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Penyebab Buang Air Besar Sembarangan (BABS) di Provinsi Jawa Timur Tahun 2018

Causes of Open Defecation in East Java Province in 2018

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ABSTRACT

Background: Open defecation (OD) is a sanitation problem that can have a negative impact on health. Open defecation can have a bad impact on sanitation this poor sanitation can then trigger various diseases. Objective: This study aims to find out the factors related to the behavior of open defecation (OD) in Regency/City communities of East Java Province in 2018. Methods: Ecological approach based on secondary data published by the Ministry of Health of the Republic of Indonesia, East Java Provincial Health Office, and the Central Statistics Agency of East Java Province of 38 districts/cities in East Java Province were included in this study. This study examined the percentage of healthy latrine users with 4 other independent variables, namely the percentage of facilities that met the available requirements, the percentage of villages that applied Community Led Total Sanitation (CLTS), the prevalence of diarrhea cases, and the percentage of illiteracy rates. Data were analyzed using cross tabulation with SPSS. Results: There were still several districts/cities in East Java Province that had not used latrines when defecating, most of them were in districts/cities with inadequate facilities, low percentage of villages willing to implement CLTS, low percentage of illiteracy, and moderate diarrhea prevalence. Conclusion: Based on these results, it can be concluded that the factors of the availability of facilities, education, compliance with CLTS implementation, and the prevalence of diarrhea have a relationship with the percentage of latrine users in districts/cities in East Java Province. The results of this study can be used by local stakeholders to make health-based policies as an effort to reduce open defecation.

Keyword: latrines; open defecation; secondary data; ecological analysis

INTRODUCTION

Open defecation (OD) is an act of disposing of feces in fields, forests, bushes, rivers, beaches, or other open areas and allowing them to spread to contaminate the environment, soil, air, and water (Fitrianingsih & Wahyuningsih, 2020). Open defecation is an unhealthy behavior that is still often seen everywhere (Paladiang et al., 2020). World Health Organization (WHO) and United Nation International Children’s Emergency Fund (UNICEF) explains that open defecation is always practiced, with a quarter of cases not having specific policies and plans. Most countries already have data on open defecation and access to basic sanitation services. From this data, it is estimated that as many as 673 million people still do not have latrines and practice open defecation (WHO/UNICEF, 2020).

The minimal percentage of use of healthy latrine facilities in districts/cities of East Java can be one of the benchmarks in the open defecation assessment. Based on data in Dinas Kesehatan Jawa Timur (2019), it shows that there were only 9 out of 38 regencies/cities in East Java Province that had reached 100% use of healthy latrines, the other 29 regencies/cities were still in percentage numbers between 74.91% to 99.83%.

There are many factors and strategies that can be done to overcome the problem of open defecation, one of data, source doesn’t need to be written. Number of tables and figures allowed is as which is through Community Led Total Sanitation (CLTS). In Indonesia, the percentage of villages implementing CLTS in 2018 has exceeded the target. Based on Kementrian Kesehatan Republik Indonesia (2019), the target of villages that should
Implement CLTS was 40,000 villages, while the realization was that 49,283 villages implemented CLTS. However, the percentage of latrine use in Indonesia, especially in East Java, is still not maximized, this indicates that it is not only the percentage of villages that apply CLTS that affects the low percentage of latrine users in East Java. There are other factors such as level of education, knowledge, and availability of facilities (Murhan & Aprina, 2020).

Open defecation can have a bad impact on sanitation, this poor sanitation can then trigger various diseases. Various diseases resulted from poor sanitation in Indonesia due to open defecation according to Hadiati Sukma, Mursid & Nurjazuli (2018) were 72% cases of diarrhea, 0.85% cases of intestinal worms, 0.57% of hepatitis, 23% of scabies, 0.14% of trachoma, 0.02% of hepatitis E and 2.5% of cases of malnutrition. In addition to the health impact, the presence of open defecation behavior in the community can also cause social disturbances such as discomfort due to the smell of human feces, decreased water quality (for open defecation in rivers or lakes, and so on). Based on the description of the background above, this study is intended to determine the relationship between several factors on open defecation behavior, especially in East Java in 2018.

