverbanks contributes to river pollution, which can lead to flooding and long-term harm to various stakeholders. This not only affects the environment, but also has significant implications for the health of the local population in the area (8). The environmental health conditions of people living along the riverbanks are very poor, according to WHO standards, due to the lack of adequate sanitation facilities related to water management and solid and liquid waste disposal, compounded by the habit of people disposing of waste directly into the river (9). Sanitation practices among riverbank communities are still inadequate, especially regarding the disposal of waste into the river (10).

The research conducted by Peny Setyowati and Muzaki in 2021 stated that a portion of the community residing in the riverbank settlements of Code in Yogyakarta city lacks proper knowledge of sanitation management, resulting in relatively poor settlement quality (11). Furthermore, a study conducted by Renjani Wulan in 2022 stated that there is an influence of knowledge on the implementation of WASH in households. Knowledge about WASH refers to the community's understanding of the practices that need to be carried out to maintain personal hygiene, environmental sanitation, and the use of safe clean water (12). From the initial observations carried out by the researcher in Sungai Pinang Luar Sub-District, Samarinda Kota, concerning conditions of the community residing along the banks of the Karang Mumus River, concerning findings of concern were made. Some individuals within the community engage in activities such as washing clothes, defecating, and bathing in the river, which consequently impacts the water quality of the river. Additionally, those residing along the riverbanks exhibit unhealthy habits and a lack of concern for environmental cleanliness. The behavior of the community in maintaining the river significantly influences the resulting water quality. Undesirable behaviors contribute to the decline in water quality (13). A new challenge for water and sanitation service providers arises when there is no trust built between the service providers and the communities residing around the riverbanks (14). Interventions within the community to improve access to clean water are necessary to facilitate evaluations aimed at assessing optimization in addressing budget, funding, and logistical constraints (15).

Based on the background mentioned above, the researcher is interested in conducting a study related to the Relationship between Community Knowledge and Behavior towards the Implementation of Water, Sanitation, and Hygiene (WASH) among the Communities along the Karang Mumus River in Samarinda Kota Sub-District.

2.0 Materials and Methods

This study uses the design of a cross-sectional study which aims to find out the relationship between the level of knowledge and behavior to the application of Water, Sanitation and Hygiene (WASH) in the community of river carrier Karang Mumus Kelurahan Sungai Pinang Luar Samarinda City Prefecture. Sampling using the method Stratified Random sampling with the population of the entire RT that exists in kelurahan river Pinang Outside Samarinda Town Prefectures. Data analysed using IBM Statistical Package for the Social Sciences (SPSS) version 25, software Windows.

3.0 Result

4.1 Characteristics of Respondents

This study involved 90 respondents; however, due to issues encountered with 5 respondents during the field research, the total number of respondents became 85, with the distribution of characteristics shown in the Table 1.

Table 1. Distribution Frequency of Characteristics Respondents in Karang Mumus Riverside, Samarinda

Characteristic	Criteria	F	%
Gender	Female	42	49,4
	Male	43	50,6
Age	30-39 years	11	13,1
	40-49 years	44	51,7
	50-59 years	25	29,5
	60-69 years	5	5,9
Tertiary Education	Not an elementary school/equivalent graduate	9	10,6
	Finished elementary school	14	16,5
	Finished junior high school	26	30,6
	Finished senior high school	33	38,8
	University	3	3,5
Total		85	100

The table above shows that the characteristics of the respondents predominantly consist of males, with a percentage of 50,6%. In terms of age categories, the majority of respondents fall into the 40-49 age range, accounting for 51,7%, while the smallest percentage is among respondents aged 60-69, which is 5,9%. Regarding their highest educational attainment, the majority of respondents have completed high school (38,8%), while those with a tertiary or academic education have the lowest percentage, at 3,5%.

4.2 Univariate Analysis

The frequency distribution of each variable analyzed in the univariate analysis is presented in the following Table 2.

Table 2. Frequency Distribution of Knowledge, Behavior, and WASH Implementation Level of Communities in Karang Mumus Riverside, Samarinda

Variables	F	%
Level of Knowledge		
Good	17	20
Sufficient	17	20
Insufficient	51	60
Behavior		
Good	24	28,2
Sufficient	48	56,5
Insufficient	13	15,3
WASH Implementation		
Good	11	12,9
Insufficient	74	87,1
Total	85	100

From the table, it can be concluded that the majority of community knowledge falls into the "insufficient" category, accounting for 60%. Community behavior falls into the "sufficient" category, with 56,5%. Meanwhile, the implementation of WASH falls into the "insufficient" category, with 87,1%.

