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RESEARCH ARTICLE

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An Evaluation on Implementation of STBM Program Pillar 1 to Decrease of Diarrhea at ODF Village (Reinforcing Factors on Precede – Proceed) in Bondowoso District

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ABSTRACT

Diarrhea is still a health problem which is found in almost the whole world, especially in developing countries including to Indonesia. National Strategy Policies of STBM refers to a strategy of acceleration which aims to pursue targets of SDGs. STBM is an integrated action to decrease number of diarrhea incident and to improve hygiene and optimal quality of society life. This research aims to evaluate implementation of program STBM Pillar 1 by identifying factors that are able to influence to behavior of free defecation in ODF Village, Bondowoso District. This study uses a quantitative approach. This type of research is observational analytic using cross-sectional design, to identify the factors that influence the behavior of free defecation which is the cause of the high incidence of diarrhea in ODF villages. The study population was all diarrhea sufferers in the ODF village in Bondowoso district, with a population size of 3293 people. sample size is 350 people selected by cluster random sampling technique. Data was collected through interviews and observations, then analyzed using logistic regression tests. From the research findings, it shows that there were effects of the role of health officers (p-value = 0.006) and village head support (p-value = 0.000) on the behavior of free defecation. Next, the factor of public figure contribution (p-value = 0.304) and religious figure (p-value = 0.268) did not affect to the behavior of free defecation. The researcher recommends that within implementation of STBM program in Bondowoso District must be more focus on the improvement of health officer role and more support from the village head which is completed by clear and appropriate advocacy and regulation. The program of STBM is taken as a program which highlights that society empowerment must keep heading toward STBM principles where the government should completely mobilize existing resources in society, so it will realize independent society to improve their health degree. The village head must also get advocacy in order to be more aware of society health problems. It is hopefully able to make them realize that their duty is not always due to routine activities such as road construction, paving installment, or other physical activities.

Keywords: STBM; behavior; ODF village; diarrhea

INTRODUCTION

Background

Number of diarrhea incident in Bondowoso District is calculated due to data recapitulation of Monthly Report of Public Health Center which is still on the second rank of most illness after Upper Respiratory Tract Infection (URI), in patients number of 15,068 in 2018. The high number of diarrhea is spread on all regions of ODF (Open Defecation Free) or non-ODF. The regions which have been registered as ODF villages in 2018 and have number of diarrhea incident in top ten ranking is Sekarputih Village, Tegalampel Sub-district in approximately about 533 patients people, Kupang Village, Curahdami Sub-district in approximately about 475 patients people, Sempol village, Ijen Sub-district in approximately about 432 patients people, Tamanan Village,

Tamanan Sub-district in approximately about 403 patients people, Sumber Canting Village, Wringin Sub-district in approximately about 346 patients people, Kalianyar Village, Tamanan Sub-district in approximately about 331 patients people, Koncer Darul Aman Village, Tenggarang Sub-district in approximately about 260 patients people, Pelalangan Village, Wonosari Sub-district in approximately about 250 patients people, Kademangan Village, Bondowoso Sub-district in approximately about 243 patients people, and Karanganyar Village, Tegalampel Sub-district in approximately about 237 patients people⁽¹⁾. This number of diarrhea is still in high rate which actually should not occur anymore in the villages that have been registered as ODF villages.

Open Defecation Free (ODF) in Indonesia is known as “*Stop Buang Air Besar Sembarangan*”, is a condition where individual in community should not behave of random defecation which is definitely potential to spread germs⁽²⁾. The ODF status is related to the fulfillment of collective behavior which is written in Pillar 1 from five pillars of *Sanitasi Total Berbasis Masyarakat (STBM)* (Community Based Total Sanitation). The number of diarrhea incident is high in several villages of ODF, this fact raises a question of how the implementation of STBM program Pillar 1. Therefore, it needs to a program of evaluation to check and identify this fact.

The purpose of Health Ministry Regulations (Permenkes) RI 3rd, 2014 about STBM is to decrease number of diarrhea incident and to improve hygiene and quality of Indonesian society life. The program of STBM means an approach which aims to change to hygiene and sanitary behavior through society empowerment and encouragement. The implementation of STBM program put focus on society awareness and participation to the importance of defecation in toilet⁽²⁾. This purpose becomes such a challenge to the sanitation officer of Health Center.

