Community-Led Total Sanitation Program Attain to Increase Knowledge, Attitude and Intention but Fail to Change the Community’s Behavior; Case Study in Urban Slum Area in Bandung Municipality

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Abstract. Environment-based diseases in developing countries mainly caused by poor sanitation and low hygienic behaviour. Community-Led Total Sanitation (CLTS) as government effort to change community’s behavior concerning campaign of open defecation free, hand washing, household water treatment and domestic waste disposal is implemented through triggering activities. This study intended to analyze implementation process and outcome of CLTS in urban-slum area in Bandung municipality. It was sequential explanatory mixed-methods study among 53 urban-slum dwellers in Taman sari sub-district during Oct-Nov 2016. Quantitative data through self-administered questionnaires was collected to compare level of knowledge, attitudes, and intentions of community pre-post triggering activities and analyzed using paired t-test analysis. Qualitative data was collected by observations, in-depth interviews, and document studies to reveal, explain, and strengthen the results. Follow-up observation was conducted after one year to gain CLTS outcome. Results showed knowledge, attitude and intention significantly different before and after triggering activities (p=0.006; p=0.021; p=0.001, respectively). Qualitative analysis explained that predisposing-factors were constructed by community knowledge, attitudes, intentions, and habits. Enabling-factors consisted of environmental conditions, officer capability, resources, enabler agents, accessibility, appropriate technology, and sanitation facilities. Reinforcing-factors consisted of officer knowledge and attitudes, regulations, policies, and external support. However, follow-up one year after triggering activities proved that the change on knowledge, attitude, intention were not accomplished by community’s action without any supervision by strong local ledership, government’s facilitation and family support. Triggering activities on CLTS programme can increase knowledge, attitude and intention but intensive monitoring-evaluation and supervision should be carried out after implementation.
1. Introduction

Water, sanitation and hygiene are known among the most fundamental for human needs, and are a prerequisite to human health and development. United Nations had projected rapid population growth in urban areas between 2000 and 2030. It is estimated that 6 out of 10 people will be living in cities, consequently access to safe drinking water and adequate sanitation in urban areas is likely to worsen unless there is a drastic policy change to cater to the needs of the urban poor. Human excreta and the lack of adequate personal and domestic hygiene have been implicated in the spread of many infectious diseases including diarrhoea, cholera, typhoid, hepatitis, polio, cryptosporidiosis, ascariasis, and schistosomiasis. One-third of deaths in developing countries are caused by the consumption of contaminated water and on average as much as one-tenth of each person’s productive time is sacrificed to water-related diseases. WHO estimates that 2.2 million people die annually from diarrhoea diseases. In Indonesia the prevalence of diarrhoea case was reported 7% and West Java Province was reported 7.9% higher than national prevalence. Factors related to this water-borne diseases were contact and ingestion of unsafe water, lack of water link to inadequate hygiene, poor personal and domestic hygiene including activities of open free defecation (ODF) or latrines without septic tank.

The Government was attempted to overcome the problem by encourage the community to actively participate by introducing Community-Led Total Sanitation (CLTS) or in Indonesian program known as Sanitasi Total Berbasis Masyarakat (STBM) since 2008. This Program intend to promote 5 pillars to change the hygiene and sanitation behaviour based on awareness and independency of the community. The 5 pillars consists of stop ODF, hand washing with soap, proper household water treatment, domestic and latrine waste management. CLTS is an integrated approach to achieving and sustaining ODF status. It entails the facilitation of the community’s analysis of their own sanitation profile, their practices of defecation and the consequences, leading to collective action to become ODF. Approaches in which outsiders “teach” community members are not the purpose of CLTS.

CLTS processes can precede and lead on, occurring simultaneously with and improvement of latrine design. CLTS triggers the adoption and improvement of hygienic practices, solid waste management, waste water disposal as well as to care the protection and maintenance of drinking water source and other environmental measures. In practice, CLTS initiates a series of new collective local development actions by the ODF communities. Initially the focus of CLTS was on the triggering or igniting event. Triggering is based on stimulating a collective sense of disgust and shame among community members as they confront the crude facts about mass open defecation and its negative impacts on the entire community. The basic assumption is that no human being can stay unmoved once they have learned that they are ingesting other people’s shit. The goal of the facilitator is purely to help community members see for themselves that open defecation has disgusting consequences and creates an unpleasant environment. It is then up to community members to decide how to deal with the problem and to take action. The basic principle is the empowerment of local communities to do their own analysis and take their own action to become ODF.

There are 3 steps of triggering activity including pre-triggering (selecting a community, introduction and building rapport), triggering (participatory sanitation profile analysis or ignition moment) and post-triggering (action planning by the community and follow up). This study intended to analyze the influence of triggering activity towards knowledge, attitude and intention of the community and explore factors related to the community’s behavior change toward stop ODF. Furthermore this study also evaluate the action of the community one year after the triggering to find out the effect of CLTS program.

