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Ima Hidayati Utami

Universitas Padjadjaran; Universitas Brawijaya, imadayati.u@ub.ac.id

Susanne Dida

Universitas Padjadjaran

Purwanti Hadisiwi

Universitas Padjadjaran

Bambang Dwi Prasetyo

Universitas Brawijaya

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Sources of Health Information Affecting Awareness in Using Latrine among Riverside Inhabitants of Rural Indonesia

Introduction

Open defecation (OD) has devastating consequences for public health (UNICEF, 2018). It contributes to malnutrition and causes approximately 432,000 diarrheal deaths annually and is a major factor in several neglected tropical diseases, including intestinal worms, schistosomiasis, and trachoma (WHO, 2019). In response to these threats, the UN issued a call to action on sanitation that included the elimination of open defecation by 2025 (UN, 2013).

In Indonesia, the practice of OD accounted for a considerable loss, i.e.: economic loss reached to Rp. 56 trillion / year where 53% accounted for health loss, time loss reached to Rp. 10.7 trillion / year, life loss reached to 25 trillion/year where 95% were under- five years old children (WSP-EAP, 2008). Despite evidence showing that the number of people practicing OD in Indonesia has been steadily decreasing from 1.5% to 9.36% per year in the last ten years, about 25 million people continue to engage in OD in 2019 (Antaranews.com, 2019). Worse still OD practice in most cases is in the rivers which

serve as a center of daily activities such as bathing, washing clothes, rinsing dishes, as well swimming and fishing spots. Previous studies showed that OD practiced by people who live close to water bodies, such as river and sea, is difficult to tackle (Mazaya, 2016; Mukherjee, 2011)

The same is true for Malang regency, a district in east Java – Indonesia, which is geographically crossed by 44 rivers and over 83 creeks (BPS of Malang Regency, 2018). Some rivers and creeks serve not only as agricultural irrigation but also as a facility for community living nearby to do daily activities include defecating. Sanitation intervention under the government program called Community-Based Total Sanitation is likely ineffective to change related behavior and practice. In fact, after the intervention, in 2019 STBM-SMART system (the rapid community-based monitoring system developed by the Indonesian Ministry of Health) showed that out of 390 villages in Malang Regency, 88 villages (22.56%) were still inhabited by people practicing OD.

Many factors may affect human health behavior and practice, one of which is a source of health information. The source of information can be defined as the originator of communication (Sundar & Nass, 2001). In terms of health-related information sources, two main sources were identified : first, interpersonal sources such as doctors, nurses, family and friends, health groups, voluntary organizations, and other professions allied

to medicine; second, the mass media sources include TV, radio, posters, books, magazines and newspapers, videos and the internet (Johnson, J. D. & Meischke, 1991).

Previous empirical studies revealed an association between health information source with health behavior (IOM (U.S.), 2002; Mertens, F. et al., 2017). In more specific, health information delivered by healthcare personnel as a source was found associated with recommended health behavior (Birkhäuser et al., 2017; Redmond, N. et al., 2010), while a combination of healthcare extension and radio was associated with mothers' awareness in accessing provided maternal and child health service in Ethiopia (Negussie & Girma, 2017). The fast growing of social networking sites recently have also been associated with some health behaviors. However, the result of a review towards 143 articles (screened from 5264 articles) describing a total of 134 studies showed that the use of peer-based social media feature did not fully affect recommended health behavior. The detailed result showed that it effected on the positive outcome by 70%, did not find any effect to the respective outcome by 28%, and effected negative outcome by 2% (Elaheebocus et al, 2018).

To change opinion, attitude and behavior, the credibility of information sources is one of important components need to be considered. As quoted in (Hussein, 2012), Ohanian defined source credibility as the extent to which the source is perceived as possessing

expertise relevant to the communication topic and can be trusted to give an objective opinion on the subject. The Source Credibility Theory (Hovland, C.I., Janis, I.L., & Kelley, 1953) described the influence of perceived expertise and trustworthiness on how people process information and create attitudes. According to this theory, individuals were more likely to be swayed if the source was alleged to be credible. A review toward studies conducted in a span of 5 decades, 1950s – 2000s, revealed that high-credibility sources were more effective than low-credibility sources in almost all of studies (Pornpitakpan, 2004).

