REVIEW ARTICLE

A Review of Open Defecation (OD) In Indonesia and The Control with Logic Model

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ABSTRACT

In 2015, Indonesia was ranked as the second-highest, with a percentage of 12.9%. Open Defecation Free (ODF) in Indonesia is still a problem, 33 out of 34 provinces in Indonesia are still not 100% verified as ODF. The purpose of this study is to make a management control of OD behaviour in Indonesia. This study's literature was collected using Google Scholar and Pubmed search engines by entering keywords open defecation Indonesia, and buang air besar sembarangan. From review of published literature, it is found that several factors cause people to practice OD, namely environmental, socio-cultural, and economic factors. These factors become the basis for making OD model control with a logic model. The program was made with a button-up approach carried out through several activities, namely approaches to community leaders, youth, and local communities, monitoring potential areas for OD practice and cross-sector coordination, and making regional regulations.

Keywords: Indonesia, Open Defecation, Behaviour Control, Logic Model, Sanitation

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INTRODUCTION

The Millennium Development Goals (MDGs) which ended in 2015 have made progress and several indicators have been achieved, but there are several health sector indicators that have not yet been reached and require special attention. In 2015, it was estimated that 946 million people around the world still practice open defecation (OD) and 81% were found in 10 countries. Indonesia was ranked as the second highest with a percentage of 12.9% (1). Based on Sanitasi Total Berbasis Masyarakat (STBM) profile up to 2021, the population of Indonesian was 288.22 million and from that figure, 32.77 million still practice OD. Indonesia has 34 provinces, but only DI Yogyakarta province was 100% Open Defecation Free (ODF) verified compared to Maluku Province which has the lowest ODF verified rate (2). It is proven that 33 out of 34 provinces in Indonesia are still not 100% verified ODF. Therefore Indonesia still needs management and control to reach 100% ODF verified villages.

The number of households in Indonesia having access to proper sanitation in 2011-2015 has experienced an increase, where in 2015 the percentage increased to 62.14% (3). As the MDGs have not yet been fully achieved, the government has to pay special attention to fulfill equal and proper sanitation and health for the entire population in accordance with the SDGs target of 2030. The successor MDGs, Sustainable Millennium Development (SDGs) which will end in 2030, have many goals. The first is to ensure the management and availability of sanitation and clean water for everyone. The aim of SDGs point 6.2 is to provide adequate access to sanitation and hygiene, to stop OD practices, to pay particular attention to the needs of women and those in vulnerable circumstances. For this reason, one of the goals of SDGs is to end OD.

OD is an unhealthy behavior. OD is a practice where people go out in open areas (fields, rivers, lakes, beaches, bushes, forests, sewers, lake , river etc) instead of using the toilet to defecate (4). An area can be called ODF if there isn't an individual in the community who defecates disorderly in that area but only in a proper toilet (5). The definition of proper sanitation is sanitation that fulfils health requirements such as the use of gooseneck closets or ones with a lid, a place to dispose

of feces using a septic tank or wastewater management system and is used by a single or multiple households (3). The National Survey results found that only 62,14% of households have has to proper sanitation services (3). In 2019 the percentage of families with access to proper sanitation facilities (healthy toilets) in Indonesia was 87.81% (6).

OD is a problem that must be overcome as is a global health burden which causes multiple diseases because in because human feces may contain 106-108 bacterial pathogens, 106 viral pathogens, 10-104 helminth eggs, and 104 protozoan cysts or oocysts (7). There is an association between the use of toilets and the occurrence of diarrhea. Germs that cause diarrhea can spread through the fecal-oral route, food, and drinks contaminated with feces or direct contact with feces. OD may cause the spread of germs that cause diarrhea and increase the incidence of diarrhea as it shortens the chain of diarrheal transmission (8).

One of the problems in Indonesia is that there are still people who practice OD. The challenge of increasing OD practice comes from socio-cultural issues, economic conditions, environmental conditions including demographics, availability of proper sanitation facilities, and conditions of sanitation facilities. The aim of the study is to map and obtain OD control solutions based on factors associated.

METHODS

The study was a literature study information were related to the topics in this study. The information was obtained through journals, thesis, research reports, regulations and articles. The information obtained were used to analyze the factors associated with the incidence of OD. The general objective of writing this article was to study the factors that cause the incidence OD, while the specific were to identify economic, socio-cultural, and environmental factors associated with OD behaviour and management of OD. The literature search strategy used is by determining keywords, journal databases used to search for literature sources and limiting search results (filters). The keywords used in the search are open defecation and buang air besar sembarangan. The journal databases used for this research are Google Scholar and Pubmed. The filter used is year, full text, title and abstract. Articles published by Indonesian journals used are articles indexed in Sinta (Science and Technology Index) Indonesia.

