

Online community impact to reduce diaper waste in Indonesia (study case at mamaberclodi community)

Dewi Arum Melati ^{1*}, and Fira Nadlratan Na'im ²

¹ Environmental Science, School of Environmental Science,
University of Indonesia; Jakarta 10430, Indonesia.

² Environmental Science, School of Environmental Science,
University of Indonesia; Jakarta 10430, Indonesia.

fira.nadlratan@ui.ac.id

* Correspondence: dewi.arum21@ui.ac.id

Received Date: April 20, 2023

Revised Date: June 30, 2023

Accepted Date: July 30, 2023

Cite This Article:

Melati, D. A. & Na'im, F. N. (2023).
Online community impact to reduce
diaper waste in Indonesia (study case
at mamaberclodi community).
*Interaction, Community Engagement,
and Social Environment*, 1(1), 52-66.
<https://doi.org/10.61511/icese.v1i1.2023.248>



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Abstract

Indonesia is listed as the fifth biggest country with the biggest number of populations in the world population review with a population of approximately 275.7 million people. Indonesia also has high fertility rate which signifies a high demand in the market for meeting the production needs of diapers. Disposable diapers are one of the most purchased items by parents in general, yet they are also one of the most environmentally damaging waste products. Despite the fact that reusable diapers exist, consumer demand for disposable diapers is still rising. The prevalence of global issues and discussions regarding pollution and waste generation has received responses from various sectors of society, leading to the formation of movements and communities focused on environmental awareness. Mamaberclodi is an online community based for all mothers who use modern cloth diapers (clodi) for their children and the community pioneer who gives cloth diapers class online and free. In this article, we will explore the impact of Mamaberclodi as online communities on the issue of diapers waste in Indonesia. This research uses a qualitative approach which uses concurrent embedded design mixed method that combines qualitative and quantitative analysis. The qualitative analysis uses data from literatures review and depth interview, while the quantitative analysis uses Mamaberclodi data from their internal survey. Qualitative analysis is used to analyze interview data. Quantitative analysis uses statistical descriptive analysis to describe the data. This research provides the data from literature review, interviews from four informants, and Mamaberclodi internal data to conclude how this online community impacted the reduction of diaper waste in Indonesia. This research concludes that online communities, such as Mamaberclodi are needed to reduce the amount of waste generated. However, further research with more data is needed to support this research.

Keywords: clodi; cloth diaper; diaper waste; mother community; online community; waste management

1. Introduction

Indonesia is listed as the fifth biggest country with the biggest number of populations in the world population review and the biggest in the Southeast Asia region with a population of approximately 275.7 million people, according to (Badan Pusat Statistik, 2020) A country with a high birth rate is often associated with a large population. The total fertility rate in Indonesia is 2.10 births per year. This data indicates that women in Indonesia, on average, give birth to 2 children during their reproductive years. The high fertility rate signifies a high demand in the market for meeting the production needs of diapers.

The market currently has two types of diapers that are commonly available, which are reusable diapers (cloth diapers) and disposable diapers. The usage of diapers among infants, predominantly by mothers in Indonesia, is primarily disposable diapers. This is described in the research findings of (Agestika et al., 2022) where the respondents involved in the study showed a significantly higher usage of disposable diapers compared to cloth diapers in the case of urban communities in Jakarta, with a ratio of 33.2% to 16.3%. The reasons why parents choose disposable diapers include (Moelyaningrum, 2018):

1. Convenience: Disposable diapers are convenient to use and dispose of. They are designed for single-use and can be easily discarded after each diaper change.
2. Time-saving: Disposable diapers require less time and effort for cleaning and washing compared to cloth diapers, which need to be laundered and dried.
3. Absorbency: Disposable diapers are designed to be highly absorbent, which helps keep the baby's skin dry and prevents leaks and rashes.
4. Availability: Disposable diapers are widely available in stores, supermarkets, and online platforms, making them easily accessible for parents.
5. Modern lifestyle: With the fast-paced modern lifestyle, many parents find disposable diapers more compatible with their busy schedules and on-the-go lifestyles.

