RESEARCH ARTICLE

THE RELATIONSHIP OF ENVIRONMENTAL SANITATION AND MOTHER'S BEHAVIOR WITH THE INCIDENCE OF DIARRHEA IN TODDLERS LIVING IN DIFFERENT TOPOGRAPHIC TYPES IN THE SERVIÇO SAÙDE MUNICIPIO COVALIMA WORK AREA.

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ARTICLEINFO

ABSTRACT

Diarrhea is a disease based on the environment. *serviço saùde Muncipio Covalima* is one of the regions with the second-highest IR in Timor-Leste 2017, with a prevalence of 16.7 percent of all diarrhea events and a major cause of under-five deaths of 25.2 percent. The purpose of this study was to determine the relationship between environmental sanitation and maternal behavior with the incidence of diarrhea in infants in the *Serviço Saude* municipal area of *Covalima.* This research is quantitative analytic research with a Cross-Sectional approach. The sample in this study amounted to 98. The technique in sampling; Multi-stage Random Sampling. Research instruments in the form of questionnaires and observation sheets. The results showed that; "There is a meaningful relationship between drinking water sources with Prevalence Ratio (RP) 1,183 and 95% CI: lower 1,038 and upper 13,421, latrine ownership with Ratio Prevalence (RP) 1,389 and 95% CI: lower 1,705 and upper 22,302, behavior/habits cook or boil drinking water and process food with a Prevalence Ratio (RP) 1.119, and 95% CI: lower 1.634 and upper 17.706, and behavior / habits of providing complementary feeding and caring for children with Prevalence Ratio (RP) 3,238 and 95% CI: lower 4,900 and upper 183,690. The results of this study also showed that: There was no relationship between the availability of trash cans and household sewage, behavior/habits of defecation, behavior/habits of washing hands with soap with the incidence of diarrhea in children under five. Behavior/habits of providing complementary feeding and caring for children are the most significant factors associated with the incidence of diarrhea in infants. It is recommended to the community, especially mothers who have toddlers to maintain environmental conditions and improve clean and healthy living behavior, especially in taking precautions to prevent diarrhea such as washing hands with soap after bowel movements, before eating, before preparing and feeding toddlers.

INTRODUCTION

Diarrhea is an environmental-based disease that is still a major health problem in developing countries and has the potential to cause death. WHO states that diarrhea is still the main cause of death, as many as 41 per 1000 of live births. Around 2.6 million children died in 2016 due to diarrhea, every day 15,000 children die before reaching the age of 5 years and 10 children die every minute *(WHO, 2018)*. In Timor-Leste, diarrhea is a tropical disease in infants with a prevalence of 16.7 percent of all diarrheal events and is a major cause of infant mortality of 25.2 percent. Globally, toddler deaths are caused by pneumonia, diarrhea, and malaria. Therefore, further management is needed according to the 4th MDG (Millennium Development Goals) target of reducing child mortality from 2000 to 2015 to 3.9 percent and targeted in 2030 the mortality rate for children under five can be reduced to 25 percent (WHS 2016). One effort to reduce

diarrhea mortality is through the identification and prevention of risk factors for diarrhea. A toddler is an age group that is susceptible to disease because the immune system is still weak so it is susceptible to bacterial, viral or parasitic infections. In general, the highest incidence of diarrhea occurs in one and two years of life which is followed by a decrease with increasing age. In 2013, 10 percent of diarrhea cases occurred in children under five years old. Diarrhea is the 2nd leading cause of death in children under five with the number of child deaths per year (CMR) 42.5 per 1000 live births. (Timor-Leste; WHO Statistics Profile, Last Update 2015). The occurrence of diarrhea generally occurs in developing countries with poor environmental sanitation conditions, inadequate water supply, poverty, and low education. Timor-Leste is one of the developing countries, which has quite high diarrhea cases each year *(DHS, May 2017)*. Timor-Leste's 2016 health statistics report shows that out of the 10 largest

