

42. The relationship between environmental sanitation

by Ismi Rajiani

Submission date: 13-Apr-2022 11:17PM (UTC-0700)

Submission ID: 1810414411

File name: 42. The relationship between environmental sanitation.pdf (368.59K)

Word count: 2323

Character count: 11919

The Relationship between Environmental Sanitation to the Incidence of Hepatitis A in Rural Areas of Central Java, Indonesia

Teguh Widyanto¹, Marsum¹, M. Choerul Anwar¹, Subinarto¹, Ahmad Fikri², Asep Tata G¹, Ismi Rajiani¹

¹Lecturers of Politeknik Kesehatan Kementerian Kesehatan Semarang; ²Lecturer Poltekkes Kemenkes Tanjung Karang; ³Deputy to Chairman, STIA Dan Manajemen Kepelabuhan Barunawati, Surabaya, Indonesia

ABSTRACT

Background: Hepatitis A is a liver disease caused by hepatitis A. The virus spreads out through food or water contaminated by the faeces of infected people. This condition can cause symptoms including nausea, vomiting, lethargy, loss of appetite, fever and other symptoms. Hepatitis is due to poor environmental sanitation (source of clean water, hand washing facilities, and latrines). This study aims to determine the relationship between ecological sanitation with hepatitis A incidence.

Method: The study applied Case Control. The location of study was in Health Community Center or in Indonesia known as *Pusat Kesehatan Masyarakat* (Puskesmas) of Wanareja in Cilacap district, Central Java, Indonesia. The relationship among variables was analyzed with Chi-Square test.

Results: The results of this study showed that source of clean water, food and beverage management, toilet condition, and defecation sites are positively related with the incidence of Hepatitis A.

Conclusion: Environmental sanitation is closely related with the incidence of hepatitis A. As such, Health Community Center or *Pusat Kesehatan Masyarakat* (Puskesmas) in the respective area must assist the society in providing information to improve environmental sanitation in the community.

Keywords: Hepatitis A, environmental sanitation, Health Community Center

INTRODUCTION

Hepatitis A is a liver disease caused by the virus spreading out through food or water contaminated by the faeces of infected people⁽¹⁾. This condition may generate symptoms such as nausea, vomiting, lethargy, loss of appetite, yellow skin and eye sclera fever and others⁽²⁾. As such, knowledge of the environment is essential to tackle environmental problems and prevention of the infectious disease due to environmental sanitation and poor conduct giving rise to various diseases such as diarrhea, typhoid and especially hepatitis A which is more common in school children infecting them from home, school and other places.

Hepatitis is still a health problem in developing countries like Indonesia. Based on data derived from the hospital, hepatitis A is still the most prominent part of the cases. The incidence rate of hepatitis per 10,000 populations often fluctuates over several years ago. Outbreaks of hepatitis A in Indonesia is always repeated every year.

High rates of hepatitis A are caused by various factors, including poor hygiene and sanitation, dense population, contamination of food and beverages by viral hepatitis and on the rare condition, hepatitis A infection can be transmitted through sexual contact (anal-oral) and blood transfusions.

In Cilacap District, the cases of Hepatitis A is still high where the peak happened in 2013 with some 119 sub-district of Wanareja, and the District Dayeuhluhur were found⁽³⁾. Based on the above background it is a possible outbreak of hepatitis A will come to strike again

Corresponding Author:

Teguh Widyanto,
Politeknik Kesehatan, Kementerian Kesehatan
Semarang, Indonesia

in the years to begin making necessary to research several factors affecting the transmission of this contagious diseases.

METHODOLOGY

This study was observational analysis with a case control study design that examines the relationship between cases (illness) by a factor of exposure/specific risk. The study begins by identifying the group with the disease (cases) and without a case group (control), and then retrospectively (tracing back) on thorough risk factors that might explain whether cases and controls affecting each other or not. The population in this study were all patients of Hepatitis A in Puskesmas I Wanareja with the number of sample cases of 49 people being diagnosed suffering from Hepatitis A and control group of 49 people who are not suffering from Hepatitis A. Data collected were tabulated and analyzed descriptively with a frequency distribution table with an explanation as well as bivariate analysis was conducted to see the relationship between the dependent variable of the incidence of Hepatitis A (Y) and independent variables of source of clean water (X₁), food & beverage management (X₂), latrines condition (X₃) and defecation sites (X₄) by employing Chi square test.

¹² RESULTS

The primary results are presented in the following tables.