It's important to note that individual preferences and factors may vary among parents when choosing the type of diapers for their babies.

The contents used in disposable diapers generally consist of several materials, as follows:

1. Fluff

Pulp Fluff pulp is a type of chemical pulp. It is produced by combining wood chips and chemicals in a large tank called a digester, where lignin, a protein that binds cellulose fibers together, is broken down.

2. Pulp

Pulp is made from long-fibered softwood and is sourced from coniferous plants such as pine, fir, and spruce. Many disposable diapers available on the market use fluff pulp made through a bleaching process that involves chemicals like chlorine dioxide, where lignin, a protein that binds cellulose fibers together, is broken down.

Apart from fluff and pulp, the majority of the materials used in disposable diapers consist of superabsorbent polymers (SAP), plastic, which contributes to microplastic pollution (Ntekpe et al., 2020)

Disposable diapers, as per their design, consist of an absorbent pad sandwiched between two layers of nonwoven fabric, one of which is permeable (closest to the skin) and the other is waterproof (outer layer). The absorbent pad in disposable diapers consists of hydrophilic polymers and fibrous material (cellulose), which provides maximum absorption capacity. It uses adhesives to hold the entire diaper together and synthetic dyes to create attractive designs found on diapers, along with colored and comfortable fasteners that indicate when changing time for baby. Fragrance may be also used in some diapers brand to mask odors (Ventrice et al., 2013).

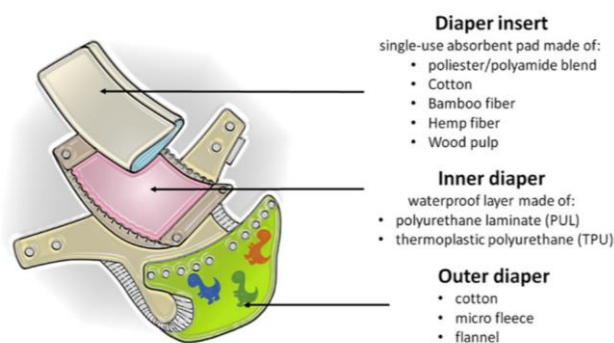


Figure 1. Diapers Composition (Płotka-Wasyłka et al., 2022)

Improper disposal of disposable diapers can have various health and environmental impacts. The gel and polymer contents that enhance the absorbency of diapers can take 250-500 years to decompose (Ntekpe et al., 2020) and can increase water retention in the soil (Zekry et al., 2020). The production of single-use diapers requires natural resources, including materials and energy. Some studies estimate that more than 22 kg of petroleum and 136 kg of wood are needed to produce a single-use diaper for a baby annually. Furthermore, in a household that has children, single-use diapers contribute to at least half of the total household garbage (Płotka-Wasyłka et al., 2022) While research on long-term health effects related to the exposure of microplastics, including those originating from the materials used in the production of disposable diapers, is still in its early stages, preliminary evidence suggests concerns about neurodegenerative and autoimmune disorders, cancer, and inflammatory lesions (Patrício et al., 2020). Other potential health hazards include the chemicals contained in diapers that can leach out and enter groundwater and surface water. Previous studies on disposable diapers containing feces have raised concerns about the presence of viruses and bacteria, such as total coliform, fecal coliform, *Escherichia coli*, *Salmonella* spp, and *Bacillus* spp (Ntekpe et al., 2020).

Therefore, there is a need for a sustainable and long-term alternative to minimize the accumulation of waste from disposable diapers, which is by switching to cloth diapers. Cloth diapers are usually made from softer and thicker materials with absorbent fabric, such as flannel, cotton terry, or other non-synthetic fibers. Often, disposable diapers are still produced from cotton fibers, either alone or in combination with other fabrics and materials obtained from natural or synthetic fibers) (Meseldzija et al., 2013). For example, a wide range of fiber combinations, such as cotton, bamboo fleece, hemp, polyamide, and microfiber polyester, can be used as absorbent materials in modern cloth diapers (Hoffmann et al., 2020). Some cloth diapers have washable and reusable inserts, while others have disposable liners. Fully washable diapers tend to be more cost-effective and cheaper to maintain compared to those that require disposable inserts. Parents have the option to choose homemade cloth diapers or commercially available ones that suit their needs and their baby's needs.

