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# COMMUNITY DEVELOPMENT MODEL CARE FOR HEALTH ENVIRONMENT BASED ON WATER AND SANITATION (Healthy Latrine Floating Eco-Friendly Program)

**Husaini[1)], Marlinae, Lenie[2)], Rahman, Fauzie[3)], Rosadi, Dian[4)], Wulandari, Anggun[5)], Pangkut, Yosua[6)], Nurhadi, Aan[7)] and Zubaidah, Tien[8)]**

*Abstract:* ***Backgorund:*** *River cultural became one of the community culture at Kelanis village South Barito regency, Central Kalimantan Province. Society used the river as a transport media, fishing, bathing, washing and toilet (MCK), even for disposal of excreta. Based on data BLHD Central Kalimantan Province in 2010 about condition of Barito River contains Escherichia coli bacteria content reached 233 millimeters /sample.* ***Purpose:*** *apply floating latrines eco-friendlycommunity development patterns around the river in reducing the negative impacts of human feces that cause water-based diseases.* ***Method:*** *Subjects used is raw water from the river at Kelanis village South Barito regency, Central Kalimantan Province. This type of research is experimental with one group pretest-post test to determine the amount of E. coli before and after processing by means of a floating healthy latrines environmentally friendly.****Result:*** *Test results water samples of floating latrines eco-friendlyare contain fecal coliform with the index before treatment equal to 24/100 ml sample and after treatment equal to 9/100 ml sample. The results of the Total Coliform MPN Index in water samples before treatment equal to 39/100 ml sample, while after treatment for 21/100 ml sample. Based on the results of sampling above the water output of the processing results of healthy latrines floating eco-friendlyin accordance with the regulations of Health Ministers of the republic of Indonesia number 416/Menkes/Per/IX/1990.* ***Conclution:*** *The conclusion that the healthy latrines floating eco-friendly were able to reduce the amount of E.coli and can be applied to the area around the river.*

***Keywords:*** *E. Coli, river, water, health behavior, healthy latrines floating*

## 1. INTRODUCTION

Rivers culture also become one of the community's culture Barito Selatan District, a district in Central Kalimantan. Every day, people use the river as a transport

[1,2,3,4,5)] Departement of Public Health, Medical Faculty of Lambung Mangkurat University, Kalimantan Selatan Province, Indonesia, 70714.

[6)] PAMA Persada Nusantara.

[7)] ADARO Indonesia.

[8)] Departement of Health Environment Poltekes Banjarmasin.

*Correspondence: E-mail: husainifawaz@yahoo.com*

medium, fishing, bathing, washing and toilet (MCK), even for disposal of excreta. Most of excreta disposal by the public using pit latrines. Based on study results EHRA, sanitary risk index in South Barito regency for drainage / puddle of 64.8%, a clean and healthy life behavior for 52.8%, 51% of domestic waste water, waste 47.4%, clean water sources for 45.2%, household access to drinking water for daily consumption (drinking) is river water (30.7%), use of water for cooking, washing dishes and brushing teeth is an activity in everyday household biggest presentation is using river water (35.5%; 41.1%; 38.8%) and the behavior of defecation carelessly/ Buang Air Besar Sembarangan (BABS) amounted to 54.1%. Water bodies such as Barito river and tributaries in South Barito regency is the estuary of the receiving rainwater drainage and domestic wastewater (Laporan Studi EHRA, 2014).

Defecation is the human biological needs. However, in practice it may cause problems for health, for example a defecation that does not comply with health requirements (Susilowati D, 2005; Zali & Tahmasb, 2016). Defecated in the sanitary latrine is one way to prevent the spread of diseases, such as diarrhea, intestinal worms, diarrhea, cholera and other infectious diseases. People who lives close to river flow largely unaware of sanitary latrines and usually a stool directly into the river. The community is not accustomed to defecating in a closed but unfamiliar with pit latrine in the river. However, there are some negative impact on the use of pit latrines in the river.