**METHOD**

This research was conducted using an ecological analysis approach or an ecological approach. The data analyzed were aggregated data in certain groups or levels, the level used in this study was the regency/city level. Variables in ecological analysis can be aggregate measurements, environmental measurements, or global measurements (Laksono & Sandra, 2020).

This study was conducted by utilizing secondary data from Health Profile of East Java Province in 2018 (Dinas Kesehatan Jawa Timur, 2019), the results of the 2018 basic health research data (Badan Penelitian dan Pengembangan Kesehatan, 2018), and Education Statistics data for East Java Province in 2018 (Badan Pusat Statistik Provinsi Jawa Timur, 2019). The unit of analysis in this study was the districts/cities in East Java with a total of 38 districts/cities.

**RESULTS AND DISCUSSION**

Table 2 shows the results of the descriptive analysis of the variables of healthy latrine users with other related of the districts/cities in East Java had been using 100% healthy latrines and most had not yet. One area that had 100% utilized latrines well was Ponorogo Regency. While the area with the lowest latrine users was Pacitan Regency with a percentage of 74.91%. Among the 38 regencies/cities in East Java Province, the lowest percentage

| Source                                      | Variable                                      |
|---------------------------------------------|-----------------------------------------------|
| Health profile of East Java Province in 2018| percentage of healthy latrine users           |
| Basic health research data in 2018          | percentage of facilities that met the available requirements |
| Education Statistics of East Java Province in 2018 | percentage of villages that implemented CLTS |
|                                               | prevalence of diarrhea cases                  |
|                                               | percentage of illiteracy rate                 |

The dependent variable in this study was the percentage of healthy latrine users. In addition to the percentage of healthy latrine users as the dependent variable, there were 5 independent variables analyzed in this study, namely the percentage of facilities that met the available requirements, the percentage of villages that applied CLTS, the percentage of illiteracy rates, and the prevalence of diarrhea cases. Data that were obtained would be analyzed in univariate and bivariate. Univariate analysis was performed using descriptive analysis on each variable and bivariate analysis was performed using cross tabulation with SPSS 21 software.

This study was conducted by utilizing secondary data from reports that were published on an official platform easily accessible by anyone, therefore ethical clearance was not required to carry out this research.
of facilities that met the available requirements was 74.04% and the highest percentage was 100%. The percentage of villages that implemented CLTS was the lowest 18.00% and the highest was 100%.

The lowest percentage of illiteracy rates was 1.26% and the highest was 21.88%, and the lowest prevalence of diarrhea cases was 1.04% and the highest was 11.53%.

Table 2. Descriptive Statistical Variables of Healthy Latrine Users with Related Variables

|                           | N | Average | Min. | Max. | Middle value | Std. Deviation | Variance |
|---------------------------|---|---------|------|------|--------------|----------------|----------|
| Percentage of healthy latrine users | 38 | 25.09   | 74.91 | 100.00 | 94.55        | 6.76           | 45.74    |
| Percentage of facilities that met the requirements available | 38 | 25.96   | 74.04 | 100.00 | 95.61        | 6.42           | 41.23    |
| Percentage of villages that implemented CLTS | 38 | 82.00   | 18.00 | 100.00 | 90.25        | 17.33          | 300.35   |
| Illiteracy percentage | 38 | 20.62   | 1.26  | 21.88 | 8.19         | 5.43           | 29.49    |
| Prevalence of diarrhea cases | 38 | 10.49   | 1.04  | 11.53 | 6.08         | 2.12           | 4.52     |

Source: (Badan Penelitian dan Pengembangan Kesehatan, 2018; Dinas Kesehatan Jawa Timur, 2019)

Table 3 shows the results of the cross tabulation between the percentage of facilities that met the requirements available and the percentage of healthy latrine users. Based on the Table 3, we can find that low percentage latrine users (74.91-83.27) were in inadequate to adequate facilities district/city. Moderate latrine users (83.28-91.64) were mostly (75.0%) in regency/city with adequate facilities, and high latrine users (91.65-100.00) were mostly (83.9%) in regency/city with adequate latrines. This means that the more adequate the facilities in a regency/city, the higher the number of latrine users in that regency/city.