incidences, diarrhea disease ranked second with a total of 15,074 cases, diarrhea disease ranked third with 12,144 cases, with a mortality rate of 2 children under five. (DHS, May 2017). Data *Estatistica Informasaun da Saùde* (EIS) municipal Covalima diarrhea disease is ranked second with 1,853 cases, as well as the classification of diseases in the IMCI program diarrhea disease is ranked second with 531 cases of children under five. (*SSM Covalima, 2017*). Many factors affect the occurrence of diarrhea disease in infants. Notoatmodjo (2003) identified two main factors causing diarrhea namely environmental factors and cultural or behavioral factors. Environmental factors include poor environmental sanitation, latrine ownership that does not meet requirements, limited availability of clean water, inadequate means of landfills and household wastewater. While behavioral factors include: open defecation habits, bad habits not washing hands before eating, and the low awareness of the community in disposing of garbage or household waste in its place. Random disposal of feces in the place and quality of drinking water sources plays a role in the spread of germs diarrhea in infants. The experience of several countries proves that the use of latrines as a place to dispose of feces has a large impact on reducing the risk of diarrhea. Drinking water facilities are also the most important part of environmental health. All sources of drinking water must meet drinking water health requirements because it is very closely related to diarrhea disease. The disposal of household wastewater also contributes to environmental sanitation.

Home pages that are muddy due to poor Waste Water Sewerage facilitate the transmission of toddlers' diarrhea diseases, especially those transmitted by worms and parasites. Solid waste such as garbage is also a good medium for the proliferation of disease vectors. The germs that cause diarrhea usually spread through the oral-fecal, among others, through food or drink that is contaminated with feces and/or in direct contact with the stool of the patient. Based on the above problems, scientific research is needed to evaluate risk factors for Environmental Sanitation and Maternal Behavior and how much influence on the incidence of diarrhea in infants living in different topographic types in the *Serviço Saùde Municipio Covalima* working area, so that it can be used as input in the preparation of counseling programs as well as policies in preventing an increase in the incidence of diarrhea in infants.

METHODOLOGY

Research design: This research is a quantitative analytic study with a cross-sectional approach, which is a study conducted with a momentary observation or in a certain period of time and each subject of study was only made one observation during the study (Machfoedz, 2007).

Place and time of Research: The research was conducted from October to November 2018. The location of the study was carried out in two regions with different topographic types namely in the *SSK Fohorem* representing the topographic type of the mountainous or inland areas and the *SSK Suai-villas represent* the topographic type of the lowland or urban areas in *Serviço Saùde Municipio Covalima*.

Data Type and Source: Secondary data were obtained from the person in charge of the statistical program *Serviço saùde municipal Covalima* and related agencies. In addition, data is also obtained through library research and electronic-based data.

Research Population: The study population is all mothers who have toddlers and visit the community center. The inclusion and exclusion criteria are as follows: Inclusion Criteria: Mothers who have toddlers and Willing to be respondents. Exclusion Criteria: Mothers who are sick when visited.

Research Samples: Determination of the Sample in this study by using the Multageage random sampling method. The first stage is to determine the purpose of the survey in a purposive manner. Two centers were established, namely, the *Suai-Vila*community center which represented the *saùde* center in the semi-urban area and the *Fohorem* community center which represented the *saùde* center in the mountains or inland as the primary sample unit (PSU). The second stage is to determine the sample of toddlers and their mothers who are in both centers at random. Sampling in the study using simple random sampling. The sample size in this study was 98.

Research Conceptual Framework
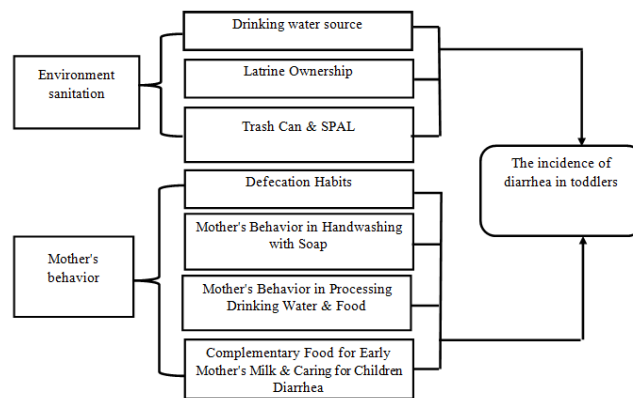
Source: Developed by researchers 2018