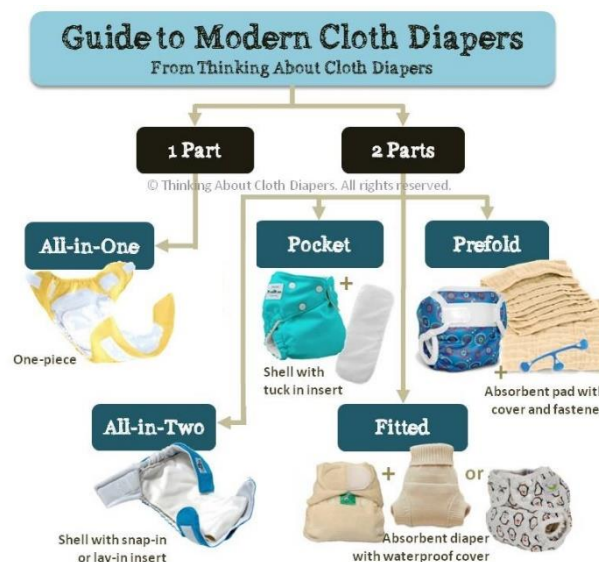


Figure 2. Modern Cloth Diapers (Płotka-Wasyłka et al., 2022)

Clodi and Disposable diapers have their own advantages and disadvantages. Figure 3 shows the major comparison between the property of modern cloth diapers or nappies or clodi and conventional disposable diapers. The diapers usually non biodegradable, has a presence of toxic and chemicals, relatively expensive and unhealthy (cause allergic case in several babies). Meanwhile, nappies or clodi is cost effective, and more healthy and sustainable.

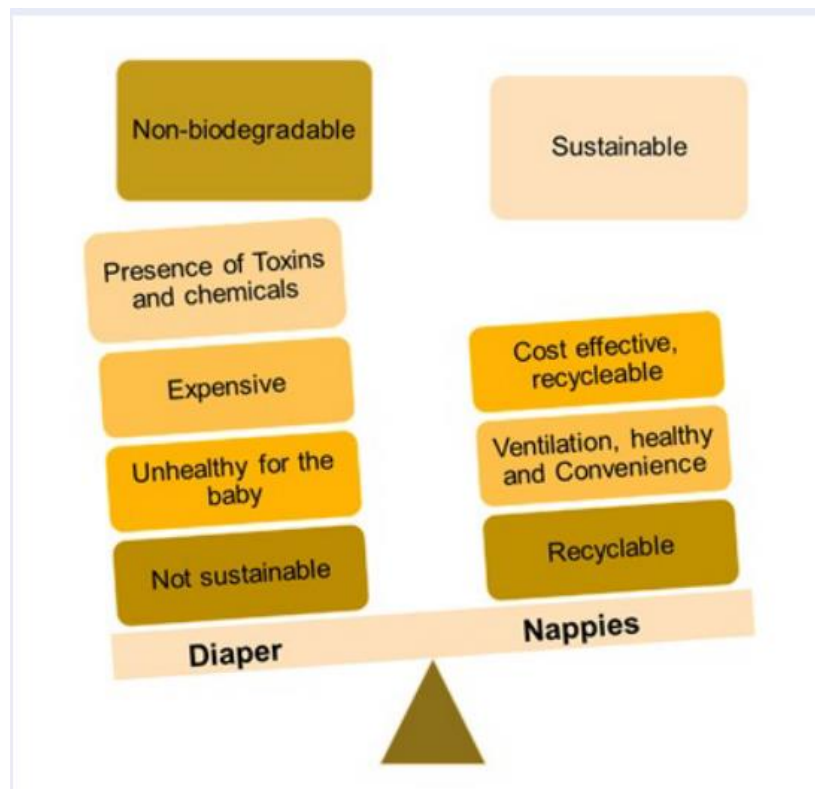


Figure 3. Diaper vs Nappies (Sachidhanandham & M, 2020)

