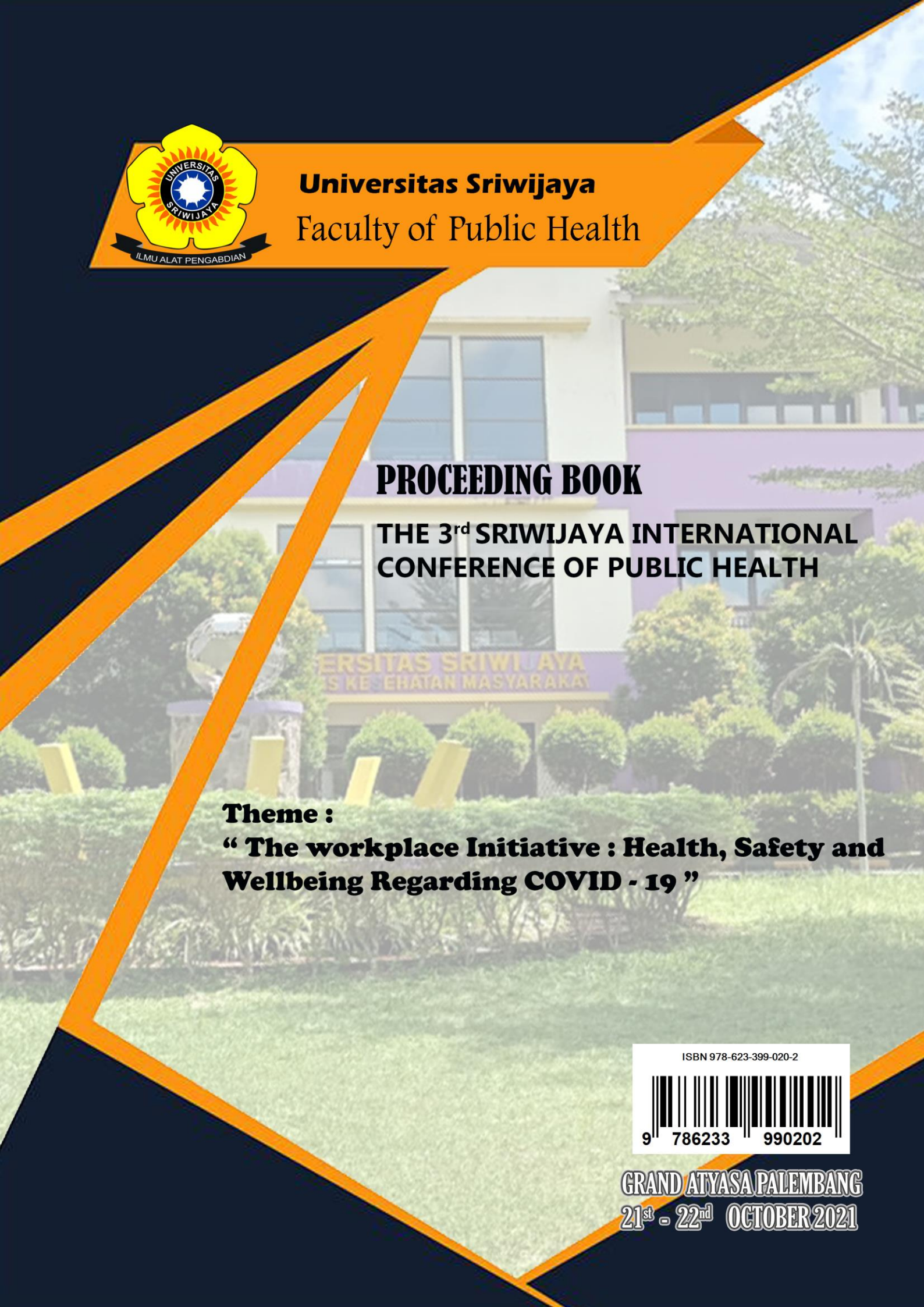

Universitas Sriwijaya

Faculty of Public Health

PROCEEDING BOOK

THE 3rd SRIWIJAYA INTERNATIONAL CONFERENCE OF PUBLIC HEALTH

Theme :

" The workplace Initiative : Health, Safety and Wellbeing Regarding COVID - 19 "

ISBN 978-623-399-020-2

GRAND ATYASA PALEMBANG

21st - 22nd OCTOBER 2021

PROCEEDING
THE 3rd SRIWIJAYA INTERNATIONAL CONFERENCE ON PUBLIC HEALTH

The Work Place Initiative: Health, Safety and Wellbeing Regarding COVID-19

Grand Atyasa Palembang, 21st – 22nd October 2021
Publication Year : March 2022

This proceeding is published by:
Public Health Faculty Universitas Sriwijaya
Kampus FKM Unsri Indralaya, Jl. Raya Palembang-
Prabumulih KM.32 Indralaya, Ogan Ilir, Sumatera Selatan, 30662
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ISBN : 978-623-399-020-2