Data collection technique: Data collection tool in the form of a questionnaire with structured questions accompanied by observation / direct observation to the home of the respondent to see the relevant environmental conditions. The research questionnaire consisted of the following sections: (1) Characteristics of respondents included: complete name, age, last education, and occupation of the respondent (2) History of diarrhea events in toddlers containing the last history of diarrhea events in toddlers in the last 6 months period toddlers experiencing diarrhea at that time (3) Environmental sanitation contains access to drinking water sources, ownership of family latrines, and availability of family waste disposal sites and SPAL. (4) Mother's behavior contains habits of defecation, habits of washing hands with soap, habits of cooking drinking water and breastfeeding complimentary food habits and how to care for children affected by diarrhea.

Data analysis: Data analysis was performed by univariate analysis and bivariate analysis, using SPSS version 23.0. The results of the study are presented in the form of tables and narratives. Univariate analysis is intended to obtain a general description of the characteristics of respondents with the incidence of diarrhea in infants. Data is presented in the frequency distribution table. Bivariate analysis is intended to evaluate and analyze aspects of Environmental Sanitation which include: Source of Drinking Water, Latrine Ownership and Availability of Trash and SPAL as well as aspects of

Mother Behavior consisting of: CHAPTER habits, habit of washing hands with soap, Habits of drinking drinking water and Habits of providing complementary feeding and how to treat children suffering from diarrhea with the incidence of diarrhea in infants, using the Chi-square test.

RESULTS AND DISCUSSION

Characteristics of Respondents: Based on the method or method of determining the sample, the samples in this study are mothers who have toddlers.

Distribution of toddler characteristics according to sex

Characteristic	Diarrhea case	Yes = n (%)	Total= n(%)	P value
	No = n (%)			
Age classification (mother) :				
15-24 Age	45 (88,2)	6 (11,8)	51 (100)	0,178
25-34 Age	43 (97,7)	1 (2,3)	44 (100)	
35-44 Age	3 (100)	0	3 (100)	
Education Level (mother):				
Primary School	25 (86,2)	4 (13,8)	29 (100)	
Junior High School	23 (85,2)	4 (14,8)	27 (100)	0,200
Senior High School	38 (90,5)	4 (9,5)	42 (100)	
Job type (mother):				
Government employees	5 (83,3)	1(16,7)	6 (100)	
entrepreneur	3 (75,0)	1 (25,0)	4 (100)	0,100
Housewife	78 (88,6)	10 (11,4)	88 (100)	
Toddler gender:				
Male	46 (88,5)	6 (11,5)	52 (100)	1,000
Female	40 (87,0)	6 (13,0)	46 (100)	
Toddler age classification:				
9 – 19 Month	25 (100)	0	25 (100)	
20 – 30 Month	31 (88,6)	4 (11,4)	35 (100)	
31 – 41 Month	19 (95,0)	1(5,0)	20 (100)	0,025
42 – 52 Month	13 (92,9)	1 (7,1)	14 (100)	
53 – 63 Month	3 (75,0)	1 (25,0)	4 (100)	
Total		98 (100)		

Distribution of factors related to the incidence of diarrhea

Variabel	Diarhea Case		Total= n(%)	RP Value	95% CI	
	No=n (%)	Yes=n (%)			Lower	Upper
Drinking water source:						
No	56(93,3)	4(6,7)	60(100)	1,183	1,038	13,421
Yes	30(78,9)	8(21,1)	38(100)			
Toilet ownership:						
No	74(92,5)	6(7,5)	80(100)	1,389	1,705	22,302
Yes	12(66,7)	6(33,3)	18(100)			
Trash and Sewer Disposal						
No	13(68,4)	6(31,4)	19(100)	0,740	0,050	0,638
Yes	73(92,4)	6(7,6)	79(100)			
Defecation behavior / habits:						
No	52 (89,7)	6(10,3)	58(100)	1,054	0,455	5,136
Yes	34(85,0)	6(15,0)	40(100)			
Hand washing behavior:						
No	6(50,0)	6(50,0)	12(100)	0,537	0,018	0,305
Yes	80(93,0)	6(7,0)	86(100)			
Habits of processing drinking water and food:						
No	65(90,3)	7(9,7)	72(100)	1,119	1,634	17,706
Yes	21(80,8)	5(19,2)	26(100)			
Behavior of complementary feeding and how to care for children with diarrhea:						
No	84(92,3)	7(7,7)	91(100)	3,238	4,900	183,690
Yes	2(28,6)	5(71,4)	7(100)			
Total			98 (100)			

