

## AN ASSESSMENT OF EARLY CHILDHOOD EDUCATION SCHOOL INFRASTRUCTURE TO SUPPORT THE WASH PROGRAM IN INDONESIA

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**Abstract:** *The purpose of this study was to explain an assessment of early childhood education schools infrastructure to support the WASH program in Indonesia. Quantitative research data collection methods were carried out in a survey with 186 samples in Banjarmasin. All early childhood education schools in Banjarmasin City have clean water and handwashing facilities with soap with water sources from the Municipal Waterworks (PDAM). Drinking water storage is in gallons and uses a dispenser processed through filtration. There is 5% of drinking water in schools in the category of less safe for consumption. Unsafe drinking water is indicated to come from water filtration that lacks maintenance and regular checks. The toilets owned by the school are shared toilets that are not used separately. The septic tank is not in accordance with Indonesian National Standard (SNI) 2398:2017. Most early childhood education schools have provided trash cans in the toilets. Each early childhood education school has a person in charge of toilet cleanliness and has a schedule for cleaning toilets. The handwashing station is located adjacent to the toilet and has a warning (in the form of a poster or banner) for washing hands after defecating. For the waste disposal used for washing hands, some are channeled into sewers, flowed under schools, flowed into septic tanks, and flowed into rivers.*

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**Keywords:** *Assessment, Early Childhood Education School, Infrastructure, Wash Program*

## A. Introduction

The Covid-19 Virus Disease 2019 (COVID-19) pandemic that has hit the world since the end of 2019 has made people aware of the importance of cleanliness. The World Health Organization (WHO), through its interim guidance, stated that this virus spreads through droplets, fomites, and close contact. According to WHO, the provision of clean water, sanitation, and all hygienic conditions are very important in protecting humans from outbreaks of infectious diseases, including COVID-19. WHO (2020) urges that the WASH program should be implemented consistently in communities, homes, schools, markets, and even health facilities to prevent the transmission of the COVID-19 virus from human to human.

WASH is an acronym for Water, Sanitation, and Hygiene, or the availability of clean water, sanitation, and hygienic conditions. These three aspects are interrelated with each other. If one aspect is missing, other aspects will be neglected. For example, clean water is very important to achieve sanitation and hygienic conditions. In addition, the existence of toilet facilities can keep water from contamination, especially fecal waste. Especially in the South Kalimantan area, which is famous for its area of a thousand rivers. There are still many people who defecate and urinate in the latrines in the river. Despite the fact that river water is also used for laundry, bathing, cooking, and drinking. Diseases associated with Water, Sanitation, and Hygiene (WASH) are one of the leading causes of high mortality rates for children under the age of five (Liu et al., 2012; Murray et al., 2012; Wolf et al., 2014; World Health Organization, 2014). School-based WASH programs should be increased to achieve the guaranteed health and education for children (Bowen et al., 2007; Freeman et al., 2014; Joshi & Amadi, 2013; Talaat et al., 2011).

Banjarmasin is a densely populated city with around 390 early childhood education schools. The condition of the city, which is 0.16 meters below sea level, causes the city to be inundated at high tide. Because of the numerous rivers that run through the city, Banjarmasin is also known as the “City

of a Thousand Rivers.” This geographical condition affects the identity of early childhood education schools in the city of Banjarmasin. Many early childhood education schools are potentially inundated during the floods. In addition, the majority of city residents use the river as a place for bath, wash and toilet (Pusat Pengembangan Kawasan Perkotaan, 2017). This has resulted in many early childhood education schools do not have toilets or special handwashing facilities that are safe, hygienic, and child-friendly. It is because they only use river water. Therefore, it can be identified that there are two main problems faced by early childhood education schools in the city of Banjarmasin related to the theme of water, sanitation, and hygiene. First is the lack of program-supporting infrastructure. The second is the absence of healthy living habits because the transfer of knowledge about these themes collides with prevailing social conditions.