PROCEEDING
THE 3rd SRIWIJAYA INTERNATIONAL CONFERENCE ON PUBLIC HEALTH

The Work Place Initiative: Health, Safety and Wellbeing Regarding COVID-19

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PREFACE

On behalf of the organizing committee, I am delighted to welcome you to the 3nd Sriwijaya International Conference on public Health (SICPH 2021) during 21th october 2021 at Palembang South Sumatera, Indonesia. The SICPH 2021 is international conference organized by Faculty of Public Health, Sriwijaya University (UNSRI). I would like to extend my warmest welcome to all the participant of The SICPH 2021 under the theme ***"The Impact of Climate Change on Infectious Disease Transmission".***

The SICPH 2021 consists of keynote sessions from well known expert speakers in the field of public health, and academic paper sessions (oral presentations) who are coming from several region. This conference seeks to bring together academics, public health professionals, researchers, scientists, students and health stakeholders from a wide range of disciplines to present their latest research experience and further development in all areas of public health. We hoped that this conference will be usefull platform for researchers to present their finding in the areas on multidisciplinary realted to public health and health system issues.

This conference will provide opportunities to exchange ideas, knowledge, and development of the latest research among the participants. We will publish the paper as output from the SICPH 2021 in proceeding book with ISBN and selected paper will be published in Jurnal ilmu kesehatan masyarakat- SINTA 3 (a nationally-accredited journal). The SICPH 2021 is being attended by about 50 participants. I hope you enjoy the conference.

With regard to considerable conference agenda, we greatly appreciate any support and sponshorship derived from any govermental as well as private institutions for the success of the conference. Great appreciation is also handed to organizing committe of the conference for any voluntarily effort that bring to the succes of the conference.

The conference committee expresses its gratitude towards all the keynote speakers, authors, reviewers, and participanst for the great contribution to enssure the succes of this event. Finnally, I sincerely thank all the members of the organizing committee who have worked hard to prepare this conference.

Palembang, October 2021

Chair,

Anita Camelia, SKM., MKKK.

PREFACE

First of all, let us thank God, the Almighty, who has given His grace and guidance so that the 3rd Sriwijaya International Conference of Public Health (SICPH) with the theme of The Workplace Initiative: Health, Safety and Wellbeing Regarding Covid:19 can be held successfully. I welcome all of you to this seminar which has received great attention not only from university, but also other communities to submit papers to be presented in this seminar. I express my highest gratitude and appreciation the presenters.

The conference is divided in two session, the first session is speeches and the second session is round table discussion. In the first session, the invited keynote speakers were Prof. Dr. Tan Malaka, MOH, DrPH, SpOk, HIU (A Professor from Medical Faculty Universitas Sriwijaya), Prof. Dr. Retneswari Masilamani (University Tunku Abdul Rahman, Malaysia), Prof.Dr.Joselito L. Gapaz MD, M.PH(University of the Philippines) and Prof. Dr Tjandra Yoga Aditama, MHA,DTM&H, DTCE,SpP(C).FIRS (Professor from Griffith University, Australia)

Of course, this conference activity would not have succeeded without the support of all parties involved, as well as the presence of all participants in all regions in Indonesia and internationally. I especially thank to all the organizing committees for their hard work, perseverance, and patience in preparing and organizing this conference so that it can go well, smoothly and successfully.

Finally, through this conference let us extend the network and cooperation among all stakeholders of the public health sector, especially in Indonesia and in the world in general, to build a better public health world in Indonesia

Thank you for participating in this conference.

Dean of Public Health Faculty,

Universitas Sriwijaya

Dr. Misnaniarti, S.K.M, M.K.M

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ANALYSIS OF SANITATION HYGIENE RISK FACTOR WITH THE INCIDENT OF DIARRHEA IN WET LAND SETTLEMENTS OF PULUTAN DISTRICT

Inoy Trisnaini,[*] Imelda Gernauli Purba, Rahmatillah Razak
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ABSTRACT

Based on the 2015 profile of Ogan Ilir District, Pemulutan District is the third most common diarrhea case in all age groups, data from Pemulutan Health Center shows 545 cases of diarrhea in 2015. Based on the health profile of Ogan Ilir District, in 2014 Pemulutan District was the the sub-district with the lowest number of clean and healthy lifestyle. The research design used is an analytical observational method with a cross sectional approach. The research was conducted in Pemulutan District. Method of collecting data Population and research sample The research population is all households in Pemulutan District, which are 10,262 households. Sample The sample selection technique is simple random sampling, the number of samples in this study was 160 samples. The results showed that the respondents who had not applied personal hygiene well were 97.3%. Meanwhile, households that have basic home sanitation facilities that do not meet health requirements are facilities of clean water (42%), family latrines (74,7%), waste disposal facilities (92,7%) and wastewater sewerage facilities (38,7%). Based on the results of statistical tests, all dependent variables do not have a significant relationship with the incidence of diarrhea. The need to increase knowledge and awareness of citizens about the importance of improving the habit of washing hands using soap and running water and maintaining sanitation of basic home sanitation facilities.

