

# The Relationship of Environmental Sanitation with Diarrhea Events among Children

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**Background :** Diarrhea is still one of the main causes of morbidity and death. Almost all geographical regions of the world and all age groups are attacked by diarrhea, but severe illness with high mortality is mainly found in infants and toddlers. The purpose of this study was to analyze the relationship of environmental sanitation with the incidence of diarrhea in infants in Kawedekan Hamlet, Balonggebang Village, Gondang District, Nganjuk Regency. **Method :** The design of this study was an observational quantitative study with a cross sectional approach with the focus of the research directed to be to analyze the relationship of environmental sanitation with the incidence of diarrhea in infants in Kawedekan Hamlet Balonggebang Village Gondang District Nganjuk District with a population of 73 respondents and a sample of 62 respondents taken with Simple technique Random Sampling. **Results :** The findings found that half the respondents had environmental sanitation in the less category as many as 31 respondents (50%). Most respondents did not experience diarrhea as many as 47 respondents (75.8%). The results of the study using the Chi Square Test showed that the p-value of  $0.001 < 0.05$  then  $H_1$  was accepted so it was concluded that there was a relationship of environmental sanitation with the incidence of diarrhea in infants in Kawedekan Hamlet Balonggebang Village Gondang District Nganjuk District. **Conclusion :** Communities in Kawedekan Hamlet Balonggebang Village Gondang District Nganjuk Regency must be more concerned with environmental sanitation to create a healthy environment and avoid disease outbreaks

## BACKGROUND

Diarrhea is defecation with a soft or liquid consistency, it can even be in the form of water with frequency more than normal (three or more times) in one day (MOH, 2018). Diarrhea is bowel obstruction / defecation characterized by bowel movements more than 3 times a day with consistency of liquid stool, can be accompanied by blood and / or mucus (Simadibrata, 2018). Diarrhea is a bowel movement with a more fluid consistency than usual, with a frequency of three or more times in a 24 hour period (Widjaja, 2016).

Diarrhea is still one of the main causes of morbidity and death. Almost all geographical regions of the world and all age groups are attacked by diarrhea, but severe illness with high mortality is mainly found in infants and toddlers. In North American countries children suffer from diarrhea more than 12 times per year (Pitono et al, 2016) while according to Zubir et al (2016) diarrhea causes death by 15-34% of all deaths, approximately 300 deaths per year. Based on the results of research Ratnawati et al (2018) shows that 35% of all under-five deaths are caused by acute diarrhea.

The incidence of diarrhea in Indonesia in 2018, the number of diarrhea sufferers of all ages served in health facilities was 3,176,079 patients and occurred in 2018, which became 4,274,790 patients or 60.4% of the diarrhea estimated in health facilities. The incidence of diarrhea of all ages nationally is 270/1000 population (RI Health Profile, 2018).

According to data compiled from the Ministry of Health of the Republic of Indonesia in 2018 stated that in East Java province had the second highest number of diarrhea after West Java which reached 1,048,885 patients, and followed by Central Java with 911,901 cases (Budijanto. 2018 ).

One step in achieving the target of the Sustainable Development Goals (SDG's) 3rd Goal is to ensure a healthy life and encourage prosperity for all people at all ages. The step taken by the government to reduce the incidence of diarrhea, especially in school-age children, is by holding a School Health Effort (UKS) in every elementary school. This program is made at school, because



the school is a well-organized institution and is a vehicle for character and media formation that is able to instill understanding and healthy living habits (Martianto, 2014).

According to Suharyono (2018), signs and symptoms of diarrheal disease are characterized by the child becoming whiny, anxious, increasing body temperature, decreased appetite, then diarrhea arises. Symptoms of vomiting can occur before or after diarrhea. If the sufferer has experienced a lot loss of water and electrolytes, symptoms develop dehydration.

Acute diarrhea due to infection can be accompanied by vomiting and / or fever, tenesmus, hematochezia, abdominal pain or stomach cramps. Diarrhea that lasts for some time without adequate medical treatment can cause death due to lack of fluid in the body resulting in hypovolemic shock or due to biochemical disorders in the form of advanced metabolic acidosis. Due to loss of fluid a person feels thirsty, weight loss, sunken eyes, dry tongue, protruding cheekbones, decreased skin turgor and hoarseness. These complaints and symptoms are caused by isotonic water depletion. In addition, symptoms can include thin baby stool, slimy or bleeding, greenish stool color due to mixing with bile and abrasions in the anus (Simadibrata, 2018).