2. Method

2.1 Study site

Bandung city is a densely populated area and the capital city of West Java Province, the most populous
province in Indonesia. The local water company distributes tap water in Bandung city only supplies 47% of the public need for clean water, consequently the remaining have to find other safe water sources on their own. Taman sari sub-district is one of slum areas in the centre of Bandung city with poor coverage for safe water, high reported diarrhoea cases, and high population density (244 persons/ha).\textsuperscript{7} This slum area is part of the priority for a development project targeting urban slum areas in 5 large cities in Indonesia. Taman sari sub-district is located right on the Cikapundung river basin, in 2014 only 210 out of 1,910 inspected households (11\%) having septic tank and only 7.8\% of them in accordance with the guideline. Cikapundung river is the main river among 15 rivers which cross the city and empties into Citarum river, almost 10.57 km land along the Cikapundung river was used for settlement. Cikapundung river has been heavily contaminated by 2.5 millions litters/day from household waste and latrine disposal of the settlement along the riverbanks while Citarum river that is located in the south part of the city also contaminated by industrial waste.\textsuperscript{8}

2.2 Research design

This study used sequential explanatory mixed-methods that applied quantitative survey to evaluate the effect of triggering program toward knowledge, attitude and intention of stop ODF, followed by qualitative study to explore factors related to behaviour change of the community and follow up the action after one year. Pre-triggering activity was done to select the community that have no septic tank in their latrine or still perform ODF. The study was conducted in 3 RW (Rukun Warga; Community Association) in Taman sari sub-district during October – November 2016 and total of 53 households were selected to participate in triggering activity.

Quantitative survey was done using self-administered questionnaire which examine the knowledge, attitude and intention of the participants before and after the triggering process. A set of questionnaire consisted of 13 questions on knowledge with yes and no answer, 10 questions on attitude and 9 questions on intention with likert scale. The correct answer on knowledge was scored as 1 and likert scale was scored with 5= very agree, 4=agree, 3=neutral, 2=disagree, 1=very disagree. Total score was calculated and the mean was compared before and after the triggering process using t-test analysis.

Qualitative study was conducted after the survey by observation and in depth interview to related informants such as participants of the triggering activity, sanitarian staffs from Tamansari Primary Health Centre, staffs from Bandung Health Office and local government like staff and head of Tamansari sub-district. Qualitative data were analyzed using content analysis to figure out the related factors that might influence the community’s behavior change based on Precede-Proceed theory.\textsuperscript{9} One year after the triggering process, all participants that identified triggered after the triggering activity were observed on their planning actions, in depth interview was done to find out obstacles and difficulty to implement their plans.

The data given by participants and informants is confidential and written information about the study before their participation and informed consent was obtained, only the research team and authorized persons have access to the data. The identities of the subjects were coded and approval was obtained from the research ethics committee of Faculty of Medicine Padjadjaran University before the study. The participants may decide to withdraw from the study at any time.

3. Result

Total of 53 participants were involved in triggering activity that was conducted from 09.00 until 12.00 AM at the field not far from the Cikapundung River. The triggering activity was starting with ice breaking for the opening session and continue with mapping of the area, analyzing the amount of faeces produce daily, transect walk, discussion and planning the upcoming action. Figure 1 illustrated the situation of triggering activity when all participants tried to make the mapping of their neighbourhood to identify
which houses still practice the ODF and or having no septic tank in the house and dispose the waste from the latrine directly to the river. The characteristic of the participants were described in table 1.

![Figure 1. Triggering activity](image)

| Characteristic       | n  | %  |
|----------------------|----|----|
| Gender               |    |    |
| Male                 | 9  | 17 |
| Female               | 44 | 83 |
| Age (years old)      |    |    |
| 18-35                | 4  | 7.6|
| 36-55                | 30 | 56.6|
| 56-69                | 19 | 35.8|
| Education            |    |    |
| Elementary           | 9  | 17 |
| Junior high          | 8  | 15.1|
| Senior high          | 27 | 50.9|
| University           | 9  | 17 |
Knowledge, attitude and intention was measured using a set of questionnaire before and after the triggering activity. The mean of total score of knowledge, attitude and intention were increasing after the activity and all of the score were significantly different between pre-test and post-test as describe in table 2. Out of 53 participants, 13 persons were identified to have intention to change their behavior. During discussion phase, all of these triggered participants plan to conduct an action to have their own septic tank but they could not define the exact time to undertaking their plan.