The aim of this study was to identify the sources of sanitation and hygiene information received by riverside villagers, to identify defecation practiced by riverside villagers, and to examine the correlation between the sources of information received with defecation practiced by riverside villagers.

This study was important to determine effective sources of information to rise people’s awareness in using latrine especially for those living in the riverside village. The result of this study can be a reference for designing tailored communication strategies for promoting sanitation and hygiene suited the need of target audiences, especially in designing the suitable sources of information for riverside villagers. This supports government policy to achieve Sustainable

Development Goal (SDGs) target 6.2, adequate and equitable sanitation for all, by 2030.

Method

Study Design and Selection of Study Area

The study employed a descriptive quantitative approach. It was conducted in Sumberjaya Village from January to February 2019. Sumberjaya village is a village under Gondanglegi sub-district, a sub-district owning the highest OD rate in Malang Regency, East Java Province (JawaPos.com, 2017). The village is geographically crossed by two big rivers 'facilitate' village inhabitants doing their sanitary habit for years. Hence, defecating in rivers has been common practice over generations. The recorded data showed that out of 659 households, 123 households (18.7%) did not have household latrines (Ketawang Primary Health Centre, 2018). Those who didn't have household latrines usually used shared latrines or accessed rivers/irrigations (Interview with village sanitarian, January 22, 2019). Finding from site observation conducted by researcher team of this study showed that despite having access to a household latrine, some villagers continue to defecate in the river or irrigation.

Study Population and Sample

The population of this study was the total number of households in Sumberjaya Village who have access to

household latrine. Thus, 536 was counted as total population of this study. To yield a representative sample proportion, sample size was determined based on Slovin formula:

$$n = \frac{N}{1 + N(e)^2}$$

Where:

n = sample size

N = population size

e = margin of error

Using 10% margin of error, the calculated sample size was 84.3. Thus, the estimated sample size was around 84 to 85 households. However, the actual sample used in this study was 90 households. It means, the sample of this study met the representative proportion requirements as the number was more than calculated sample size.

Data Collection method and tools

For this study, a set of questionnaire was distributed to respondents to be filled. The questionnaire was written in Indonesia language and was divided into 3 parts:

- 1) Part I contained demographic data of respondents, i.e.: name, address, age, education, occupation and household income.
- 2) Section II comprised sources of sanitation and hygiene information received by respondents.

Here, a list of hygiene and information sources was given, respondents were requested to choose the sources they received. They can choose more than one option and add another sources were not on the list.

- 3) Part III comprised 13 closed-ended questions with “yes/no” alternative responses to assess defecation practiced by respondents. A score of “1” (one) was given for “yes” answer showing healthy practice. Otherwise, “0” (zero) score was given for “no” answer showing unhealthy practice.

In case the respondents were illiterate, researcher of this study read them the questions and let them decide their answers.

Data was collected from every individual household in the study area through door-to-door survey. The survey was conducted in the evening during weekdays and in the morning during weekends to get maximum respondents at home. Before requesting a prospective respondent to take part in the survey, the researcher asked them if they were household heads. In case a household head was unavailable, an appointment for the second visit. A household head who could not take part in the survey after the second visit was counted as a non-respondent. In case there were over one family living in the same house, one household head was chosen to be study a respondent randomly.

Statistical Analysis

All statistical analysis in this study were performed using SPSS version 16.0. A Frequency distribution was used to identify demographic characteristics, defecation practice characteristics, and information sources received by respondents. While a two-tailed Pearson's correlation was used to assess correlation between the sources of sanitation and hygiene information with defecation practice among riverside villagers.

