International Journal of Hygiene and Environmental Health 220 (2017) 539–550

Contents lists available at ScienceDirect

International Journal of Hygiene and Environmental Health

journal homepage: www.elsevier.com/locate/ijheh

Improving water, sanitation, and hygiene in schools in Indonesia: A cross-sectional assessment on sustaining infrastructural and behavioral interventions

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ARTICLE INFO

Article history:
Received 29 September 2016
Received in revised form 22 January 2017
Accepted 8 February 2017

Keywords:
Hygiene
Sanitation
Water
WASH in schools
Sustainable Development Goals (SDGs)
Indonesia

ABSTRACT

Water, sanitation, and hygiene (WASH) in schools are important for child health, development, and educational performance; yet coverage in Indonesian schools remains low. To address this deficiency, UNICEF and partners conducted a WASH intervention in 450 schools across three provinces in Indonesia. A survey evaluating the sustainability of infrastructure and behavioral interventions in comparison to control districts was conducted one year after completion of the intervention. The survey data were also compared with national government data to assess the suitability of government data to report progress on the Sustainable Development Goals (SDGs). Logistic regression was used to explore associations between WASH conditions and behaviors. Intervention schools were more likely to have handwashing stations with soap and water. In multivariable analyses, schools with a toilet operation and maintenance fund were more likely to have functional toilets. Students who learn hygiene skills from their teachers were less likely to defecate openly, more likely to share hygiene knowledge with their parents, and more likely to wash their hands. Survey data were comparable with government data, suggesting that Indonesian government monitoring may be a reliable source of data to measure progress on the SDGs. This research generates important policy and practice findings for scaling up and sustaining WASH in schools and may help improve WASH in schools programs in other low-resource contexts.

1. Introduction

The primary education sector in Indonesia is the third largest in the world with over 30 million students and two million pre-primary and primary school teachers (UNESCO, 2013). Government expenditure on education in Indonesia is 3.4% of GDP or 17.6% of total government spending which translates into an average expenditure of US$460 per pupil for primary education (UNESCO, 2013). The Government of Indonesia, through Law No. 20/2003 and Constitutional Amendment III, recognizes that all Indonesian citizens have a right to education and the Government has an obligation to finance education (Ministry of Education and Culture Indonesia, 2016). To ensure optimal learning in schools, it is important that these investments are used in part to create a safe, healthy environment for children.

In terms of water, sanitation, and hygiene (WASH), Indonesia faces many challenges. Over 50 million people – 20% of the total population – practice open defecation (WHO/UNICEF, 2015). Many WASH challenges also occur in school settings (UNICEF, 2013a). Over 190,000 government primary schools have basic sanitation facilities but only 22% of school toilets are reported to be in 'good' condition, i.e. no damage and completely functional, while 17% are regarded as heavily damaged or unusable, as defined by the Educational Management Information System (EMIS) of the Ministry of Education and Culture (MoEC) (Ministry of Education and Culture and Indonesia, 2016). Indeed, the average child-to-toilet ratio in each province is in excess of the MoEC standard of 1:60 for boys and 1:50 for girls (Ministry of Education and Culture and Indonesia, 2016). Hygiene practices are also poor. Only 12% of children between five and fourteen years old wash their hands with soap after defecating, 14% wash their hands with soap before eating, and 35% wash their hands with soap after eating (RISKESDAS, 2013).

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http://dx.doi.org/10.1016/j.ijheh.2017.02.001
1438-4639/

Interventions to improve WASH in schools (WinS) often pair software elements such as hygiene education, strengthening of school governance structures in relation to WASH, establishing WASH specific budgets with the provision of adequate WASH facilities and hardware (e.g. access to safe drinking water, clean and functioning toilets, handwashing facilities with soap and adequate waste management). Improvements in WinS have been linked to child enrollment and retention in education and also to child health, dignity, and well-being while in school (UNICEF and IRC, 1998). A handwashing with soap intervention in schools was shown to significantly reduce pupil absenteeism by 21–54% (Bowen et al., 2007). School-based interventions that include both handwashing with soap and water treatment were shown to reduce pupil absenteeism by 26% to 58%, with a greater impact on girls (O'Reilly et al., 2008). Comprehensive school-based WASH interventions have been shown to have positive effects on reducing absence and illness (Trinies et al., 2016). Latrine construction has been found to have a positive impact on enrollment of students, especially girls (Adukia, 2013). A systematic review of WinS substantiated the positive health impacts; and the review recommended further research to quantify the impact of WinS on educational achievement (Jasper et al., 2012). Despite the important role of WinS, substantial inequalities in coverage of WinS have been documented in low- and middle-income countries (Fehr et al., 2013; Jordanova et al., 2015).