Disposable diapers are among the most purchased items by parents in general, yet they are also one of the most environmentally damaging waste products (Velasco Perez et al., 2021). Despite the fact that reusable diapers exist, consumer demand for disposable diapers is still rising. Even though, there also is an increasing number of consumers who are environmentally conscious and aware of eco-friendly diapers alternatives (Amelia & Saragih, 2023).

Statistically, each person requires thousands of diapers in their lives while each diaper needs 100-500 years to decompose. This means an alarm escalating the population and diminishing land availability for waste disposal (Sachidhanandham & M, 2020). Indonesia is one of the largest consumers of disposable diapers, and this has led to a significant increase in the amount of waste generated from them. Indonesia generates almost a million waste of diapers per day (Naratif.id, 2021). Modern parents are comfortable with the use of disposable diapers since they do not have to bother to wash and pick up the piles of diapers as their parents did in the past (Sandra & Morika, 2019).

The prevalence of global issues and discussions regarding pollution and waste generation has received responses from various sectors of society, leading to the formation of movements and communities focused on environmental awareness (Tolangara et al., 2021). A community is a social unit composed of individuals who share common interests. Within a community, individuals collaborate and exchange ideas about visions and missions, whether they are functional or theoretical in nature. The scope of individuals joining a community is no longer limited to those within a specific geographic area or background but can include people from different segments of society due to the rapid increase in digitalization, leading to the formation of virtual communication platforms (Mubin, 2021). The development of online communities is greatly influenced by the rapid growth and advancement of the Internet. As a result, some individuals or groups take advantage of this situation to create massive online communities. The emergence of online communities provides a new mode of gathering for individuals to engage in activities or work in virtual spaces together, creating movements and actions towards a more environmentally friendly lifestyle.

Skarzauskiene & Mačiulienė (2021) defines online community from definition from Luo *et al.*, (2009), Lykourantzou *et al.*, (2011) as any human in a group that share common value, characteristics and has similar purposes through technology facilitation. Online communities are important because the rapid development of the Internet has permitted new and efficient means of exchanging knowledge among groups. Knowledge creation in online communities is influenced not only by individual human actors but also by digital technologies. Communities are seeking responsible ways to boost human intellect by harnessing more data, learning faster, and accelerating development. Within the virtual community there must be a dynamic that runs in accordance with the community's concepts and goals to their goals (Oktaviana *et al.*, 2022).

Mamaberclodi is an online community based for all mothers who use modern cloth diapers (clodi) for their children. Mamaberclodi is a community pioneer who gives cloth diapers class online and free. In recent years, the rise of online communities has had a significant impact on various aspects of Indonesian society. In this article, we will explore the impact of online communities on the issue of diapers waste in Indonesia and the potential for these communities to create meaningful change in the country's waste management practices particularly in diaper waste.

2. Methods

This research uses a qualitative approach which uses concurrent embedded design mixed method that combines qualitative and quantitative analysis. The qualitative analysis uses data from literatures review and depth interview, while the quantitative analysis uses Mamaberclodi data from their internal survey. Qualitative analysis is used to analyze interview data. Quantitative analysis uses statistical descriptive analysis to describe the data.

The process of interviews permits evaluation of a broader context and opens up new avenues for interpreting the situation in online initiatives more flexibly than measuring numerical values. Furthermore, it provides a vast array of data, which leads to the evaluation of the entire contextual environment and the determination of the relationship between the circumstance and the behavior in an online community.