The study inclusion criteria were publications or articles in bahasa Indonesian and English, which were published throughout 2017-2020. Studies with research variables other than economics, culture, and the OD environment were excluded from this review. All articles used were found in full text. The keyword used in a search with the Google Scholar database is "buang air besar sembarangan" by filtering publications in 2017-2020, where 4,490 articles were found. The keyword used in a search with the Pubmed database is "open defecation Indonesia" by filtering publications in 2017-2020 and full text where 9 articles were found. After screening on title, abstract and variable based on research needs, 30 articles were finally obtained . The review results obtained from several OD articles in Indonesia got important environmental, socio-cultural, and economic factors related to OD behaviour. Researchers use these points to be included as the basis for making logic models (Table I).

RESULTS

Environmental facots which causes the practice of open defecation (OD) in the community

There are still many people who defecate where they are not supposed to due to sanitation facilities availability. It impacts human defecation behavior (9,10). There is a relationship between latrine ownership and defecation behavior (11). OD behavior in urban areas is caused by ownership latrine and access (12). Latrine ownership affects latrine use by the family. OD behaviour depends on the available facilities and infrastructure (13). The public toilet was built for several families, and they do not feel responsible for the up keep of the public toilets clean, so that makes people not keen to use the toilet for defecating (14). The toilet conditions such as smells, or where insect or rats can enter, or where slippage may occur due to the wet floor caused by stagnant water, may discourage people from using it (15). Poor toilet conditions pose a risk of 1,500 chances of encouraging OD than proper toilet conditions (16). The condition of a proper toilet provides twice the opportunity to increase community participation than poor toilet conditions (17).

Another problem is the availability of clean water, for example, the unavailability of clean water due to water supply system problems. There is no free-flowing water to clean or use for rinsing , and this causes the toilet to become dirty fast. This becomes a reason why people prefer to defecate in the open. The availability of clean water supports the convenience of using toilets (10,15,18,19). The water availability in the toilet is closely linked to toilet ownership. Land ownership is a constraint in toilet construction (20). The unavailability of private toilets because of the geographical location, position of their homes located on the coast, so that soil conditions have high basicity that can cause weathering on the toilet walls (21) Houses built on illegal land are a challenge to realizing ODF. House owners do not want to build toilets because it would be useless if the legal owner disassembles their houses (14). OD behavior can still be found because public toilets far from their house. Therefore, they prefer to practice OD in the farm, rice fields, and irrigated rivers are potential places for people practicing OD (22,23).