Because of the importance of WASH for child health, development, and educational performance, WinS is reflected in the Sustainable Development Goals (SDGs) through Goals 4 and 6. Specific targets associated with these goals aim to track the percentage of primary and secondary schools with basic water services, basic sanitation services, and basic handwashing facilities (United Nations General Assembly, 2015). At present, there is insufficient monitoring of WinS (Cronk et al., 2015; UNICEF, 2015) to allow comprehensive analysis on the magnitude of the gaps in coverage, but from available data, coverage appears to be low, with an estimated 31% of schools lacking basic water facilities, 29% lacking basic sanitation facilities, and 79% lacking basic handwashing facilities (UNICEF, 2015).

The Ministry of National Education and Culture (MoEC) and the Ministry of Religious Affairs (MoRA) are responsible for overseeing the education system in Indonesia. The UKS (Indonesian school health program) and related policies on school health in Indonesia were established in 1956 and cover WASH, environmental health, nutrition in schools, and regular health monitoring (dental and immunization). The Government of Indonesia's current Five Year Development Plan aims for universal access to water and sanitation in community and school settings by 2019 (Bappenas, 2014). To achieve universal coverage and national targets, operational models to implement WinS coupled with adequate monitoring and evaluation (M&E) are needed to understand what mechanisms lead to better service delivery of WinS and how these services can be sustained over time.

A WinS pilot intervention in 450 schools in four Provinces in the eastern areas of Indonesia was undertaken between 2011 and 2013 in partnership with the Government of Indonesia, UNICEF, CARE and Save the Children. This was known as the WASH in Schools Empowerment (WISE) Program (WISE, 2013). The primary goal was to improve the well-being of children through the integration of water and sanitation facilities and hygiene activities in primary schools and to use the findings to inform scale-up and acceleration of WinS improvements across Indonesia (UNICEF, 2013a). A secondary objective of the WISE program was to support the Government of Indonesia to develop a WinS model that encompasses the scaling up of best practices and sustainable integration of WASH activities into education sector planning in low resource settings across the country. Activities in the WISE schools included capacity building, toilet and handwashing facility construction, hygiene promotion, water point rehabilitation, strengthening of School Committees to create participatory-based school action plans and finally M&E were implemented in six districts across South Sulawesi, Nusa Tenggara Timur (NTT), Papua and West Papua Provinces (WISE, 2013)

No standardized version of the intervention was delivered as school action plans varied by intervention school. A training of trainers (TOT) for appropriate technology was conducted at the provincial level for member of a WASH working group (government and implementing partners) which was then cascaded to school committees and other school representatives. The training focused on planning and design, construction, monitoring and evaluation, operations and maintenance, and development of a school action plan. A TOT was also conducted for hygiene and was provided to health workers, parents, and community leaders around target schools. The School Committee members that developed the action plans consisted of both parents and teachers. The objective of each action plan was to assess the current situation in the school and then prioritize and plan to implement WASH interventions based on need. One consistent component of action plans was to allocate a dedicated portion of the annual school operational grant for WASH costs so as to maintain hardware and purchase hygiene consumables such as soap or other cleaning products. School hygiene promotion typically covered the topics of diarrhea, hand washing with soap, clean drinking water, food hygiene, and waste management. It was conducted through teachers (not always through curriculum) and through child-to-child initiatives.

The lessons learnt were consolidated and used to support MoEC policy development at the national level (UNICEF, 2013a). In total over 45,000 children were reached and lessons learned were shared with national and sub-national government actors (TANGO International, 2014).

The WISE intervention was evaluated in January 2015 in three districts, approximately one year after the program ended. The goal of the evaluation was to assess the sustainability of the intervention and compare intervention schools to quasi-controls that had not received the intervention to determine the critical drivers and barriers for sustaining WASH facility usage and behavior change at the school and student levels (TANGO International, 2015).

In this article, we conducted logistic regression analyses using the data from the evaluation to identify the most important factors that drive and sustain behavior change at the student and school levels. The analysis was also undertaken to support efforts to strengthen and provide recommendations for on-going and future monitoring of WinS, especially in light of SDG target 4a which includes the objective of a safe and clean learning environment for all children. National EMIS are important monitoring initiatives that can be used to establish baselines and to measure progress towards this target. To this end, the survey results of the evaluation were further compared with routine monitoring data collected via self-reporting of school principals to an online Ministry of Education system to inform how such systems may fare in tracking SDG progress.

2. Methods

2.1. Study area and intervention

This study took place in schools in three districts where the WinS intervention (known as the WISE program) was implemented, one in each of three provinces eastern Indonesia in poorer areas and with WinS challenges. The districts were Takalar in South Sulawesi Province, Timor Tengah Selatan (TTS) in NTT Province, and Jayapura in Papua Province. The WISE interventions, based on a developed