Diarrhea is an environmental-based disease. Several factors related to the occurrence of diarrhea are inadequate supply of clean water, water contaminated by feces, lack of hygiene facilities (unhygienic disposal of feces), poor personal and environmental hygiene, preparation of undercooked food and storage of cooked food at unhealthy room temperature should (Sander, 2015). Many factors directly or indirectly drive diarrhea, which are agents, hosts, the environment and behavior. Environmental factors are the most dominant factors, namely the means of providing clean water and disposal of feces, both factors interact together with human behavior.

Transmission of diarrhea can be by faecal-oral, ie through food or drinks that are contaminated by enteropathogens, direct hand contact with sufferers, items that have been contaminated with patient feces or indirectly through flies. This method of transmission is known as 4F, namely (finger, flies, fluid, field) (Subagyo, 2012).

Based on Juariah's research results (2010), it is known that there is a significant relationship between diarrhea pain with clean water sources, latrine ownership, floor type, home lighting and home ventilation. Rahadi (2015) concluded that there is a relationship between latrine ownership, SPAL distance, type of floor and the incidence of diarrhea. Based on the results of research by Wibowo et al (2014), it is known that there is a significant relationship between the occurrence of diarrhea with the disposal of feces and the type of drinking water source.

Based on the results of preliminary studies conducted by researchers at Balonggebang Village, Gondang District, Nganjuk Regency on October 12, 2019, to 10 toddlers, it was found that 7 toddlers had had diarrhea in the last 1 month while 3 other toddlers had had diarrhea in the last 3 months. In the process of observation to the respondent's house it was found that the environmental sanitation in the respondent's house was not good where there was a lot of garbage behind the house, the distance of the septic tank and the well was less than 10 meters and some respondents also did not have a private latrine that caused it to cause respondents to more often defecate besides in the toilet like in a river or somewhere else.

Based on the above conditions, the authors are interested in researching the relationship of environmental sanitation with the incidence of diarrhea in infants in Kawedekan Hamlet Balonggebang Village Gondang District Nganjuk Regency.

## **MATERIALS AND METHODS**

In this study, researchers used a quantitative analytic design with a cross sectional approach which is a study to study the dynamics of the correlation between risk factors and effects, by way of approach, observation or data collection at once (point time approach), that is, each subject the study was only observed once and measurements were made on the character status or subject variables at the time of examination. This does not mean that all research subjects were observed at the same time (Soekidjo, 2017). This research will analyze the relationship of environmental sanitation to the incidence of diarrhea in infants in Kawedekan Hamlet, Balonggebang Village, Gondang District, Nganjuk Regency

Total population of 73 respondents and a sample of 62 respondents taken by simple random sampling technique. Data analysis using Chi Square test.

**RESULTS**

Table 1 Chi Square statistical test results the relationship of environmental sanitation to the incidence of diarrhea in infants in Kawedekan Hamlet, Balonggebang Village, Gondang District, Nganjuk Regency

No	Variable	Value	Sig
1	Chi Square	14,905	0.001
2	Likelihood Ratio	17,528	0,000
3	N of Valid Case	62	

Based on the results of the Chi Square analysis showed that the p-value  $0.001 < 0.05$  then H1 was accepted so it was concluded that there was the relationship of environmental sanitation to the incidence of diarrhea in infants in Kawedekan Hamlet, Balonggebang Village, Gondang District, Nganjuk Regency.

**DISCUSSION****A. Environmental Sanitation in Kawedekan Hamlet, Balonggebang Village, Gondang District, Nganjuk Regency**

The results showed that half of the respondents had less environmental sanitation in the category of 31 respondents (50%). In addition, 25 respondents (40.3%) had environmental sanitation in the sufficient category. Whereas 6 respondents (9.7%) had environmental sanitation in the good category.

According to researchers environmental sanitation is very important for people's lives in achieving optimal health. Because sanitation has a lot of waste which can cause various problems such as disease and several other things. People who are able to maintain environmental sanitation will get a healthy and suitable environment to live in, while people who cannot maintain environmental sanitation will get a slum environment that is far from healthy. Based on the results of the study, it was found that the majority of respondents had fairly healthy environmental sanitation, but there were some respondents who lacked environmental sanitation. That was caused by the distance of the well with the septic tank is less than 15 meters, in addition there are some respondents who do not have healthy latrines and household waste water is not made into a sewer that is good, but directly on the ground.

