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Implementation of the Open Defecation Free (ODF) Pillar of Community-Led Total Sanitation (CLTS) Program in East Kalimantan, Indonesia

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Abstract
The implementation of the first pillar of the Community-Based Total Sanitation (CLTS) program, targeting the elimination of Open Defecation (OD), has yielded varying outcomes across regions, including East Kalimantan. Program success is closely linked to factors such as community knowledge, local culture, access to sanitation infrastructure, and the involvement of health workers and local leaders. Approaches like Community-Led Total Sanitation (CLTS) and Ecological Sanitation (EcoSan) demonstrate different levels of effectiveness depending on geographic conditions and institutional support. In East Kalimantan, challenges such as dispersed settlements, limited access to clean water, and substandard housing quality hinder program outcomes. Nevertheless, programs integrating education, appropriate technology, community participation, and adaptive policies have proven to reduce diarrhea incidence, lower stunting rates, and raise sanitation awareness. Cross-sectoral collaborative strategies are essential to achieving sustainable and context-sensitive sanitation behavior change in this region.

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Introduction

Sanitation is a superlative element in improving public health, the impact of which is clearly seen in reducing environmental-based diseases such as diarrhea, stunting, parasitic infections, and skin diseases. Inadequate sanitation is responsible for approximately 1.4 million deaths and 74 million DALYs (*disability-adjusted life years*) global in 2019, of which 564,000 deaths were directly caused by involuntary defecation (ODF) due to environmental and clean water contamination (WHO, 2024).

In Indonesia, although access to basic sanitation has reached around 82–86% of the population, this achievement does not fully reflect adequate and sustainable sanitation conditions. Data shows that there are still more than 11 million people who will have open defecation (ODF) in 2023. This practice is most prevalent in rural areas, remote areas, and coastal communities, where the availability of sanitation infrastructure is often not kept up with changes in people's behaviors(UNICEF, 2023).

The results of field observation and socialization obtained results that Prapat Tunggal Village, Riau, which is part of the coastal area, needs special attention for the STMB – Pillar 1 (Stop BABS) program with triggering activities for behavior change, assistance with facilities and infrastructure by providing proper sanitation and clean water sources for its communal operations so that the community can use it together so that there is no contamination of diseases caused by Improper basic sanitation (Herniwanti, Sudarto, & Ardiana, 2022).

However, in areas with geographical and cultural challenges such as East Kalimantan, the implementation of this pillar encounters structural and socio-cultural barriers, such as limited road access, hereditary habits of defecation in rivers, seasonal water availability, and weak follow-up monitoring post-status verification *Open Defecation Free* (ODF). For example, a field study on the Talisayan River, Berau, by Aini *et al*., (2023), revealed that the factors of community knowledge, cultural aspects and the role of counseling from health workers had a significant relationship ($p < 0.05$) with the termination of BABS behavior, while the variables of education level and income had no effect.

Meanwhile, research conducted by Juliana *et al*., (2022) provide results that are in line with the Aceh region. The study highlights that indicators such as the level of community knowledge, ownership of proper latrine facilities, and the frequency of health facilitation by officers or cadres have a very strong correlation with behavioral changes in the first pillar of Community-Based Total Sanitation (CLTS), namely stop open defecation (ODF).

The facts in the field reinforce that efforts to improve clean and healthy living behaviors cannot rely on just one approach. Internal community motivation, such as awareness of the importance of sanitation and a sense of responsibility for the surrounding environment, must go hand in hand with the provision of adequate basic facilities and infrastructure. Without a combination of these two factors, it will be difficult to achieve behavior change in a comprehensive and sustainable manner.

In a different location, namely in the city of Samarinda, the study conducted by Al Syahrin *et al*., (2023) shows that active collaboration between the Health Office, village government, and sanitation cadres plays an important role in improving the quality of CLTS program implementation. Although this cross-sectoral coordination has succeeded in strengthening implementation in the field, the reality is that changing people's behavior, especially in stopping the practice of BABS, remains a challenge in itself.

Changes in social norms cannot be achieved only through one-sided counseling or conventional campaigns. A regulatory incentive system and consistent long-term monitoring are needed so that new behaviors can become established social habits. In addition, local cultural factors are also important variables that cannot be ignored. In some communities, there are traditional beliefs and ritual practices that make rivers a sacred place or part of a living ecosystem, so the behavior of defecation is seen as unproblematic.

Based on these dynamics, this study was prepared as a comprehensive and integrative literature review. The main objective of this study is to identify in depth the factors that are the key to success and the main obstacles in the implementation of the BAS elimination program. In addition, this study also aims to formulate evidence-based strategic recommendations, to assist program designers and policy makers in designing local interventions that are more contextual, inclusive, and sustainable. throughout the East Kalimantan region.

Method

The literature search strategy is carried out systematically through Google Scholar, ResearchGate, Elsevier, Semantic, and other scientific journal platforms. The search was focused on articles that discuss the factors that affect the behavior of open defecation (ODF) as well as the implementation of the first pillar of Community-Based Total Sanitation (CLTS) in Indonesia, especially in the East Kalimantan region and coastal areas. The publication year limit is set between 2015 to 2025. Based on the search results, 16 relevant scientific articles were identified and used as the basis for analysis in this study.

Research and Discussion

The implementation of the First Pillar of CLTS in East Kalimantan needs to consider various factors related to knowledge, behavior, and institutional roles. Arsyaf *et al.*, (2023) emphasized that the low knowledge of the community has a great influence on the poor implementation of CLTS. Their study in Aceh showed that 58.8% of respondents had little knowledge about CLTS, and only 63.9% showed good implementation of Pillar 1 They also found that the roles of health workers and community leaders had a significant relationship to the success of the program.

