

ENVIRONMENTAL RISK FACTORS IN COASTAL AREA OF WAWATU VILLAGE, MORAMO SUB DISTRICT, NORTH OF SOUTH KONAWE, SOUTHEAST SULAWESI

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ABSTRACT

Aim: This survey study aims to assess and describe environmental risk factors in Wawatu Village, Moramo sub district, North of South Konawe, Southeast Sulawesi.

Methods: There 43 respondents selected using convenience sampling. Data were collected using self-questionnaire and observation sheet, consisting of physical condition dimension, chemical and biological factors. Data were analyzed using descriptive statistics.

Results: Findings show that 77% of respondents had a good water condition, however, 77% of them had no latrines, 93% had no sewerage channel, and 63% no landfills. Some of respondents (28%) disposed of ship waste (28%) and household waste (28%) in the sea. Sadly, 81% of respondents did not defecate in the toilet.

Conclusions: This study provides the evidence that the health environment in Wawatu Village, Moramo sub district, North of South Konawe, Southeast Sulawesi, needs to more attention. Government and Public health workers need to do great efforts in controlling the risk factors, build the health structure, and implement health promotion program in this area.

Key words: Environmental factors, coastal area, risks, Southeast Sulawesi

BACKGROUND

Coastal areas are one area in the environment that is very important to note management of administration, life habitat, and environmental sanitation.^{1,2} Environmental sanitation is one of the priority programs on the international agenda of the Millennium Development Goals (MDGs) aimed at strengthening the

culture of clean and healthy living, preventing the spread of environment-based diseases, improving community capacity, and implementing government policies to improve access to drinking water and basic sanitation on an ongoing basis in achieving the MDGs 2015.³

Indonesia is strategically located, namely in the tropics, flanked by two

continents and two oceans. This strategic location makes Indonesia as a country rich in natural resources, especially coastal. Marine tourism, pond farming, mining and settlement are some examples of high value economic potential. Coastal areas become an attraction for all parties to manage and use it in terms of economic and politics.

Based on Health Act No. 36 of 2009 Chapter XI, the government stated that environmental health efforts are aimed at realizing the quality of a healthy environment, whether physical, chemical, biological, and social that enables everyone to achieve health status as high as possible. Healthy environments include residential neighborhoods, workplaces, recreation areas, and public places and facilities free of wastewater, solids, garbage, hazardous chemicals, contaminated water and air.⁴ The objective of this research was to describe environmental factors such as physical, chemical, and biological factors in coastal areas of Wawatu village.

METHODS

This was a survey study with a descriptive approach to describe the environmental factors in Wawatu Village, Moramo sub district, North of South Konawe, Southeast Sulawesi. With the overall sample size in this study was 43 respondents selected using convenience sampling. Data were collected using questionnaire and observation sheet developed by the researcher, consisting of physical condition, chemical and biological factors. The researcher has confirmed that all respondents have obtained an appropriate informed consent. Data were analyzed using descriptive statistics.

RESULTS

Table 1 shows that 77% of the physical condition of water was good, however, 77% of respondents had no latrines, 93% had no sewerage channel, and 63% had no landfills.

Table 1. Distribution of Physical Conditions in Wawatu Village, North Moramo District, South Konawe Regency, Southeast Sulawesi

Physical Conditions	Respondents	
	f	%
Physical condition of water (smelling, feeling, color)		
Yes	10	23
No	33	77
Ownership of latrines		
Yes	10	23
No	33	77
Ownership of sewerage channel		
Yes	3	7
No	40	93
Ownership of landfills		
Yes	16	37
No	27	63
Total	43	100

Table 2. Chemical Factors in Wawatu Village, North Moramo District, South Konawe Regency, Southeast Sulawesi

Chemical factor	Respondents	
	f	%
The habit of catching fish in the sea		
Yes	12	28
No	31	72
Disposal of ship wastes at sea		
Yes	12	28
No	31	72
Disposal of household waste at sea		
Yes	16	37
No	27	63
Total	43	100

Table 2 shows that 28% of respondents had a habit of catching fish in the sea, 28% of

them disposed of ship waste at sea, and 37% disposed of household waste at sea.

Table 3. Distribution of Biological Factors in Wawatu Village District of North Moramo Regency of South Konawe Southeast Sulawesi

Biological Factors	Respondent	
	f	%
Hand washing before and after eating		
Yes	32	74
No	11	26
Hand washing after defecation		
Yes	40	93
No	3	7
Bath one day (> 1 time)		
Yes	35	81
No	8	19
Defecation in the toilet		
Yes	8	19
No	35	81
Water cooking habits		
Yes	33	77
No	10	23
Keep nail cleaning (every 2 weeks)		
Yes	34	91
No	9	9
Habits of wearing footwear outside the house		
Yes	40	93
No	3	7
Total	43	100

Table 3 shows that the majority of respondents had a good habit of hand washing before and after eating (74%), after defecation (93%), habit of wearing footwear outside the house (93%), cooking

water (77%), bathing more than one time (81%), and keep nail cleaning (91%). However, 81% of respondents did not defecate in the toilet.

DISCUSSION

This study described the environmental factors in terms of physical condition of water, chemical and biological factors. Findings showed that the physical condition of the water source in Wawatu village is quite good, but the problem is the ownership of latrines, sewerage channel, and landfills. The absence or shortage of proper sanitation and poor waste management are the main causes of the disease. Microbial contamination and water-borne diseases are caused by improper sanitation systems in some developing countries.⁵

On the other hand, this study also described that some respondents still had a habit of catching fish in the sea, disposing ship and household waste at sea, which potentially pollute the coastal and marine environment.⁶ In addition, fishing activities such as water transport and disposal from shipyards contribute to the increase in metal content.⁷ The heavy metal content that accumulates in seawater and sediment will enter into the food chain system and affect the life of the organism.⁸

Waste is one of the main forces driving the destruction of coral reefs around the world.⁹ Waste contains many types of disease-causing organisms including *E-coli*, which can cause various health problems such as diarrhea, severe abdominal pain, and vomiting. Pollution of waste also affects the ecosystem. Furthermore, waste contains high levels of nutrients such as phosphates and nitrates that can affect rivers, lakes and seas through eutrophication caused by enrichment of nutrients.⁹

However, findings also showed that the majority of respondents had a good habit of hand washing before and after eating, after defecation, habit of wearing footwear outside the house, cooking water, bathing more than one time, and keep nail

cleaning. These habits need to be maintained. Research found that hand washing with soap could reduce morbidity diarrhea in the range 30% to 47%, even higher than diarrhea reduction by providing clean water (27%).¹⁰ Hand washing is done not only when our hands are dirty, but also when preparing food, before meals and feeding the child, and after defecating.¹¹

But, one of the major concerns in the findings of the study is defecation in toilet. In fact, 81% of respondents did not defecate in the toilet, which tells the risk factors are identified. A case-control study of risk factors for diarrhea in children under three years in Burkina Faso reported that improper disposal of feces was associated with a 50% of the increase of the risk of diarrhea morbidity compared with disposal in latrines.¹⁰ Similar study has also shown that failure to dispose of feces properly was associated with an increased incidence of diarrheal diseases of 30-50% in children.¹²

CONCLUSION

This study provides the evidence that the health environment in Wawatu Village, Moramo sub district, North of South Konawe, Southeast Sulawesi, needs to be improved, especially in terms of the structure (ownership of latrines, sewerage channels, and landfills); and process (the habits of disposal of wastes in the sea, defecation in toilet). Government and Public health workers need to pay more attention in controlling the risk factors and build the health structure, and implement health promotion program in this area.

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