

Extensive Communications for Increasing Community Awareness in Handling Waste (Disposable Diapers): A Bibliometric Study

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ABSTRACT

In the disposal of urban and rural garbage, diaper waste has emerged as a new phenomenon. If this kind of waste is put into a river, it will harm the water environment because the earth cannot quickly break down it. This study aims to clarify the efficacy of counseling communication in raising public knowledge of postal waste management (disposable diapers). Bibliometric analysis is used in this quantitative descriptive study. The objective is to get fresh data on the investigation of extension communication to raise public knowledge of the disposal of pospak waste. Google Scholar and Crossref, two publisher sources, were used to gather the data. Through Publish or Perish, you can access articles from both sources. After gathering the data, VOS viewer is used to analyzing it. The results of the study indicate that counseling information is still an exciting topic in increasing public awareness. The importance of communication in handling waste is included in cluster 5. While public awareness in handling waste is included in cluster 3. The study of "Waste Management" is a point of attention of researchers which can be found in 8 clusters on research topics.

Keywords: Indonesian Librarian Association; library roles; library science

1. INTRODUCTION

Many studies on solid waste state that public awareness about hygiene and health is still very low (Armadi, Suarna, Sudarma, Mahendra, & Sudipa, 2020; Darmawan, 2020; Kingking Muttaqien, & Sarifudin, 2019; Hamdan, Rifani, Jalaluddin, & Rudiansyah, 2018; Hanafi, Sholihah, Martina, & Deniati, 2018; Hutagaol, Nasution, & Kadir, 2020; Indrawati, Ruhayat, Indrawati, & Siami, 2021; Putra, Darmawati, & Sumiarti, 2021; Utama & Putri, 2020; Wijaya & Muchtar, 2019). 52 million people in Indonesia, which has a population of 262 million, are concerned about cleanliness in the environment and its impact on their health, according to data from the Ministry of Health (R & D Agency, 2018; CNN Indonesia, 2018; Idawati et al., 2020). According to data from the Ministry of Environment and Forestry 2020, 37.3 percent of Indonesia's 67.8 million tons of garbage produced in 2020 came from domestic activities. East Java Province's waste generation is estimated to be over 2,500,000 tons per year in 2021, whereas the amount

of garbage generated in Surabaya is predicted to reach 650,614.62 tons annually in 2021. This has an impact on both the ecology and pollution in rivers and the ocean.

Organic and inorganic trash can result from daily household activities (Anggraini & Hermanto, 2021; Izzaty, Astuti, & Cholimah; Khoeroni, 2018; Radityaningrum, Caroline, & Restianti, 2017; Rahmawati, Nopitasari, WD, Wardani, & Nurbaety, 2020; Siswati, Ningsih, & Eteruddin, 2020). Organic waste includes items like fruit, paper, cardboard, and culinary residue that can degrade. Plastic, bottles, cans, glass, wires, and other inorganic waste comprise 21% of marine waste and comes in second place according to World Bank data from 2017 (Mongabay, 2018).

Along with the increasing number of baby births, disposable diapers continue to increase because they are widely used by the community rather than reused diapers (Marthaliakirana, 2018). The use of is very easy but the waste from disposable diapers can pollute the environment. Unlike the case with reused diapers, these diapers can be another option for parents who have toddlers. The use of reused diapers or cloth diapers can be re-washed and does not contribute to waste to the surrounding environment, including rivers and seas (Imelda, & Christy, 2020; Suwanda, 2019).

The habit of residents disposing of disposable diapers poses a hazardous risk to the quality of river water and the sustainability of the river in the future. Waste, which is the result of waste containing feces and urine from toddlers, has turned out to be a new phenomenon (Marthaliakirana, 2018; Naimah, 2019; Rustina & Nuraini, 2018). First, if it is dumped into the river, it can block the flow of river water and cause flooding. Second, if it is filled with, it cannot be decomposed by the soil. Third, if it is burned, there is a myth in society that babies will experience *suleten*, a myth that is believed by some communities of Javanese people (Aprilyantini & Sari, 2021; Zerowaste, 2019); if there is a diaper containing human waste and then thrown in the trash to be burned, the diaper user will experience a hot feeling in the buttocks area. People who dispose of disposable diapers are far from aware of the importance of protecting the environment, including the smell it causes, and will cause flooding if it continues because it also clogs river flows (Aprilyantini & Sari, 2021).