**B. Incidence of Diarrhea in Toddlers in Kawedekan Hamlet Balonggebang Village Gondang District Nganjuk Regency**

The results showed that the majority of respondents did not experience diarrhea as many as 47 respondents (75.8%). Whereas 15 respondents (25%) had diarrhea.

The incidence of diarrhea in Kawedekan Hamlet, Balonggebang Village, Gondang Subdistrict, Nganjuk Regency is still high where from the results of the study, almost half of the respondents experienced diarrhea. Diarrhea experienced by toddlers in Kawedekan Hamlet, Balonggebang Village, Gondang District, Nganjuk Regency is caused by unclean environmental conditions where the distance of the well with a septic tank is less than 15 meters, in addition there are some respondents who do not have healthy latrines and household waste water is not made good drainage drain but directly to the ground around. Under these conditions it will affect the quality of food hygiene that is there. Foodstuffs that will be consumed should be cleaned very clean and cutlery must be washed also with clean water.

**C. The Relationship of Environmental Sanitation with the Incidence of Diarrhea in Toddlers in Kawedekan Hamlet Balonggebang Village Gondang District Nganjuk Regency**

Based on the results of the Chi Square analysis showed that the p-value of  $0.001 < 0.05$  then H1 was accepted so it was concluded that there was a relationship of environmental sanitation with the incidence of diarrhea in toddlers in Kawedekan Hamlet of Balonggebang Village, Gondang District, Nganjuk District.

According to researchers, the incidence of diarrhea in infants in Kawedekan Hamlet, Balonggebang Village, Gondang District, Nganjuk Regency was caused by the community itself, where the community did not take care of environmental health through sanitation, where the distance from the well to the septic tank was less than 15 meters, besides that there were

some respondents who did not have a latrine. healthy and household waste water is not made into a good drainage drain but directly to the surrounding land. So it proves the relationship of environmental sanitation with the incidence of diarrhea in infants in Kawedekan Hamlet, Balonggebang Village, Gondang District, Nganjuk Regency.

## CONCLUSION

1. Half of the respondents have environmental sanitation in the poor category of 31 respondents (50%).
2. Most respondents no diarrhea as many as 47 respondents (75.8%).
3. There is the relationship of environmental sanitation to the incidence of diarrhea in infants in Kawedekan Hamlet, Balonggebang Village, Gondang District, Nganjuk Regency.

## SUGGESTION

1. For Respondents  
Expected to the community at Kawedekan Hamlet, Balonggebang Village, Gondang District, Nganjuk Regency is more concerned with environmental sanitation to create a healthy environment and avoid disease outbreaks.
2. For Future Researchers  
It is hoped that further researchers will need to deepen and add more research about the effect of health education on increasing community awareness in maintaining environmental sanitation in Kawedekan Hamlet, Balonggebang Village, Gondang District, Nganjuk Regency.
3. For Educational Institutions  
It is expected that educational institutions can use the results of this research to learn about the relationship of environmental sanitation to the incidence of diarrhea in infants in Kawedekan Hamlet, Balonggebang Village, Gondang District, Nganjuk Regency.

## References

- Aliya. (2006). *Mengenal Teknik Penjernihan Air*. Semarang : CV Aneka Ilmu
- Arikunto (2010). *Metodologi Penelitian Kuantitatif Edisi Revisi*. Bandung: Remaja Rodakarya
- Arikunto, Suharsimi. (2010). *Prosedur Penelitian Suatu Pendekatan Praktik*. Jakarta : Rhineka Cipta.
- Bintoro, Bhakti Rochman Tri. (2010). *Hubungan Antara Sanitasi Lingkungan Dengan Kejadian Diare Pada Balita di Kecamatan Jatipuro Kabupaten Karanganyar*. Skripsi. Universitas Muhammadiyah Surakarta. Surakarta.
- Fauziah, Ardillah. (2016). *Studi Komparatif Determinan Kejadian Diare Di Wilayah Pesisir (Puskesmas Abeli) Dan Perkotaan (Puskesmas Lepo-lepo) Tahun 2016*. Skripsi. Universitas Halu Oleo.
- Haryoto, Kurti. (2003). *Hubungan Hygiene Ibu terhadap Pengolahan Makanan Dengan Kejadian Diare Balita di Wilayah Kerja Puskesmas Selat Kecamatan Selat..* Skripsi. Fakultas Kesehatan Masyarakat. Universitas Palangkaraya. Kalimantan Tengah.
- Hidayat . (2011). *Metode Penelitian Keperawatan dan Teknik Analisis Data*, Salemba Medika, Jakarta
- Kemenkes RI. *Kurikulum dan Modul Pelatihan Sanitasi Total Berbasis Masyarakat (STBM)*. Jakarta: Kementerian Kesehatan RI; (2014). (Online), tersedia di <http://stbmindonesia.org/files/kurmod/STBM%20Fasilitator.pdf> Diakses pada tanggal 22 Januari 2017
- Kemenkes RI. *Kurikulum dan Modul Pelatihan Sanitasi Total Berbasis Masyarakat (STBM)*. Jakarta: Kementerian Kesehatan RI; (2014). (Online), tersedia di <http://stbmindonesia.org/files/kurmod/STBM%20Fasilitator.pdf> Diakses pada tanggal 22 Januari 2019