Table 3. Cross Tabulation of the Percentage of Facilities that Met the Available Requirements with the Percentage of Healthy Latrine Users

| Percentage of facilities that met the available requirements | Low (74.91-83.27) | Moderate (83.28-91.64) | High (91.65-100.00) |
|-----------------------------------------------------------|-------------------|-----------------------|-------------------|
| Inadequate (74.04-82.69) | n | % | n | % | n | % |
| 1 | 33.3 | 1 | 33.3 | 0 | 0 | 0 |
| Fairly Adequate (82.70-91.35) | n | % | n | % | n | % |
| Adequate (91.36-100.00) | n | % | n | % | n | % |
| 1 | 33.3 | 3 | 75.0 | 26 | 83.9 |
| Total | n | % | n | % | n | % |
| 3 | 100 | 4 | 100 | 31 | 100 |

Source: (Dinas Kesehatan Jawa Timur, 2019)

Table 4 shows the results of the cross tabulation of the percentage of villages that implemented CLTS with the percentage of healthy latrine users. Based on Table 4, it can be seen that the percentage of healthy latrine users was low (74.91-83.27) and moderate (83.28-91.64) in districts/cities with a high percentage of villages implementing CLTS. Meanwhile, the highest percentage of latrine users (87.1%) was in districts/cities with a high percentage of villages that implemented CLTS. This means that the higher the percentage of villages that implement CLTS, the higher the latrine users.
Table 4. Cross Tabulation of the Percentage of Villages that Implemented CLTS with the Percentage of Healthy Latrine Users

| Percentage of villages that implemented CLTS | Percentage of healthy latrine users |
|---------------------------------------------|-----------------------------------|
|                                            | Low (74.91-83.27) | Moderate (83.28-91.64) | High (91.65-100.00) |
| Low (18.00-45.30)                         | 0                           | 0                      | 2                       | 6.5 |
| Moderate (45.31-72.61)                     | 0                           | 0                      | 2                       | 6.5 |
| High (72.62-100.00)                        | 3                           | 100                    | 4                       | 27  | 87.1 |
| Total                                      | 3                           | 100                    | 4                       | 31  | 100 |

Source: (Dinas Kesehatan Jawa Timur, 2019)

Table 4 shows the results of the cross tabulation between the percentage of latrine users. Based on Table 4, we have found a low percentage of latrine users (74.91-83.27) in regency/city with a low prevalence of diarrhea, moderate percentage of latrine users (83.28-91.64) were mostly in districts/cities with a high prevalence of diarrhea, and the highest percentage of latrine users (91.65-100.00) were mostly in districts/cities with a low percentage of diarrhea. This means that the lower the prevalence of diarrhea, the more the latrine users.

Table 5. Cross tabulation of the percentage of illiteracy with the percentage of healthy latrine users

| Illiteracy percentage | Percentage of healthy latrine users |
|-----------------------|-----------------------------------|
|                       | Low (74.91-83.27) | Moderate (83.28-91.64) | High (91.65-100.00) |
| Low (1.26-8.13)       | 0                           | 0                      | 2                       | 50  | 19  | 61.3 |
| Moderate (8.14-15.02) | 3                           | 100                    | 2                       | 50  | 8   | 25.8 |
| High (15.03-21.88)    | 0                           | 0                      | 3                       | 0.0 | 4   | 12.9 |
| Total                 | 3                           | 100                    | 4                       | 100 | 31  | 100 |

Source: (Badan Pusat Statistik Provinsi Jawa Timur, 2019; Dinas Kesehatan Jawa Timur, 2019)

Table 5 shows the results of the cross tabulation between the percentage of illiteracy with the percentage of healthy latrine users. Based on Table 5, we have found a low percentage of illiteracy (1.26-8.13%) and high (15.03-21.88%) percentage of healthy latrine users (74.91-83.27) in regency/city with a low prevalence of diarrhea, moderate percentage of latrine users (83.28-91.64) were mostly in districts/cities with a high prevalence of diarrhea, and the highest percentage of latrine users (91.65-100.00) were mostly in districts/cities with a low percentage of diarrhea. This means that the lower the illiteracy rate, the more the latrine users.