Due to the lack of public awareness about waste, it is necessary to educate those who have the authority in the community (Anggriani & Annas, 2020; Darmawan, 2020; Rahmadani, 2020; Suyanto, 2018; Widodo & Nurjanah, 2021). Education and knowledge provide changes so that the surrounding environment, rivers, and seas will be better than before. Extension communication is the process of conveying messages in counseling to change a person who is the target of communication's behavior, actions, opinions, skills, and knowledge, either directly or indirectly, so that the target of communication is moving in a better direction by adhering to the idea, suggestions, or innovations that are taught (Cerya & Evanita, 2021; Manurung, 2018; Ramon & Afriyanto, 2017). It is essential to build public awareness to participate in environmental hygiene. Several studies have proven that extension communication has a positive effect on general understanding of waste management (USA, Saragih, & Siswadi, 2020; Ayu, 2019)

Extension communication theory and public awareness theory about waste are keywords used to search for bibliometric data sourced from Google Scholar and Crossref through the Publish or Perish application. The data is analyzed using the VOS Viewer application. Extension communication is an effort to replace knowledge, behavior, skills, and routines by helping, motivating, and influencing the community to increase their living standard. Counseling is a communication activity. The government or non-government institutions often use extension

communication to persuade and convey to the public in a more modern direction in all fields or zones (A vessina, Kustari, & Anisa, 2018).

According to Lathiffah (2020), Triyono & Ekoyudistiro (2017), extension communication also has effectiveness. The significance of counseling communication is communication that goes through a particular process and has a structure to achieve predetermined goals or targets with a predetermined budget, number of people, and time. If these conditions can run smoothly until the planned objectives are achieved. For effectiveness of extension communication to go according to plan, there are several indicators of the effectiveness of extension communication (Triyono & Ekoyudistiro, 2017), namely: source credibility, the trust held by the community towards the instructor, the expertise possessed by the scientific and technical instructor, the ability of the instructor to communicate, the attractiveness of the instructor having certain characteristics, the proximity of the extension worker to the community. Meanwhile, there are four indicators of public awareness (Aulia, 2016; Puspandari, Pajrin, & Permatasari, 2021): knowledge, attitude, understanding, and pattern of behavior. Studies conducted by Johar & Manihuruk (2021) about communication counseling on public awareness about waste shows that awareness is still low. However, after the counseling was held, public understanding and awareness increased. It proves that the existence of outreach to public awareness about waste can change the community's mindset.

This study uses bibliometric analysis. According to Alan Pritchard as quoted by Tupan (2018), bibliometrics uses mathematics and statistics in communication media or books. The use of bibliometric analysis is the initial stage for an early stage for the development of science that measures or analyzes the development of literature with statistical and mathematical techniques (Aprilia, 2022; Tupan, 2018). Bibliometric analysis can also be used to study publications obtained from various sources and publishers such as Google Scholar, Crossref, Pubmed, Scopus, Scholar Semantics, and Web of Science. This analysis aims to find how many articles and journals with the theme of public awareness of disposable diaper waste and counseling communication. This research uses stages from selecting objects, making maps, and displaying and evaluating the maps. The study uses the VOS Viewer tool to display the findings. The map is based on the author's name with co-citation or co-occurrence data in labeling, density, or clusters for sketch map displays.

2. METHODS

This bibliometric study gathered data from two main sources, Google Scholar and Crossref, using keywords that focus on *Counseling About Waste*, *Public Awareness About Waste*, *Handling of Pospak Waste*, *Counseling Communication*, and *Myth of Garbage*. The study also used the Publish or Perish (PoP) application to generate data during 2017-2022 from two primary sources mentioned earlier. The obtained data were then analyzed, and shown using the VOS Viewer tool, software for processing network bibliometric data down to the publication type, volume, organization, and author. The initial step is importing the data from Google Scholar and Crossref in RIS format. In addition, the study applies two approaches: the citation approach, to deeply see cited journals, and the co-citation approach.

3. RESULTS AND FINDINGS ANALYSIS

Following are some of the 110 publications that the study discovered that have the same theme for the last six years between 2017 and 2022, as follows.