In the context of the sustainability of community-based sanitation systems, a study by Daniel *et al*., (2023) about PAMSIMAS nationally also emphasized the importance of household management and connection in ensuring the functioning of the system. They found that household connections were more likely to function optimally than communal connections. In addition, the absence of a tariff or payment mechanism increases the likelihood of the system not working up to 20 times. This indicates that financial management and citizen participation aspects need to be part of the sanitation strategy in East Kalimantan, especially to ensure that access to decent toilets can be sustainable.

Further Yuliawati *et al*., (2024) highlighting the spatial and physical challenges in East Kalimantan, particularly in Samarinda Ulu. The distribution of poorly sanitation houses is concentrated in hilly areas that have limited access to clean water. This reinforces the importance of appropriate technological approaches and adaptation of infrastructure to local geographical conditions. The study also linked unhealthy home conditions to an increase in environment-based diseases such as diarrhea, ARI, and stunting, suggesting a direct link between sanitation and public health.

Study by Annashr *et al*., (2023) It shows that the triggering method is not only effective in changing the behavior of open defecation, but also increases awareness of the importance of sanitation in stunting prevention. Through participatory approaches such as water pollution demonstrations and handwashing simulations, participants became better aware of the impact of defecation practices on health. This intervention resulted in a significant increase in public knowledge, from 14.8% to 51.9% in terms of understanding of the 5 Pillars of CLTS. This reinforces that community-based strategies with visual methods and hands-on practice are very suitable to be applied in the East Kalimantan region.

Moreover Ariyaningsih & Shaw (2023) highlight the importance of cross-sectoral monitoring and engagement in CLTS programmes, including in ensuring ODF *(Open Defecation Free)* Sustainable. Their findings underscore that the role of health center officers in monitoring post-declaration ODF is very important to maintain the sustainability of behavior change. The lack of evaluation after the declaration of ODF is one of the causes of the resurgence of the practice of defecation in several locations. and the success of long-term implementation will be achieved if accompanied by a monitoring system and institutional strengthening.

Overall, the implementation of pillar 1 of CLTS in East Kalimantan requires contextual, collaborative, and adaptive interventions. Sustainable behavior change will only be achieved if the program involves all community stakeholders, local governments, health workers, traditional leaders, and the private sector in the process of planning, implementing, and evaluating the program.

The success of the implementation of Pillar 1 of CLTS is not only measured by the decrease in the number of BABS, but also by the emergence of collective awareness and long-term social change in the community. The relevance of these findings is very closely related to the main goal in the title of the research, namely how the implementation of the First Pillar of CLTS is really able to be a driving force in stopping the practice of defecation in East Kalimantan effectively and sustainably.

The implementation of the first pillar of the Community-Based Total Sanitation Program (CLTS), namely the cessation of the practice of open defecation (ODF), in East Kalimantan has shown mixed results depending on the local context of each region. Several factors such as geographical conditions, community knowledge levels, cultural values, access to sanitation infrastructure, and the active role of health workers and community leaders greatly affect the effectiveness of this program.

Table 1
Review Results

No	Researcher and Year	Study Location	Research Focus	Key Findings	Implications / Recommendations
1.	Aini *et al*., (2023)	Talisayan River Bank, Berau (East Kalimantan)	Low knowledge and habits of the public defecation	Intensive counseling of health workers effectively encourages the use of healthy latrines	Interpersonal educational approaches are important for changing behaviors in areas with cultural open defecation practices
2.	Herniwanti *et al*., (2023)	Prapat Tunggal Village, Riau	Effectiveness of the *triggering* method	Participatory discussions and simulations increase awareness of the impact of defecation	Community-based approaches are more effective than one-way counseling; relavan for remote areas of East Kalimantan
3.	Kamiludin and Azizah (2025)	Sarijaya Village (East Kalimantan)	The relationship between CLTS Pillar 1 and diarrhea and stunting	Households without clean water and proper toilets are at higher risk of diarrhoea and stunting	Increased access to sanitation contributes to children's health and nutrition
4.	Fatmawati *et al*., (2024)	Stilt house and riverbank area (East Kalimantan)	Application of RPS (*Repeated Processing Septic Tank*) sanitation technology	Technological innovation increases sanitation success despite limited application	Appropriate technology is important for specific geographical conditions
5.	Al Syahrin *et al*., (2023)	Samarinda, East Kalimantan	Policy and cross-sector support for CLTS	Increased budgets and involvement of regional leaders strengthen the implementation of Pillar 1	A sustainable approach with local values and social control is needed
6.	Yuliawati *et al*.,	Hilly areas and limited water access (East Kalimantan)	Physical and sanitation infrastructure	Unhealthy house conditions and water limitations hinder sustainability	Synergy of education, local technology, and institutional strengthening is needed
7.	Crocker *et al*., (2021)	East Kalimantan (General)	CLTS and EcoSan approach	CLTS emphasizes social triggers; EcoSan provides economic benefits (fertilizer from waste)	The combination of CLTS and EcoSan is effective if it is supported by policies and in accordance with local culture

Conclusion

The implementation of Community-Based Total Sanitation (CLTS), especially the first pillar, is effective in reducing the practice of defecation and environment-based diseases if supported by education, community involvement, and appropriate technology. Approaches such as CLTS and EcoSan show varying effectiveness depending on the local context. The success of the program is largely determined by the synergy between community participation, institutional support, and policies that are adaptive and responsive to local needs, including the availability of infrastructure and cultural values.

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