Tropical Health and Medical Research
Vol. 6, No. 2, August 2024, pp. 45-51
ISSN (Online): 2684-740X
Journal homepage: https://tropicalhealthandmedicalresearch.com

Environmental Health Risk Assessment in Tabing Banda Gadang Subdistrict, Padang City

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Abstract: Sanitation problems in Indonesia still involve deviant social behavior, namely defecation habits anywhere. According to World Health Organization, around 2.5 billion people worldwide do not have access to proper sanitation facilities. Indonesia itself is ranked second after India, with a high number of people still defecating in the open; this is due to people's habits, which are very difficult to change because they have been inherited. The use of surface water sources, namely river water, with physical water quality that does not meet requirements, the absence of facilities for wastewater disposal, and the absence of household waste management can cause health hazards to the environment. The research aims to know the risky health environment in the sub-district Tabing Banda Gadang, Padang City. Study method This Quantitative nature descriptive analytic with approach Studies Evaluation Risk Health Environment is a participatory study to understand the condition of sanitation and hygiene facilities and community behaviors at the household scale, the results of data processing and analysis that can describe the determination of risk areas from each region to the village/sub-district level. The results of the study found that the risk areas were Water Sources with results of Not enough risk (value 28), Domestic Wastewater with Medium risk (value 68), Medium Risk Waste (value 51), high risk of waterlogging (value 58) and Clean and Healthy Living Behavior is not enough risky (value 32) it can be concluded that the sanitation risk index of Tabing Banda Gadang Village is included in the Current Risk with a value of 237. Tabing Banda Gadang Village is at high risk of waterlogging, so it is recommended that the Village facilitate the construction of drainage by coordinating with the Department of Housing and Public Works to resolve the waterlogging problem.
Keywords: Environmental health risk assessment; index risk sanitation; risk area.

INTRODUCTION

The sanitation problem in Indonesia is caused by the deviant behavior of society, namely the habit of defecating in random places. According to WHO, around 2.5 billion people worldwide do not have access to proper sanitation facilities. Indonesia itself is ranked second after India, with a high number of people who still defecate. Carelessly, this is due to the community's habits, which are very difficult to change because they have been inherited. The use of surface water sources, namely river water, with physical water quality that does not meet the requirements, the absence of facilities for Wastewater disposal, and the absence of household waste management can cause health hazards to the environment. Sanitation Risk is a decline in the quality of life, health, buildings,

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and/or the environment due to low access to sanitation sector services and sanitation hygiene behavior[1].

Environmental Health Risk Assessment (EHRA) study is a participatory study in the Regency/City to understand the condition of sanitation and hygiene facilities and community behaviors at the household level. The results of data processing and analysis can describe the determination of risk areas from each Regency/City area to the village/sub-district level, which is then used to prepare and update the Regency/City Sanitation Strategy as a material for policy review and advocacy towards proper and safe total sanitation health which leads to increasing the level of community health. The sanitation components that are the object of the study include domestic liquid waste, garbage, and environmental drainage, as well as hygiene and sanitation behavior. The contents of the questions in the questionnaire and observation sheets have been directed by the five pillars of Community-Based Total Sanitation[2].

Community-based total Sanitation, abbreviated as CBTS, is an approach to changing hygienic and sanitary behavior through community empowerment using triggering. The CTBS pillars are hygienic and sanitary behaviors used as a reference in implementing Community-Based Total Sanitation; the pillars consist of Behavior 1). Stop Defecating Carelessly, 2). Washing Hands with Soap, 3). Management of drinking water and household food, 4). Securing household waste, and 5). Securing household liquid waste, where these 5 CTBS pillars are intended to break the disease transmission and poisoning chain[3]

Results research by Lestari NKS et al. 2021 in the District Abiansemal Regency Badung got Index Risk Sanitation (SRI) risk area category low / less at risk (1 village) with value/score 142, risk area category high (11 villages) with value/score 161 and risk area category medium (6 villages) with value/score 149[4]. Firdaus SF et al. 2021 state evaluation of risk health environment values Index Risk Health Environment Ward Wirolegi as much as 116 with category risk very tall And Ward Source of the world as much as 57 with category risk low. From the average of both Index Risk sanitation, the Subdistrict Source of the world's SRI value is 87, with a tall category risk. Aspect risk health environment becomes the main problem of aspect behavior sorting waste, facilities, waste, water disposal, And means disposal of rubbish[5]; based on previous research, the results of the Sanitation Risk Index and sanitation problems vary in each region. Therefore, conducting Environmental Health Risk Evaluation research in the other areas is important.