The Development of Waste Management Publications and Extension Communications According to Publication Years, Publishers, Number of Authors, and Gender

Publication Years

Table 1. Journal Publication Years

Year	Counts	(%)
2022	1	0.90%
2021	23	20.90%
2020	36	32.72%
2019	21	19.09%
2018	17	15.45%
2017	12	10.90%

Publishers

Table 2. Publishers of 110 Journals

Publishers	Counts	(%)
Padjadjaran University	4	3.36%
Andalas University	4	3.36%
Muhammadiyah University of Mataram	4	3.36%
Mataram University	3	2.72%
Surabaya State University	3	2.72%
Padang State University	3	2.72%
Udayana University	2	1.81%
Lancang Kuning University	2	1.81%
Tadulako Universitas University	2	1.81%
Yogyakarta Muhammadiyah University	2	1.81%
Medan University Area	2	1.81%
Bandar Lampung University	2	1.81%
Brass Stick	1	0.90%
PGRI Madiun University	1	0.90%
Malahayati University	1	0.90%
PPNI Central Java	1	0.90%
Muhammadiyah University of Jember	1	0.90%
Tarumanagara University	1	0.90%
Yogyakarta Institute of Technology	1	0.90%
University of Indonesia	1	0.90%
Hero University	1	0.90%
Lambung Mangkurat University	1	0.90%
sebelas Maret University	1	0.90%
UPN East Java	1	0.90%
Bandung Institute of Technology	1	0.90%
University of Northern Sumatra	1	0.90%
Bhayangkara University, Greater Jakarta	1	0.90%
Sriwijaya University	1	0.90%
Hasanudin University	1	0.90%

Publishers	Counts	(%)
Manado State University	1	0.90%
Nelectura Journal	1	0.90%
PGRI Semarang University	1	0.90%
Andi Djemma Universitas University	1	0.90%
Journal Loyalty	1	0.90%
Muhammadiyah University of Semarang	1	0.90%
IKIP PGRI Bojonegoro	1	0.90%
Pamulang University	1	0.90%
Pasundan University	1	0.90%
Jember State Polytechnic	1	0.90%
Mulawarman University	1	0.90%
Environmental Studies Center Cooperation Agency	1	0.90%
Muhammadiyah Kendal	1	0.90%
Proceedings of PKM-CSR	1	0.90%
Hero University	1	0.90%
UIN Walisongo	1	0.90%
Wiralodra University	1	0.90%
Bang Kabelitung University	1	0.90%
UIN Ar-Raniry	1	0.90%
Muhammadiyah University Purwokerto	1	0.90%
Stispol Wira Bhakti	1	0.90%
Langlangbuana University	1	0.90%
Journal Literacy	1	0.90%
Widya Mataram University	1	0.90%
Batam Putera University	1	0.90%
Veranda of Mecca . University	1	0.90%
PGRI Semarang University	1	0.90%
Bondowoso University	1	0.90%
Trunojoyo University	1	0.90%
Indonesian Islamic University	1	0.90%
Kanjuruhan University Malang	1	0.90%
Ahmad Dahlan University	1	0.90%
University of Veterans Bangun Nusantara	1	0.90%
IKIP Siliwangi	1	0.90%
Semarang University	1	0.90%
Jambi University	1	0.90%
UIN Sunan Kalijaga Yogyakarta	1	0.90%
UIN Sunan Ampel Surabaya	1	0.90%
Kadiri University	1	0.90%
Tulungagung Sticks	1	0.90%
Merdeka University Malang	1	0.90%
Bukittinggi FDK Stickers	1	0.90%
Lampung University	1	0.90%
Gorontalo State University	1	0.90%
Semarang Health Polytechnic	1	0.90%
Muhammadiyah University of Palangkaraya	1	0.90%
Journal Bali Prov	1	0.90%
STIE AUB Surakarta	1	0.90%
Trisakti University	1	0.90%
Muhammadiyah University of Magelang	1	0.90%
Tribhuwana Tunggaladewi University	1	0.90%
Imelda University Medan	1	0.90%

Publishers	Counts	(%)
Bhayangkara University Surabaya	1	0.90%
Panca Bhakti University	1	0.90%
Almuslim University	1	0.90%
Indonesian University of Informatics & Business	1	0.90%
Anonymous	4	3.36%

Number of Authors

Table 3. Number of Authors

Number of Authors in Articles	Counts	(%)
Single author	23	20.90%
Two authors	36	32.72%
Three authors	29	26.36%
> four authors	22	20%

Gender

Table 4. Gender Table of 110 Journals

Gender	Counts	%
Males	121	42.16%
Females	166	57.83%
Total	287	

Articles Based on Keywords (Co-Occurrence)

As many as 110 journals were obtained based on information gathered from the two sources. The VOS Viewer may then examine it regarding the authors and co-occurrence of keywords (co-author). It produced 207 keywords, which were then reduced to 40. The outcomes are shown in the figure below.