Source: Result of Primary Data processed and Analysing

The basis for the decision to accept the hypothesis is based on a significant level (α value) of 95% and the Chi-Square (X2) Risk technique, the Cross tabulation method with a 2x2 table in the SPSS 23 program to analyze the prevalence ratio (RP), which is the difference between the prevalence of effect events on subjects from risk groups, with a prevalence of effects on subjects in the riskless group. The prevalence ratio is formulated with the formula RP = A / (A + B): C / (C + D) from the 2x2 table, the results of SPSS cross-tabulation calculations and analysis with collected data, then X2 (Chi-square) can be used, RP (prevalence ratio) with a confidence level of 95% CI (Confidence Interval).

The respondent was composed of 98, namely mothers who have toddlers and have diarrhea.

Distribution of respondents according to age classification: Table 4.1 above, shows that according to the classification or age group of mothers aged 15-24 years, the toddlers did not suffer from diarrhea by 88.2% and those suffering from diarrhea were 11.8%. 97.7% and those suffering from diarrhea by 2.3%, and the age group of mothers 35-44 whose toddlers do not suffer from diarrhea by (3) 100%.

Distribution of Mother and Toddler characteristics

Distribution of respondents according to education level: The table above shows that respondents according to the level of education of mothers: at the elementary level the toddlers did not suffer diarrhea by 86.2% and those suffering from diarrhea were 13.8%, at the junior high school level the toddlers did not suffer from diarrhea by 85.2% and those with suffering from diarrhea by 14.8%, and high school education level where toddlers do not suffer from diarrhea by 90.5% and those suffering from diarrhea by 9.5%.

Distribution of respondents according to type of work: Table 4.1 above, shows that respondents according to type of work, then the group of mothers who are civil servants (PNS) whose toddlers do not suffer diarrhea as much as 83.3% and those suffering from diarrhea 16.7%, whereas in the group of mothers- mothers who worked as traders or entrepreneurs whose toddlers did not suffer diarrhea as much as 75.0%, and who suffered diarrhea by 25%, while in the group of housewives (IRT) whose toddlers did not suffer diarrhea by 88.6% and those suffering from diarrhea by 11.4%. Table 4.1 can show that toddlers with male sex who did not suffer from diarrhea were 88.5%, and those suffering from diarrhea were 11.5%, while toddlers with female sex who did not suffer from diarrhea were 87.0% and those who did not suffer diarrhea. suffer from diarrhea by 13.0%.

Distribution of toddler characteristics according to age classification: Table 4.1 above shows that according to the classification of toddlers or the age group of toddlers 9-19 months who do not suffer from diarrhea by 25 toddlers (100%), the age group of toddlers 20-30 months who do not suffer from diarrhea is 88.6% and those suffering from diarrhea by 11.4%, the age group of toddlers 31-41 months who did not suffer diarrhea by 95.0% and those suffering from diarrhea by 5.0%, the age group of toddlers 42-52 months who did not suffer from diarrhea by 92.9% and those who suffer from diarrhea by 7.1% and the age group of toddlers 53-63 months who do not suffer from diarrhea by 75.0% and who suffer from diarrhea by 25.0%.