In achieving the sanitation access target in the 2020-2024 medium-term development plan, it is necessary to Evaluate the Risk Health Environment to get a picture of the risk area at the sub-district level, which will later be the basis for intervention in sanitation development. Sanitation risk is interpreted as a decline in quality of life, health, and environment due to poor hygiene and lack of access to sanitation services and facilities[6].

Tabing Banda Gadang Village is a tourist destination in Padang City. It has a very complex impact, especially on the environmental health aspect and the ongoing occurrence of diseases in the community based on the environment. The Mayor of Padang designated Tabing Banda Gadang Village as a Thematic Historical Tourism Village, namely the Japanese Hole[7].

From this description, it is important to research Environmental Health Risk Assessment in Tabing Banda Gadang Village, Nanggalo District, Padang City, which aims to assess environmental health risks. Namely the risk area And Index risk Sanitation.

MATERIALS AND METHODS

This study is a quantitative study to assess environmental health risks; the research design used is Descriptive Analytical with an EHRA Study approach. with observation and interview methods. The study will be implemented in Tabing Banda Gadang Village, Nanggalo District, Padang City, and the research time will be May - October 2024. The population in this study is Tabing Banda Gadang Village, with a population of 5580 people or 1477 Heads of Families[8]. A sample is part of a population, where the sample members are members selected from the population. Therefore, sampling is carried out in the population area that has been determined as the target area of the study. Respondents/Samples of the EHRA Study are expected to be able to represent/represent the nature of the population. Represented by him. Determining the Neighborhood Association of the Study Area is done by assessing the number of neighborhood associations. Neighbors in each Village/Sub-district as the Study Area. The primary sampling unit in the EHRA household study (household stairs selected using random sampling In the EHRA study, the minimum number of samples (respondents) per village/sub-district is 40 respondents, and the minimum number of samples (respondents) per RT is five respondents. Respondents in the EHRA study were mothers or daughters who were married and aged between 18 and 60 years.

The data collection technique used a questionnaire and form issued by the Directorate of Environmental Health, Ministry of Health of the Republic of Indonesia, in 2021. Data processing is carried out in several stages: editing, coding, data entry, and tabulating. Editing is the stage of checking data that has been successfully collected. The editing stage aims to correct errors and deficiencies in data in field notes. Coding is the process of giving certain initials to each data. These initials are codes in the form of numbers, letters, or a combination thereof to distinguish data identity. Data entry is needed to enter the collected data into one database for further processing. Tabulating is the stage of compiling data in tables according to analysis needs.

Data analysis was conducted descriptively and univariately using the EHRA approach. Determination of the Sanitation Risk Index (SRI) was obtained in several stages as follows:

1. SRI is calculated by dividing the hazard sources by the percentage of residents per study area.The equation used is as follows:

$$SRI = \frac{\text{Source of Danger}}{\text{Population / regional study}} \quad X\ 100\%$$

2. Calculation of Environmental Health Risk Index A weight of 100% is given to each source of hazard and opportunity for exposure to hazard, then divided according to the number of components in the hazard variable and opportunity for risk exposure. Calculation= Risk Index Percentage (%) x Weight Per Hazard Source (%)
3. Cumulative Environmental Health Risk Index is determined by adding the sanitation risk index from the second stage weighting results. The summation results determine

the risk category using the maximum and minimum total risk index calculation intervals. After obtaining the interval, then choose the lower and upper limits.

Interval = Max Index Value - Min Index Value
Number of risk categories

4. Determining Risk Area Categories
   Category determination is based on SRI results matched with the upper and lower limit ranges. Risk Area Description: Less risky: 1, Medium Risk: 2, High Risk: 3, Very High Risk: 4

Study This is Also Already approved and recommended by the Head Service Investment and Service Integrated One Door[9]. This research has complied with the rules of the Helsinki Declaration and does not violate the principles of research ethics. All respondents' identities are kept confidential, and no dangerous incidents have occurred to respondents during the research.