The previous research was conducted by Bresee et al., (2016) entitled ‘A child is also a teacher’: explores the potential for children as agents of change in the context of a school-based WASH intervention in rural East Zambia. Data collection took place over five weeks from June and July 2013. Five schools were selected to participate in the study based on the selection criteria: (i) schools had received the SPLASH intervention, and (ii) the school was in a suburban or rural area. In each school, teachers help deliberately select students who are (i) in the age range of 8-12 years, and (ii) they can communicate openly as part of a scheduled activity. The result of this study is that there is a strong evidence to support the premise that children can be used as agents of change in the WASH program by disseminating information from schools to households. Students utilize techniques such as changing their environment, reminding their families regularly, and communicating by showing educational materials or modeling behavior to effect change at home. The similarity of this research lies in the implementation of the WASH intervention. The difference lies in the research location in rural East Zambia with an age range of 8-12 years old and this study with a sample of early childhood education School in Banjarmasin City.

Other research related to the WASH program includes the research conducted by Dreibelbis et al., (2016) entitled Behavior Change without Behavior Change Communication: Nudging Handwashing among Primary School Students in Bangladesh. The research team intervened to wash hands after defecating by conducting socialization and providing handwashing facilities in the toilets of two elementary schools. Initially, only 4% of children washed their hands after using the toilet. This figure increased to 68% after the intervention was carried out. After 2-6 weeks, the proportion of children who wash their hands reaches 74%. It can be concluded that motivation-based interventions and the provision of facilities can increase handwashing activities after leaving the toilet. As for the similarities, this study carried out hand washing activities and provided hand washing facilities. The difference is that previous research was carried out in elementary schools and only focused on hand washing activities, while this study looked at the infrastructure of early childhood education institutions.

Furthermore, research from Megawati (2020) entitled Habituation of Clean and Healthy Life Behavior in Early Childhood in the Kindergarten of Jambi City. This study is a qualitative research to determine the habituation of clean and healthy living behavior in early childhood in BI class. The results of this study indicate that there are 3 steps in the habituation of clean and healthy living behavior in early childhood, namely habituation, cooperation, and policy. However, there are obstacles experienced by teachers in habituation of clean and healthy living behavior in children at that age, namely children, inadequate facilities and infrastructure while the efforts made by teachers in overcoming these obstacles are by practicing daily hand washing and throwing garbage in its place and facilities. Infrastructure is still in the process of being better so that the learning process is comfortable. The similarity of this research lies in the habit of clean and healthy living in early childhood. While the difference, this study uses qualitative research and researchers use quantitative research by looking at the availability of infrastructure that supports the WASH program.

Child development is the emergence of interdependent skills, namely sensorimotor, cognitive, and socio-emotional functions (UNICEF, 2006). This complex phenomenon also depends on biological factors such as nutrition, genetic factors, and the psychosocial and physical environment in which children are raised. The biological and psychosocial risk factors associated with poverty lead to inequalities in early childhood development. This can impact educational attainment difficulties and productivity as children begin to grow and contribute to intergenerational poverty (Engle et al., 2007).

Many risk factors stem from a developmental deficit. The potential role of hygiene should be considered in this context. The Child Development Series released by The Lancet identifies inadequate cognitive stimulation, stunting, iodine deficiency, and anemia as the main factors preventing children from reaching their developmental potential (Walker et al., 2007). The relationship of malnutrition to child development due to malnutrition may be the main mediator of the consequences of an unhygienic environment. Malnutrition affects brain development directly, affecting physical growth, motor development, and physical activity (Pollitt et al., 1995). The importance of safe drinking water, sanitation, and hygiene (WASH) has long been identified as an important factor for public health in general and the health of infants and young children in particular. WASH is often divided into four rather than three categories, with the water section divided into two subcategories: water quantity and water quality. The first intervention is related to increasing the quantity of drinking water available to households. The last is to explain the intervention related to drinking water quality whether it is safe for consumption.