DISCUSSION

The relationship between drinking water sources and the incidence of diarrhea in infants: The results of research in the aspect of environmental sanitation in drinking water sources with the incidence of diarrhea in infants are presented in the following table**.** Clean water sources have a role in the spread of several infectious diseases. The things that need to be considered can be the supply of clean water, namely: taking water from clean water sources, taking and storing water in a clean and closed place and using a special dipper to take water, maintain and maintain the source of water from pollution, use water that is boil, and wash all cooking and eating utensils with clean water. In accordance with table 4.2 above, a conclusion is drawn that environmental sanitation in terms of drinking water sources, shows that there is a significant relationship between drinking water sources and the incidence of diarrhea in infants living in different topographies in the Covalima municipal service working area, with the Prevalence Ratio (RP) 1,183 with a confidence level of 95% CI: lower 1,038 and upper 13,421. This study is not in line with research conducted by I Wayan Arimbawa, et al (2016), which says there is no relationship between access to water sources and the incidence of diarrhea in infants in the village of Sukawati, Gianyar, Bali, with a value of p = 0.236 (p> 0.05). On the other hand, another

study that is in line with this research is a study conducted by **Sudirman Soamole**, et al (2017) which states that there is a significant relationship between the quality of clean water and the incidence of diarrhea in very, Ternate, with p = 0.003 (p < 0.05)).

The relationship between latrine ownership and the incidence of diarrhea in infants: Conditions for disposal of feces (latrines) that meet the health rules are: do not pollute the surrounding soil surface, do not pollute the surrounding surface water, do not pollute the water in the surrounding soil, dirt should not be open because it can become a breeding ground for other disease vectors, does not cause odor, and easy to use and maintain. In this study, almost the majority of respondents used gooseneck latrines. According to Entjang (2000), gooseneck latrines are types of latrines that meet health requirements. This latrine is shaped like a gooseneck so that it will always be filled with water which acts as a stopper from the mud and prevents flies or other insects from settling in the stool. While most respondents already have latrines but do not yet meet health requirements. Where there are still respondents who rarely clean their toilets and cause an odor that is not pleasant because it is rarely cleaned, so the possibility of contamination with bacteria that cause diarrhea is very large. And some toilets are still nesting places for vectors such as flies, cockroaches, and mice.

In accordance with table above, a conclusion is drawn that environmental sanitation in terms of latrine ownership, shows that there is a significant relationship between latrine ownership and diarrhea occurrence in infants living in different topographies in the Covalima municipal service saùde working area, with a Prevalence Ratio (RP) 1.389 and 95% confidence level CI: lower 1,705 and upper 22,302, have a risk> 1 time for diarrhea. This study is not in line with research conducted by I Wayan Arimbawa et al. (2016), which says there is no relationship of latrine ownership and diarrhea incidence in toddlers in Sukawati village, Gianyar, Bali, with a value of p = 0.236 (p> 0.05). Another study that is in line with this research is a study conducted by Sudirman Soamole et al. (2017) which states that there is a significant relationship between latrine ownership and the incidence of diarrhea in the Sangaji urban village of Ternate, with p = 0.003 (p < 0.05).

The relationship between trash cans and SPAL with the incidence of diarrhea in infants: This research shows that sewerage water that does not meet the requirements greatly affects the occurrence of diarrhea in infants, this is because most residents have open sewage that can cause pollution of water sources, smelly, and standing water and also wastewater it is not thrown into the absorption trench but is allowed to flow away, so that it can invite the arrival of vectors of diarrhea disease. Likewise regarding the management and disposal of household waste and wastewater that is disposed of at random places where vector nests can be found such as flies, and others. In accordance with table 4.2 above, a conclusion is drawn that environmental sanitation in terms of the availability of rubbish bins and sewerage (SPAL), shows that there is no relationship between the availability of rubbish bins and sewerage (SPAL) with the incidence of diarrhea in toddlers living at the topography differs in the Covalima municipal service saùde working area, with a Prevalence Ratio (RP) of 0.740 and a confidence level of 95% CI: lower 0.050 and upper 0.638. This study is in line with research conducted by I Wayan Arimbawa et al. (2016), who said there was no

relationship between the availability of SPAL RT trash bins and the incidence of diarrhea in infants in Sukawati village, Gianyar, with a value of p = 0.236 (p> 0.05). Other research that is not in line with this research is a study conducted by Sudirman Soamole et al. (2017) which states that there is a significant relationship between the availability of trash with p = 0.002 (p < 0.05) and sewerage with p = 0.006 (p < 0.05) and the incidence of diarrhea in the Sangaji subdistrict of Ternate City, with p = 0.003 (p < 0.05).