Table I: Literature summary of the studies

Author	Title	Study Design	Result	Conclusion
Sunaryo Putra et al., 2017	Related Fator with the Ownership of a Healthy Latrine in the Village of Empakan Kayan Hulu Subdistrict	*Cross-Sectional*	there is a relationship between education (p=0.000), economic level (p=0.000), knowledge (p=0.000), attitude (p=0.000), and culture (p=0.00) with healthy latrine ownership	This study shows that the variables of education, economy, knowledge, attitudes, and culture are related to ownership of healthy latrines.
Wahyu Afiatul Qudsiyah et al., 2015	Factors Associated with High Number of Open Defecation (OD) in District Jember (Studies in Sumber Kalong Village, Kalisat Subdistrict)	*Cross-Sectional*	Factors associated with high OD rate The results showed associated between knowledge (p=0.041), attitude (p=0.006), latrine ownership (p=0.003), distance from the house to defecation except for latrines (p=0.019), family support (p=0.044), community support (p=0) with a high number of OD. There was no associated (p>0.05) age, gender, education, employment, income, type latrine, latrine conditions, supply of clean water, and support health workers with a high number of OD OD.	Related factors in research can be used as an intervention to enhance ODF behavior such as giving education to increase people's awareness and attitudes, constructing riverbanks with structures that cannot be used for OD, and carrying out targeted triggers, the community has a role in the construction of latrines.
Fani Febri Anggoro et al., 2015	Analysis of Factor Associated with the Use of Toilets at Coffee Plantation Region	*Cross-Sectional*	there were significant relationships between income (p-value=0.004), knowledge (p-value=0.000), attitude (p-value=0.000), condition of toilets (p-value=0.001), and the availability of clean water (p-value= 0.000) with the use of toilets. Factors age, occupation, education, the support of health workers, religious leaders, community leaders, and family (p>0.05) were no significant relationships with the use of toilets.	Community empowerment begins with a Rural Appraisal (PRA) to increase people's knowledge and attitudes about using latrines. local governments can work together across sectors to address the issue of funding for latrine development and policy making that supports the procurement of latrines and the use of latrines.
Joko Prayitno et al., 2018	Study of The Health Promotion Strategy of Community Led Total Sanitation (CLTS) in Kejawan Putih Tambak Village Surabaya City	*Cross-Sectional*	The obstacles that affect it are the absence of a clear policy and commitment for perpetrators of disposing of feces into the river, no law enforcement and no commitment to seek community contributions that are facilitated by the government and the private sector. It is necessary to design a new strategy in the form of imposing sanctions on perpetrators of open defecation, law enforcement, increasing public awareness and commitment to building communal wastewater installations.	The community empowerment strategy is also not yet So, it is necessary to do: (1) efforts to apply sanctions through fines and administrative sanctions for perpetrators of throwing feces into rivers. (2) realizing law enforcement. (3) increasing public awareness. (4) as well as efforts to add a communal household liquid waste management tank.
Dwi Yonif Novri Yani et al., 2018	Defecation in the Garden (Study in Pagar Gading Village Society, Pino Raya District, South Bengkulu Regency)	*Cross-Sectional*	The results of the study explain that people who defecate in the garden are interpreted as behavior that is still correct. The absence of sanctions and prohibitions makes people think that defecating in the garden does not disturb other people. The economic factor of the community is that they are only able to meet basic needs, so that people think that defecation in the garden is more economical, it does not require the cost of making a place to defecate. The low level of public knowledge makes it difficult to receive information related to defecation in the garden through various information media. And the lack of socialization related to the use of latrines has an impact on the low level of public knowledge regarding the impact of defecation behavior in the garden.	it is necessary to conduct socialization to the community by involving community leaders, traditional leaders and religious leaders.
Laeli Apriyanti et al., 2019	Factors Affecting the Utilization of Family Jamaban in Jatibarang District, Brebes Regency	*Cross-Sectional*	There is a significant relationship between knowledge (p=0.015), attitudes(p=0.005), defecation habits, and family support with the use of family latrines (p=0.000). There is no significant relationship between education level, family income (p=1,000), health worker support (p=0.07), community leaders support (p=0.770), availability of clean water (p=1,000), distance a place to defecate in addition to latrines on the use of family latrines (p=0,335).	Several factors that have a significant relationship to the use of latrines are the respondent's knowledge about the benefits of latrines and their impact on health, p value 0.014, the attitude of respondents to the use of family latrines (p value 0.005). The variables that influence the use of family latrines are the knowledge of the respondents and family support.
Gede Bagus Subha Jana Giri., 2017	Relationship of Some Internal Factors with Open Defecation (OD) Behavior in Dusun Kandangan Tarik District Sidoarjo	*Cross-Sectional*	there was a relationship between age (p=0.000), education level (p=0.000), and economic status (p=0.000) with OD behavior, while gender (p=0.443) and habits (p=0.560) had no relationship (p > 0.05).	It is hoped that the health program makers will intervene that can increase public understanding of OD behavior. economic status that influences the occurrence of OD behavior in the community. It is hoped that the community will organize a joint program that can increase knowledge about the impact of OD, hold a latrine social gathering program between residents, as well as a latrine ownership credit system, in order to increase the number of ODF

Table I: Literature summary of the studies (continued)