Keyword : *Personal hygiene, basic home sanitation facilities.*

ABSTRAK

Based on the 2015 profile of Ogan Ilir District, Pemulutan District is the third most common diarrhea case in all age groups, data from Pemulutan Health Center shows 545 cases of diarrhea in 2015. Based on the health profile of Ogan Ilir District, in 2014 Pemulutan District was the the sub-district with the lowest number of clean and healthy lifestyle. The research design used is an analytical observational method with a cross sectional approach. The research was conducted in Pemulutan District. Method of collecting data Population and research sample The research population is all households in Pemulutan District, which are 10,262 households. Sample The sample selection technique is simple random sampling, the number of samples in this study was 160 samples. The results showed that the respondents who had not applied personal hygiene well were 97.3%. Meanwhile, households that have basic home sanitation facilities that do not meet health requirements are facilities of clean water (42%), family latrines (74,7%), waste disposal facilities (92,7%) and wastewater sewerage facilities (38,7%). Based on the results of statistical tests, all dependent variables do not have a significant relationship with the incidence of diarrhea. The need to increase knowledge and awareness of citizens about the importance of improving the habit of washing hands using soap and running water and maintaining sanitation of basic home sanitation facilities.

Kata kunci : personal higiene, fasilitas sanitasi dasar rumah

Introduction

Population growth is increasing day by day with changing times. High population growth without being balanced by the addition of facilities, infrastructure, tends to form very dense settlements. Very densely populated settlements provide an opportunity or cause the city's environmental conditions to be bad. The existing space capacity is not able to serve the residents' houses properly. Slums in the middle of the city are characterized by very low-quality housing, buildings made of materials that do not meet the requirements, sometimes consisting of all kinds of used materials, sanitation and clean water supplies are generally not available or inadequate. The sanitation sector of the residential environment is currently experiencing a decrease in the degree of environmental quality accompanied by the emergence of a disease. Managing the environment must be oriented to aspects of environmental quality and aspects of life. The culture of building houses on the banks of the swamp has resulted in the swamp becoming polluted and the emergence of environmental sanitation problems for settlements on the banks of the swamp due to household waste so that it interferes with the use of swamps and aesthetics. The same thing happened in Pemulutan sub-district which is part of Ogan Ilir Regency, South Sumatra Province. In terms of environmental sanitation facilities and infrastructure, this area can be considered very lacking. One of the diseases caused by poor implementation of PHBS is diarrheal disease. The World Health Organization notes that Globally there are two million children die every year because of diarrhea.[1] Diarrhea is a disease that often attacks school-age children. The results of the 2007 Basic Health Research (Riskesdas) show that the prevalence of diarrhea in Indonesia is around 42.2%. In school-age children (5–14 years), the incidence of diarrhea ranks 5th most after the infant, toddler and elderly age group, which is 9.0%.[2] Based on the 2015 profile of Ogan Ilir District, Pemulutan District is the third most common diarrhea case in all age groups, data from Pemulutan Health Center shows 545 cases of diarrhea in 2015. Based on the health profile of Ogan Ilir District, in 2014 Pemulutan District was the the sub-district with the lowest number of PHBS households out of all sub-districts in Ogan Ilir Regency, which is 21.9% of households that have PHBS, while the remaining 78.1% of households have not PHBS.[3] One of the causes of diarrhea according to Maharani is from food factors, which can be in the form of stale food, toxic, food allergies, food contaminated with bacteria or germs so that personal hygiene involved in food processing needs to be considered to ensure food safety.[4] Personal hygiene itself is an effort made by individuals to maintain personal hygiene to avoid disease. personal hygiene or personal hygiene needs to be implemented or applied to ourselves and our families in order to avoid

disease and our productivity is good. There are several factors related to the incidence of diarrhea, namely, water contaminated by feces, lack of hygiene facilities, improper preparation and storage of food.[5] Another major factor in the incidence of diarrhea in children is environmental sanitation. Environmental health problems in developing countries revolve around sanitation (latrines), garbage disposal and waste water disposal (dirty water).[6] So the need for further research on the risk factors associated with the incidence of diarrhea in Pemulutan District.

Method

The research design used is an analytical observational method with a cross sectional approach, namely research to study population dynamics between risk factors and effects by means of an observation approach or data collection at once (point time approach). The research was conducted in Pemulutan District. Method of collecting data Population and research sample The research population is all households in Pemulutan District, which are 10,262 households. Sample The sample selection technique is simple random sampling. The sample inclusion criteria are: Residents living on the edge of the swamp in Pemulutan District One resident represents one sample house Family members who suffered from diarrhea most recently The sample size was calculated using the formula for the Independent Proportion Test of 2 two-sided groups.[7] Based on the calculation of the minimum sample size, the sample size was chosen with the number of samples in this study was 150 samples. Types of Data, Data Collection Methods and Tools Types and Methods of Data Collection Primary data Quantitative data is primary data collected based on observations regarding personal hygiene and basic sanitation facilities for clean water, healthy latrines, garbage collection and waste water disposal. Secondary Data Secondary data was obtained from the Pemulutan District Profile. Data Collection Tool Data were collected using questionnaires and observation sheets. The use of observation sheets to find out the basic sanitation description of the settlement. The data that has been collected using a questionnaire is then processed through the following stages. Data Analysis and Presentation Data analysis carried out in this study was univariate and bivariate data analysis using the SPSS program.