Based on the data input in STBM web, until the end of December 2018, the total ODF village in Bondowoso District reaches up to 39 villages from 219 registered villages. In behalf of pursuing target 100% in 2019, it means that those 219 villages will definitely need much energy. The behavioral learning to people who live in ODF villages is very important to do. So, this habitual can be shared and implemented to the other villages and the total of ODF villages will also increase. If the total ODF village is increasing, it is hoped that the number of diarrhea incident will less occur. Until now, diarrhea is still the main health problem in developing countries and can occur to all age groups, particularly children under five years old. According to the data of WHO (2017), it is stated that almost 1,7 billion of diarrhea case is occurred to children with the death rate 525,000 on toddler per year. Based on the result of Basic Health Research 2013, diarrhea in Indonesia caused to the increase of toddler morbidity and mortality, where the diarrhea incident is rated 6.7%. The focus of this research is relevance between health promotion and factors that might influence to the behavior of free random defecation. This behavior of free random defecation is hopefully able to decrease number of diarrhea incident, so the status of ODF village can be obtained.

The determinant factor of human behavior is hard to limit, since the behavior is resultant from a number of factors, in either internal or external (environment). Based on empirical experience in field, it is summed that the outline of human behavior is seen from three aspects, they are physic, psychological, and social aspect⁽³⁾. A popular theory that is related to form human behavior is “Theory of Precede – Proceed” (1991), this theory was developed by Lawrence Green, which was established since 1980. Green at that time tried to analyze human behavior from the level of health. The human or society health is affected by two principal factors, they are: behavior factor and non-behavior factor. Further, behavior is influenced by three main factors, which is enclosed into an acronym PRECEDE: *Predisposing, Enabling, dan Reinforcing Causes in Educational Diagnosis and Evaluation*. Precede is a phase of problem diagnosis, while PROCEED: *Policy, Regulatory, Organizational Construct in Educational and Environmental Development*, which means a guidance of planning, implementation, and evaluation on health education (promotion)⁽⁴⁾.

According to the outcome expectation from STBM program that to decrease incident of diarrhea and other environment-based illness which are related to sanitation and behavior and based on the research backgrounds mentioned before, then, the researcher decide to conduct this research under title “An Evaluation on Program Implement of STBM Pillar 1 to Number Decrease of Diarrhea at ODF Village (Reinforcing Factors on Precede – Proceed) in Bondowoso District”. The objective of this research is to evaluate implementation of STBM program Pillar 1 to decrease rate of diarrhea incident at ODF Village by employing theory of Precede – Proceed in Bondowoso District.

METHOD

This study uses a quantitative approach. This type of research is observational analytic using cross-sectional design, to identify the factors that influence the behavior of free defecation which is the cause of the high incidence of diarrhea in ODF villages. The study population was all diarrhea sufferers in the ODF village in Bondowoso district, with a population size of 3293 people. sample size is 350 people selected by cluster

random sampling technique. Data was collected through questionnaires and observations, then analyzed using logistic regression tests.

RESULTS

Respondent characteristics of this research were based on the level of education, gender, and economy status. These are the characteristics from the research respondent.

Table 1. The characteristics of respondent

Characteristics	Frequency	Percentage
Educational Level		
▪ Senior High School-University	102	29.2
▪ Elementary School-Junior High School	195	55.7
▪ Un-graduated of Elementary School	53	15.1
Gender		
▪ Male	100	28.6
▪ Female	250	71.4
Economic Status		
▪ \geq UMR	60	17.1
▪ <UMR	290	82.9

UMR = Regional minimum wage

The table 1 figures that respondent characteristic was based on the educational level and divided into un-graduated Elementary School 14.6%, Elementary School – Junior High School 55.7%, and Senior High School – University 29.7%. This result indicates that society of Bondowoso who have low level of education or in field observation is still found people who cannot read and write. This condition can be difficult for them to get and comprehend written information, including to written information in sector of environmental health.