Table 6. Cross tabulation between the prevalence of diarrhea cases and the percentage of healthy latrine users

| Prevalence of diarrhea cases | Percentage of healthy latrine users |
|-----------------------------|-----------------------------------|
|                            | Low (74.91-83.27) | Moderate (83.28-91.64) | High (91.65-100.00) |
| Low (1.04-4.53)            | 0                           | 0                      | 2                       | 25.0 | 5   | 16.1 |
| Moderate (4.54-8.04)       | 3                           | 100                    | 1                       | 25.0 | 22  | 71.0 |
| High (8.04-11.53)          | 0                           | 0                      | 2                       | 50.0 | 4   | 12.9 |
| Total                      | 3                           | 100                    | 4                       | 100 | 31  | 100 |

Source: (Badan Penelitian dan Pengembangan Kesehatan, 2018; Dinas Kesehatan Jawa Timur, 2019)
The not-yet maximum use of latrines in several districts/cities in East Java can be influenced by the availability of facilities, the percentage of villages that apply CLTS, the percentage of illiteracy, and the prevalence of diarrhea. The assumption of the influence of the availability of facilities in the use of latrines is supported by the results of previous studies which showed that one of the factors that affected open defecation free was the availability of facilities (Abubakar, 2018). The selection of this independent variable is also supported by other studies which stated that the factors that influenced open defecation behavior were the level of education and community knowledge in using latrines (Murhan & Aprina, 2020). In addition to the things above, the results of previous research conducted in Trenggalek Regency in 2018 also showed a relationship between diarrhea and cases of open defecation (Dista et al., 2018).

In 2018 the most healthy latrine users in East Java Province were in the regency/city with the percentage of adequate facilities. This means that the more adequate latrine facilities in a regency/city, the higher the percentage of healthy latrine users. This statement is in line with the results of previous studies which showed that the lower the ownership of latrines, the more people would open defecation (Dwiana, 2017). In a similar study in Pemalong Regency in 2016 also showed that open defecation behavior was influenced by knowledge, work, attitudes, availability of facilities and support from family and community leaders (Shalhuiyah et al., 2016). In addition, the results of other studies also showed that there was a significant relationship between latrine ownership and open defecation behavior (Nina, 2019). In addition to having an impact on open defecation behavior, the unavailability of latrines also affected a person's psychology (Jain et al., 2020).

The percentage of healthy latrine users were mostly in districts/cities with a high percentage of villages implementing CLTS. Community-based total sanitation is a program strategy approach to change sanitation hygiene behavior through community empowerment with the triggering method (Syarifah et al., 2020). Total sanitation is the condition of people who do not open defecation or Open Defecation Free (ODF). The principle of implementing Community-Based Total Sanitation is to eliminate subsidies for basic sanitation facilities with the aim of exploring the potential of the community in building sanitation facilities personally by developing social solidarity in the community. CLTS will encourage household responses to use household latrines (Alhassan & Anyarayor, 2018). The results of previous studies showed that CLTS was able to increase latrine coverage by 6-12% and even reach 30% (Harter, Inauen and Mosler, 2020). From this study, it can be seen that CLTS has a relationship with the use of latrines and effectively increases the percentage of latrine users, which shows that in addition, CLTS also supports the creation of a healthy society (Indriyani et al., 2016).

The inability to read or the illiteracy rate can be used as an indicator of measuring the level of education in an area. The higher the illiteracy rate in a regency/city, the lower the percentage of healthy latrine users in that regency/city. In previous studies, it has succeeded to show a significant relationship between knowledge and defecation behavior (Mailanie S, 2018). This is also supported by a research by conducted in Wamesa sub-district, South Manokwari district which showed that open defecation behavior was influenced by knowledge, attitudes, roles of health workers, government, cadres, and community participation (Linggar et al., 2019). Based on the results of previous research, it was shown that the education of the head of the family affected the behavior of open defecation. Education is one way for someone to get information and interpret it correctly as a cause of behavioral disease. Knowledge in the form of suggestions that invites people to think and evaluate the impact of defecating not in latrines according to health standards is an effective action (Syarifah et al., 2020).