WASH interventions focus on improving sanitation, proper water treatment, and handwashing habits. Integrated early childhood development, such as the Essential Package developed by CARE, Save the Children, and care for development initiated by the United Nations through UNICEF and the World Health Organization (WHO), recognizes the importance of preventing childhood diseases through the promotion of clean water, hygienic conditions, and sanitation

practices positively. Poor WASH conditions are associated with 6.6% of diseases and disabilities globally and 2.4 million deaths each year due to diarrhea, malnutrition, and its consequences (Prüss-Üstün & World Health Organization, 2008). The Three-Star WASH approach in Schools is designed to increase the effectiveness of hygiene behavior change programs. This approach ensures that healthy habits are taught, practiced, and integrated into the daily school routine. The Three-Star approach helps schools meet the essential criteria for a healthy and protective learning environment for children as part of a child-friendly school.

In the Three Star Approach, schools are encouraged to take the simple and inexpensive steps outlined in the United Nations Children's Fund (UNICEF). These measures are designed to ensure that all children wash their hands with soap, have access to drinking water, and availability for separate male and female toilets (Adams et al., 2009). Children have the right to water, sanitation, and health. This right needs to be fulfilled in schools, where children spend most of their day. Adequate water and sanitation as part of the health of the school environment significantly increase the prospects for the quality of children to develop. The promotion of good hygiene behavior in schools can be the basis for lifelong behavior change. The purpose of this study is to explain the infrastructure in early childhood education school to support the WASH Program in Banjarmasin City. This WASH program is an international scale program driven by UNICEF. It has a high urgency in early childhood education, so the researcher intends to conduct quantitative research in mapping the distribution of PAUD in Banjarmasin City, which has facilities and runs this program according to the guidelines of UNICEF. The significance of the research is: As information and data on WASH facilities owned by early childhood education school so that they can be utilized by stakeholders and policy makers; As a reference for the implementation of the WASH program in early childhood education school that are beneficial for stakeholders, parents and the community; and As initial information on the readiness to implement teaching and learning activities during the adaptation period for new habits.

## **B. Method**

Researchers chose quantitative methods. Data on the mapping of WASH facilities in early childhood education school will be collected through questionnaires and presented quantitatively. The method of collecting quantitative research data was in the form of a survey. The total population in this quantitative research was all kindergarten (TK/RA) heads in Banjarmasin City in 2020, which was 390. The sampling in this research was based on Isaac Michael's table with a significance level of 5% (Sugiyono, 2013), so that 186 samples were obtained.

The questionnaire used in the survey was developed based on guidelines for improving health and learning through better water, sanitation, and hygiene in schools (World Health Organization, 2019a). This information package offers practical support for school staff on addressing common WASH issues and providing improvements at the school level with the child and the entire school community. This will help schools strengthen health education and implement policies that promote health and well-being. The results of the questionnaires, both closed-ended and open-ended, will be analyzed and presented descriptively.

## **C. Result and Discussion**

Early childhood education school are encouraged to take simple steps to ensure that all children wash their hands with soap, have access to drinking water, and are equipped with clean, gender-segregated, and child-friendly toilets. The availability of basic water, sanitation, and hygiene facilities is a mandatory requirement for schools in Indonesia to reopen (Yusuf et al., 2021).

### **1. Drinking-Water**

Based on the survey results, all early childhood education school in the City of Banjarmasin have the availability of clean water. The majority of early childhood education school, i.e., 95%, have water sources from Municipal Waterworks (PDAM). Even though it is called a drinking water company, the teachers do not advise

children to drink water directly from the PDAM before it is processed, either through filtration or boiling.