The relationship between CHAPTER behavior/habits and the incidence of diarrhea in infants: Mother's behavior is very contrary to health advice, so the possibility of contamination with bacteria causing diarrhea has a very high chance. In terms of culture or customs and behavior of mothers washing their hands with soap and how drinking water and food processing greatly contribute and provide opportunities for the spread and occurrence of cases of diseases of diarrhea. Conditions for disposal of feces (latrines) that meet the health rules are: do not pollute the surrounding soil surface, do not pollute the surrounding surface water, do not pollute the water in the surrounding soil, dirt should not be open because it can become a breeding ground for other disease vectors, does not cause odor, and easy to use and maintain. In this study, almost the majority of respondents used gooseneck latrines. According to Entjang (2000), gooseneck latrines are types of latrines that meet health requirements.

This latrine is shaped like a gooseneck so that it will always be filled with water which acts as a stopper from the mud and prevents flies or other insects from settling in the stool. In accordance with table 4.2 above, a conclusion is drawn that maternal behavior regarding defecation behavior or habits, indicates that there is no relationship between bowel habits with the incidence of diarrhea among infants living in different topographies in the Covalima municipal service saùde working area, with the Prevalence Ratio (RP) 1.054 and 95% confidence level CI: lower 0.455 and upper 5.136. This study is in line with research conducted by Sukardi et al (2016), who said there was no correlation between bowel habits and the incidence of diarrhea in infants with a value of p = 0.066 (p<0.05) in the work area of Health Center. Other research that is not in line with this research is a study conducted by **Suci Wahid, et al (2015)** which states that there is a significant relationship between CHAPTER behavior and diarrhea in *Perkamil, Paal Dua, Manado* City with p = 0.01 (p < 0.05).

The relationship between behavior/habits of washing hands with soap with the incidence of diarrhea in infants: Mother's behavior is very contrary to health advice, so the possibility of contamination with bacteria causing diarrhea has a very high chance. Habits associated with personal hygiene that are important in transmitting diarrhea germs are hand washing. Washing hands with soap, especially after defecating, after defecating a child, before preparing food, before feeding the child and before eating, has an impact on the incidence of diarrhea. Washing hands properly and correctly can reduce the incidence of diarrhea. The expected behavior of the mother is washing hands with soap, especially after defecating, after removing the child's feces, before preparing food, before feeding the child and before eating. As well as handwashing behavior itself must be done using clean running water and soap. In accordance with table 4.2 above, a conclusion is drawn that maternal behavior in terms of behavior or habit of washing hands with soap, shows that there is no relationship

between the habit of washing hands with soap with the incidence of diarrhea in infants living on different topographies in the service area of the municipal service of Covalima, with a Prevalence Ratio (RP) of 0.537 and a confidence level of 95% CI: lower 0.018 and upper 0.305. This study is not in line with research conducted by Sukardi, et al (2016), who said there was no relationship between handwashing habits and the incidence of diarrhea in infants with a value of p = 0.066 (p < 0.05) in the work area of Poasia Health Center. Another study that is in line with this research is a study conducted by **Suci Wahid, et al (2015)** which states that there is a significant relationship between handwashing and diarrhea in the *Perkamil sub-district, Paal Dua District, Manado* City with p = 0.01 (p < 0.05).

The relationship between the behavior/cooking habits or boiling drinking water and food processing with the incidence of diarrhea in infants: The cause of diarrhea in humans is closely related to the physical quality of water consumed for drinking in everyday life. Using polluted drinking water in this case water that has been polluted from its source or when stored at home can cause diarrhea. So, the physical quality of water which is seen from the indicators of smell, taste, turbidity, temperature, color, and the number of solids dissolved, can directly trigger bacteriological and chemical contents in water. The occurrence of diarrhea can be caused by contamination of chemicals with certain organisms, especially if the concentration of the material is in high doses, it can cause diarrhea so drinking water must be boiled until boiled in silence before drinking.