Table 1: Cross Tabulation of Water Resources with The Incidence of Hepatitis A

Water Resources	Case		Control	
	n	%	n	%
Not in compliance with the health requirements	24	49.0%	9	18.4%
Compliance	25	51.0%	40	81.6%
Total	49	100%	49	100%
Chi-Square = 8.955	P-value = 0.001		Odd Ratio = 4.267	

All 98 respondents (100%) of cases and controls used a source of clean water daily from wells. Quality of fresh water sources used by the respondent of cases

and control groups indicate some are compliant with the criteria of water resources which are colorless, tasteless and odorless. Source of clean water not to meet the requirements mainly is found in case group (49.0%) compared to the control group (18.4%) while the source of clean water that meets the element is located in the control group (81.6%) higher than the one in case group (51.0%). Further, the quantity of clean water sources used to meet the needs of the people daily = ± 80 -100 l/ person/day.

Table 2: Cross Tabulation of Food and Beverage Management with The Incidence of Hepatitis A

Food and Beverage Management	Case		Control	
	n	%	n	%
Buying outside	24	49.0%	4	8.2%
Individual Cooking	25	51.0%	45	91.8%
Total	49	100%	49	100%
Chi-Square = 18.050	P-value = 0.000		Odd Ratio = 10.800	

In managing food and beverage to consume, a more substantial proportion of cases group (49.0%) prefers to buy the food from outside compared to the one in the control group (8.2%). Consequently, the control group (91.8%) prefer to cook at home in providing food to consume compare to the case group that shows only 51% of respondents making their food and beverage at home.

Table 3: Cross Tabulation of Latrines with The Incidence of Hepatitis A

Latrine Condition	Case		Control	
	n	%	n	%
Not in compliance with the health requirements	47	95.9%	27	55.1%
Compliance	2	4.1%	22	44.9%
Total	49	100%	49	100%
Chi-Square = 19.920	P-value = 0.000		Odd Ratio = 19.148	

The latrines that do not meet the requirements are found in a more significant proportion of cases group (95.9%) compared to the control group which is only 55.1% making the percentage of latrines that meet the requirements in the control group (44.9%) is higher than the one found in case group (4.1%).

Table 4: Tabulation Cross of Defecation Sites in The Incidence of Hepatitis A

Defecation Sites	place defecation ()			
	Cases		Controls	
	n	%	n	%
Rivers, ponds	47	95.9%	27	55.1%
Latrine + Septic Tank	2	4.1%	22	44.9%
Total	49	100%	49	100%
Chi Square = 16.720	P-value = 0.001		Odd Ratio = 17.138	

The sites do not meet the requirements (rivers, ponds) in more significant proportion are found in the cases group (95.9%) compared to 55.1% of the control group, while defecating place that meets the requirements in the control group is 44.9% greater than the case group which is only 4.1%. These figures are similar to the data for the condition of the restrooms.

DISCUSSION

The water resources with the incidence of hepatitis A show the value of Chi-Square = 8.955 and p-value = 0.001 which is less than $\alpha + 0.05$. This value indicates there is a significant correlation between clean water source and the incidence of hepatitis A. Furthermore, the odd ratio shows the amount of 4.267 which means respondents whose clean water source does not meet the requirements are at risk of infected by hepatitis 4.267 times higher than the respondents whose clean water source has met the requirements of health standard. This is consistent with ⁽⁴⁾ that hepatitis A pattern of transmission is through contaminated food or drink. Solutions that can be done is to perform simultaneous chlorination on the source of clean water to break the chain of transmission of hepatitis A and to improve well construction which is still mostly used in the rural areas.

The relationship of food and beverage management with the incidence of hepatitis A shows the value of Chi-Square = 18.050 with value p-value 0.000 indicating there is a significant relationship between how to manage food and beverage with the incidence of hepatitis A. The odd ratio shows the value of 10,800 meaning that respondents who frequently purchase food and drink at risk can get hepatitis A by 10,800 times higher than the respondents who cook for themselves at home. How to manage the food and drinks affects the health mainly by self-cooking to guarantee the hygiene of foods and beverages. But the majority of the respondents still buy food and drink outside, do not pay attention to where the food is sold especially about hygiene and health of the sellers. This is consistent with ⁽²⁾ that transmission of hepatitis A is through food and beverages that contain the virus originating from patients with hepatitis A. This may happen due to the hepatitis A virus is mixed with food or drink served or it could be the mixing of the patient into the water that often used to process food. The solution must be made is that food and beverage should be cooked personally. People who are ill should not prepare to reduce the source of infection as well as to pay attention to every material in food processing.

The relationship between latrines with the incidence of hepatitis A shows the value of Chi-Square = 19.920 with value p-value 0.000 proving there is a significant correlation between the prevalence of hepatitis A with the latrine condition. Besides, odd ratio shows the value of 19,148 indicating that respondents whose latrines do not meet the requirements are at risk of infected by hepatitis A 19,148 times higher than the respondents whose restrooms are in compliant with the health standards.