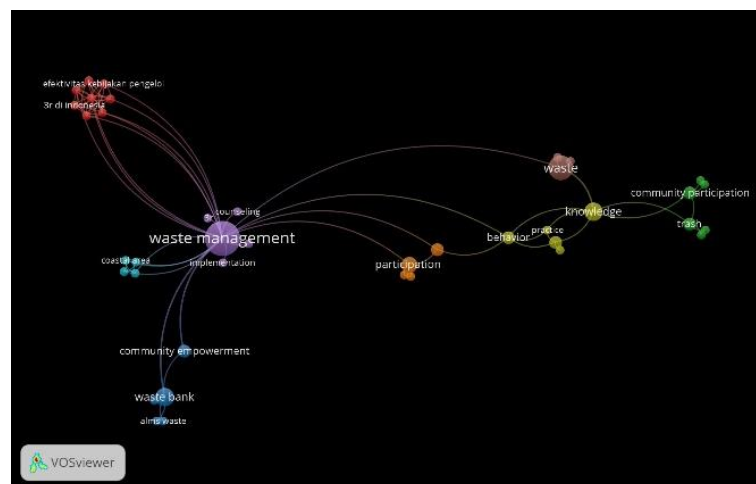


Figure 1. Keywords network visualization from VOS viewer

The network visualization analysis results show that keywords related to each other are associated with the theme of counseling communication to increase public awareness in

handling postal waste. The picture above shows that the keyword most often used by other authors in research with the same theme is *waste management*.



Figure 2. Overlay visualization

The overlay visualization analysis results show that the author's longest year in the journal has the same theme related to the keywords, which is 2016.

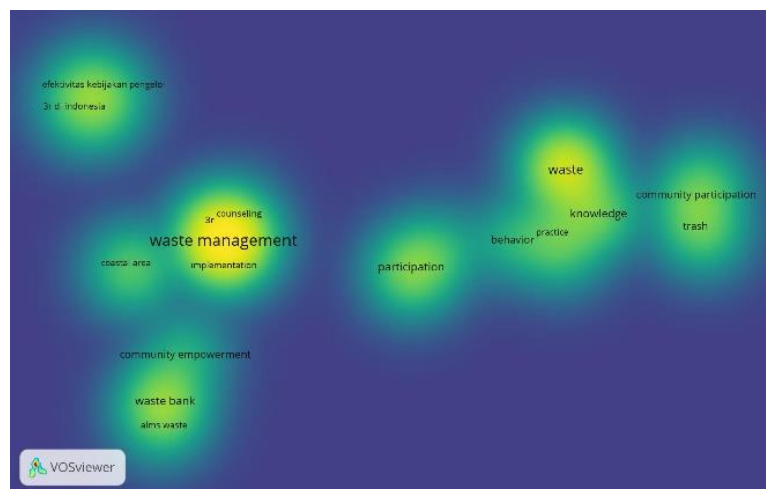


Figure 3. Density visualization

The results of the density visualization analysis show that keywords often appear in publications by authors, so the keyword *waste management* is a keyword that is often appeared in every research journal.

From the 40 keywords, based on the VOS Viewer meta-analysis, the study found eight (8) clusters or groups within Network Visualization, Overlay Visualization, and Density Visualization as described in the following:

Table 5. Keywords clusters

Cluster	Information
Cluster 1	Effectiveness of waste management policies with integrated waste management locations.
Cluster 2	About public awareness to participate in the construction of trash bins.
Cluster 3	Community empowerment towards environmental cleanliness by building a waste bank.
Cluster 4	Household waste is expected to have a garbage disposal schedule to change behavior for the better and increase knowledge.
Cluster 5	Extension communication can be implemented in waste management that has been scheduled in the previous 3r (recycle, reduce, reuse) which has not been implemented.
Cluster 6	In coastal areas, people have low awareness of the environment and do not think about the environmental impact.
Cluster 7	By participating, you can increase your knowledge about waste and waste bank management.
Cluster 8	Problems with waste and waste banks.

Articles by Author (Co-Author)

The study also discovered that 110 documents with up to 278 authors were collected from both sources and filtered to get the outcomes shown in the figure below.

