

Clean and healthy living behavior of Baubau city: A geographic information system approach

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Abstract

Background: The main determinant of the degree of public health apart from environmental conditions is the behavior of the community. Riskesda 2007 data shows that only 38.7% of households that have practiced clean and healthy living behavior have practiced clean and healthy living behavior. In Baubau City, people still wash their hands and defecate improperly. So, they are still at risk of contracting infectious diseases.

Objective: This study aims to determine the risk areas for clean and healthy living behavior in Baubau City.

Methods: This type of research is an observational study with a Geographic Information System (GIS) approach. The number of respondents was 1.720 in 43 villages. Each village was represented by 40 respondents with the sampling method in each village namely simple random sampling.

Results: Based on the calculation results obtained a maximum total risk index of 38 and a minimum total risk index of 9. to obtain an interval value is 7. Villages with clean and healthy living behavior Very high risk in 3 villages. High risk in 13 villages. Medium risk in 21 villages and less risky in 6 villages.

Conclusion: Most of the villages in Baubau City are included in clean and healthy living behavior at medium risk.

Keywords: Behavior; Living; Clean; Healthy; Risk

1. Introduction

Environmental conditions. Community behavior. Health services. And genetics essentially affect the level of public health that is not yet optimal. The main determinant of the degree of public health in addition to environmental conditions is the behavior of the community. Riskesda 2007 data shows that households that have practiced clean and healthy living behavior have only reached 38.7% of households that have implemented clean and healthy living behavior (1).

The behavior of washing hands and defecating properly is part of the indicators for implementing clean and healthy living behavior. Based on the results of Riskesdas 2018. In Indonesia. 49.8% of people wash their hands properly. There are still 50.2% who wash their hands incorrectly. While the habit of defecating properly is 88.2%. There are still 11.8% of people who defecate in an improper way (2).

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The people of Southeast Sulawesi Province who wash their hands properly are still. Namely 42.30% and Baubau City 70.58%. While the habit of defecating correctly in Southeast Sulawesi Province is 87.34% and in Baubau City is 98.40% (3). The data shows that people mainly in Baubau City still wash their hands and defecate improperly. So they are still at risk of contracting infectious diseases. One of the infectious diseases that can be caused by poor clean and healthy living behavior is diarrhea. Based on the results of Riskesdas 2018. The prevalence of diarrheal disease in Baubau City based on diagnoses by health workers (doctors, Nurses, Or midwives) was 6.94%. While based on diagnoses by health workers or symptoms experienced by household members reached 7.38% (3).

The application of clean and healthy living behavior is something that is important and must be done by humans and it would be better if it was made a daily habit. The impression is that clean and healthy living behavior is a simple thing. But there are still many who do not pay attention to how important clean and healthy living behavior is, there are still many people who do not realize that clean and healthy living behavior is very important for themselves. Clean and healthy living behavior is very important when the world is hit by the COVID-19 pandemic. This situation should make us aware of how important clean and healthy living behavior is to prevent the spread of infectious diseases. In addition to themselves. Clean and healthy living behavior also plays a role in maintaining environmental cleanliness. For example not throwing garbage/waste carelessly. The successful implementation of clean and healthy living behavior must also be supported by the provision of sanitation services. Especially the problem of the availability of clean water. The implementation of clean and healthy living behavior will bring many benefits to our health of ourselves. Our families. And the environment around us.

2. Material and methods

This type of research is an observational study with a Geographic Information System (GIS) approach. This research was conducted in March 2021 in Baubau City. Data collection was carried out by household surveys using questionnaires and observation sheets in all 43 villages in Baubau City. Each village was represented by 40 households so 1.720 households became the target of the survey. The sampling method for each village used was simple random sampling.

Recap of research data using the SPSS version 20.2 application. Then an analysis is carried out to determine the level of risk using the interval method. The level of risk is divided into 4 levels. Namely low risk. Medium risk. High risk. And very high risk. The value used to determine the level of risk is the clean and healthy living behavior value which is not good for each variable. Then a percentage calculation is carried out. The percentage value is then taken as the highest and lowest values among all villages/villages and then divided into 4 levels of risk so that the interval value is obtained. The value of this interval will determine the value of 4 levels of risk so that the level of clean and healthy living behavior risk is known for each village that is the target of the survey. The results of this risk level calculation are then processed with the application of the Geographic Information System using Quantum GIS Version 3.26.0. Resulting in a clean and healthy living behavior risk level map with color gradations according to each risk level.

Determination of the level of risk based on variables related to clean and healthy living behavior in the Environmental Health Risk Assessment (EHRA) Study. Namely. The habit of washing hands with soap at five important times. The condition of the latrine walls free from feces. Latrines free from cockroaches and flies. Functioning of closed flushing. Presence of soap in the latrine. Contamination of water storage and handling containers and open defecation (4). The risk areas are then entered into a GIS application which produces a map of the risk areas using color gradations based on the risk level of each village.

3. Results

3.1. Habit of Washing Hands with Soap at Five Important Times

Based on the table. Most of the respondents (72.2%) did not wash their hands at five important times. Only a small proportion (27.8%) practice hand washing at five important times. Namely before eating. After defecating. After washing children. Before managing food. And before performing ablution. There are several sub-districts where all respondents do not wash their hands at five important times. Namely Sukanayo. Waruruma. And Waborobo Villages.