Respondent characteristic based on gender was divided into male and female, where the total male was 28.6%, while woman was 71.4%. The male respondents tend to be lesser, since the research survey was executed in morning to afternoon time, where they usually worked and had activities outside home. Most of female respondents are household mother. Further, the assumption on some toddler respondents, that it is better to be accompanied by woman rather than the man to fill questionnaire during the survey.

According to respondent economic level, it was divided into two groups: income under UMR standard and same as or upper than UMR standard. It shows result that people who had income under UMR standard was 83.4%, while respondents who had same as or upper than UMR standard was 16.6%. This result indicates that the most respondent average of Bondowoso District have low money income, in detail of below UMR standard IDR 1,801,406.00.

The role of health officers in this research was involvement of health officers to increase access of clean toilet through encouragement, counseling, or advocacy to the importance of toilet utilization. The table below was divided into two categories of health officer role in this context.

Table 2. Role of health officer to respondent (diarrhea patients) at ODF Villages in Bondowoso District in 2019

Role of health officer	Frequency	Percentage
Sufficient	309	88.3
Less	41	11.7
Total	350	100

Table 2 shows that from total of 350 respondents, 309 or 88.3% stated that the role of health officer was sufficient to advocate them to understand the significance of toilet utilization to improve health standard. The role of health officer could be found in posyandu, activities of environmental health like STBM encouragement in several residential meetings or when they visit to puskesmas through counseling and sanitation clinic. The

rest of 41 respondents (11.7%) stated that the role of health officer is not enough to inform them about health programs, especially significance of toilet in daily life.

According to the result of research, the public figure contribution has a positive role to improve access of toilet in non-physical, not infrastructure. The percentage of public figure role and contribution is figured in the table 3.

Table 3. Public figure contribution to respondents (diarrhea patients) at ODF Villages in Bondowoso District in 2019

Public figure contribution	Frequency	Percentage
Sufficient	297	84.9
Less	53	15.1
Total	350	100

Table 3 shows that from 350 respondents, 297 or 84.9% stated that public figure contribution to advocate them in understanding importance of toilet utilization was sufficient in order to improve health degree of respondent. The contribution of public figure could be managed through residential activities, meetings, karang taruna, or activities that might be conducted in the village. Whereas, 53 respondents (15.1%) stated that public figure contribution is less.

Support of religious figure in this research implies to a positive role of religious people to improve access of clean toilet in non-physically, not infrastructure. This statement is clarified in detail through table 4.

Table 4. Religious figure support to respondents (diarrhea patients) at ODF Villages in Bondowoso District in 2019

Religious figure support	Frequency	Percentage
Sufficient	259	74.0
Less	91	26.0
Total	350	100

Table 4 shows that from total of 350 respondents, 259 or 74.0% stated that support of religious figure to advocate them was sufficient to significance of toilet utilization in order to improve health degree. The role of religious figure could be obtained in daily life and interaction, religious activities like pengajian or yasinan/tiba'. Usually, the religious figure conveyed information of toilet significance through religious regulations, like to show aurat was haram, to maintain wife and daughter to keep aurat, so people will not see them taking bath or defecate in river randomly. Moreover, religious figure also extended that Islam highly requires people to cleanness as it is mentioned in surah Al-Waqi'ah verse 79, that cleanness is a part of iman. The rest of 91 respondents (26.0%) stated that the support of religious figure was not enough to convey them to significance of toilet.

Next, the role of village head in this research indicates a positive role as effort to improve toilet access in either physically and non-physically support. The table 5 figures out survey result related to the role of village head.

Table 5. Village head support to respondents (diarrhea patients) at ODF Villages in Bondowoso District in 2019

Village head support	Frequency	Percentage
Sufficient	148	42.3
Less	202	57.7
Total	350	100

Table 5 indicates that from 350 respondents, 148 or 42.3% stated that support of village head was sufficient to advocate them to understand importance of toilet utilization and access. The village head support included to physical help of toilet facility in the village. While, 202 respondents (57.7%) stated that the village head support is not enough to influence them to toilet access.