Latrines owned by most of the respondents did not meet the requirements such as they have restrooms and fecal sewer canalized directly into a pond as means of feeding fish, or the sludge is discharged directly into rivers. This way, soil contaminated surfaces and the contamination of soil can get into the well because the pool is not protected by the wall and is not water resistant.

This is consistent with ⁽⁵⁾ from several factors causing the incidence of hepatitis A, one is poor environmental sanitation. Solutions are to make a septic tank that meets requirements such as latrines gooseneck + septic tank. When soil surface is not contaminated, no contamination of groundwater that may enter the spring.

The places to defecate relationship with the incidence of hepatitis A results show the value Chi-Square = 16.720 with value p-value 0.001 indicating there is a significant relationship between area of defecation with the prevalence of hepatitis A. In addition, the odds ratio shows the value of 17.138 meaning that respondents' sites to defecate do not meet the requirements are at risk of contracting hepatitis A 17,138 times greater than the respondents who place defecation meet the health standards.. In this area, people still consider the making of latrines and septic tanks that meet the requirements of health are unimportant that many people have a toilet but does not have a septic tank. This indicates that people are less aware of the danger of fresh faeces not appropriately handled. This improper handling will cause transmission of the disease because faeces are a source of bacterial infections and pathogens virus in the stool including hepatitis A virus. Latrines owned by the respondent contaminate surface soil contaminating groundwater which enters the springs. Hepatitis A virus from faeces of Hepatitis A sufferers, as well as faeces that contain lots of hepatitis A virus, can contaminate food and beverage as well as cooking utensils or cutlery⁽⁶⁾.

¹ CONCLUSION

The results of environmental sanitation relationship with the incidence of hepatitis A in children under five in Community Health Center or *Puskesmas I* Wanareja in Central Java, Indonesia are summed up as follows:

1. There is a connection between a source of clean water to the incidence of hepatitis A ($p = 0.001$; OR =4.267).
2. There is a relationship between how to manage food and beverage with the incidence of hepatitis A ($p = 0.00$; OR =10.800).

- ³ 3. There is a relationship between the condition of restrooms with the incidence of hepatitis A ($p = 0.000$; OR =19.418).
- ³ 4. There is a relationship between the place of excrement with the incidence of hepatitis A ($p = 0.001$; OR =17.138).

¹ **Conflict of Interest:** The authors have no conflict of interests related to the conduct and reporting of this research.

Source of Funding: Source of the fund for this project was by Politeknik Kesehatan Kementerian Kesehatan Semarang, Indonesia.

Ethical Clearance: Before conducting the study, written permission was obtained from Politeknik Kesehatan Kementerian Kesehatan Semarang, Indonesia.

REFERENCES

1. WHO. Hepatitis A Fact Sheet. WHO, 2013.
- ⁸ 2. Sanityoso, A. Hepatitis virus akut. Buku ajar ilmu penyakit dalam. Interna Publishing: Jakarta. 2010. Halaman 645-52.
- ² 3. Dinas Kesehatan Kabupaten Cilacap. 2013, Laporan KLB Hepatitis A Di Puskesmas I Wanareja dan Puskesmas Dayeuh Luhur Tahun 2013. Cilacap: Dinas Kesehatan Kabupaten Cilacap.
4. Cahyono, Suharjo, 2009. Hepatitis A, Yogyakarta:Kansius.
- ² 5. Maryunani, Anik, 2013. Perilaku Hidup Bersih dan Sehat, Jakarta: C.V Trans Info Media.
- ¹¹ 6. Suparmin, Soeparman, 2001. Pembuangan Tinja dan Limbah Cair, Jakarta:EGC

42. The relationship between environmental sanitation

ORIGINALITY REPORT

17%

SIMILARITY INDEX

16%

INTERNET SOURCES

3%

PUBLICATIONS

4%

STUDENT PAPERS

PRIMARY SOURCES

1	eprints.ners.unair.ac.id Internet Source	6%
2	www.jmscr.igmpublication.org Internet Source	3%
3	Yana Afrina, Mursid Rahardjo, Nurjazuli Nurjazuli. "Analysis of Environmental Factors with Malaria Incidence in Mabodo Health Center", Jurnal Aisyah : Jurnal Ilmu Kesehatan, 2021 Publication	1%
4	portal.arid.my Internet Source	1%
5	directory.indianjournals.com Internet Source	1%
6	ejobios.org Internet Source	1%
7	repository.unair.ac.id Internet Source	1%
8	balimedikajurnal.com Internet Source	

<1 %

9

eprints.ums.ac.id

Internet Source

<1 %

10

www.ijphrd.com

Internet Source

<1 %

11

www.scribd.com

Internet Source

<1 %

12

"13th European Congress of Clinical Microbiology and Infectious Diseases", Clinical Microbiology and Infection, 2003

Publication

<1 %

Exclude quotes Off

Exclude matches Off

Exclude bibliography Off