The prevalence of diarrhea in a regency/city can increase the percentage of latrine users in that regency/city. According to a previous study conducted in 2019, the prevalence of diarrhea was slightly higher in non-ODF households than in ODF households (Megersa et al., 2019). Areas with free open defecation status had a lower prevalence of diarrhea cases compared to areas that had not achieved open defecation free status (Njuguna, 2016). The statement shows that the...
prohibition of open defecation can reduce the number of cases of diarrhea, therefore the presence of diarrhea can increase public awareness to defecate in its place. This is also supported by a similar study conducted in Jambi which showed that diarrhea was the most significant variable to create open defecation behavior in the community (Eko Mirsiyanto et al., 2020). In addition, previous research conducted by Wiwik Winarningsih, Z. Fanani, 2019 in Pasuruan, East Java also showed that the diarrhea variable had a significant direct effect on permanent healthy latrines (JSP) and open defecation (BABS).

CONCLUSION

Based on the results of the study, it can be concluded that the low number of latrine users in East Java Province in 2018 was due to the inadequacy of healthy latrine facilities, the lack of village participation in implementing CLTS, and the existence of several districts/cities with moderate illiteracy rates. Apart from these factors, the presence of diarrhea cases can actually increase the percentage of healthy latrine users. The results of this study can be used by local stakeholders to make health-based policies as an effort to reduce open defecation

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REFERENCE

Abubakar, I. R. (2018). Exploring the determinants of open defecation in Nigeria using demographic and health survey data. *Science of the Total Environment*, 637-638(May), 1455-1465. https://doi.org/10.1016/j.scitotenv.2018.05.104

Alhassan, A., & Anyarayor, B. K. (2018). Determinants of adoption of open defecation-free (ODF) innovations: A case study of Nadowli-Kaleo district, Ghana. *Journal of Development and Communication Studies*, 5(2), 54. https://doi.org/10.4314/jdcs.v5i2.4

Badan Penelitian dan Pengembangan Kesehatan. (2018). *Laporan_Nasional_RKD2018_FINAL.pdf*. In *Riskesdas* (p. 198). http://labdata.litbang.kemkes.go.id/images/download/laporan/RKD/2018/Laporan_Nasional_RKD2018_FINAL.pdf

Badan Pusat Statistik Provinsi Jawa Timur. (2019). *Statistik Pendidikan Provinsi Jawa Timur 2018* (Hermanto (ed.); 2018th ed.). Badan Pusat Statistik Provinsi Jawa Timur.

Dinas Kesehatan Jawa Timur. (2019). *Profil Kesehatan Jawa Timur 2018*. *Dinas Kesehatan Provinsi Jawa Timur*, 100.

Dista, R., Ngadino, & Warna, S. E. (2018). Hubungan Perilaku Buang Air Besar dengan Kasus Diare (Studi Kasus di Wilayah Kerja Puskesmas Ngulankulon Kab. Trenggalek). *Gema Kesehatan Lingkungan*, 16(1), 21-28. https://doi.org/https://doi.org/10.36568/kesling.v16i1.888

Dwiana, A. (2017). Determinan perilaku buang air besar pada masyarakat pesisir di kabupaten Buton Selatan. *Jurnal BERDIKARI*, Volume 33(Nomer 6), Halaman 273-276. https://doi.org/https://doi.org/10.22146/bkm.23539

Eko Mirsiyanto et al. (2020). Analysis of Environmental Factors with Chronic Diarrhea in Toddlers in Jambi City in 2019. *International Journal of Science and Society*, 2(4), 300-310. https://doi.org/https://doi.org/10.200609/ijsoc.v2i4.216

Fitrianingsih, S. & Wahyuningsih, S. (2020). Analisis Faktor-Faktor Yang Mempengaruhi Perilaku Buang Air Besar Sembarangan (Babs). *Jurnal Sanitasi Dan Lingkungan*, 1(2), 52-57.