RESULT

1. Personal Hygiene the behavior of washing hands with soap

Table 1. Hand Washing Behavior With Soap And Running Water

	Frequency	Percent
No	67	44.7
Yes	83	55.3
Total	150	100.0
Washing hands with soap before preparing food		
	Frequency	Percent
No	60	40
Yes	90	60
Total	150	100.0
Washing hands with soap after defecation		
	Frequency	Percent
No	40	26.7
Yes	110	73.3
Total	150	100.0
Washing hands with soap after washing children		
	Frequency	Percent
No	3	2
Yes	147	98
Total	150	100.0
Washing hands with soap after handling animals		
	Frequency	Percent
No	57	38
Yes	93	62
Total	150	100.0
Washing Hands with Soap After Cleaning the Trash		
	Frequency	Percent
No	79	52.7
Yes	71	47.3
Total	150	100.0
Washing Hands with Soap After Disposing of Garbage		
	Frequency	Percent
No	110	73.3
Yes	40	26.7
Total	150	100.0

Table 2. Handwashing Habits with Soap and Running Water

Category	Frequency	Percentage
Bad	146	97.3
Well	4	2.7
Total	150	100

Table 3. The Relationship between Handwashing Habits and the Incidence of Diarrhea

Category		Handwashing Habits		Total	P- value
		Yes	**No**		
Incidence of diarrhea	Yes	31	1	32	
	No	115	3	118	0.856
Total		146	4	150	

Based on the results of the study as shown in Table 4, it shows that there are more mothers who apply good personal hygiene than mothers who apply poor personal hygiene, although in some variables the difference is not too much, 55.3% of respondents are accustomed to washing hands with soap before eating. 73.3% of respondents are accustomed to washing their hands with soap after defecating, 98% of respondents are accustomed to washing their hands with soap after washing their children, 62% of respondents are accustomed to washing their hands with soap after handling animals. However, 52.7% of respondents are not accustomed to washing their hands with soap after cleaning the trash and 73.3% of respondents are not accustomed to washing their hands with soap after disposing of garbage. Overall, it shows that 97.3% of respondents still have bad habits in terms of washing hands using soap and running water in their daily activities. The results also show that there is no significant relationship between the respondent's personal hygiene and the incidence of diarrhea

2. The Relationship Between Clean Water Facilities And The Incidence Of Diarrhea

Table 4. Distribution of Clean Water Sources

Kategori	Frequency	Percent (%)
PDAM	39	26
Sumur Bor/Sumur Gali	3	2
Sungai/danau/rawa	108	72
Total	150	100.0

Tabel 5. Clean Water Sanitation Distribution

Category	Frequency	Percent
Not Qualify	63	42
Qualify	87	58
Total	150	100.0

Table 6. The relationship between clean water facilities and the incidence of diarrhea

Category		Not Qualify	Qualify	Total	P value
Incidence of	Yes	9	23	32	
diarrhea	No	54	64	118	0.073
Total		63	87	150	

Table 4 shows that the majority (72%) of respondents use river/swamp/lake water as a source of water for their daily needs, in this case for bathing, washing, toileting, including washing food ingredients. However, if you look at the condition of water bodies that appear around settlements, the use of swamp water as a source of daily water is feared to have a negative impact on health, and vice

versa the use of swamp water and community activities on the outskirts of the swamp can cause pollution to swamp bodies, such as pollution of biological waste from MCK activities or pollution by the use of detergents. Table 5 shows that the majority (58%) of the daily water sources used by the research respondents have met the health requirements of water sources. Especially physically. Table 6 shows that here is no significant relationship between clean water facilities and the incidence of diarrhea, but even so the majority (58%) of the daily water sources used by the research respondents have met the health requirements of water sources.

3. Relationship Between Family Latrine Facilities And The Incidence Of Diarrhea

Table 7. Distribution of Community Toilet Sanitation in Pemulutane District

Characteristic	Category	Frequency	Percentage
Family latrine ownership	No	71	47.3
	Yes	79	52.7
Total		150	100
Location of defecation	Garden	9	12.7
	River/Swamp/Lake	62	87.3
Total		71	100
Closed latrine	No	105	70
	Yes	45	30
Total		150	100
Type of latrine	Leher angsa, latrine	71	89.9
	Cemplung/Cubluk/lubang	7	8.9
	The other	1	1.3

Table 8. Distribution of Family Toilet Facilities

Category	Frequency	Percentage
No Qualify	117	74.7
Qualify	38	25.3
Total	150	100

Table 9. Relationship of Family Toilet Facilities with The Incident of Diarrhea

Category		No Qualify	Qualify	Total	P value
Incident of	Yes	21	11	32	0.185
Diarrhea	No	91	27	118	
Total		112	38	150	

Based on Table 7, more respondents who already have family latrine facilities (52.7%). Even if based on the observation results, the majority (74.7%) of respondents' latrines do not meet the health

requirements. There are 71 of the total respondents who do not have a family latrine, with 87.3% doing defecation in rivers/swamps while the remaining 12.7% doing defecation in gardens. This of course can be a source of pollution for the surrounding water. Based on the results of the analysis, it was found that there was no significant relationship between family latrine facilities and the incidence of diarrhea.