The interview was conducted online using Zoom applications with 4 informants at different times for each informant using an interview guide. The interview guide addressed various topics, such as the background introduction about the reason for using clodi, the story about how to find Mamaberclodi and why join it, and how it has impacted their motherhood journey especially related to diaper waste. The recorded interview lasted an average of 40 minutes. The informants were the co-founder of Mamaberclodi, the current CEO of Mamaberclodi, a community member who is also a part of the internal team, and a community member who doesn't be a part of the internal team of Mamaberclodi.

3. Results and Discussion

3.1 Diaper Waste Effect to Environment and Community

On Table 1, listed several literatures related to how disposable diapers affected environment and communities.

Table 1. The Diapers Effect to Environment and Communities

Journal Title	Authors, Year Published	Result
End-of-life management of single-use baby diapers: Analysis of technical, health and environment aspects	Plotka-Wasyłka <i>et al.</i> , 2022	Most of the diaper disposal sites are located along the outskirts of villages and dwellings, where livestock grazing is prevalent. This waste site description is essential to the development of efficient and effective waste management programs and policies that prioritize the remediation of areas with the

Cultural Aspects of Disposable Diaper Waste and Sanitary Napkins in Indonesia	Suhanti, 2021	greatest potential impact on human, animal, and environmental health. The research reveals that industrial culture, Javanese culture, and colonial culture are the most frequently mentioned cultures in relation to disposable diaper and sanitary napkin waste management issues. This also influences the rationale for Indonesia's waste management practices.
Disposable diapers: Impact of disposal methods on public health and the environment	Ntekpe et al., 2020	This research suggests that disposable diapers should be disposed of properly and that mothers and caregivers should be discouraged from discarding disposable diapers carelessly. Authorities in charge of waste management should raise awareness about appropriate disposal and the environmental effects of used diapers.
A review on convenience and pollution caused by baby diapers	Sachidhanandham & M, 2020	Huge quantities of chemicals found in disposable diapers pose a threat to the community and environment. As a consequence of the difficulties in combating diaper pollution, some sustainable brands and commercially successful companies have developed eco-friendly products. To meet the enormous consumer demand, nonwovens (pads, tissues, napkins) and single-use materials have been developed. To combat this diaper pollution, it is necessary for both sectors to be informed.
Mothers' Perceptions to Disposable Diapers Waste and Disposable Diapers Waste management. (Persepsi Ibu Terhadap Sampah Popok Bayi Sekali Pakai dan Manajemen Pengelolaanya)	Moelyaningrum, 2018	The results of this research show that the reason for the use of single-use diapers is not troublesome, the amount of diapers dumped for a baby between 2-6 pieces a day, there is a belief and culture that diapers should be dumped into the river as well as a certain distinctive view of the disposal of baby debris that leads to behavior and patterns that are distinctively opposed to the handling of baby diapers.

(Source: The authors, rewritten 2023)

3.2 The Impact of Online Community to Reduce the Environmental Effects of Climate Change
 We have reviewed some literature to see how online communities are growing and nowadays have some impact on our lives and environment. Below in Table 2 is listed some research related to online communities.

Table 2. Literature Review of Community Role and Digitalisation

Journal Title	Authors, Year Published	Result
Online Community Analysis, Tenoan.id, The	Oktaviana et al., 2022	In an online community, communication is the most important thing. Information