Table 1 Distribution of Respondents based on the Habit of Washing Hands with Soap at Five Important Times in Baubau City in 2021

Code	Village	The habit of Washing Hands with Soap at Five Important Times					
		Yes		No		Total	
		n	%	n	%	n	%
001	Bataraguru	6	15.0	34	85.0	40	100.0
002	Batulo	17	42.5	23	57.5	40	100.0
003	Bukit Wolio Indah	10	25.0	30	75.0	40	100.0
004	Kadolo Katapi	13	32.5	27	67.5	40	100.0
005	Tomba	4	10.0	36	90.0	40	100.0
006	Wale	1	2.5	39	97.5	40	100.0
007	Wangkanapi	16	40.0	24	60.0	40	100.0
008	Bugi	6	15.0	34	85.0	40	100.0
009	Gonda Baru	6	15.0	34	85.0	40	100.0
010	Kaisabu Baru	7	17.5	33	82.5	40	100.0
011	Karya Baru	8	20.0	32	80.0	40	100.0
012	Baadia	4	10.0	36	90.0	40	100.0
013	Lamangga	8	20.0	32	80.0	40	100.0
014	Melai	10	25.0	30	75.0	40	100.0
015	Tanganapada	26	65.0	14	35.0	40	100.0
016	Wajo	8	20.0	32	80.0	40	100.0
017	Kalia-Lia	12	30.0	28	70.0	40	100.0
018	Kantalai	11	27.5	29	72.5	40	100.0
019	Kolese	15	37.5	25	62.5	40	100.0
020	Lowu-Lowu	15	37.5	25	62.5	40	100.0
021	Palabusa	12	30.0	28	70.0	40	100.0
022	Kadolo	28	70.0	12	30.0	40	100.0
023	Kadolomoko	11	27.5	29	72.5	40	100.0
024	Lakologou	12	30.0	28	70.0	40	100.0
025	Liwuto	1	2.5	39	97.5	40	100.0
026	Sukanayo	0	0.0	40	100.0	40	100.0
027	Waruruma	0	0.0	40	100.0	40	100.0
028	Kampeonaho	20	50.0	20	50.0	40	100.0
029	Liabuku	11	27.5	29	72.5	40	100.0
030	Ngkari-Ngkari	19	47.5	21	52.5	40	100.0
031	Tampuna	12	30.0	28	70.0	40	100.0
032	Waliabuku	22	55.0	18	45.0	40	100.0
033	Katobengke	4	10.0	36	90.0	40	100.0

034	Labalawa	21	52.5	19	47.5	40	100.0
035	Lipu	1	2.5	39	97.5	40	100.0
036	Sulaa	19	47.5	21	52.5	40	100.0
037	Waborobo	0	0.0	40	100.0	40	100.0
038	Bone-Bone	15	37.5	25	62.5	40	100.0
039	Kaobula	17	42.5	23	57.5	40	100.0
040	Lanto	9	22.5	31	77.5	40	100.0
041	Nganganaumala	14	35.0	26	65.0	40	100.0
042	Tarafu	14	35.0	26	65.0	40	100.0
043	Wameo	14	35.0	26	65.0	40	100.0
	Baubau City	479	27.8	1.241	72.2	1.720	100.0

Sourcer: Primary Data. 2021

3.2. The state of the toilet wall is free from feces

Table 2 Distribution of Respondents based on the State of the Toilet Walls Free of Feces in Baubau City in 2021

Code	Village	The State of the Toilet Walls Free of Feces					
		Yes		No		Total	
		n	%	n	%	n	%
001	Bataraguru	36	90.0	4	10.0	40	100.0
002	Batulo	36	90.0	4	10.0	40	100.0
003	Bukit Wolio Indah	39	97.5	1	2.5	40	100.0
004	Kadolo Katapi	23	57.5	17	42.5	40	100.0
005	Tomba	40	100.0	0	0.0	40	100.0
006	Wale	36	90.0	4	10.0	40	100.0
007	Wangkanapi	36	90.0	4	10.0	40	100.0
008	Bugi	37	92.5	3	7.5	40	100.0
009	Gonda Baru	40	100.0	0	0.0	40	100.0
010	Kaisabu Baru	40	100.0	0	0.0	40	100.0
011	Karya Baru	40	100.0	0	0.0	40	100.0
012	Baadia	40	100.0	0	0.0	40	100.0
013	Lamangga	38	95.0	2	5.0	40	100.0
014	Melai	39	97.5	1	2.5	40	100.0
015	Tanganapada	40	100.0	0	0.0	40	100.0
016	Wajo	38	95.0	2	5.0	40	100.0
017	Kalia-Lia	32	80.0	8	20.0	40	100.0
018	Kantalai	27	67.5	13	32.5	40	100.0
019	Kolese	36	90.0	4	10.0	40	100.0
020	Lowu-Lowu	39	97.5	1	2.5	40	100.0