4. The Relationship Between Waste Disposal Site Sanitation And Diarrhea Incidence

Table 10. Sanitation Distribution of Residents' Garbage Shelters in Pemulutan District

Characteristic	Category	Frequency	Percentage
Ownership of Waste Disposal	No	75	50
	Yes	75	50
Total		150	100
Type of Waste Disposal			
	Wastebasket	37	49.3
	Plastic bags	33	44
	Storage tank	4	5.3
	The other	1	1.3
Total		75	100
Other Garbage Disposal	Burned		
	Covered with soil	5	6.7
	Thrown into the river	32	42.7
Total Data		75	100
Sanitation of Waste Disposal	No Qualify	139	92.7
	Qualify	11	7.3
Total		150	100

Based on Table 10, it shows that the majority of the waste shelters owned by the response do not meet health requirements (92.7%). In more detail, respondents who have and do not have waste collection facilities are 50% each. Where the majority (49.3%) use the waste basket as a means of storage. Facts in the field show that there are still many respondents (50.7%) in handling household waste by burning it, and (42.7%) by dumping it into water bodies, namely rivers.

Table 11. Relationship between Waste Disposal Facilities with The Incident of Diarrhea

Category		Waste Disposal Facilities		Total	P value
		No Qualify	Qualify		
The incident of Diarrhea	Yes	30	2	32	0.791
	No	109	9	118	
Total		139	11	150	

Based on the statistical test with Chi square obtained PValue = 0.791 so that there is no relationship between waste disposal facilities at home and the incidence of diarrhea.

5. Relationship between Wastewater Sewerage Facilities (SPAL) and the incidence of diarrhea

Table 12. Sanitation Distribution of Wastewater Sewerage Facilities in Pemulutan District

Category (Saniter)	Frequency (n)	Percent (%)
No Qualify	58	38.7
Qualify	92	61.3
Total	150	100.0

Tabel 13. Relationship between Wastewater Sewerage Facilities (SPAL) and the incidence of diarrhea

		Wastewater Sewerage Facilities		Total	P value
		No Qualify	Qualify		
Incident of diarrhea	Yes	11	21	32	
	No	47	71	118	0.574
Total		58	92	150	

Based on Table 12 shows that the sanitary conditions of the sewerage of the majority of respondents (61.3%) have met the requirements. Based on the statistical test with Chi square, it was found that there was no relationship between the quality of the sewerage and the incidence of diarrhea.

Discussion

1. Personal Hygiene The Behavior Of Washing Hands With Soap and Running Water

Based on the results of the study shows that there are more mothers who apply good personal hygiene than mothers who apply poor personal hygiene, although in some variables the difference is not too much, 55.3% of respondents are accustomed to washing hands with soap before eating. 73.3% of respondents are accustomed to washing their hands with soap after defecating, 98% of respondents are accustomed to washing their hands with soap after washing their children, 62% of respondents are accustomed to washing their hands with soap after handling animals. However, 52.7% of respondents

are not accustomed to washing their hands with soap after cleaning the trash and 73.3% of respondents are not accustomed to washing their hands with soap after disposing of garbage. Overall, it shows that 97.3% of respondents still have bad habits in terms of washing hands using soap and running water in their daily activities. The results also show that there is no significant relationship between the respondent's personal hygiene and the incidence of diarrhea. The results showed that more respondents applied good personal hygiene than respondents who applied bad personal hygiene. However, various studies have shown the importance of personal hygiene factors on the incidence of diarrhea, especially the habit of washing hands using soap and running water on the incidence of diarrhea. Although based on the analysis, the results showed that there was no relationship between personal hygiene and the incidence of diarrhea, but the analysis also showed that more of the respondents who applied good personal hygiene did not suffer from diarrhea than the other way around. This shows the role of personal hygiene on the incidence of diarrhea. For example, research by Muhajirin, one of which proves that there is a relationship between maternal personal hygiene and the incidence of diarrhea in toddlers.[8] Several other studies also support the role of hand washing habits in the incidence of diarrhea.[9,10,11,12]

2. The Relationship Between Clean Water Facilities And The Incidence Of Diarrhea

The result shows that the majority (72%) of respondents use river/swamp/lake water as a source of water for their daily needs, in this case for bathing, washing, toileting, including washing food ingredients. However, if you look at the condition of water bodies that appear around settlements, the use of swamp water as a source of daily water is feared to have a negative impact on health, and vice versa the use of swamp water and community activities on the outskirts of the swamp can cause pollution to swamp bodies, such as pollution of biological waste from MCK activities or pollution by the use of detergents. Table 5 shows that the majority (58%) of the daily water sources used by the research respondents have met the health requirements of water sources. Especially physically. Table 6 shows he result that here is no significant relationship between clean water facilities and the incidence of diarrhea, but even so the majority (58%) of the daily water sources used by the research respondents have met the health requirements of water sources.