Table 2 Comparison of knowledge, attitude and intention score before and after triggering activity

| Variable | Pre-test Mean | SD | Post-test Mean | SD | T-value | P-Value |
|----------|---------------|----|---------------|----|----------|---------|
| Knowledge | 1.40          | 0.98 | 1.74          | 0.93 | 2.896    | 0.006   |
| Attitude | 2.63          | 1.61 | 3.19          | 2.30 | 2.379    | 0.021   |
| Intention | 2.18          | 1.93 | 3.02          | 1.81 | 3.990    | 0.001   |

Further qualitative study was done after the triggering activity by observed the condition of the houses and hygiene sanitation all of the triggered participants. In depth interviewed was also conducted to explore potential factors that influence the change of community’s behavior related to stop ODF issue. All of these factors were identified based on Precede-Proceed theory that consist of predisposing factors, enabling factors and reinforcing factors. Figure 1 illustrated all of the factors that influence the behavior of the community. Predisposing factors define as strength that functioning to motivate the individual or community to perform an action. The result showed that knowledge, attitude, intention and habit were the predisposing factor. The attitude were specifically dealing with guilty feeling, sense of sin, fear and worry due to the impact of ODF. Enabling factors define as strength from the individual, health staff or the community to allow an action or to make it possible. The enabling factors identified in this study were the environment, capability of the sanitarian staff, other resources, the present of enables agents such as trained facilitators, appropriate technology and availability of sanitation facility in the neighborhood. Reinforcing factors define as factors that promote or force the individual to perform the action. The force can come up from the health personnel or from the social environment. The reinforcing factors known in this study were the knowledge and attitude of health staff, regulation, policy and external support.

The qualitative study also determined some key factors among all of the identified factors. These key factors were funding, appropriate technology, land availability and regulation and family support. These factors were important according to the informants and were highlighted by them to be prioritized.

In addition, follow up toward 13 participants that triggered after the triggering activity demonstrated that intention was not enough to perform an action. No one of those participants do their action plan one year after the triggering activity. Some reasons as the barriers mostly due to lack of money and condition of their house that relatively small and in condition of sharing/rented from other, therefore they did not know appropriate technology to use.
Figure 2. Conceptual mapping of factors related to community’s behavior toward ODF
4. Discussion
West Java is the most populous province in Indonesia and Bandung city as the capital city also have urbanization effect which result in growth of slum areas. In developing country, mostly slum area located in empty space or land in the centre of the city such as in river basin or area along the railways. This study focused on population of slum dwellers in river basin in the centre of Bandung city. This slum area is known as one of main course of faeces contamination in Cikapundung River since only 7.8% of the houses have the proper septic tank.

Community-Led Total Sanitation (CLTS) focuses on igniting a change in sanitation behavior rather than constructing toilets. It does this through a process of social awakening that is stimulated by facilitators from within or outside the community. It concentrates on the whole community rather than on individual behaviors. Collective benefit from stopping open defecation can encourage a more cooperative approach. People decide together how they will create a clean and hygienic environment that benefits everyone. It is fundamental that CLTS involves no individual household hardware subsidy and does not prescribe latrine models. Social solidarity, help and cooperation among the households in the community are a common and vital element in CLTS. Other important characteristics are the spontaneous emergence of Natural Leaders (NLs) as a community proceeds towards ODF status; local innovations of low cost toilet models using locally available materials, and community-innovated systems of reward, penalty, spread and scaling-up. CLTS encourages the community to take responsibility and to take its own action.

Safe excreta disposal is also critical as a first barrier to disease transmission. Therefore, the reduction of morbidity and mortality from infectious diarrheal diseases requires improvements in the quality and availability of water, excreta disposal and general personal and environmental hygiene. Different aspects of environmental health improvement may be critical in different circumstances and will be determined by the current health burden, economic development and availability of services, as well as nutritional and immune-status.

Promoting better excreta disposal and hygiene habits are the most important measure to improve public health and reduce human suffering and financial loss. Most technical and hygiene education programmers do not have the measurable improvement of human practices as their prime objective. Funds for behavioral aspects form only a very small percentage of investments, despite the fact that human behavior is the key determinant for an impact on public health. If investors and implementers want to get the full benefits from improved water supply and sanitation systems for public health, they will have to make usage of improved water, sanitary disposal of waste and better hygiene practices major objectives of their programmers.

To promote better hygiene practices, many hygiene education programmers focus on increasing people’s knowledge. Planners and implementers assume that when people know better how water and sanitation diseases are transmitted, they will drop unhygienic practices and adopt improved ones. However, this is often not the case. Better knowledge does not, in many cases, lead to action. Increasing people’s knowledge does not automatically lead them to change their hygiene behavior. This study showed even the triggering activity can increase the knowledge, attitude and intention of the participants that similar to another study in Indonesia, but these were not enough to change the behavior later on.