021	Palabusa	39	97.5	1	2.5	40	100.0
022	Kadolo	39	97.5	1	2.5	40	100.0
023	Kadolomoko	40	100.0	0	0.0	40	100.0
024	Lakologou	40	100.0	0	0.0	40	100.0
025	Liwuto	21	52.5	19	47.5	40	100.0
026	Sukanayo	37	92.5	3	7.5	40	100.0
027	Waruruma	38	95.0	2	5.0	40	100.0
028	Kampeonaho	35	87.5	5	12.5	40	100.0
029	Liabuku	33	82.5	7	17.5	40	100.0
030	Ngkari-Ngkari	35	87.5	5	12.5	40	100.0
031	Tampuna	31	77.5	9	22.5	40	100.0
032	Waliabuku	39	97.5	1	2.5	40	100.0
033	Katobengke	40	100.0	0	0.0	40	100.0
034	Labalawa	37	92.5	3	7.5	40	100.0
035	Lipu	38	95.5	2	5.5	40	100.0
036	Sulaa	40	100.0	0	0.0	40	100.0
037	Waborobo	39	97.5	1	2.5	40	100.0
038	Bone-Bone	40	100.0	0	0.0	40	100.0
039	Kaobula	38	95.0	2	5.0	40	100.0
040	Lanto	36	90.0	4	10.0	40	100.0
041	Nganganamala	31	77.5	9	22.5	40	100.0
042	Tarafu	29	72.5	11	27.5	40	100.0
043	Wameo	38	95.0	2	5.0	40	100.0
	Baubau City	1.565	91.0	155	9.0	1.720	100.0

Sources: Primary Data. 2021

Based on the table above. Most respondents (91.0%) had latrines that were free from human feces. And only a small proportion of respondents (9.0%) still found feces around or on the walls of the latrine. The sub-district with the largest number of respondents who still found the presence of feces on the toilet wall is Liwuto Village. Which is 47.5% of the 40 respondents.

3.3. Latrine Free from Cockroaches and Flies

Based on the table. Most of the respondents (87.5%) had latrines that were free from insects such as cockroaches and flies. But only a small proportion of respondents (12.5%) still found the presence of cockroaches and flies around the toilet. The village with the most respondents who still found the presence of cockroaches and flies is Waliabu Village. Which is 77.5% of 40 respondents.

Table 3 Distribution of Respondents based on Condition of Latrine Free from Cockroaches and Flies in Baubau City in 2021

Code	Village	Condition of Latrine Free from Cockroaches and Flies					
		Yes		No		Total	
		n	%	n	%	n	%
001	Bataraguru	35	87.5	5	12.5	40	100.0
002	Batulo	36	90.0	4	10.0	40	100.0
003	Bukit Wolio Indah	37	92.5	3	7.5	40	100.0
004	Kadolo Katapi	34	85.0	6	15.0	40	100.0
005	Tomba	40	100.0	0	0.0	40	100.0
006	Wale	33	82.5	7	17.5	40	100.0
007	Wangkanapi	27	67.5	13	32.5	40	100.0
008	Bugi	24	60.0	16	40.0	40	100.0
009	Gonda Baru	38	95.0	2	5.0	40	100.0
010	Kaisabu Baru	39	97.5	1	2.5	40	100.0
011	Karya Baru	40	100.0	0	0.0	40	100.0
012	Baadia	37	92.5	3	7.5	40	100.0
013	Lamangga	40	100.0	0	0.0	40	100.0
014	Melai	24	60.0	16	40.0	40	100.0
015	Tanganapada	40	100.0	0	0.0	40	100.0
016	Wajo	39	97.5	1	2.5	40	100.0
017	Kalia-Lia	30	75.0	10	25.0	40	100.0
018	Kantalai	25	62.5	15	37.5	40	100.0
019	Kolese	33	82.5	7	17.5	40	100.0
020	Lowu-Lowu	40	100.0	0	0.0	40	100.0
021	Palabusa	37	92.5	3	7.5	40	100.0
022	Kadolo	38	95.0	2	5.0	40	100.0
023	Kadolomoko	35	87.5	5	12.5	40	100.0
024	Lakologou	40	100.0	0	0.0	40	100.0
025	Liwuto	32	80.0	8	20.0	40	100.0
026	Sukanayo	37	92.5	3	7.5	40	100.0
027	Waruruma	37	92.5	3	7.5	40	100.0
028	Kampeonaho	37	92.5	3	7.5	40	100.0
029	Liabuku	34	85.0	6	15.0	40	100.0
030	Ngkari-Ngkari	40	100.0	0	0.0	40	100.0
031	Tampuna	34	85.0	6	15.0	40	100.0
032	Waliabuku	9	22.5	31	77.5	40	100.0
033	Katobengke	40	100.0	0	0.0	40	100.0

034	Labalawa	38	95.0	2	5.0	40	100.0
035	Lipu	37	92.5	3	7.5	40	100.0
036	Sulaa	40	100.0	0	0.0	40	100.0
037	Waborobo	35	87.5	5	12.5	40	100.0
038	Bone-Bone	40	100.0	0	0.0	40	100.0
039	Kaobula	37	92.5	3	7.5	40	100.0
040	Lanto	35	87.5	5	12.5	40	100.0
041	Nganganaumala	28	70.0	12	30.0	40	100.0
042	Tarafu	35	87.5	5	12.5	40	100.0
043	Wameo	39	97.5	1	2.5	40	100.0
	Baubau City	1.505	87.5	215	12.5	1.720	100.0

Source: Primary Data. 2021

3.4. Flushing Function

Table 4 Distribution of Respondents based on Flushing Functions in Baubau City in 2021