Clean water from PDAM used by residents is easy to get so that people can have personal clean water facilities for people who can afford it. Although some already have clean water facilities personally, there are still many people who do not yet have these facilities. Residents who do not have clean water facilities use clean water communally with public toilet facilities. There are still a small

number of residents who use groundwater that has inadequate conditions.[13] Realizing the importance of water for humans, the use of water that does not meet the quality standard criteria according to its designation can cause health problems caused by the presence of pathogenic microorganisms, toxic chemicals and radioactive substances.[8] Several studies have shown a relationship between the quality of drinking water sources and the incidence of diarrhea in children under five.[14,15,16] Although based on laboratory tests on 20 samples of drinking water sources, no E-coli content was found, but research by Aryanto showed that the level of risk of contamination of drinking water sources was categorized as moderate risk of causing diarrhea 2,633 times, high risk category 2,613 times, and very risky category. high risk 3.31 times, compared to drinking water sources with a low level of pollution risk.[17]

3. Relationship Between Family Latrine Facilities And The Incidence Of Diarrhea

Based on the results of the analysis, it was found that there was no significant relationship between family latrine facilities and the incidence of diarrhea. Even if based on the observation results, the majority (74.7%) of respondents' latrines do not meet the health requirements. There are 71 of the total respondents who do not have a family latrine, with 87.3% doing defecation in rivers/swamps while the remaining 12.7% doing defecation in gardens. This of course can be a source of pollution for the surrounding water.

Although there are many factors that make residents prefer to do MCK activities in swamps. This is in line with the results of research by Yuliama which shows that actually people who live on the banks of the Karang Mumus River, Kelurahan Bandara know that the quality of the Karang Mumus River has decreased due to the large amount of waste disposed of by people living on the banks of the river and feces. and liquid waste are also thrown into the river but some of them don't care and still use the water for bathing, washing and latrines because they don't have PDAM facilities. The results of this study, according to respondents, the declining water quality of the Karang Mumus River is because local people still throw garbage into the river, use latrines above the river so that feces and liquid waste enter the river and make the river dirty. As an alternative solution related to proper disposal of feces, the disposal of domestic waste is directed to use a septic tank system with infiltration/filter, partly with a septic tank without infiltration. By processing directly into the existing IPLT (using a sewage truck) and using the SPAL system. Management and construction of domestic facilities involving community participation with the support of government assistance. In this way, it is hoped that the disposal of feces can be better managed and of course this must begin with the sanitary conditions of family latrines that

meet health requirements.[18] According to the Ministry of Health of the Republic of Indonesia, 2004 there are several provisions for latrines that meet health requirements, namely:[19]

a. Dirt does not contaminate the soil surface, ground water, and surface water,

b. The distance of the latrine to the source of clean water is not less than 10 meters,

c. strong construction, d. Minimum lighting 100 lux (Kepmenkes No. 519 of 2008),

e. Does not become a nest of insects (mosquitoes, flies, cockroaches),

f. Cleaned at least 2x a month,

g. Ventilation 20% of the floor area,

h. Equipped with protective walls and roofs, waterproof and light colored walls,

i. Inexpensive

j. Have a good drain and final disposal, which is a hole other than closed

k. And must be cemented so as not to pollute the environment.

According to research by Wagner cited by Muhajirin, the distance of spread of bacterial contamination from the fecal shelter in accordance with the direction of groundwater flow can reach 11 meters, while the spread of chemicals can reach 95 meters from the source. The vertical distribution in the soil layer far from the groundwater table is 3 meters with a width of about 1 meter.[8] Based on this, the minimum distance of the latrine location from the source of clean water is 10 meters. On sloping areas, the location of the latrine should be placed under a source of clean water. Stool as a waste product of human metabolism which is full of disease-causing germs, if not managed properly, can be a source of diarrheal disease germs that are transmitted to other humans through contaminated clean water sources or through disease-carrying vectors such as insects and nuisance animals. Disease germs originating from human feces can be in the form of viruses, bacteria or parasites such as Rotavirus, Shigella, Salmonella, Escherichia coli, Compylobacter, Staphylococcus, Clostridium perfringens, Cryptosporidium, Giardiasis, Cholera and Amoebiasis. Several studies support this theory, namely by showing that there is a relationship between the quality of latrines and the incidence of diarrhea, including research by Ismail, that latrines that meet the requirements will reduce the risk of diarrhea in children under five.[20] This is also supported by research conducted by Muhajirin, Adisasmito, and Yusmidiarti.[8,15,18] As well as research by Aryanto, that the disposal of unhygienic feces, in the form of ditches, ponds, rivers, and similar facilities has a risk of causing diarrhea in toddlers by 3,289 compared to the disposal of feces in the form of a goose-neck latrine.[17]

4. The Relationship Between Waste Disposal Site Sanitation And Diarrhea Incidence

Based on the result shows that the majority of the waste shelters owned by the response do not meet health requirements (92.7%). In more detail, respondents who have and do not have waste collection facilities are 50% each. Where the majority (49.3%) use the waste basket as a means of storage. Facts in the field show that there are still many respondents (50.7%) in handling household waste by burning it, and (42.7%) by dumping it into water bodies, namely rivers. Based on the statistical test with Chi square obtained P-Value = 0.791 so that there is no relationship between waste disposal facilities at home and the incidence of diarrhea. The recommended waste storage conditions are:[21]

a. Made of waterproof, strong, and not easy to leak.
b. The lid used for garbage collection can be easily opened, emptied, and easy to clean.
c. The size of the garbage collection site is made in such a way that it can be transported even with only 1 person.