RESULTS AND DISCUSSION

From the assessment risk health environment in the Tabing Banda Gadang Village, Nanggalo District, Padang City can be found indicator assessment, risk areas, and index risk sanitation in the table under this:

Table 1. Indicators Evaluation Sanitation Risk Index

Information	Water Sources		Waste water Domestic		Garbage		Puddle		Behavior Life Clean and Healthy		Ward Tabing Banda Gadang	
Total Index Risk Maximum	74		100		88		100		70		432	
Total Index Minimum Risk	14		42		24		8		8		96	
Interval (Mak -Min) /4	15		14.5		16		23		15.5		84	
Risk Area Category	BB	BA	BB	BA	BB	BA	BB	BA	BB	BA	BB	BA
Not Enough at Risk	14	29	42	56	24	40	8	31	8	23.5	96	180
At Risk Currently	30	45	57	71	41	57	32	55	24	39.5	181	265
Risk Tall	46	61	72	86	58	74	56	79	40	55.5	266	350
Risk Very Tall	62	74	87	100	75	88	80	100	56	70	351	432

Note: BB: Lower Limit, BA: Upper Limit

From Table 1 it is obtained risk area category on each indicator assessment, for not enough at risk water source boundary value 14-29, waste water domestic: 42-56,

garbage: 24-40, waterlogging: 8-31, behavior life clean and healthy: 8-23.5 while For Subdistrict 96-180, at risk currently for water source boundary value 30-45, waste water domestic: 57-71, garbage: 41-57, waterlogging: 31-55, behavior life clean and healthy: 24-39.5 while for subdistrict 181-265, risk tall for water source boundary value 46-61, waste water domestic: 72-86, garbage: 58-74, waterlogging: 56-79, behavior life clean and healthy: 40-55.5 while for subdistrict 266-350, risk very tall for water source boundary value 62-74, waste water domestic: 87-100, garbage: 75-88, waterlogging: 80-100, behavior life clean and healthy: 56-70 while for subdistrict 351-432.

Table 2. Areas at Risk and Sanitation Risk Index Ward Tabing Banda Gadang

No	Risk area	SRI Results
1	Water sources	28
2	Wastewater Domestic	68
3	Garbage	51
4	Puddle	58
5	Behavior Life Clean And Healthy	32
6	VILLAGE SRI VALUE	237
	Conversion To Number Score Risk Sanitation	
1	Water sources	1 (Less Risk)
2	Wastewater Domestic	2 (Medium Risk)
3	Garbage	2 (Medium Risk)
4	Puddle	3 (High Risk)
5	Behavior Life Clean And Healthy	2 (Medium Risk)
6	VILLAGE SRI VALUE	2 (Medium Risk)

From Table 2, we get the risk areas on puddles of water with a value of 58, the risk area currently on wastewater domestic with a score of 68, and waste and behavior life clean and healthy with a value of 32. In contrast, the less risky area is water source, which has a value of 28, and for the mark, index risk sanitation ward is currently at risk with a value of 237. Result study This is different from the study of Yulistya E et al. 2021[10] And Sunik et al. 2018[11]; Yulistya E's research only conveyed risk areas, namely 73% of respondents did not have private toilets, and 47% of respondents did not have wastewater management facilities and 100% of respondents carried out hygienic and sanitation behavior, namely by washing hands with soap. Research Sunik also only conveyed risk areas, namely sanitation facilities and behavior of residents regarding waste, are still at risk to health while the sanitation risk index is not assessed; in our study, the sanitation risk index was calculated, namely puddles with a value of 58, water domestic waste with a value of 68, garbage and clean and healthy living behavior with a value of 32, water sources with a value of 28.

Research by Lestari NKS et al. 2022[12], Maliga I et al. 2020[13], Susilawaty A et al. 2018[14], and Alfat W et al. 2021[15] already there is evaluated index risk sanitation. Lestari NKS research results in Very High Risk with a value of 211 in Wanasari Baleran village with a risk area for puddles and domestic wastewater; Lestari NKS research is in line with our study, both places are at risk for puddles.

Maliga I research has very high-risk results, with a value of 281 in Kukin village, which is a risk area for clean and healthy living behavior, garbage, and wastewater; the results of this study are different from our risk areas. Susilawaty A's research with very high-risk results with a value of 191 in neighborhood association 1 with a risk area of garbage, wastewater, and clean and healthy living behavior, the results of this study are different from our risk area. Alfat W's research had very high-risk results in Neighborhood Association 1, with a value of 222, and Neighborhood Association 5, with 223, the risk area in Clean and Healthy Living Behavior and wastewater. The results of the study are different from those of our risk area. It can be concluded that the results of each region's risk area and sanitation risk index are different.

Limitations in the study This only evaluates index-risk sanitation in one ward. It is recommended that all subdistricts be assessed to reflect the condition-risk sanitation of Padang City.