In accordance with table 4.2 above, a conclusion is drawn that maternal behavior in terms of behavior or habit of washing hands with soap, shows that there is a significant relationship between the habit of boiling drinking water and food processing with the incidence of diarrhea in infants living at different topographies in the service area of service saùde Covalima municipality, with a Prevalence Ratio (RP) of 1.119 and a confidence level of 95% CI: lower 1.634 and upper 17.706, with a risk of> 1 time for diarrhea. This study is not in line with research conducted by Sukardi, et al (2016), who said there was no relationship between water and food processing habits with the incidence of diarrhea in infants with a value of p = 0.066 (p < 0.05) in the work area of Poasia Health Center. Other research that is in line with this research is a study conducted by Suci Wahid, et al (2015) which states that there is a significant relationship between drinking water cooking behavior and the incidence of diarrhea in the *Perkamil village, Paal Dua District, Manado* City with p = 0.01 (p < 0.05). Another study that is in line with this research is a study conducted by I Wayan Arimbawa, et al (2016) which states that there is a significant relationship between drinking water cooking behavior and the incidence of diarrhea in the village of S*ukawati, Gianyar, Bal*i with a value of p = 0.236 (p> 0.05).

The relationship between the behavior/habits of breastfeeding complementary feeding and how to care for toddlers and the incidence of diarrhea in infants: Mother's behavior is very contrary to health advice, so the possibility of being contaminated with the bacteria that causes diarrhea has a great chance. Mother's behavior of providing complementary feeding and caring for infants affected by diarrhea contribute and provide opportunities for the spread and occurrence of diarrhea cases or diseases. In accordance with table 4.2 above, a conclusion is drawn that maternal behavior in terms of complementary feeding and how to care for children with

diarrhea, shows that there is a significant relationship between supplementary feeding and how to care for children with diarrhea with the incidence of diarrhea in infants living in different topographies in the region Covalima municipal service saùde work, with Ratio Prevalence (RP) 3,238 and 95% confidence level CI: lower 4,900 and upper 183,690. This study is not in line with research conducted by Sukardi, et al (2016), who said there was no relationship between water and food processing habits with the incidence of diarrhea in infants with a value of p = 0.066 (p < 0.05) in the work area of Poasia Health Center. Other research that is in line with this research is a study conducted by Herry Tomy Ferllando, et al (2014) which states that there is a significant relationship between drinking water cooking behavior and the incidence of diarrhea in the Perkamil village, Paal Dua District, Manado City with p = 0,023($p < 0,05$).

Conclusion

Based on the results of research on environmental sanitation and behavior with the incidence of diarrhea in infants living in different topographic types in the working area of Covalima serviço saùde municipality in 1818, it can be concluded as follows: Significant relationship between drinking water sources with the incidence of diarrhea in infants with a prevalence ratio (RP)) 1,183 and 95% confidence level CI: lower 1,038 and upper 13,421. There is a meaningful relationship between latrine ownership and the incidence of diarrhea in infants with a Prevalence Ratio (RP) 1.389 and a 95% confidence level CI: lower 1,705 and upper 22,302, which have a risk of> 1 time for diarrhea cases. household wastewater (SPAL) with the incidence of diarrhea in infants with a Prevalence Ratio (RP) of 0.740 and a 95% confidence level CI: lower 0.050 and upper 0,638.

There is no relationship between CHAPTER behavior/habits with the incidence of diarrhea in infants with a Prevalence Ratio (RP) 1.054 and 95% confidence level CI: lower 0.455 and upper 5.136. There is no relationship between the behavior/habit of washing hands with soap with the incidence of diarrhea in infants with a Ratio Prevalence (RP) of 0.537 and a 95% confidence level of CI: lower 0.018 and upper 0.305. There is a significant relationship between the behavior/cooking habits or boiling drinking water and food processing with the incidence of diarrhea in infants with a Prevalence Ratio (RP) 1.119 and a 95% confidence level CI: lower 1,634 and upper 17.706, with a risk of> 1-time experiencing diarrhea. Behavior/habits of providing complementary feeding and caring for children with diarrhea in infants with a Prevalence Ratio (RP) 3,238 and a 95% confidence level CI: lower 4,900 and upper 183,690, with a risk of> 3 times having diarrhea.

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