Author	Title	Study Design	Result	Conclusion
Vera Yulyani et al., 2019	Latrine Use and Associated Factors Among Rural Community in Indonesia	*Cross-Sectional*	The result showed a relationship between the knowledge level (p=0.001), attitude (p=0.001), economic status (p=0.001), latrine condition (p=0.002), availability of clean water (p=0.026), health officer support (p=0.015) and latrine use. Multivariate analysis showed that attitude was the most dominant factor related to the utilization of latrine (P<0.05)	The findings of this study suggest to encourage communities by applying a policy against open defecation and approaching key leaders and families to change their attitude into behavior in daily practices were very important.
Ignatius Trismon et al., 2016	Analysis of several factors related to the use of family latrines in Ranah Singkuang Village, Kampar Regency	*Cross – Sectional*	All independent variables of education (p = 0.008, knowledge (p = 0.000), attitudes (p = 0.000), the role of extension workers (p = 0.014), latrine conditions (p = 0.022) were significantly correlated with community participation in the use of family latrines.	Predisposing factors (education, knowledge and attitudes), enabling factors (latrine conditions) and reinforcing factors (the role of extension workers) have the meaningful relationships with community participation in the use of household toilets.
Anna Dwiana et al., 2017	Determinats of defecation behavior among coastal community in district of South Buton	*explanatory sequential mixed method*	Knowledge factor (p= 0.0117) and facility availability (p = 0.0001) are related to OD behavior. Meanwhile, Attitude Factors, economic conditions, support from health workers and support from community leaders are not related to OD behavior.	Increasing knowledge and increasing the availability of toilets can be done through cross-sectoral collaboration (health workers, village office workers, community leaders, religious leaders).
Fera Novitry et al., 2017	The Determinant of the Ownership of Healthy Latrines in Sukomulyo Village Martapura Palembang	*Cross – Sectional*	There was a significant relationship between owning a healthy latrine and education (p=0,001), knowledge (p=0,001), attitude (p=0,001), and family income (p=0,001).	According to the study findings, the higher the education, knowledge, attitude, and family income factors, the higher the ownership of healthy latrines.
Norma B. Toduho et al., 2019	Open Defecation Behavior of North Maluku Province, Indonesia (A Case Study at Community of Toseho Village in Archipelago Tidore City)	*observation approach*	The results of the study found lack of family, public figures, and public religious about perceptions against open defecation and latrine availability due to difficult geographic location (coastal), absence of latrines either private or public latrines (damaged), limited finances, and ashamed of using neighbor latrines.	It is expected that health workers will be more optimal in carrying out community empowerment activities through family-related approaches to sanitation and Clean and Healthy Life Behavior, public figures and public religious conducting activities that instill Islamic values to the community to maintain sanitation and clean and healthy life behavior.
Makhfudli et al., 2017	Factors Related to Open Defecation Behavior Among Schoolage Children in West Lombok	*Cross – Sectional*	Parental education background (p = 0.000), economic background (p = 0.003), cultural values and lifestyle (p = 0.000), social and family (p = 0.000), religiosity (p = 0.000), technology (p = 0.000) are significant related to open defecation behavior in school-aged children.	the intervention was needed on the factors that influence the open defecation behavior by nurses participating directly to communities to increase public awareness about the importance of healthy defecate in a closet to avoid the disease.

It can be concluded that environmental factors that force people to defecate in the open area are the availability of toilet facilities, toilet condition, availability of clean water, land ownership, and geographical factor. So that suitable approaches and solutions are needed to overcome them.

Social norm factors which cause the practice of OD in the community

A community's behaviour often depends on their daily habits (24). Habit is an indicator of culture so that people's habits in the practice of OD are predominantly tied to culture (25). local and cultural values may influence sanitation practices in the community (26). Due to cultural and habit factors, the community continues to defecate in open locations despite having adequate information about the usage of latrines (27). Parents who practicing OD will be imitated by their child and become a habit in the community since then and until now as long as it does not have a toilet (21). Psychological factors prevent people from practising defecating in the toilet, such as a feeling of comfort and togetherness when practising OD. People who already own a toilet still defecate in open area because they feel more comfortable than defecating in the toilet. It becomes a habit of the group. The feeling of comfort and togetherness when practising OD becomes a challenge to telling people using the toilet (16,24,27,28). People who are used to defecating in the open are reluctant to build a toilet. The lack of education and public awareness makes it difficult for this habit to change. The community needs to be encouraged to adopt good sanitation habits to influence the community in building healthy toilets (9).

People think that the toilet is intended for guests, and they are not going to utilize it. People still defecate on the water because they feel comfortable and think it considered usual. It is not a big issue based on their long-standing experience in the community. Because of this, OD is still considered normal and more practical (22,29). OD behaviour can still be found because

public toilets far from their house. Therefore, they prefer to practise OD on a farm. Disposing of defecation anywhere is considered normal because it is carried out on their land. The waste will be consumed by animals and will not cause odour and is considered normal (there is no prohibition) (22). Social influence can encourage OD practices to more healthy behaviour, for example, the culture of shame (30).

OD has been a habit of the community for a long time. It is still considered normal, but there must be an effort to show the public that this behaviour is not suitable for the public's health.