In this study, 75% of early childhood education school provided drinking water in the classroom, while 25% did not. Water is safe if it can come from piping or be treated through solar disinfection, boiling, filtering, or chlorination. Drinking water must be stored in a clean place, either in a dispenser, gallon, jerry can, or other containers. Each classroom should ideally have one drinking water storage area with a faucet to prevent contamination from hands, dirt, or insects. In addition, each child should have their cup or small bottle for drinking water, so they do not take turns using the same container. Based on the study results in Chart 1, 62% of early childhood education school store drinking water in gallons, and 34% use dispensers as drinking water storage. 64% of the drinking water used by early childhood education school studied used drinking water processed through filtration, 18% used mineral water, 16% used drinking water treated by boiling. and as much as 2% there are early childhood education school that use drinking water directly from the PDAM.

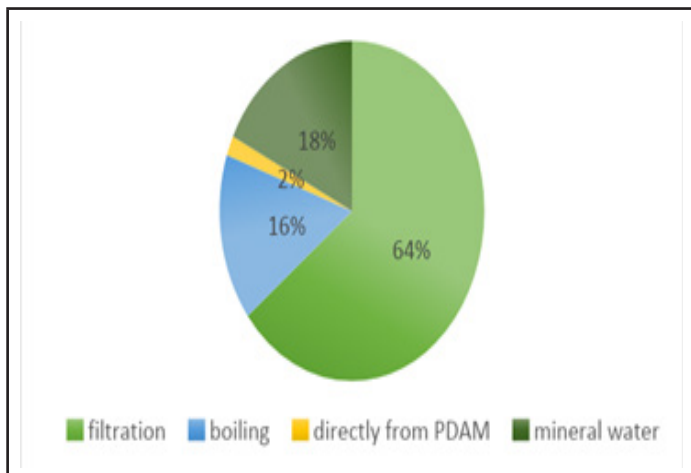


Chart 1. Drinking Water Treatment



The majority of early childhood education school said that the drinking water available in schools was in the sufficient category. The school management must consider the adequacy of drinking water so that the children's drinking needs are fulfilled in a day. IDAI states that infants aged 0-6 months need 700 mL/day of fluids; infants 7 - 12 months require 800 mL/day of fluids; children 1 - 3 years need 1300 mL/day; and children aged 4-8 years need 1700 mL/day (Yolanda, 2016). As many as 95% of respondents stated that the drinking water available in schools was in the safe category for consumption, and 5% said that the drinking water available in schools was less safe for consumption. Unsafe drinking water is indicated to come from water filtration that lacks maintenance and regular checks. Still, if the water has been boiled, the teachers agree on the safety of the water for consumption. Here are easy ways to make sure water is safe for consumption: colorless, tasteless when drunk, water has no odor, is free from *Escherichia Coli* bacteria, and has an average temperature between 10-25°C (World Health Organization, 2019b). Lack of water (dehydration) in school-age children will cause fatigue and decreased concentration study. The recommended water consumption is water and it is highly recommended for do not consume sugary and fizzy drinks as well as various packaged drinks containing high sugar content.

## 2. Toilet Facilities

Based on the survey results in Chart 2, only 1% of the respondents stated that no toilets were available in their schools. 53% of respondents stated that the toilets available at their schools were shared toilets that were not used separately between students and the teacher council. For the safe distance of the septic tank, as many as 69% of respondents stated that the septic tank was at an unsafe distance, and 31% said it was safe. SNI 2398:2017 has set a minimum safe distance between the location of the septic tank processing site and wells and buildings (2017).

Safe sanitation systems should be located away from clean water sources to reduce the risk of water being contaminated. Furthermore, for the safe distance of the septic tank, it is very important to have a trash can on the outside of the toilet for other waste disposals, such as tissue, plastic, etc.