- Kemenkes RI. Kurikulum dan Modul Pelatihan Sanitasi Total Berbasis Masyarakat (STBM). Jakarta: Kementerian Kesehatan RI; (2014). (Online), tersedia di <http://stbmindonesia.org/files/kurmod/STBM%20Fasilitator.pdf> Diakses pada tanggal 22 Januari 2019
- Kementerian Kesehatan RI. (2013). Profil Kesehatan Indonesia 2012 Jakarta : Kemenkes RI.(Online), tersedia di <http://www.depkes.go.id/profil-kesehatan-indonesia/profil-kesehatan-indonesia-2013.pdf> Diakses 20 Januari 2019
- Mannan dan Rahman. (2010). Exploring The Link Between Food Hygiene Practice And Diarrhoea Among The Children of Garments Worker Mothers In Dhaka. (Online), tersedia di [www.banglajol.info](http://www.banglajol.info).
- Notoadmodjo, Soekidjo. (2010). Metode Penelitian Kesehatan. Jakarta: PT. Rhineka Cipta
- Notoatmodjo (2009). Pengembangan Sumber Daya Manusia. Jakarta : PT. Rineke Cipta
- Notoatmodjo. (2010). *Metodologi Penelitian Kesehatan*. Jakarta : PT. Rineka Cipta
- Nursalam. (2013). *Konsep Penerapan Metode Penelitian Ilmu Keperawatan*. Jakarta: Salemba Medika
- Rahmi Hidayanti. (2012). Perilaku mencuci tangan dengan kejadian diare di kecamatan Cisarua, Cigudeg, dan Megamendung Kabupaten Bogor tahun 2012. Skripsi. Universitas Indonesia. Depok.
- Saktiansyah, (2010). Hubungan Sanitasi Lingkungan dengan Kejadian Penyakit Diare pada Masyarakat Kawasan Pesisir Kelurahan Nambo Kecamatan Abeli Kota Kendari. Skripsi. Universitas Haluoleo. Kendari.
- Sari, Yulistia Eka. (2014). Hubungan Antara Pengetahuan Ibu Tentang Diare Dan Perilaku Ibu Mencuci Tangan Dengan Kejadian Diare Pada Balita Di Wilayah Kerja Puskesmas Pucangsawit Surakarta. Skripsi. Universitas Muhammadiyah Surakarta.
- Sugiyono, (2012). Metode Penelitian Pendidikan Pendekatan Kuantitatif, Kualitatif, dan R&D. Penerbit Alfabeta, Bandung.
- Sukardi. (2016). Faktor-Faktor Yang Berhubungan Dengan Kejadian Diare Pada Balita Umur 6-59 Bulan Di Wilayah Kerja Puskesmas Poasia Tahun 2016. Skripsi. Universitas Halu Oleo. Kendari.
- WHO, (2013). World Health Statisitcs 2013. [www.who.int/gho/publications/](http://www.who.int/gho/publications/). Diakses pada tanggal 12 Januari 2017
- Zubir, Juffrie, M., Dan Wibowo, T. (2016). Faktor-Faktor Risiko Kejadian Diare Akut Pada Anak 0-35 Bulan (Batita) Di Kabupaten Bantul. Sains Kesehatan. Vol 19. No 3. Januari 2016. Issn 1411-6197 : 319- 332.