Result and Discussion

Demographic Characteristics of Respondents

Table 1 showed that the participants of this study were 90 household heads with a variety of age range, namely: aged 20–30 years (37%), aged 31–40 (20%), aged 41–50 (20%), and aged 50–over (22.2%). In relation to education background, the majority of villagers graduated junior and senior high school (55.6%) followed by graduated elementary school (27.8%), never attended school (12.2%) and graduated College and University (4.4%). Nearly all of respondents (88.8%) earned below the regional minimum wage, namely: 44.4% of respondents earned under Rp.1.500.000/month, 44.4% earned between Rp.1.500.000 to Rp. 2.781.000/month. Only 10% of respondent earned more than Rp.2.781.000/month. Referring to the decree issued by the Governor of

East Java dated November 2018, regional minimum wage for Malang Regency in 2019 is Rp. 2.781.000/month (The Governor of East Java, 2018).

Table 1 : Demographic Characteristics of Respondents

Characteristics:	Frequency N = 90	%
Age :		
20 – 30	34	37
31 – 40	18	20
41 – 50	18	20
50 – over	20	22.2
Education:		
Never Attended School	11	12.2
Elementary School	25	27.8
High School	50	55.6
College/University	4	4.4
Household Income:		
Income/month < Rp.1,500,000	40	44.4
Income/month Rp.1,500000 – Rp.2,700,000	40	44.4
Income/month > Rp. 2,700,000	10	11.5

Source: Field Data, 2019

Sources of Sanitation and Hygiene Information Received by Respondents

Reflected on table 2 was the responses from respondents regarding the sources of sanitation and hygiene information received. More than half of the respondents claimed that they received the information from TV and healthcare workers, half of them received it from health cadres, 38.9% received it from social media, and a little portion (11%) received it from book.

Table 2: Distribution of Source of Information Received by Respondents

No.	Source of Information	Number of Respondents	%
1	Healthcare Worker	49	54.4
2	Health Cadre	45	50
3	Book	10	11.1
4	TV	62	68.9
5	Social Media	35	38.9
6	Banner	39	43.3

Source: field data 2019

Defecation Practice on the Study Area

The study revealed that although 88.8% of respondents earned below the regional minimum wage (table 1), most of them (87.8%) built recommended healthy household latrines which were supplied with clean water (83.3%), equipped with septic tanks (91%), and didn't channel the latrine waste into the river (81%). Most of them (90%) also

stated not disposing children excreta and diapers into the river (see table 3).

However, many respondents still accessed rivers/irrigations in certain conditions, such as when the latrine was occupied (36.7%), when they worked in the field far from home or when they had activities near the river/irrigation (42.2%). That 50% of respondents viewed defecation in a flowing river endangered human's health means a half of respondents continued to access rivers as long as long as the river's flow was quite swiftly. This assumption was supported by research findings showing that 51% of respondents still practiced open defecation in a flowing river. Furthermore, few respondents were found unaccustomed to wash hand using soap after defecation (36.7%) and to clean latrine regularly (6.7%).

Table 3: The Characteristics of Latrine Users

Healthy Defecation Practice	Yes		No	
	F	%	F	%
Having access to latrines.	90	100	0	0
Equipping the latrine with clean water.	75	83.3	15	16.7
Cleaning the latrine regularly.	84	93.3	6	6.7
Equipping the latrine with a septic tank.	82	91.1	8	8.9
Not channeling the latrine waste to a river.	73	81.1	17	18.9
The type of the latrine accessed	79	87.8	11	12.2

is an improve toilet or a simple latrine with a lid supplied to cover the hole.				
Not defecating in a flowing river/irrigation.	44	48.9	46	51.1
Defecation in a flowing river endangers human's health	45	50	45	50
Not defecating in a river/irrigation although the household latrine is being used.	57	63.3	33	36.7
Not defecating in the open when working in a field or having activity in a river.	52	57.8	38	42.2
Washing hand with soap after defecation.	67	74.4	23	25.6
Not disposing children excreta or baby diapers into a river.	81	90	9	10
Reminding family members not to defecate in a river/irrigation.	30	33.3	60	66.7

Source: Field Data, 2019

Correlation between Sources of Health Sanitation and Hygiene with Defecation Practice