The dependent variable of research refers to a behavior of free defecation. Behavior of free defecation is defined as a behavior of respondent to avoid random defecation. It was distinguished into two categories: Total Open Defecation Free and Non-total Open Defecation Free.

Table 6. Behavior of open defecation free on respondents (diarrhea patients) at ODF Villages in Bondowoso District in 2019

Behavior of open defecation free	Frequency	Percentage
Total ODF	249	71.1
Non-total ODF	101	28.9
Total	350	100

Table 6 shows that from 350 respondents, 249 or 71.1% stated that they have behaved of free defecation in total, while 101 or 28.9% did not behave free defecation in total. Non total ODF action here refers that they did not throw their babies feces in toilet. They usually used pampers and immediately threw up pampers into toilet without sanitizing.

Effect analysis of reinforcing factors includes role of health officer, contribution of public figure, support of religious figure, and support of village to realize behavior of free random defecation to diarrhea patients at ODF village in Bondowoso District 2019, therefore, it needs to exert logistic regression test.

Here is the table of logistic regression test result.

Table 7. Result of logistic regression test: independent variable to dependent variable of respondents (diarrhea patients) at ODF Villages in Bondowoso District in 2019

No	Variable	B	Exp (B)	P Value	Explanation
1.	Role of health officer	-1.685	0.185	0.006	Significant
2.	Contribution of public figure	0.489	1.631	0.304	Not Significant
3.	Support of religious figure	0.458	1.581	0.268	Not Significant
4.	Support of village head	1.408	4.086	0.000	Significant

From the statistic analysis of logistic regression with $\alpha = 0.05$, it shows these interpretation of result:

- 1) Factor of health officer role to behavior of open defecation free indicated that p-value = 0.006, which means that there was effect of health officer role on the behavior of open defecation free. From the result of SPSS analysis, it was obtained that OR value (Odd Ratio) = 0.185, which means that the role of health officer is sufficient to have possibility more than 0.185 to influence respondents to ODF behavior. The regression coefficient number was -1.685 which means that in every addition of health officer role affects to the decrease of ODF behavior in about 1.685, if it is not supported by respondent characteristics, including to respondent attitude and strong tradition.
- 2) Factor of public figure contribution to behavior of open defecation free indicated p-value = 0.364, which means that there was no effect of public figure contribution on behavior of open defecation free. From the result of SPSS analysis, it was obtained that OR Value (Odd Ratio) = 1.631 which implies that the respondents who have support from public figure tends to behave ODF more than 1.631. While, regression coefficient value was 0.489 which implies that in every addition of public figure contribution, the behavior of ODF will increase in about 0.489.
- 3) Factor of religious figure support to the behavior of open defecation free indicated p-value = 0.268, which means that there was no effect of religious figure on behavior of open defecation free. From the result of SPSS analysis, it was obtained that OR Value (Odd Ratio) = 1.581, which implies that respondents who got support from religious figure tend to have possibility more than 1.581 to behave open defecation free. While, regression coefficient number was 0.458 which implies that in every addition of religious figure support, the behavior of ODF will increase in about 0.458.

- 4) Factor of village head support to behavior of open defecation free indicated p-value = 0.000, which means that there was effect of village head support on behavior of open defecation free. From the result of SPSS analysis, it was obtained that OR Value (Odd Ratio) = 4.086, which implies that respondents who got support from the village head tend to have possibility more than 4.086 to behave open defecation free (ODF). While, regression coefficient number was 1.408 which implies that in every addition of village head support, the behavior of ODF will also increase in about 1.408.

Here are cross tabulation between variables to the behavior of open defecation free (ODF) to figure out tendency of each variable:

Table 8. Cross tabulation between role of health officers and ODF behavior in Bondowoso District in 2019

No.	Health officer role	ODF behavior				Total	
		Total ODF		Non-total ODF		n	%
		f	%	f	%		
1	Sufficient	220	71.2	89	28.8	309	100
2	Less	29	70.7	12	29.3	41	100
	Total	249	71.1	101	28.9	350	100

According to table 8, it figures out that the respondents who obtained sufficient role of health officer tends to behave total open defecation free (ODF) rather than respondents who obtained less effect of health officer role. This result is proven by rate of total ODF behavior is greater on the respondents who obtained enough role of health officer rather than respondents who obtained less role of health officer, in comparison between 220 and 29.