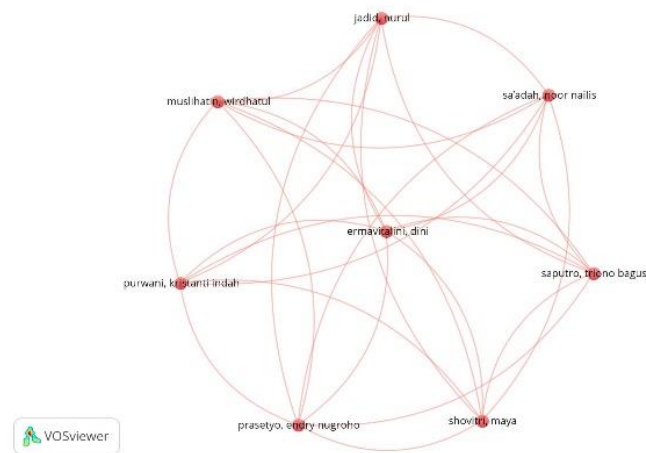


Figure 4. Network visualization

The authors of journals are shown by network visualization analysis how and where the publications are involved. Participation includes keeping journals that are published and signed in small groups by the author.

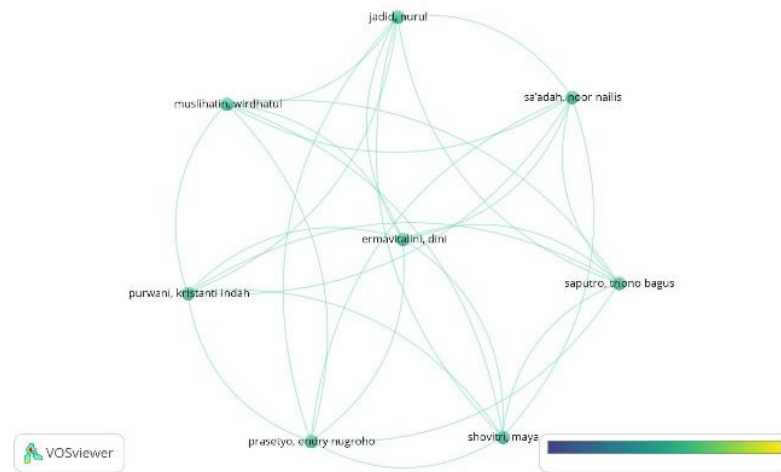


Figure 5. Overlay visualization

The authors are displayed in the articles studied using overlay visualization analysis. The eight names of authors in the journal "*Training for Composting Waste Based on the Village Community of Ketegan Tanggulangin Sidoarjo*" were discovered to be the same.

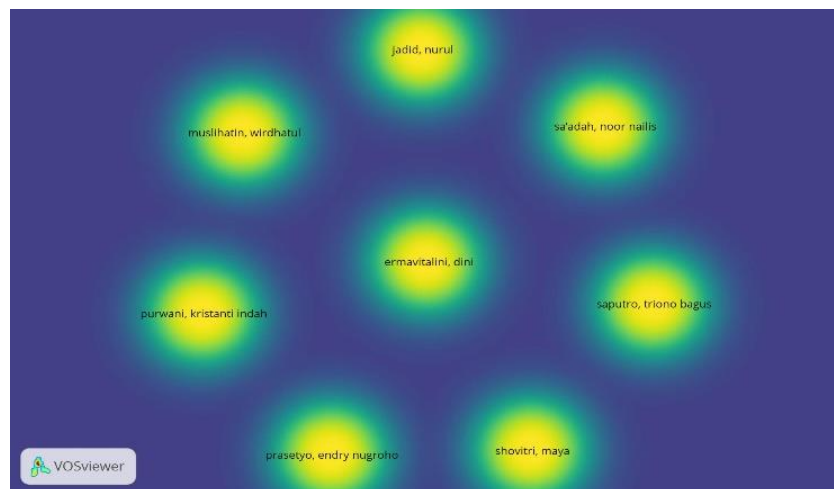


Figure 6. Density visualization

A density visualization analysis also revealed which journal had the most published authors. It was discovered that the eight most prolific authors.

4. CONCLUSION

The topic of counseling communication continues to be intriguing for raising public awareness. Cluster 5 includes the significance of communication in handling trash. While cluster 3 also includes public awareness of trash management. The authors' attention eventually turned to the study of *Waste Management* which was one of eight clusters on the research topic. 110 papers with the same theme as the research theme provided the entire data set that was processed. The findings of this study should assist other researchers in locating currently popular articles that are currently popular, which can subsequently be used in reference

searches for the topic under study. This study focuses on the author and co-occurring keywords features (co-Author). The relationship among fellow writers serves as a clear illustration of the visualization's outcomes. Based on data from Google Scholar and Crossref that the VOS Viewer program has processed, publications that have authors that are trending in their authorship from 2016 to 2022 feature the keyword *waste management* in their titles.

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