Table 4 below showed the significant correlations between information received from healthcare worker, book, tv, social media and banner with hygiene information with healthy defecation practiced among

riverside villagers. The highest significant correlation was gained by social media ($r=0.476$), followed by TV ($r=0.450$), banner ($r=0.344$), healthcare worker (0.307), and finally book ($r =0.027$). The lowest contribution of books toward the recommended practice had been predicted by the researcher team since books were not used as sources in the promotion of sanitation and hygiene in the study area. In addition, the lower level of education background of the majority respondents (see table 1) likely related to their low reading habit. The finding of this study supported the result of previous studies showing an association between health information source with health behavior (IOM (U.S.), 2002; Mertens, F. et al., 2017). The novelty was mass sources (except book) tended to have a stronger association with healthy defecation practices than interpersonal sources.

The Health cadre was the only source associated negatively with recommended practice ($r=-0.197$). Although the frequency of respondents in receiving sanitation and hygiene information from health cadres was high (50%), the result did not associate with the higher likelihood of positive outcomes. This finding raised a question why health cadres were found to be ineffective sources. The theory of source credibility (Hovland, C.I., Janis, I.L., & Kelley, 1953) and the result of previous studies (Pornpitakpan, 2004) recommended the use of credible sources since high-credibility sources

were found more effective than low-credibility sources. Hence, to answer the question, health cadres' expertise and trustworthiness need to be assessed.

Table 4: Correlation between Sources of Health Sanitation and Hygiene with Defecation Practice

No.	Source of Information	r	Sig
1	Healthcare Worker	0.307**	0.003
2	Health Cadre	-0.197	0.063
3	Book	0.234*	0.027
4	TV	0.450**	0.00
5	Social Media	0.476**	0.00
6	Banner	0.344**	0.01

** correlation is significant at the 0.01 level (two-tailed)

*correlation is significant at the 0.05 level (two-tailed)

Source: Field Data, 2019

Referring to the system of public health in Indonesia, health cadre is volunteers becoming the extension of health workers in a neighborhood or village where they live. To carry out their main task and function, they got a 30 hours training provided by the Community Health Center (Puskesmas) in advance. Unfortunately, based on the Curriculum and Module for Health Cadre Training (Ministry of Health, 2012), sanitation and hygiene issue were not prioritized in the training. To be effective in carrying out the role as sources of sanitation and hygiene information, health cadres are required to have the

knowledge and skills to persuade people for practicing sanitation and hygiene properly. Thus, they needed a continuous supervision, guidance, education and training to improve their performance. In addition, to be a trusted source, before disseminating information to their neighbors, health cadres must ensure themselves that they and their families have done the practice properly in their daily lives.

Conclusion

More than half of respondents were found receiving sanitation and hygiene information from TV (68.9%) and healthcare worker (54.4%), half of them received from health cadre, 38.9% received from social media, and a little portion (11%) received from books. It was also found that a half of respondents viewed defecation in the rivers did not endanger human's health as long as it was carried out in the flowing rivers. As a result, 51% of respondents accessed rivers, specifically the flowing rivers, although they had access to household latrines. This finding indicated that sanitation and health promotion needs to put more emphasis on the impact of open defecation into the water sources, flowing or not flowing, to human health and environmental hygiene. The importance of using soap and cleaning latrine regularly also needs more attention in the promotion since the study found few respondents unaccustomed to wash

hand using soap after defecation (36.7%) and to clean latrine regularly (6.7%).

The Significant association between information sources with the healthy defecation practice were gained by social media ($r=0.476$), TV ($r=0.450$), banner ($r=0.344$), healthcare worker (0.307), and book ($r=0.027$). This finding showed that mass sources (except book) tended to have stronger association with recommended practice than interpersonal sources. Conversely, health cadres associated negatively with recommended practice ($r=-0.197$). To become an effective source, the health cadre required to get a guidance, education and training to improve their knowledge skill. In addition, to be a trusted source, health cadres needed to ensure themselves that they and their families did defecation practice properly in their daily lives before persuading their neighbors to practice it.

Study's Limitation

The study was limited to one specific location. Hence, the result of the study cannot be generalized to the entire regency. Further studies can be conducted in all areas under Malang regency so the results can be generalized to the entire regency.