Meanwhile, the health requirements for temporary waste collection sites:

a. There are two doors: both of these doors are entered for entry and for exit
b. The duration of the waste is limited to a maximum of three days in the bin
c. Should not be located in flood-prone areas
d. The volume of the temporary waste storage area is able to accommodate waste for at least three days.
e. There is a ventilation hole that is covered with gauze to prevent the entry of fly vectors.
f. There is a water faucet that can be used for cleaning.
g. It is not a breeding ground for various vectors.
h. Easily accessible by the public or transport vehicles.

Research by Hakki on the impact of riverbank utilization on environmental quality in Pasar Krui Village. A total of 27 (90%) respondents disposed of their garbage in the Tuwak River because it is closer to residential areas than public waste disposal sites and a total of 30 (100%) respondents stated that there was pollution of the Tuwak River because the river water was mixed with garbage. The river is something that is very useful for the survival of every living thing in this world. For humans, river water is very useful to support their daily needs, rivers can be used as drinking water, washing, and there are also some people who use it as a source of electricity generation. However, unlike what happened to the Tuwak River, Pasar Krui Village, Pesisir Barat Regency, residents who live in the riverbank area

mostly use it as a place for their household waste disposal, which of course will damage the sustainability of the river. As one alternative solution to the waste problem in this area so that people do not throw garbage into the river which can then pollute the river is through the provision of trash bin spots in each area, processing waste into organic waste and placing TPS to accommodate household waste temporary.[22]

5. Relationship between Wastewater Sewerage Facilities (SPAL) and the incidence of diarrhea

Based on the result shows that the sanitary conditions of the sewerage of the majority of respondents (61.3%) have met the requirements. Based on the statistical test with Chi square, it was found that there was no relationship between the quality of the sewerage and the incidence of diarrhea. As an example of the system applied in the Cikapundung Riverbank Area, the wastewater disposal system is divided into two, namely the first wastewater from bathing water, washing clothes, cooking waste, and kitchen utensils. Second, waste water from the rest of defecation. For the sewerage system, the community uses the septic tank facility individually or communally through public toilet facilities. However, the facilities for the disposal of waste water from bathing, washing clothes, cooking residue, and washing kitchen utensils are directly channeled into the river. The sewerage channel is irregular because the sewer network is in a very dense residential area. This condition causes the maintenance of the canal to be difficult, so that if a leak occurs it causes a puddle and is difficult to repair. Inundation that occurs or the repairs made cannot be maximized, causing the area to become increasingly slum. Meanwhile, the waste water management system uses a communal or individual saptic tank located in the middle of a settlement with a very narrow alley, making it difficult to maintain if the saptic tank is full, because it is used by a large number of residents.[23] The wastewater disposal system applied must meet the following requirements:

a. No impact on contamination of clean water sources, especially drinking water.
b. Does not cause pollution to surface water.
c. Does not cause water pollution, namely for fisheries, river water, or recreational areas and especially for daily needs.
d. It is not infested by vector animals such as flies, rats and insects, and is not a breeding ground for various germs and vectors.
e. Must be in a closed condition, and not open if the wastewater is not treated.
f. Does not cause odor or unpleasant smell

Conclusions

Personal hygiene variables, especially the habit of washing hands using soap and running water, variables for clean water facilities, variables for family latrine facilities, variables for garbage collection facilities, and variables for waste water treatment facilities had no relationship with the incidence of diarrhea. The need to increase knowledge and awareness of citizens about the importance of improving the habit of washing hands using soap and running water and maintaining sanitation of basic home sanitation facilities.

Acknowledgment

We would like to thank the staff and health workers of Siti Fatimah Hospital, South Sumatra, Gandus Hospital Palembang, and Sriwijaya Hospital Palembang as well as all respondents who have provided assistance and support for this research.

Funding

The authors should state that they have no funding for the research.

Conflict of Interest

The authors declare that they have no conflict of interest.

References

1. Andy Muharry, Icca Stella Amalia, Aat Dwihayati. Analysis on The Occurrence of Diarrhea of Children In Order of Household). Jurnal Ilmu-Ilmu Kesehatan Bhakti Husada Kuningan. 2017;6(2).
2. Litbang Kemenkes. Laporan Nasional Riskesdas; 2007.
3. Ogan Ilir district government. Profile of Ogan Ilir District; 2015.
4. Maharani, Devita dan Maria Anita. 2013. Personal Hygiene Ibu Yang Kurang Berhubungan Dengan Kejadian Diare Pada Balita Di Ruang Anak. Jurnal STIKES. 2013; 6(1).
5. Nurul utami dan Nabila Luthfiana. Faktor-Faktor yang Memengaruhi Kejadian Diare Pada Anak. MAJORITY. 2016;5(4): 101-106.
6. EGC. Indikator Perbaikan Kesehatan Lingkungan Anak. Jakarta; 2008.