Hadiati Sukma, Mursid, N., & Nurjazuli. (2018). Hubungan Pengetahuan, Sikap Bab, Dan Kepe milan Septic Tank Dengan Status Odf (Open Defecation Free) Di Kecamatan Candisari Kota Semarang. *Jurnal Kesehatan Masyarakat (e-Journal)*, 6(6), 143-149.

Indriyani, Y., Yuniarti, & Nur Latif, R. V. (2016). Kajian Strategi Promosi Kesehatan Sanitasi Total Berbasis Masyarakat (Stbm) Di Kelurahan Tirto Kecamatan Pekalongan Barat Kota Pekalongan. *Unnes Journal of Public Health*, 5(3), 240. https://doi.org/10.15294/ujph.v5i3.
Jain, A., Wagner, A., Snell-Rood, C., & Ray, I. (2020). Understanding open defecation in the age of Swachh Bharat Abhiyan: Agency, accountability, and anger in rural Bihar. *International Journal of Environmental Research and Public Health, 17*(4). https://doi.org/10.3390/ijerph17041384

Kementrian Kesehatan Republik Indonesia. (2019). Profil Kesehatan Indonesia Tahun 2019. In *Kementrian Kesehatan Republik Indonesia* (Vol. 42, Issue 4).

Laksono, A. D., & Sandra, C. (2020). Analisis Ekologi Persalinan di Fasilitas Pelayanan Kesehatan di Indonesia. *Buletin Penelitian Sistem Kesehatan, 23*(1), 1–9. https://doi.org/10.22435/hsr.v23i1.2323

Magersa, S., Benti, T., & Sahiledengle, B. (2019). *Prevalence of Diarrhea and Its Associated Factors among Under-Five Children in Open Defecation Free and Non-Open Defecation Free Households in Goba District Southeast Ethiopia: A Comparative Cross-Sectional Study*. 16*(324)*, 1–9.

Murhan, A., & Aprina. (2020). *Jurnal Kesehatan Prima. Jurnal Kesehatan Prima, 14*(1), 31–39. https://doi.org/10.32.807/jkp.v14i1.283

Nina, N. (2019). Hubungan Pengetahuan, Sarana, dan Sosial Ekonomi dengan Kebiasaan Buang Air Besar Sembarangan (BABS) pada Masyarakat. *Jurnal Ilmu Kesehatan Masyarakat, 8*(01), 30–39. https://doi.org/10.33221/jikm.v8i01.206

Nguguna, J. (2016). Effect of eliminating open defecation on diarrhoeal morbidity: An ecological study of Nyando and Nambale sub-counties, Kenya. *BMC Public Health, 16*(1), 2–7. https://doi.org/10.1186/s12889-016-3421-2

Paladiang, R., Haryanto, J., & Marah Has, E. M. (2020). Determinan Perilaku Buang Air Besar Sembarangan (BABS) di Desa Kiriana Kecamatan Kambera. *Indonesian Journal of Community Health Nursing, 5*(1), 33. https://doi.org/10.20473/ijchn.v5i1.17545

Shaluhiyah, Z., Widagdo, L., & Wijayanti, A. (2016). Faktor-Faktor Yang Berhubungan Dengan Buang Air Besar Sembarangan (BABS) di Desa Seumantok Kecamatan Pulosari Kabupaten Pemalang. *Jurnal Kesehatan Masyarakat (e-Journal), 4*(1), 450–460.

Syarifah, Yustina, I., & Lumongga Lubis, N. (2020). Effect of Predisposing Factors (Education, Economic Level, Knowledge and Attitude) on Defecation Behavior in Bener Meriah Regency. *Britain International of Exact Sciences (BioEx) Journal, 2*(1), 142–149. https://doi.org/10.33258/bioex.v2i1.122

WHO/UNICEF. (2020). *State of the World’s Sanitation*. UNICEF and WHO.

Wiwik Winarningsih, Z. Fanani, E. S. and J. R. (2019). Multiple Strategies For Reducing Open Defecation in Pasuruan Regency, East Java. *International Journal of Advanced Research, 4*(6), 625–634. https://doi.org/10.21474/IJAR01