Economic factor causes the practice of OD in the community

The 2015 Indonesian National Survey results found that 43.31 % of the population in quintile 1 (lowest) had access to proper sanitation services. 83.52 % of the population in quintile 5 (richest) had access to adequate and sustainable sanitation facilities so that the quintile 1 (lowest) community had less access to proper sanitation than the quintile 5 (richest) population. The lower the household expenditure, the lower the percentage of households with access to proper sanitation facilities because of the lack of funds to create adequate sanitation facilities (3). Many villagers with low economic status did not use toilets (31). People with low incomes think they do not require healthy latrines because they are more comfortable with OD in public places and use other people's restrooms (32). People with lower economic status are more likely to practice open defecation than ones with better economic status. A better economic status means that the community can fulfil all of their primary and secondary needs, while those with lower economic status will prioritize their primary needs (30). Low-income families find it hard to build toilets because they use their income to meet their daily needs, and after fulfilling those needs, they will find a way to spend on other things such as building a toilet (33). Building toilets required for health reason (gooseneck toilets with a septic tank) is considered expensive, so people prefer to defecate in the open yard or river at no cost. Low economic conditions lead people to consider toilets as not necessary (19).

In Sukomulyo Village, there is a strong relationship between family income and healthy toilet possession. Low economic factors make people unable to build toilets with health standard requirements (34). There is a relationship between economic level with toilet ownership. People with better economic level tend to have healthy toilets than those with low economic levels (9). There is an income relationship with the toilets ownership. Low-income families think that making latrines that meet health requirements is expensive (35). Communities with a high economic level found it easy to build toilet facilities, the income obtained is used to build their toilets as a place to defecate. People with high economic levels have proper defecated behaviour. People with low economic levels tend to OD because they are can not to make their toilets at home and prefer to defecate in rivers, yards or ditches (36). There is no correlation between the number of family income and the use of family toilets. There is no difference in risk among low-income and high-income respondents because high-income people tend not to have proper sanitation facilities they can utilize if they live near the river to defecate. Hence, people choose to utilize the surrounding environment (open environment) for defecation that does not require construction or maintenance funds (24).

It can be concluded that the construction of toilets following the health standard requirements is still considered unimportant by the community, so people choose to utilize the surrounding environment (open environment) for defecation that does not require funds in construction or maintenance

Program implementation to a chieve open defecation free in Indonesia

Sanitasi Total Berbasis Masyarakat (STBM) or Community Lead Total Sanitation (CLTS) is a sanitation-based program in Indonesia. The STBM approach is to empower the community to change hygienic and sanitation behavior. STBM has five standards: open defecation free, washing hands with soap, food and water management, waste management, and wastewater management. The first standard is to stop open defecation, which is an effort to make individuals in the community engage in open defecation practice (37).

Indonesian Ministry of Health describes the STBM as the following, to enabling the environment in the implementation of STBM includes policies, national strategies, budget and resource support, partnerships and institutions, to increase the capacity for program implementers or facilitators, program implementation strategies, media to deliver health messages related to STBM, the fulfilment of sanitation supply and government financing in the implementation of STBM. The Indonesian government, multiple sectors such as donors, international and local NGOs, and the private sector through STBM programs, religious organizations, social groups, and others supported STBM implementation. The government made technical guidelines and modules to build the facilitator's capacity. It makes it easier to implement the STBM pillars in the community. The government made technical guidelines and modules for STBM facilitators to build the their capacity. The programme's slogan is created by adopting local languages to make the community feel comfortable, making it easier to implement the STBM pillars. The sanitation needs in several provinces, there are sanitation entrepreneurs, and the government is helping the community to fulfill their sanitation needs. The following points need to be considered for the

success of STBM: enabling environment STBM policy and roadmap, budget and resource support, partnerships and institutions), demand creation, sanitation supply, monitoring and evaluation (38).

The STBM programme is an effort by the Indonesian government to achieve total sanitation by changing the behaviour of hygiene and sanitation through community empowerment. In this program, the government tries to encourage people. The encouragement is through cross-sectoral cooperation so that the health and welfare of the community increases. Looking at the results of several studies on environmental, socio-cultural, and economic factors, a button-up-based program (from the bottom up) is needed so that people feel they own the program.