CONCLUSION

Based on the evaluation of the risk health environment in the Subdistrict Tabing Banda Gadang, a risk area is puddles of water with a value of 58, a risk area currently is wastewater domestic with a score of 68, waste and behavior life clean and healthy with a value of 32. in contrast, the less risky area is water source, which has a value of 28, and for the mark, index risk sanitation ward is currently at risk with a value of 237. because of the risk of waterlogging, we highly recommend that the parties facilitate drainage and coordinate with service settlement and work. It is common for puddles of water always to become problem flow fluently.

ACKNOWLEDGEMENT

We express our gratitude to the mother director, head of center, study, and community service, chairman of major health and environment, polytechnic padang health, village head, secretary village head, Tabing Banda Gadang, as well as the ladies and gentlemen who have contributed to study This.

CONFLICT OF INTEREST

The authors declare that there are no conflicts of interest regarding the publication of this paper.

FUNDING

The source of funding comes from DIPA Polytechnic Padang Health.

REFERENCES

1. Wahyudi A, Zaman C. Environmental Health Risk Assessment Using the Environmental Health Risk Assessment (EHRA) Approach in Kertapati Village. J Medical Sciences and Health. 2021;8(3):310–5.
2. Direktur Kesehatan Lingkungan Kementerian Kesehatan. Panduan Praktis Pelaksanaan EHRA (Environmental Health Risk Assessment). Kementerian Kesehatan. 2021. 1–133 p.
3. Menteri Kesehatan. Peraturan Menteri Kesehatan nomor 3 tentang Sanitasi Total Berbasis Masyarakat. 2014 p. 40.

4. Ketut N, Lestari S, Made I, Wirawan A, Januraga P,. Environmental Health Risk Assessment of Abiansemal District, Badung Regency Master of Environmental Science Study Program, Udayana University, Badung Regency. 2021;15(2):191–203.
5. Firdaus SF, Ma'rufi I, Ellyke E. Environmental Health Risk Assessment in Sumbersari District, Jember Regency. J Environ Health Indones. 2022;21(3):311–9.
6. Menteri Dalam Negeri. Peraturan Menteri Dalam Negeri Republik Indonesia Nomor 87 Tahun 2022 Tentang Percepatan Layanan Sanitasi Berkelanjutan Di Daerah Tahun 2022-2024. 2022;(1217):1–24. https://peraturan.go.id/files/bn1217-2022.pdf
7. Walikota Padang. Keputusan Walikota Padang Nomor 286 Tentang Kampung Tematik. 2021: 1-3
8. Kepala BPS Kota Padang. Kecamatan Nanggalo Dalam Angka 2022. 2022; 1-130
9. Kepala Dinas PMPTSP. Rekomendasi Penelitian Dinas Penanaman Modal Dan Pelayanan Terpadu Satu Pintu Kota Padang. 2024 p. 1.
10. Yulistya E, Lusia M, Sari EK. Environmental Health Risk Assessment (EHRA) in Batu Putih Village, West Baturaja District, Ogan Komering Ulu Regency. J Deform. 2021;6(2):117.
11. Sunik, Kristianto D, Khamelda L. Environmental Health Risk Assessment - EHRA (Facilities and Behavior of Residents of Karanglo Indah Housing) towards Household Waste. Reka Buana: Scientific Journal of Civil Engineering and Chemical Engineering,. 2018;3(2):98–107.
12. Lestari NKS, Astuti NPW, Purnawan IN. Sanitation Risk Index of Wanasari Village, Tabanan District, Tabanan Regency. J Technol and Manaj. 2022;3(2):59–68.
13. Maliga I, Darmin D. Analysis of Environmental Health Risk Assessment Using the Environmental Health Risk Assessment (EHRA) Approach in North Moyo District. Media Ilm Tek Lingkung. 2020;5(1):16–26.
14. Susilawaty A, Lagu AMH, Basri S, Maisari U, Amansyah M. Environmental Sanitation Risk Assessment on Balang Lompo Island, Mattiro Sompe Village, Liukang Tupabbiring District, Pangkajene and Islands Regency. Al-sihah Public Heal Sci J. 2018;10(2):204–15.
15. Alfat W, Susilawaty A, Mallapiang F, Amansyah M, Basri S. Environmental health risk assessment of personal hygiene and sanitation on skin disease complaints on Badi Island, Pangkep Regency. Hig J Kesehat Enlkung. 2020;6(1):42–51. http://garuda.ristekbrin.go.id/documents/detail/1718426