Table 9. Cross tabulation between public figure contribution and ODF behavior in Bondowoso District in 2019

No.	Public figure contribution	ODF behavior				Total	
		Total ODF		Non-total ODF		n	%
		f	%	f	%		
1	Sufficient	230	77.4	67	22.6	297	100
2	Less	19	35.8	34	64.2	53	100
	Total	249	71.1	101	28.9	350	100

According to table 9, it figures out that the respondents who obtained enough contribution from public figure ends to behave total ODF rather than the respondents who obtained less effect of public figure contribution. This result is proven by the rate of total ODF is greater on the respondents who obtained sufficient support from public figure (230 respondents), while respondents who obtained less support from public figure is only about 19 respondents. On the respondents who got less public figure support tends to behave non total ODF 64.2%, while who behave total ODF is in percentage of 35.8.

Table 10. Cross tabulation between religious figure support and ODF behavior in Bondowoso District in 2019

No.	Religious figure support	ODF behavior				Total	
		Total ODF		Non-total ODF		n	%
		f	%	f	%		
1	Sufficient	205	79.2	54	20.8	259	100
2	Less	44	48.4	47	51.6	91	100
	Total	249	71.1	101	28.9	350	100

According to table 10, it figures out that the respondents who obtained sufficient support from religious figure tend to behave total ODF 79.2%, while the respondents who obtained less support from religious figure 48.4%.

Table 11. Cross tabulation between village head support and ODF behavior in Bondowoso District in 2019

No.	Village head support	ODF behavior				Total	
		Total ODF		Non-total ODF		n	%
		f	%	f	%		
1	Sufficient	129	87.2	19	12.8	148	100
2	Less	120	59.4	82	40.6	202	100
	Total	249	71.1	101	28.9	350	100

According to table 11, it figures out that the respondents who obtained sufficient village head support tend to behave total ODF rather than the respondents who obtained less support. The behavior of non-total ODF and total ODF is in quite bigger comparison between 82 and 19.

DISCUSSION

Role of health officer is distinguished into two categories, they are: sufficient and less role of health officer. From the total 350 respondents, who obtained sufficient role of health officer is about 309 respondents and who obtained less role of health officer is about 41 respondents. The cross tabulation test describes that respondent tendency who obtained sufficient health officer role will deliver to behavior of ODF in approximately 71.2%, while who obtained less health officer role will deliver less tendency of ODF behavior in approximately 70.7%. This harmony indicates that there is effect between role of health officer and ODF behavior. In short, sufficient role of health officer will emerge to better ODF behavior, total ODF.

Good promotion of health education conducted by health officer to the society is able to change society behavior and habitual⁽³⁾. But, this research finding was not supported in research who stated that there is no any relation between health officer support and ODF behavior in clean toilet⁽⁵⁾. The similar finding was asserted by Laeli Apriyanti in his research that there is no any relation between health officer support and toilet utilization or access⁽⁶⁾.

Next, contribution of public figure is distinguished into sufficient and moderate category. This kind of contribution is usually conducted through daily activities of society such as routine meeting, official meeting in the village or other informal residential activities⁽⁷⁾. This analysis depicts that from total 350 respondents, 297 respondents got enough contribution from public figure, while 53 respondents got less contribution. This result is supported by the result of cross tabulation test which states that the respondents who obtained sufficient support from public figure relating to total ODF behavior is about 77.4%, while non total ODF is about 22.6%. The respondents who have less public figure contribution usually behave ODF in less total 64.2%, while the total ODF is only 35.8%. This analysis finding implies that there is no any effect between public figure contribution and ODF behavior, but still this action delivers tendency that sufficient public figure contribution might affect people to behave better ODF. This research finding is not in line with the research done by Amalinda⁽⁸⁾, but it is appropriated to the research by Apriyanti⁽⁶⁾.