Code	Village	Flushing Functions					
		Yes		No		Total	
		n	%	n	%	n	%
001	Bataraguru	37	92.2	3	7.5	40	100.0
002	Batulo	19	47.5	21	52.5	40	100.0
003	Bukit Wolio Indah	39	97.5	1	2.5	40	100.0
004	Kadolo Katapi	39	97.5	1	2.5	40	100.0
005	Tomba	40	100.0	0	0.0	40	100.0
006	Wale	33	82.5	7	17.5	40	100.0
007	Wangkanapi	38	95.0	2	5.0	40	100.0
008	Bugi	38	95.0	2	5.0	40	100.0
009	Gonda Baru	38	95.0	2	5.0	40	100.0
010	Kaisabu Baru	40	100.0	0	0.0	40	100.0
011	Karya Baru	38	95.0	2	5.0	40	100.0
012	Baadia	39	97.5	1	2.5	40	100.0
013	Lamangga	30	75.5	10	25.5	40	100.0
014	Melai	37	92.2	3	7.5	40	100.0
015	Tanganapada	40	100.0	0	0.0	40	100.0
016	Wajo	28	70.0	12	30.0	40	100.0
017	Kalia-Lia	39	97.5	1	2.5	40	100.0
018	Kantalai	37	92.2	3	7.5	40	100.0
019	Kolese	40	100.0	0	0.0	40	100.0
020	Lowu-Lowu	40	100.0	0	0.0	40	100.0

021	Palabusa	36	90.0	4	10.0	40	100.0
022	Kadolo	38	95.0	2	5.0	40	100.0
023	Kadolomoko	40	100.0	0	0.0	40	100.0
024	Lakologou	38	95.0	2	5.0	40	100.0
025	Liwuto	40	100.0	0	0.0	40	100.0
026	Sukanayo	39	97.5	1	2.5	40	100.0
027	Waruruma	37	92.2	3	7.5	40	100.0
028	Kampeonaho	40	100.0	0	0.0	40	100.0
029	Liabuku	37	92.2	3	7.5	40	100.0
030	Ngkari-Ngkari	38	95.0	2	5.0	40	100.0
031	Tampuna	39	97.5	1	2.5	40	100.0
032	Waliabuku	39	97.5	1	2.5	40	100.0
033	Katobengke	40	100.0	0	0.0	40	100.0
034	Labalawa	33	82.5	7	17.5	40	100.0
035	Lipu	35	87.5	5	12.5	40	100.0
036	Sulaa	39	97.5	1	2.5	40	100.0
037	Waborobo	39	97.5	1	2.5	40	100.0
038	Bone-Bone	40	100.0	0	0.0	40	100.0
039	Kaobula	39	97.5	1	2.5	40	100.0
040	Lanto	37	92.2	3	7.5	40	100.0
041	Nganganaumala	39	97.5	1	2.5	40	100.0
042	Tarafu	39	97.5	1	2.5	40	100.0
043	Wameo	38	95.0	2	5.0	40	100.0
	Baubau City	1.608	93.5	112	6.5	1.720	100.0

Source: Primary Data. 2021

Based on the table above. Most of the respondents (93.5%) had toilet flushers that were still functioning. But only a small percentage of respondents (6.5%) still found non-functioning toilets. The village with the most respondents who still found the flushing was not functioning was Batulo Village. Which was 52.5% or 21 out of 40 respondents.

3.5. The presence of soap in the latrine

Based on the table. Most of the respondents (91.5%) found soap in the toilets that were still available. But only a small proportion of respondents (8.5%) found soap in the toilets that were still there. The village with the most respondents who did not find soap in the latrine was Bugi Village. Which was 30% or 12 of 40 respondents.

Table 5 Distribution of Respondents based on the Presence of Soap in Latrine in Baubau City in 2021

Code	Village	the Presence of Soap in Laterine					
		Yes		No		Total	
		n	%	n	%	n	%
001	Bataraguru	40	100.0	0	0.0	40	100.0
002	Batulo	39	97.5	1	2.5	40	100.0
003	Bukit Wolio Indah	40	100.0	0	0.0	40	100.0
004	Kadolo Katapi	37	92.2	3	7.5	40	100.0
005	Tomba	37	92.2	3	7.5	40	100.0
006	Wale	31	77.5	9	22.5	40	100.0
007	Wangkanapi	39	97.5	1	2.5	40	100.0
008	Bugi	28	70.0	12	30.0	40	100.0
009	Gonda Baru	31	77.5	9	22.5	40	100.0
010	Kaisabu Baru	36	90.0	4	10.0	40	100.0
011	Karya Baru	37	92.2	3	7.5	40	100.0
012	Baadia	33	82.5	7	17.5	40	100.0
013	Lamangga	39	97.5	1	2.5	40	100.0
014	Melai	39	97.5	1	2.5	40	100.0
015	Tanganapada	40	100.0	0	0.0	40	100.0
016	Wajo	39	97.5	1	2.5	40	100.0
017	Kalia-Lia	38	95.0	2	5.0	40	100.0
018	Kantalai	36	90.0	4	10.0	40	100.0
019	Kolese	38	95.0	2	5.0	40	100.0
020	Lowu-Lowu	40	100.0	0	0.0	40	100.0
021	Palabusa	39	97.5	1	2.5	40	100.0
022	Kadolo	38	95.0	2	5.0	40	100.0
023	Kadolomoko	40	100.0	0	0.0	40	100.0
024	Lakologou	38	95.0	2	5.0	40	100.0
025	Liwuto	33	82.5	7	17.5	40	100.0
026	Sukanayo	32	80.0	8	20.0	40	100.0
027	Waruruma	33	82.5	7	17.5	40	100.0
028	Kampeonaho	29	72.5	11	27.5	40	100.0
029	Liabuku	40	100.0	0	0.0	40	100.0
030	Ngkari-Ngkari	39	97.5	1	2.5	40	100.0
031	Tampuna	37	92.2	3	7.5	40	100.0
032	Waliabuku	39	97.5	1	2.5	40	100.0
033	Katobengke	40	100.0	0	0.0	40	100.0