Based on data from local environmental agency (BLHD) Central Kalimantan Province in 2010 the condition of the Barito River and several other rivers including Sungai Martapura Escherichia Coli bacteria content has reached 233 millimeters samples (Mirwan, 2012). A large number Escherichia coli bacteria and other pollutants in the river water causes diseases such as diarrhea and typhoid, because the disease can be transmitted through the feces (Permana RS, 2012). Inspiring and change people's habits that have been going on for years is not easy. The rejection reaction also usually the toughest field constraints around the riverside residents who are accustomed BABS on the river.

Therefore, the society need a model-based empowerment of local communities to become agents of changes that will infect healthy behavior to the surrounding community and applying healthy latrines floating eco-friendlycommunity around the river as the maintenance of the environment, especially the water of the river of impurities in the form of human faeces.

## 2. PURPOSE AND IMPLICATION

Purpose of the reseacrh apply floating latrines eco-friendlycommunity development patterns around the river in reducing the negative impacts of human feces that cause water-based diseases. The implication from this research is to inform other researcher that the eco-friendly floating healthy latrines

were able to reduce the amount of E. coli and can be applied to the area around the river.

## 3. MATERIALS AND METHODS

Subjects used is raw water from the river at Kelanis village South Barito regency, Central Kalimantan Province. This type of research is experimental with one group pretest-post test to determine the amount of E. coli before and after processing by means of a floating healthy latrines environmentally friendly. Intake of 240 ml of water is done before processing and then test the water samples and then performed water sampling after the installation of equipment and have been used by the public for 1 month to determine the levels of E. coli with the addition of chlorine of 0.05 grams / liter of chlorine through filtration media filter activated carbon on the tool.

## 4. RESULT AND DISCUSSION

**Table 1**
**Test Result of Water Samples**

| *Sample* | *MPN Fecal Coliform Index* |
|---|---|
| Before treatment | 24/100 ml sample |
| After treatment | 9/100 ml sample |

| *Sample* | *MPN Total Coliform Index* |
|---|---|
| Before treatment | 39/100 ml sample |
| Aafter treatment | 21/100 ml sample |

Test results water samplesof floating latrines eco-friendlyto contain fecal coliform with the index before treatment equal to 24/100 ml sample and after treatment equal to 9/100 ml sample. The results of the Total Coliform MPN Index in water samples before treatment equal to 39/100 ml sample, while after treatment for 21/100 ml sample. Based on sample results above, the water output of the processing results of healthy latrines floating eco-friendlyin accordance with the regulations of Health Ministers of the republic of Indonesia number 416/Menkes/ Per/IX/1990 (Menkes, 1990).

Based on the results of sampling above the water output of the processing results of healthy latrines floating eco-friendlyis qualified that is 9/100 ml sample and below the maximum allowable levels, namely 50/100 ml sample of water is not piped in accordance with the regulations of the republic Indonesia's Health Minister No: 416/Menkes/Per/IX/1990 dated 3 Setember 1990 (Menkes, 1990).

It because of the disinfection process is done by adding chlorine as much as 0.05 mg / liter into a tool for the deadly E.coli bacteria that can cause disease. This

is consistent with research Rhenny Ratnawati & Sugito (2013), entitled Process Wastewater Disinfection On Being Domestic Water For Water Raw Water. Disinfection using chlorine in this study resulted in water quality with microbiological parameters E. Colisebesar 0 MPN/100 mL happened to increasing doses of chlorine of 350 ppmdan 400 ppm (Ratnawati R & Sugito, 2013).

Chlorine compounds have excellent solubility, so as to kill bacteria Esherecia Coli dissolved in water. Multimedia-based filtration and disinfection using chlorine filter can treat domestic wastewater into clean water that meets the requirements of environmental quality standards set by the Minister of Health RI No. 416 / Menkes / Per / IX / 1990. This technology proved capable of producing excellent treated water so that it can be recovered and it is possible used as for drinking water (Ratnawati R & Sugito, 2013).