4.3 Bivariate Analysis

3.1.1 The Relationship Between Level of Knowledge and the Implementation of WASH

The relationship between the level of knowledge and the implementation of WASH among the communities along the Karang Mumus River, Samarinda City, is presented in the Table 3.

Table 3. The Relationship Between Level of Knowledge and the Implementation of WASH in Communities in Karang Mumus Riverside, Samarinda

Level of Knowledge	WASH Implementation				Total		<i>p-value</i>
	Good		Insufficient		F	%	
	F	%	F	%			
Good	2	2,4	15	17,6	17	20	0,966
Sufficient	2	2,4	15	17,6	17	20	
Insufficient	7	8,2	44	51,8	51	60	
Total	11	12,9	74	87,1	85	100	

Based on the chi-square test results in the table above, between the level of knowledge and the implementation of WASH in the community, a p-value of 0,966 was obtained, which is $> 0,05$. This means that there is no significant relationship between the level of knowledge and the implementation of WASH among the communities along the Karang Mumus River, Samarinda City.

3.1.2 The Relationship Between Behavior and the Implementation of WASH

The relationship between behavior and the implementation of WASH in the community along the Karang Mumus River, Samarinda City District, is presented in the following Table 4.

Table 4. The Relationship Between Behavior and the Implementation of WASH in Communities in Karang Mumus Riverside, Samarinda

Behavior	WASH Implementation				Total		<i>p-value</i>
	Good		Insufficient		F	%	
	F	%	F	%			
Good	3	3,5	21	24,7	24	30	0,960
Sufficient	6	7,1	42	49,4	48	55,6	
Insufficient	2	2,4	11	12,9	13	14,4	
Total	11	12,9	74	87,1	85	100	

Based on the chi-square test results in the table above, between the level of knowledge and the implementation of WASH in the community, a p-value of $0,960 > 0,05$ was obtained, which means

that there is no significant relationship between the level of knowledge and the implementation of WASH in the community along the Karang Mumus River, Samarinda.

4.0 Discussion

4.1 Level of Knowledge

In this study, the knowledge of the community was measured with a questionnaire containing 10 questions related to the application of WASH. Based on the results of the univariate test, the level of knowledge of society of the river of Karang Mumus and the city of Samarinda indicated that the majority of the knowledge level of the society belongs to the category of less with a percentage of 60%. Opinions from Nurhasim (2013), factors that influence knowledge include 2, that is, internal factors that include age, experience, intelligence, and gender, while the external factors include education, employment, social and cultural and economic, environment and information received. If you look at the characteristic table, the respondents show that the majority of the population has ages ranging from 40 to 49 with 51.7% and the most recent level of education is SLTA graduation of 38.8%.

Of the 10 questions available on the questionnaire sheet, the majority of people who answered incorrectly were in questionnaires number 3, 6 and 10. Questionnaire number 3 that contained questions related to the conditions to be met in the quality of clean water the vast majority answered wrong 54.1% and respondents answered correctly only 45.9%. In questionnaire number 6 containing questions relating to the location of the waste disposal site the large majority replied wrong 61.2% and replied correctly approximately 38.8%.

In the questionnaire number 10, which contained questions related to 6 correct hand washing steps, the majority answered wrong about 69.4% and that answered correctly only 30.4%. This indicates that most respondents behaved badly when washing hands. Respondents who behaved poorly reflected that respondents did not understand well about Hand Washing With Soap (CTPS). The statement is supported by the low percentage of people living in the Mumus Coral River who have a sink with soap to wash their hands at home by 56.5 per cent. CTPS habits are healthy lifestyle behaviors and have an impact on individual health.

4.2 Behavior

To measure public behavior in this study use a sheet containing 10 statements with answers scale Highly agree (SS), Agree (S), Disagree (TS), and Highly disagree (STS). According to the univariate trial on table 2 related to the behavior of the community of the river of the Karang Mumus district of Samarinda City showed that the majority of the behaviour of the society belongs to the category sufficient with a percentage of 56.5% and that falls into the category less than about 15.3%.

On the behavioural statements listed in the observation sheet based on the frequency of replies from respondents, the majority of the respondents were unanimously agreed with the statement that every home should have a family bath (40%), that bathing using river water would cause dermatitis (45,9%), and that washing hands using soap before and after meals/BAB (42.4%). On the statement of negative behaviour, most respondents expressed strong disagreement with the

claim that contaminated/contaminated water is safe for consumption (37.6%), that garbage is disposed of in rivers (38.8%), that kitchen waste water is used and that laundry is discharged directly into rivers (45,9%).