Behavioral change is a process comprising several steps, from wanting to change and deciding what change to make, to deciding and to try it out and if positive keep maintain it. Before making the actual change, different considerations (own beliefs and values, developed attitude, influence of others, enabling factors) might play a role. Intention as probability of an individual to perform an action in the future can be used to predict the strength of the individual’s motivation to do the action. According to BASNEF model about how individuals change hygiene behavior, the behavior intention is influencing the behavior change. However, in this study we found that intention is not enough to change the behavior. Among urban slum dwellers, external support is important to make them do the action plan. Influential people can
be outsiders respected for their general status, such as public figures or health personnel, but also friends, peers and local opinion leaders.

This study found that family support particularly from the head of the family is one of the key factor. A gender strategy is also needed in community to manage the hygiene programmers, because what motivates men to support and adopt hygiene changes differs from the factors which stimulate women. Without a gender strategy, women also often find that their physical work in hygiene has increased, while decisions and management positions have gone to the men. A gender strategy helps men and women both take part in decisions and find common solutions for conflicting interests. In this study, most of the participants were women since the triggering activity was conducted in office hour and most of the men were working. However, mostly the decision on what and when to do the action still depends on the man or head of the family.

Another key factors found in this study were funding and appropriate technology. Barriers such as perception that to build septic tank need high cost, lack of skill to built the septic tank in a limited area were noticed from the triggered participants. Appropriate technologies that are available in the market should be well inform to the community. Even though more than half of the participants were good education but they still need proper information from the sanitarian staff and trained facilitator as enabler agents. Intensive monitoring and evaluation as part of post triggering process from external support is also important to help urban slum dwellers capable to manage their plan into action.

Promotion is a combination of specially developed information, education and promotion packages and personal visits from development workers, non-governmental office staff and local voluntary groups. Socio economic diversity in caste and class exists for income and other resources, such as land and water, education, access to communication and level of power/influence. In practice, many hygiene programmers reach only the higher-income groups because they have the time, education, economic means and sufficient independence to try and adopt new technologies which facilitate improved hygiene practices. How can one ensure that promoted practices and products are attractive and facilitative for the poor, reach them and be adopted by them? Community managed programmes have addressed this question by involving the poor in the planning and management of the programmes and base programmes on the needs and opportunities of all sections in the community. Motivating new practices requires a good understanding of the local culture and local government. Strengthening the professionalism of hygiene educators and adaption of a team approach of engineers, health staff and users will optimize the impacts

5. Conclusion
In conclusion, triggering activities on CLTS programme can increase knowledge, attitude and intention of the community, however intensive monitoring-evaluation and supervision should be carried out as part of post triggering activity. Supervision by strong local leadership (natural leaders) and government’s facilitation regarding the land regulation is needed as well as supporting funding. Appropriate technology due to the land availability and family support are essential to convince that community’s intention can be implemented into action in urban slum area.

6. References
[1] United Nation 2010 Water and cities facts and figures UN-water decade programme on advocacy and communication (UNW–DPAC)
[2] World Health Organization 2010 Water, sanitation, hygiene and health department of public health and environment Monitoring water and sanitation: for evidence-based policy and intervention (Geneva: WHO)
[3] Ministry of Health Republic of Indonesia 2013 Basic Health Research (Jakarta: Department of research and development)

[4] Haryanto B and Sutomo S 2012 Improving access to adequate water and basic sanitation services in Indonesia Rev Environ Health 27 159–62

[5] Ministry of Health Republic of Indonesia 2014 Community-led total sanitation (Jakarta: Regulation No 3)

[6] Kar K and Chambers R 2008 Handbook on community-led total sanitation (United Kingdom: Institute of Development Studies at the University of Sussex)

[7] Bandung Health Office 2012 Annual report of bandung health office (Bandung: Bandung Health Office)

[8] Halimatusadiah S, Dharmawan A H, Mardiana R 2012 Efektivitas kelembagaan partisipatoris di hulu daerah aliran sungai citarum. Jurnal Sosiologi Pedesaan 6 71–90

[9] Andrea C G, Eileen M, Tiffany L G, Lee R B 2008 Using the precede-proceed model to apply health behaviour theories ed 4 (United State of America: Jossey bass) p 407–429

[10] Pudjaningrum, Wahyuningsih NE, Darundiati Y H 2016 Pengaruh metode pemecuan terhadap perubahan perilaku buang air besar sembarangan pada masyarakat kelurahan kauman kidul kota salatiga Jurnal Kesehatan Masyarakat 4

[11] Christine van Wijk and Tineke M 1995 Motivating better hygiene behaviour: importance for public health mechanisms of change (The Netherlands: IRC International Water and Sanitation Centre)

[12] Jenkins M W and Scott B 2007 Behavioral indicators of household decision-making and demand for sanitation and potential gains from social marketing in ghana Journal Social Science & Medicine 64 2427–2442.

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