Public figure refers to people who is influential and highly regarded in his/her environment. The public figure is influential because of effect of individual position, honor, capability, and sophistication. Therefore, all attitude, statement, and behavior will be followed by many people⁽⁷⁾. According to theory of B. Kar in Soekidjo stated that health behavior is pointed on social support and contribution from the public figure, health officer, and health information. It means that the society who obtained support from public figure might have better health behavior than other people who did not obtain any support from public figure and health officer. Public figure support is regarded as a reinforcing factor which enables to raise influence of open defecation free⁽³⁾. However, people in ODF villages have been independent to take action relating to cleanness and sanitation without any dependence to public figure though.

Religious figure support is also distinguished into two categories: sufficient and less support. The support from religious figure can be more specific than the support from public figure. Moreover, society characteristic of Bondowoso District is religious. Then, this kind of support is considered to be able to emerge bigger effect to the society. The research finding indicates that from 350 respondents, 259 respondents stated that they had sufficient support from the religious figure, while 91 respondents stated that they had less support.

From the result of cross tabulation, it describes that respondent tendency to get support from the religious figure is to behave ODF totally in about 205 respondents, while ODF non totally in about 54 respondents.

Further, the respondents who get less support from religious figure tends to behave ODF non totally 47 respondents, while the reversely 44 respondents. Therefore, although the analysis finding clarifies that there is no any effect between religious figure support and ODF behavior, but it still raise up relevance of religious figure support to encourage society to behave total ODF.

The support from religious figure can be conducted in anytime like religious activities in village: routine Islamic studies, diba' and kifayah. Society in Tapal Kuda of Bondowoso District is very religious. They are famously known as statement "*apa cak en kyai (which means whatever due to kyai)*". This principle is actually enough to encourage people to behave appropriately, including in sector of health. Therefore, the other responsibility of health officer is to encourage and push the religious figure to take role to fix society behavior in order to improve their health degree.

Linda Destiya Kurniawati and Rudatin Windraswara in his research which discussed about the influential factors to patriarch behavior regarding to toilet access in Residential of Kampung Nelayan Tambaklorok Semarang executed grouping to three factors at once, they are support from the village apparatus, public figure, and religious figure which delivers result of p value = 0.548. According to bivariate analysis, it is not related to patriarch behavior in utilizing toilet⁽⁹⁾.

The village head support takes role especially currently because the fund from government has been given in quite great amount. It comprises to physical support (toilet supplying) or non-physically. This kind of support is divided into two categories: sufficient and less support. The respondents who stated that the village head support is sufficient 148 respondents, while the respondents who stated that the village head support is less optimal 202 respondents. This statement the relates to the result of cross tabulation test where both less and sufficient support from the village head tend to behave total ODF, where the sufficient support acquires to 129 respondents, while the less support acquires to 120 respondents. The non-total ODF is divided into sufficient support 19 respondents and less support 82 respondents.

This tendency comparison of total ODF behavior between sufficient and less support of village head is very significant, 87.2% for the sufficient support and 59.4% for the less support. It implies that the result of cross tabulation very support to analysis result that there is effect between the role of village head support and ODF behavior. The sufficient support of village head will deliver to total ODF behavior. This research finding is not in line with the research finding by Linda which asserted that there is no any relation between village apparatus and patriarch behavior in toilet utilization⁽⁸⁾.

CONCLUSION

The conclusion of this study are:

1. There are some effects between the role of health officer and ODF behavior at ODF villages in Bondowoso District.
2. There are no any effects between public figure support and ODF behavior at ODF villages in Bondowoso District.
3. There are no any effects between religious figure support and ODF behavior at ODF villages in Bondowoso District.
4. There are some effects between village head support and ODF behavior at ODF villages in Bondowoso District.

The researcher recommends that within the implementation of STBM program in Bondowoso District must focus more in improving the role of health officer and relate the village head support through precise and clear advocacy and regulation. The program of STBM is a program which prioritizes society empowerment that have to hold on STBM principles that totally seized on existing resources in the environment, so they could be independently to improve their health degree. The village head also have to get advocacy to get more awareness to the health problems of society, so that they will not only focused on routine activities like road construction, paving installment, and other physical activities of construction.

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