034	Labalawa	30	75.0	10	25.0	40	100.0
035	Lipu	34	85.0	6	15.0	40	100.0
036	Sulaa	40	100.0	0	0.0	40	100.0
037	Waborobo	30	75.0	10	25.0	40	100.0
038	Bone-Bone	40	100.0	0	0.0	40	100.0
039	Kaobula	38	95.0	2	5.0	40	100.0
040	Lanto	39	97.5	1	2.5	40	100.0
041	Nganganaumala	35	87.5	5	12.5	40	100.0
042	Tarafu	34	85.0	6	15.0	40	100.0
043	Wameo	39	97.5	1	2.5	40	100.0
	Baubau City	1.573	91.5	147	8.5	1.720	100.0

Source: Primary Data. 2021

3.6. Contamination of Water Storage and Handling Containers

Table 6 Distribution of Respondents based on the Presence of Pollution in Water Storage and Handling Containers in Baubau City in 2021

Code	Village	Presence of Pollution in Water Storage and Handling Containers					
		Yes		No		Total	
		n	%	n	%	n	%
001	Bataraguru	10	25.0	30	75.0	40	100.0
002	Batulo	25	62.5	15	37.5	40	100.0
003	Bukit Wolio Indah	3	7.5	37	92.5	40	100.0
004	Kadolo Katapi	1	97.5	39	2.5	40	100.0
005	Tomba	2	5.0	38	95.0	40	100.0
006	Wale	1	97.5	39	2.5	40	100.0
007	Wangkanapi	1	97.5	39	2.5	40	100.0
008	Bugi	2	5.0	38	95.0	40	100.0
009	Gonda Baru	1	97.5	39	2.5	40	100.0
010	Kaisabu Baru	0	0.0	40	100.0	40	100.0
011	Karya Baru	1	97.5	39	2.5	40	100.0
012	Baadia	6	85.0	34	15.0	40	100.0
013	Lamangga	0	0.0	40	100.0	40	100.0
014	Melai	2	5.0	38	95.0	40	100.0
015	Tanganapada	0	0.0	40	100.0	40	100.0
016	Wajo	1	97.5	39	2.5	40	100.0
017	Kalia-Lia	1	97.5	39	2.5	40	100.0
018	Kantalai	0	0.0	40	100.0	40	100.0
019	Kolese	0	0.0	40	100.0	40	100.0
020	Lowu-Lowu	0	0.0	40	100.0	40	100.0

021	Palabusa	0	0.0	40	100.0	40	100.0
022	Kadolo	2	5.0	38	95.0	40	100.0
023	Kadolomoko	1	2.5	39	97.5	40	100.0
024	Lakologou	0	0.0	40	100.0	40	100.0
025	Liwuto	10	25.0	30	75.0	40	100.0
026	Sukanayo	0	0.0	40	100.0	40	100.0
027	Waruruma	0	0.0	40	100.0	40	100.0
028	Kampeonaho	2	5.0	38	95.0	40	100.0
029	Liabuku	1	2.5	39	97.5	40	100.0
030	Ngkari-Ngkari	0	0.0	40	100.0	40	100.0
031	Tampuna	4	10.0	36	90.0	40	100.0
032	Waliabuku	0	0.0	40	100.0	40	100.0
033	Katobengke	0	0.0	40	100.0	40	100.0
034	Labalawa	0	0.0	40	100.0	40	100.0
035	Lipu	5	12.5	35	87.5	40	100.0
036	Sulaa	0	0.0	40	100.0	40	100.0
037	Waborobo	1	2.5	39	97.5	40	100.0
038	Bone-Bone	0	0.0	40	100.0	40	100.0
039	Kaobula	3	7.5	37	92.5	40	100.0
040	Lanto	2	5.0	38	95.0	40	100.0
041	Nganganamala	0	0.0	40	100.0	40	100.0
042	Tarafu	3	7.5	37	92.5	40	100.0
043	Wameo	2	5.0	38	95.0	40	100.0
	Baubau City	93	5.41	1.627	94.59	1.720	100.0

Source: Primary Data. 2021

Based on the table above. Most of the respondents (94.59%) in water storage and handling containers did not find any contamination. But only a small proportion of respondents (5.41%) still found pollution. The village with the most respondents who did not find any contamination of water storage and handling containers was Batulo Village. Which was 25% or 10 out of 40 respondents.

3.7. Indiscriminate Defecation Behavior

Based on the table. Most of the respondents (92.33%) did not defecate anywhere. only a small proportion of respondents (9.77%) still behaved to defecate in any place. The village with the most respondents behaving in open defecation is Waliabuku Village. which is 50% or 20 of the 40 respondents.