Implementation of Logic Model

Situation

The situation in a logic model is defined as the origin of a problem which is the beginning for developing a logic model (39) (Figure 1). OD behavior is associated with several health problems. In (40) found that there was a relationship between OD behavior and the incidence of diarrhea, and families peforming OD were 5.47 times suffering from diarrhea than families who ODF and it was found that when the number of toilet ownership increased, cases of diarrhea decreased. A recent study (8) states a correlation between toilet use and the prevalance of diarrhea. OD causes the spread of enteric bacteria and increases the incidence of diarrhea. Another study (41) shows a correlation between the incidence of stunting with the availability of toilets and the behavior of washing hands with soap. Based on the STBM monitoring, until 2020, it was found that 34 out of 35 provinces in Indonesia had not been verified as 100% ODF (2). The conclusion is that there are still Indonesians who practice OD due to environmental, socio norm, and economic factors. A bottom-up (from the bottom up) based program is required. The program is carried out by involving the community in its implementation to feel they the program.

Priorities

SDGs goal point 6 is clean water and sanitation for all. Based on the SDGs goal point 6.2, by 2030, the world is free of OD (3). Which effort is needed to achieve these targets. One of the efforts to achieve this is to reduce OD practices in the community by managing and controlling OD through a bottom-up approach. This approach is based on environmental factors, socio-cultural factors, and economic factors that cause people to practice OD.

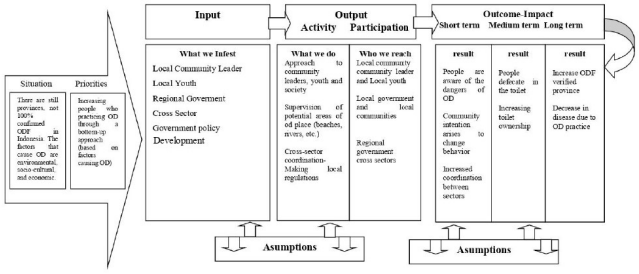

Figure 1: The Implementation of Logic Model in the Open Defecation Controlling base on Powel, 2008 (39)

Input

The definition of input in the logic model is what is contained in the program, including resources, investment, staff, financing, equipment, partnership and research as a basis (39). Before the program is implemented, local community leaders are to support the implementation of the program. It is hoped that community leaders can realize that ODF is unhealthy behaviour, therefore arousing the community's intention to participate in the program. Teenagers are invited to discuss together to find solutions to solve ODF problems. Teens can invite family members and friends to behave healthily. Local government act as the party is providing facilities, support, and policymakers. Facilities equipment and financial assistance. The program's implementation requires the local government to coordinate related government agencies (health service, environmental service, tourism office, public works office) and across sectors that can assist with implementing programs such as ministries in the government (Ministry of Environment and Ministry of Public Works and Housing).

Outcone-Impact

Outcomes-Impact is behavior change on program objectives including individuals, groups and communities. Results may comprise of short, medium or long term. Short term results, information, aptitudes, mentalities, conclusions, and goals. Medium-term result conduct, dynamic, and activity. Long term results, for example, changes in social, financial, environmental, and impact. Short-term outcome in this program is that the community is aware of OD's dangers to the environment and their health. There will be an intention to change OD behaviour from defecating in open spaces/ toilets. Thirdly, cross-sector coordination to accelerate the reduction of OD practices in the community. The first long-term outcome for the community to practice defecating in the toilet and increasing in the number of toilet ownership. Long-term outcomes an increase ODF verified province and a decrease in diseases due to proper OD practice.

The strength of this article is that it contains a review of environmental, socio-cultural, and economic factors related to ODF behaviour based on the articles obtained and presents a logic model for efforts to control OD behaviour in the community. The limitation of this article is that the source of the article has not come from all regions in Indonesia and only contains three variables related to OD behaviour. In addition, there are other variables associated with OD behaviour.

CONCLUSION

There are several factors associated with OD, namely the environment, socio-culture, and economy. These factors are the basis OD using a logic model. The situation in Indonesia is that there are still provinces that are not 100% confirmed as ODF. The priority of the program reduces OD practices through a bottom-up approach. Resources needed in implementing the program are community leaders, local youth, local government, cross-sectoral, and government policies. OD management and control can be carried out through several activities, namely approaches to community leaders, youth, and local communities, monitoring potential areas for OD practice and cross-sectoral coordination, and making regional regulations. The expected outcomes and impacts in implementing short-term programs are that the public is aware of the problem. There is an intention to change behaviour and to improve coordination between sectors. Medium-term outcomes include people defecating in the toilet and an increase in the number of toilet ownership. The long-term outcome is increase in ODF verification rates and decreased diseases due to OD practice.

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