7. Murti, Bhisma. Desain dan Ukuran Sampel untuk Penelitian Kuantitatif dan Kualitatif di Bidang Kesehatan. Yogyakarta: Gadjah Mada University Pres; 2010.
8. Muhajirin. Hubungan Antara Praktek Personal Hygiene Ibu Balita Dan Sarana Sanitasi Lingkungan Dengan Kejadian Diare Pada Anak Balita Di Kecamatan Maos Kabupaten Cilacap [Tesis]. Semarang: Program Pasca Sarjana Universitas Diponegoro; 2007.
9. Rosyidah, Alif Nurul. Hubungan Perilaku Cuci Tangan Terhadap Kejadian Diare Pada Siswa di Sekolah Dasar Negeri Ciputat 02. Jurnal Ilmiah Keperwatan Orthopedi. 2019; 3(1).
10. Kody, Martha Meti, dan Melki Sedek Landi. Kebiasaan Mencuci Tangan Dengan Kejadian Diare Pada Anak Sekolah Dasar Negeri Kota Waingapu Kabupaten Sumba Timur. Jurnal Kesehatan Primer. 2016; 1(1).
11. Purwandari, Retno, Anisah Ardiana, Wantiyah. Hubungan Antara Perilaku Mencuci Tangan Dengan Insiden Diare Pada Anak Usia Sekolah Di Kabupaten Jember. 2013; 4(2).
12. Rosidi, Ali, Erma Handarsari, Mita Mahmudah. Hubungan Kebiasaan Cuci Tangan Dan Sanitasi Makanan Dengan Kejadian Diare Pada Anak SD Negeri Podo 2 Kecamatan Kedungwuni Kabupaten Pekalongan. Jurnal Kesehatan Masyarakat Indonesia. 2010; 6(1).
13. Faisal Aswar, Rusli Ngatimin, Arsunan Arsin. Analisis Situasi Perilaku dan Lingkungan Terhadap Kejadian Diare di Pemukiman Transmigrasi Desa Belabori Kab. Gowa. Jurnal MKMI. 2010; 6(3): 153-159.
14. Eralita. Hubungan Sanitasi Lingkungan, Pengetahuan Dan Perilaku Ibu Terhadap Diare Akut Pada Balita Di Kecamatan Pahandut Kota Palangka Raya [Tesis]. Yogyakarta: Magister Ilmu Kesehatan Masyarakat Universitas Gadjah Mada; 2011.
15. Adisamito, Wiku. 2007. Faktor Risiko Diare Pada Bayi Dan Balita Di Indonesia: Systematic Review Penelitian Akademik Bidang Kesehatan Masyarakat. Makara Kesehatan. 2007; 11(1): 1-10.
16. Ahmad, M. Iqbal, Suriah, Indra Fajarwati. Perilaku Personal Hygiene di Kelurahan Karema Kecamatan Mamuju Sulawesi Barat. Makasar; Fakultas Kesehatan Masyarakat Universitas Hasanudin: 2013.
17. Aryanto, Samsu. Studi Sosiodemografi Dan Hygiene Sanitasi Lingkungan Pada Balita Penderita Diare Di Kota Makassar [Tesis]. Yogyakarta: Magister Ilmu Kesehatan Masyarakat Universitas Gadjah Mada; 2012.

18. Yusmidiarti. Sarana Kesehatan Lingkungan Dan Perilaku Ibu Dengan Kejadian Diare Pada Balita Di Wilayah Puskesmas Pasar Ikan Kecamatan Teluk Segara Kota Bengkulu Tahun 2010 [Tesis]. Yogyakarta: Magister Ilmu Kesehatan Masyarakat Universitas Gadjah Mada; 2011.
19. Mukono. Prinsip Dasar Kesehatan Lingkungan. Surabaya : Airlangga University Press; 2006.
20. Ismail. Faktor-faktor risiko yang berhubungan dengan kejadian penyakit diare akut pada anak usia 0-5 tahun di Kabupaten Bengkulu Utara [Tesis]. Yogyakarta: Magister Ilmu Kesehatan Masyarakat Universitas Gadjah Mada; 2009.
21. *Notoatmodjo*, Soekidjo. Ilmu Kesehatan Masyarakat. Rineka. Cipta. Jakarta; 2003.
22. Wan Hakki, I Gede Sugiyanta, Edy Haryono. Dampak Pemanfaatan Bantaran Sungai Terhadap Kualitas Lingkungan Di Kelurahan Pasar Krui. Jurnal Penelitian Geografi. 2015; 3(4).
23. Karto Wijaya , Asep Yudi Permana, Noor Suwanto. Kawasan Bantaran Sungai Cikapundung Sebagai Pemukiman Masyarakat Berpenghasilan Rendah (Mbr) Di Kota Bandung. Jurnal Arsitektur. 2017; 1(2).

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ISBN 978-623-399-020-2