Table 7 Distribution of Respondents based on Open Defecation Behavior in Baubau City in 2021

Code	Village	Indiscriminate Defecation Behavior					
		Yes		No		Total	
		n	%	n	%	n	%
001	Bataraguru	5	12.5	35	87.5	40	100.0
002	Batulo	4	10.0	36	90.0	40	100.0
003	Bukit Wolio Indah	1	2.5	39	97.5	40	100.0
004	Kadolo Katapi	1	2.5	39	97.5	40	100.0
005	Tomba	3	7.5	37	92.5	40	100.0
006	Wale	12	30.0	28	70.0	40	100.0
007	Wangkanapi	2	5.0	38	95.0	40	100.0
008	Bugi	8	20.0	32	80.0	40	100.0
009	Gonda Baru	13	32.5	27	67.5	40	100.0
010	Kaisabu Baru	4	10.0	36	90.0	40	100.0
011	Karya Baru	6	15.0	34	85.0	40	100.0
012	Baadia	0	0.0	40	100.0	40	100.0
013	Lamangga	1	2.5	39	97.5	40	100.0
014	Melai	2	5.0	38	95.0	40	100.0
015	Tanganapada	0	0.0	40	100.0	40	100.0
016	Wajo	0	0.0	40	100.0	40	100.0
017	Kalia-Lia	5	12.5	35	87.5	40	100.0
018	Kantalai	4	10.0	36	90.0	40	100.0
019	Kolese	1	2.5	39	97.5	40	100.0
020	Lowu-Lowu	1	2.5	39	97.5	40	100.0
021	Palabusa	9	22.5	31	77.5	40	100.0
022	Kadolo	3	7.5	37	92.5	40	100.0
023	Kadolomoko	3	7.5	37	92.5	40	100.0
024	Lakologou	4	10.0	36	90.0	40	100.0
025	Liwuto	3	7.5	37	92.5	40	100.0
026	Sukanayo	5	12.5	35	87.5	40	100.0
027	Waruruma	4	10.0	36	90.0	40	100.0
028	Kampeonaho	8	20.0	32	80.0	40	100.0
029	Liabuku	6	15.0	34	85.0	40	100.0
030	Ngkari-Ngkari	1	2.5	39	97.5	40	100.0
031	Tampuna	4	10.0	36	90.0	40	100.0
032	Waliabuku	20	50.0	20	50.0	40	100.0
033	Katobengke	0	0.0	40	100.0	40	100.0

034	Labalawa	8	20.0	32	80.0	40	100.0
035	Lipu	3	7.5	37	92.5	40	100.0
036	Sulaa	0	0.0	40	100.0	40	100.0
037	Waborobo	3	7.5	37	92.5	40	100.0
038	Bone-Bone	1	2.5	39	97.5	40	100.0
039	Kaobula	2	5.0	38	95.0	40	100.0
040	Lanto	2	5.0	38	95.0	40	100.0
041	Nganganaumala	5	12.5	35	87.5	40	100.0
042	Tarafu	1	2.5	39	97.5	40	100.0
043	Wameo	0	0.0	40	100.0	40	100.0
	Baubau City	166	9.77	1.552	92.33	1.720	100.0

Source: Primary Data. 2021

4. Areas of Risk for Clean and Healthy Living Behavior

The risk area assessment is calculated by taking the variable that has a bad score, namely the answer No on the habit of washing hands with soap at five important times (A), the answer No on the variable condition of the latrine wall free of feces (B), the answer No on the independent latrine variable from cockroaches and flies (C), the answer is No to the closed flushing function variable (D), the answer is No to the variable presence of soap in the latrine (E), the answer is Yes to the variable of contamination in the storage container (F) and the answer is Yes to the handling variable water and open defecation behavior (G).

Furthermore, each variable has used as the value of the proportion of each variable that is included at risk, then each variable is given a weight. The variables of the habit of washing hands with soap at five important times, the presence of contamination in water storage and handling contain, er and the behavior of open defecation are each given a weight of 25%, and the variables of the condition of the latrine walls are free from feces, the latrine is free from cockroaches and flies, the flushing function is closed. , and the presence of soap in the latrine was given a weight of 6% (4).

The risk area index value uses the formula:

$$Risk\ Index = (A \times 25\%) + (B \times 6\%) + (C \times 6\%) + (D \times 6\%) + (E \times 6\%) + (F \times 25\%) + (G \times 25\%)$$

So that the interval value is 7. From the interval value, the range of risk level values is obtained as follows:

Table 8 Risk Level Criteria

Risk Area Category	Minimal	Maximal
Low Risk	9	16
Medium Risk	17	24
High Risk	25	33
Very High Risk	34	41

The level of risk of a Clean and Healthy Lifestyle for each village in Baubau City is as follows:

Table 7 Risk Level of Clean and Healthy Life Behavior in Baubau City in 2021

Code	Village	Risk Index	Risk Area Category
001	Bataraguru	33	Risiko Tinggi
002	Batulo	37	Risiko Sangat Tinggi
003	Bukit Wolio Indah	22	Berisiko Sedang
004	Kadolo Katapi	22	Berisiko Sedang
005	Tomba	27	Risiko Tinggi
006	Wale	37	Risiko Sangat Tinggi
007	Wangkanapi	20	Berisiko Sedang
008	Bugi	33	Risiko Tinggi
009	Gonda Baru	32	Risiko Tinggi
010	Kaisabu Baru	24	Berisiko Sedang
011	Karya Baru	25	Berisiko Sedang
012	Baadia	28	Risiko Tinggi
013	Lamangga	23	Berisiko Sedang
014	Melai	26	Risiko Tinggi
015	Tanganapada	9	Kurang Berisiko
016	Wajo	23	Berisiko Sedang
017	Kalia-Lia	25	Berisiko Sedang
018	Kantalai	26	Risiko Tinggi
019	Kolese	18	Berisiko Sedang
020	Lowu-Lowu	16	Kurang Berisiko
021	Palabusa	25	Berisiko Sedang
022	Kadolo	12	Kurang Berisiko
023	Kadolomoko	21	Berisiko Sedang
024	Lakologou	21	Berisiko Sedang
025	Liwuto	38	Risiko Sangat Tinggi
026	Sukanayo	30	Risiko Tinggi
027	Waruruma	30	Risiko Tinggi
028	Kampeonaho	22	Berisiko Sedang
029	Liabuku	25	Berisiko Sedang
030	Ngkari-Ngkari	15	Kurang Berisiko
031	Tampuna	25	Risiko Tinggi
032	Waliabuku	29	Risiko Tinggi
033	Katobengke	23	Berisiko Sedang
034	Labalawa	20	Berisiko Sedang
035	Lipu	32	Risiko Tinggi