4.3 WASH Implementation

Based on the results of the research that has been obtained, it is known that the application of WASH in the community of the Karang River Mumus District of Samarinda City indicates that the majority have less WASH application with a percentage of 87.1% while the community that falls into the category of good application WASH only about 12.9%. Of the 10 statements available on the observation sheet, the WASH application well done by the community is to have a family shed with a percentage of 96.5%, and disposal of garbage with a percent of 72.9%. Whereas the communities that have the application of WASH are less present in the statements where the water storage is not closed (98.8%), the garbages have no cover (96,5%), do not sort organic and inorganic garments (100%), and stack / hang dirty clothes (83.5%).

From the observations of the researchers during the conduct of research in the field, they found that the people who still use the jambas that directly faces the river and also people who are still using the water of the Mumus Coral River as a daily necessity such as bathing and washing. This will have an impact on river water pollution which will ultimately affect water quality and public health as a whole. The impact also covers the spread of diseases, especially for people who use the water for their daily needs. Besides, this habit also potentially damages river ecosystems and the surrounding environment. Efforts to address these problems require a sustainable approach that includes educating the public on the importance of good sanitation, the provision of hygienic clothes, and the active role of governments and community organizations in building awareness and changing public behaviour towards healthier and more sustainable sanitation practices.

4.4 The Relationship Between Level of Knowledge and the Implementation of WASH

Research has shown a p-value of 0.966, where the value is greater than the alpha. (0,05). This indicates that if there is no relationship between the level of knowledge of the application of WASH by the community of the Coral River Mumus district of Samarinda City. This finding differs from the previous research conducted by Renjani Wulandari, which suggests that there is a relationship between knowledge level of application of the WASH of the household environment with a value of chi-square = $0,000 < 0.05$ (Wulan et al., 2022). The better the knowledge, the better the WASH application that the households will do. The difference in results may be due to the level of education and information obtained by respondents in both studies.

Later, this study also disagreed with the Andika study which found that there was a relationship between the level of knowledge of clean and healthy living behavior in the elderly in Dusun Prangas with the results of the chi-square test $0.044 <$ which is smaller than the alpha value of 0.05. According to the study, most people obtain adequate health-related information from their local health personnel, and that's accurate with their response to the research instrument (16). These differences in results may be due to other factors such as the characteristics of the sample, the location of the study, or the methods used in each study.

4.5 The Relationship Between Behavior and the Implementation of WASH

Based on the results of the research, the p-value value of $0.960 > 0.05$ was obtained so that no relationship was found between the behavior against the application of WASH by the community of the Coral River Mumus District of Samarinda City. The results are inconsistent with the theory described by Green (1980) that a person's behaviour is influenced by supporting factors that include the availability of facilities and supplies such as clean water, hand washing, garbage disposal and others.

The results obtained on the behavioral questionnaire were approved by the majority (70%) of the number 1 questionnaire, which stated that clean water is water used for everyday purposes. However, the observation sheet showed that a large number of people use river water for daily needs as much as 60%. From these results it can be concluded that good behavior does not necessarily affect good deeds. The results of this study are in line with the research carried out by Wati and Ridlo at Kelurahan Rangkah Kota Surabaya which stated that there is no relationship of attitude with healthy living actions. The study showed that the majority of respondents had a positive attitude and understanding regarding clean and healthy living behavior at home, but in fact there are still many respondents who do not apply such PHBS or their application of PHBS is still less (17).

5.0 Conclusion and Recommendation

Based on the results of the research carried out, the conclusion was as follows :

1. The majority of the population has a low level of knowledge, with a percentage of about 60% of the total respondents.
2. Most of the behavior of the society related to the application of WASH is categorized sufficiently, with the percentages of about 55,6% of the overall respondent.
3. WASH application of most of the community is still less with a percent of 86,7% of the totals respondents.
4. The results of Chi-square test showed no relationship found between the knowledge level of application WASH in the community of the River Karang Mumus district of Samarinda City with a p-value of $0.880 > 0.05$.
5. Chi-square test results on behavioral variables against the application of WASH in the community of the Coral River Mumus district of Samarinda City Juka showed no relationship found with the p-value value of $0.916 > 0.05$.

Based on the research findings, we recommend two key actions: First, it is imperative for the general public to elevate their awareness, knowledge, and commitment to hygiene, emphasizing the adoption of Water, Sanitation, and Hygiene (WASH) practices at both household and individual levels. Second, researchers should engage in ongoing and systematic research endeavors, continuously monitoring and evaluating fluctuations in the studied variables concerning respondents over time, ensuring the relevance and accuracy of the collected data.

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Declaration

The authors declare no potential conflict of interest with respect to the research, authorship and publication of this article.

Authors contribution

VP designed the study, drafted and correction manuscript. AB observation, collect and analysis the data, RS and DK review the manuscript. All authors reviewed and commented on subsequent drafts of the manuscript formerly approved the final version of the manuscript.

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