Further research needs to be done so that the treated water is used as drinking water so as to reduce the cost of water use and continuity of use of of clean water and drinking water stay awake (Sugito, 2012). At the end of the waste water is not a problem anymore, but can be reused (recycle) to avoid environmental pollution due to the generation of domestic waste water pollution from various sources (Ratnawati R & Sugito, 2013).

Performance filtration media mix of silica sand, manganese greensand, activated carbon and resins for treating process water biofilter is capable of producing clean water that meets the quality standards of the physical aspect and chemical and biological, as determined by the Minister of Health RI No. 416 / Menkes / Per / IX / 1990. Disinfection using chlorine in this study resulted in water quality with microbiological parameters E. Coli by 0 MPN / 100 mL happened to increasing doses of chlorine of 350 ppm and 400 ppm. Treated water from domestic wastewater in this study can be used as recommended for drinking water by the process further (Ratnawati R & Sugito, 2013).

According to the research Sugito and Al-Kholif (2012) concerning the application biofilter and Filtration showed excellent performance to produce clean water that meets the standards. Treated water it is possible to use as for drinking water, so we need further analysis of microbiological quality. Microbiological parameters is a very important aspect considered to reduce the number of cases of diarrheal disease is always the case especially in the event of water pollution. Therefore it is necessary to do the disinfection process to lose content of total coliforms to a concentration not available (NA), thus meeting the drinking water quality standards. Disinfection process is a method to kill microorganisms that are not desired to be in the drinking water, such as pathogenic bacteria as the cause of various diseases (Sugito and Al-Kholif, 2012). This study reinforced by Karen S. Lewis & Brent Metz (2014) with a model community to research the participatory education method known as "Community Health Club" (CHC) and

assess its viability for use as part of a larger sustainable development project organized by Engineers Without Borders-Sunflower State Professionals (EWB-SSP) with the Matazano, Guatemala community to provide and improve existing water supply methods. Currently the water in existing lines, which are contaminated with Escherichia coli, is adversely impacting the overall health of this community (Karen S. Lewis & Brent Metz, 2014). This study is consistent with research CHC promotes group consensus through providing active discussion by community members of concernsin open meetings, discussion and introduction of potential methods to address these concerns, and agreement as a group to adopt these new methods. As such, conformity is achieved through creating a group consensus that leaves no individual acting alone in their actions as they try to impact these issues (Waterkeyn, 2010). In addition, meetings are consistently open to new members and the adopted techniques (and benefits) visible to neighbors. As such, there is ample opportunity for non-attending community members to join in and adopt these tactics on their own. Since everyone has this opportunity to enjoy the benefits presented, it increases the likelihood the new tactics will become a standard community practice (Waterkeyn, 2010).

By utilizing local health organizations to train local individuals from the start as facilitators, trust issues within the community are often alleviated. In addition, training from within the community provides opportunities for individuals to have leadership roles which will be important for future project initiation and community development (Azurdy, 2007).

## 5. CONCLUTION

The conclusion that the eco-friendly floating healthy latrines were able to reduce the amount of E. coli and can be applied to the area around the river. Healthy latrines floating eco-friendlyis one of the solutions for people who are having a culture outskirt of river to dump the sludge in the water body so that the body of water is not contaminated by human feces that cause water-based diseases.

Healthy latrines floating eco-friendly is one solution for people who are outskirt of rivers are cheap and can be duplicated by the community with the resources owned by outskirt of area of the river. In addition, as one solution that can support STBM program in achieving ODF villages.

## 6. GRATITUDE NOTE

Rector of the Lambung Mangkurat University, Dean of Medicine Faculty Lambung Mangkurat University, Director of Health Polytechnic Banjarmasin, Departement of Health Environment Poltekes Banjarmasin, Pama Persada Nusantara, Adaro Indonesia, village Kalanis and all the staff of public health study programs on Medicine Faculty Lambung Mangkurat University and Global illuminators.

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