036	Sulaa	13	Kurang Berisiko
037	Waborobo	30	Risiko Tinggi
038	Bone-Bone	16	Kurang Berisiko
039	Kaobula	19	Berisiko Sedang
040	Lanto	24	Berisiko Sedang
041	Nganganaumala	24	Berisiko Sedang
042	Tarafu	22	Berisiko Sedang
043	Wameo	18	Berisiko Sedang

Source: Primary Data. 2021

Based on the calculation results above, the clean and healthy living behavior Risk Areas in Baubau City in 2021 are described on the map as follows:

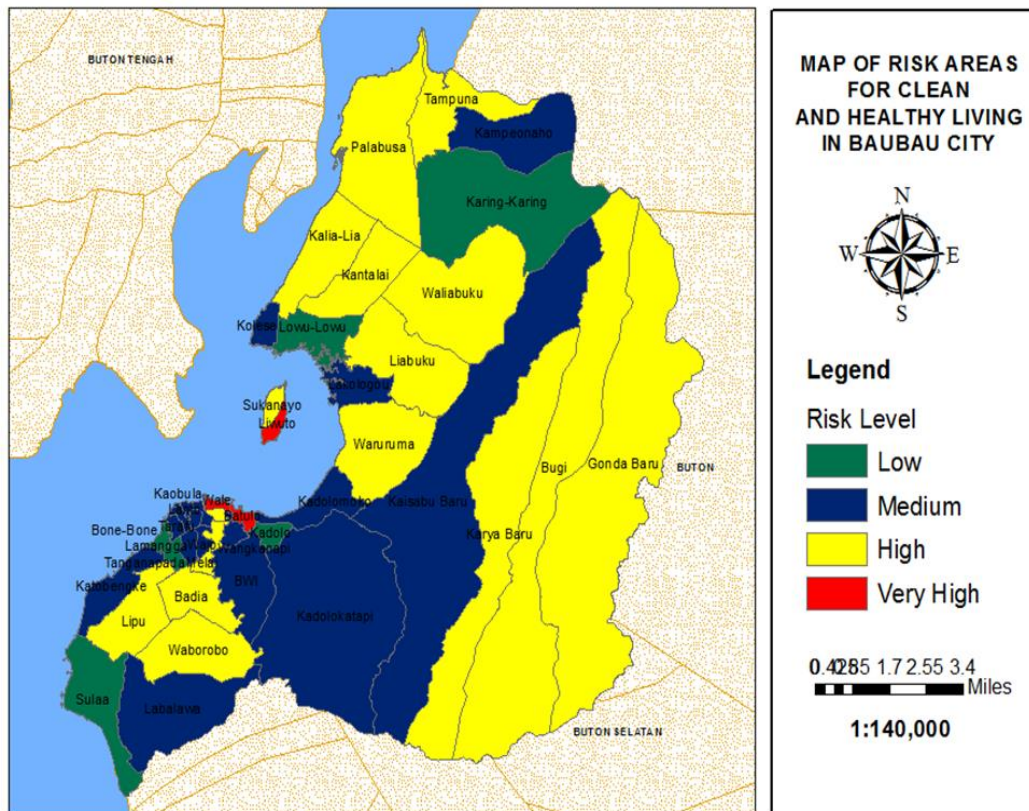


Figure 1 Map of Areas at Risk for Clean and Healthy Lifestyles in Baubau City in 2021

5. Discussion

Clean and Healthy Living Behavior is a set of behaviors that are practiced based on awareness as a result of learning, which makes a person, family, group, or community they can help themselves (independently), especially in the field of Health, and can also play an active role in creating public health (1).

5.1. Habit of Washing Hands with Soap at Five Important Times

The habit of washing hands at five important times consists of washing hands with soap before eating, after defecating, before breastfeeding, before preparing food, after washing children, and after contact with animals. Most of the

respondents did not wash their hands with soap at five important times. Hand-washing time is mostly done before eating and after defecating.

Hand washing is an important way to prevent cross-contamination with pathogens during food preparation. Many people think that washing hands with water only and washing hands with soap are considered the same thing (5).

During the Covid-19 pandemic, hand washing has become one of the things that must be done. hand washing habits should be better and more often done. World Health and other major world authorities recommend frequent hand washing and proper hand hygiene procedures as one of the cheapest, easiest, and most important ways to prevent the spread of the virus, For most circumstances hand washing, including those related to eating, personal hygiene, leaving home, socializing, health, and household chores, where nowadays the habit of always washing hands is much higher during the COVID-19 pandemic period (6).

5.2. The state of the toilet wall is free from feces

There are still latrine walls owned by the community in Baubau City which is classified as unclean, there are still stains of feces on the walls of the latrines. The utilization of latrines is not accompanied by good behavior. When finished defecating, cleaning should be carried out not only cleaning the flushing but also cleaning around the flushing. Many factors are related to the habit of using latrines.