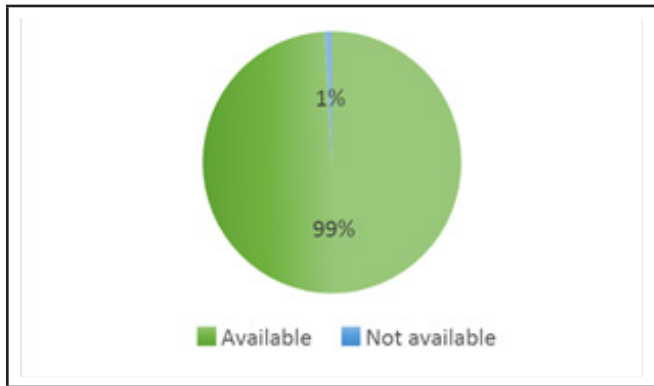


Chart 2. Toilet Availability

Based on the results of a survey at the early childhood education school, as many as 67% of respondents stated that they provided a trash can in the toilet, and 33% said there was no trash can in the toilet. The cleanliness of the toilet cannot be separated from how often we clean it. Each early childhood education school has a person in charge of toilet cleaning. There are 51% of early childhood education schools that specifically employ janitors. The remaining 49% in charge of toilet cleaning are teacher councils. As many as 65% of respondents made a schedule for cleaning the toilet every day, 26% of respondents stated a schedule to clean the toilet every 2 or 3 times a week, 8% said they cleaned the toilet once a week, and 1% who cleaned the toilet only a few times a month. The availability of child-friendly toilet facilities and infrastructure aims to fulfill children's rights to get access to proper sanitation, encourage children to learn to defecate independently in a safe and comfortable place, and to break the flow of disease transmission originating from feces and urine.

### 3. Hand Washing Facilities

All early childhood education school in Banjarmasin City have handwashing facilities with soap. Simple WASH practices such as proper handwashing with clean water and soap can interfere with the transmission of some disease-causing bacteria and viruses, thereby reducing the general burden of disease (Donde et al., 2021). Handwashing with soap can reduce the risk of diarrhea by around 43% (Curtis & Cairncross, 2003). There are 95% of respondents stated that handwashing was using a faucet, and 5% stated that the place to wash their hands was using a bucket. The majority (65%) of the handwashing facilities owned are located adjacent to the toilet and have warnings (in the form of posters or banners) for washing hands after defecating/urinating (BAB/BAK).



Figure 1. A poster on how to wash hands properly so that children can follow the steps

Ideally, the handwashing area is near the toilet to support the child's habit of washing hands after leaving the toilet. As for the disposal of used hand washing waste, 61% of respondents said that the disposal of used hand washing water was channeled under the school, 12% of respondents stated that the disposal of hand washing water

was channeled into a septic tank, and 11% of respondents stated that disposal of hand washing water is channeled into the river. Washing hands with soap and water or using alcohol-based cleaners (hand sanitizer) should always be done according to the instructions known as “Hand Washing at 5 Critical Times” (WHO & UNICEF, 2020). The habit of washing hands is very important, although sometimes it is considered a trivial thing, but it can cause various diseases if you do not wash your hands before and after eating and after leaving the toilet.

#### **D. Conclusion**

Based on the research results, all early childhood education school in Banjarmasin city already has infrastructure to support the WASH Program. It consists of washing hands with soap with clean water with water sources coming from Municipal Waterworks (PDAM). It also has a warning (in the form of posters or banners) for washing hands after defecating, having access to drinking water that is processed through filtration, and being equipped with clean, and child-friendly toilets. Most early childhood education schools have provided trash cans in the toilets. Each early childhood education school has a person in charge of cleaning toilets and schedules for cleaning toilets. Cleanliness is very important in life. Schools in Banjarmasin City have held promotional activities such as socialization, competitions, seminars, and inviting cleaning agents to come to school. Almost all early childhood education schools in Banjarmasin city have hygiene materials included in the curriculum. Then supervision of children when washing hands with soap, supervising related hygiene facilities and inviting parents to get used to clean and healthy living behavior. In the future, institutions are expected to be able to formulate sanitation programs in early childhood education schools starting from planning, building, and maintaining sanitation facilities; routinely supervises cleaning facilities and learning activities related to clean and healthy living behavior in early childhood education schools and collaborates with related parties to promote hygiene activities.

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