Factors that were significantly related to the use of latrines were the number of household members from one to three people, the presence of primary or secondary school students in the house, the time since the household latrine was built for two years or more, and the frequency of daily latrine cleaning (7). The habit of cleaning the toilet and the frequency of cleaning the latrine can be the cause of whether or not the latrine is free from feces.

Feces scattered in latrines that are not cleaned will certainly pose a risk / negative impact on users. Users of the latrine will be contaminated with feces. As a result contamination of feces can cause infectious diseases, one of which is diarrhea (8).

5.3. Latrine Free from Cockroaches and Flies

Insects that are found around the latrines owned by the community are flies and cockroaches. There are still people who allow cockroaches and flies to be around latrines, without exterminating and preventing flies and cockroaches from being around latrines. The cleanliness of the latrine is related to the presence of insects. Dirty latrines will invite insects to land and even live and breed around the latrine. this poses a serious risk to public health.

The habit of cleaning latrines can indirectly prevent insects that can transmit diseases such as cockroaches and flies. Cockroaches and flies have lived near humans throughout history. However, these insects can also serve as vectors for many zoonotic enteric parasites (ZEPs). The risk of transmitting insect vectors in our shared environment makes it very important to adopt a One Health approach to reducing the transmission of ZEP (9). Cockroaches and flies that land on dirty latrines and then land on food are very at risk of carrying harmful parasites into food which is ultimately consumed by humans and can cause disease.

5.4. Flushing Function

The latrines owned by the community in Baubau City are still found to have flushed that are no longer functioning. This happens mostly in people who have a low economy, people claim to have no money to repair their latrines, especially the flushing that is no longer functioning, as a result, people switch to throwing feces in the surrounding environment (defeating in any place).

Flushing on the latrine greatly determines the use and cleanliness of the latrine, flushing that does not work, the user becomes reluctant, or even does not use the latrine. The problem that can arise from the malfunction of the flush is when the latrine is used by people who do not have good manners. even though the flushing is not working, the latrine is still used, so it can cause feces to contaminate the latrine, which in turn can cause disease in users.

5.5. The presence of soap in the latrine

Washing hands with soap can clean other dirt and can also kill germs. Germs and dirt when washing hands using only water can still be left behind if you don't wash your hands with soap and water. Therefore, the presence of soap in the toilet is very important to kill germs after defecation.

5.6. Contamination of Water Storage and Handling Containers

Only a small portion of the water storage and handling containers owned by the community in Baubau City have been detected as contaminated because most of the storage containers have lids and the intensity of cleaning the containers is more frequent. A container that is polluted because the water storage container does not have a cover and is rarely cleaned because the water is never empty so the container continues to be filled without regular cleaning. Water storage containers that do not meet health requirements will be easily contaminated from both human and animal waste. Water consumed from these containers can hurt users.

5.7. Indiscriminate Defecation Behavior

Only a small part of the people of Baubau City still defecate openly. This habit certainly hurts society. The bad habits of a small number of people can have an impact on other people, the feces that are dumped in any place will contaminate the groundwater consumed by many people, and insects can also be infested which then land on the food consumed by the community.

Open defecation behavior can be influenced by several factors such as economic status, attitude, distance from house to river, and latrine ownership. Of these several factors, the most influential factor is attitude, which is closely related to latrine behavior and ownership (10). Unsafe sanitation, and more specifically open defecation, is one of the main causes, leading to fecal contamination of water bodies and transmission of fecal bacteria (11).

5.8. Areas of Risk for Clean and Healthy Living Behavior

Each village in Baubau City has a risk level for clean and healthy living behavior. The 21 less-risk areas are Tanganapada, Lowu-Lowu, Kadolo, Ngkari-Ngkari, Sulaa, Bone-Bone. The 21 medium-risk areas are Bukit Wolio Indah, Kadolo Katapi, Wangkanapi, Kaisabu Baru, Karya Baru, Lamangga, Wajo, Kalia-Lia, Kolese, Palabusa, Kadolomoko, Lakologou, Kampeonaho, Liabuku, Katobengke, Labalawa, Kaobula, Lanto, Nganganaumala, Tarafu, Wameo. There are 13 high-risk areas, namely Bataraguru, Tomba, Bugi, Gonda Baru, Baadia, Melai, Kantalai, Sukanayo, Waruruma, Tampuna, Waliabuku, Lipu, Sulaa. There are 3 very high-risk areas, namely Batulo, Wale, and Liwuto.

The level of risk of clean and healthy living behavior in each village becomes information that can be used by local governments, especially those related to public health to determine priority areas that need to be intervened related to changes in clean and healthy living behavior, both physical intervention and interventions related to clean and healthy living habits. Very high-risk areas can be the priority target of intervention.

6. Conclusion

Most of the sub-districts in Baubau City are included in the behavior of a clean and healthy life of medium risk. The number of sub-districts based on the level of risk of clean and healthy living behavior is Villages with clean and healthy living behaviors in the very high-risk category as many as 3 villages, 13 villages at high risk, 21 villages at moderate risk, and 6 villages at low risk.

Compliance with ethical standards

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Disclosure of conflict of interest

All authors state that this research was conducted without any conflict of interest.

Statement of informed consent

All informants/respondents involved in this study have stated their consent as informants/respondents to be interviewed and provided information/information on research needs.

Author contribution

Jumakil, Suhadi, and Irma as designers, implementers of research, and drafts of Reports. Jumakil is the reviewer of the Laporta manuscript. La Ode Muhammad Asri is the data collector and Jumakil is the analyst and interpreter of data. All authors read and agree to the Final Report.

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