Dynamics and Empowerment of Women and Disable Community in Indonesia. (Analisis Komunitas Online Tenoon . id: Dinamika dan Pemberdayaan Terhadap Kaum Disabilitas dan Perempuan di Indonesia)		and communication technologies are designed to enhance information and maintain the harmony of interpersonal social relationships effectively and efficiently, as well as reduce existing risks.
Youth mobilization to stop global climate change: narratives and impact	Han & Ahn, 2020	This research demonstrates the emergence of young people as change agents in the arena of global climate change and the necessity of involving them in climate change governance and policymaking.
The Impact of social media on Learning Behavior for Sustainable Education: Evidence of Students from Selected Universities in Pakistan Jaffar	Abbas et al., 2019	The findings of this study indicate that social media has both positive and negative effects on the learning processes of students, and a balanced approach is advised when utilizing social media applications. Social media has altered how individuals, communities, and organizations produce, exchange, and consume information over the past decade. Social media has altered the world and affected all individuals.
Education For Sustainable Development to Increase Community Understanding in Reducing Disposable Diapers Waste by Using Reusable Diapers (Education for Sustainable Development (Esd) Melalui Pemahaman Masyarakat Untuk Mengurangi Sampah Popok Sekali Pakai Dengan Menggunakan Popok Reuse)	Angsoka et al., 2018	The community understanding to reduce the disposable diapers waste and change to reusable diapers increasing after the learning session.
Community participation in household solid waste reduction in Surabaya, Indonesia.	Dhokhikah et al., 2015	Four strategies for achieving the objective of community participation in household solid waste reduction are intensifying training for community and environmental cadres; increasing information about household solid waste handling and reduction through mass media and campaigns; and promoting community participation.
Climate forums: virtual discourses on climate change and the sustainable lifestyle	Barr, 2011	Consequently, the Internet presents both opportunities and obstacles to researchers who wish to investigate social issues in virtual communities and their significance in contemporary politics. As virtual communities of

Environmental learning in online social networks: adopting environmentally responsible behaviors

Robelia et al., 2011

Creating a Successful Professional Virtual Community: A Sustainable Digital Ecosystem for Idea Sharing

Wagner et al., 2009

practice develop, social scientists will need to embrace methodologies that can interpret both the emerging discourses and their broader sociopolitical effects.

In summary, responses to survey questions, comments from focus groups, and online discussion revealed that users' participation increased their understanding of environmental issues and provided them with insights into environmental action strategies. Community organizers and IT developers must facilitate socially valuable online collaboration. Communication, community-centered design, usability, regulation, moderation, and resource nature affect community sustainability. Virtual communities have dynamics that match their goals. Communication is crucial to maintaining online communities. Information and communication technology is used to improve information, maintain social harmony, and reduce risk.

(Sources: The authors, rewritten 2023)

3.3 About Mamaberclodi Online Community and Its Achievements

Mamaberclodi (a clodi, or cloth diaper mama) is an online community based of a mother who used cloth diapers as an alternative substitution for disposable diapers for their children. Mamaberclodi's vision is to normalise the use of cloth diapers by children in Indonesia. Their mission is to make clodi as an alternative substitution for disposable diapers, as a platform to learn and share, and as the support system for all mothers who use or want to use cloth diapers on their children, will be referred to as clodi mama or Mamaberclodi in the future. Mamaberclodi was built in early 2020, right when the COVID-19 pandemic started. It also refers to the growth of digital content demand worldwide, including in Indonesia.

Currently, almost a thousand members have joined the Mamaberclodi class, and more than 600 members join the Mamaberclodi supporting group channel on the Telegram application. The majority of those who joined this community are mothers or soon-to-be mothers. However, every woman is allowed to join this community, regardless of her marital status. Based on the information gathered in the interview with Mamaberclodi's CEO, Vicky, there was a young girl who joined the class because she wanted to get more knowledge about clodi.

Mamaberclodi has an official account on Instagram, which can be accessed at @mamaberclodi. The Instagram account has reached more than 4,000 followers organically. Besides their routine clodi class, Mamaberclodi partnered with other communities of mothers or women and clodi brands to arrange some webinars or talk shows about less-waste living and other clodi tips and tricks. Mamaberclodi also held a clodi donation programme, in which they donated about 50 sets of clodi. Around 30 brands and Small - Medium Enterprises (SMEs) are partnered with Mamaberclodi.

There are various reasons why mothers joined Mamaberclodi's online class, in summary, most of them joined the class to learn and get more information about clodi, find a support system for using clodi, and get more confident in using clodi. 71% of our class participants knew the opening class information from Mamaberclodi's Instagram account, 21% from recommendations, and the rest from other sources like our media partner, etc.

About 62% of our class participants are housewives; 10% are also entrepreneurs; and the rest are working mothers who work in various fields (teachers, doctors, freelancers, etc.).

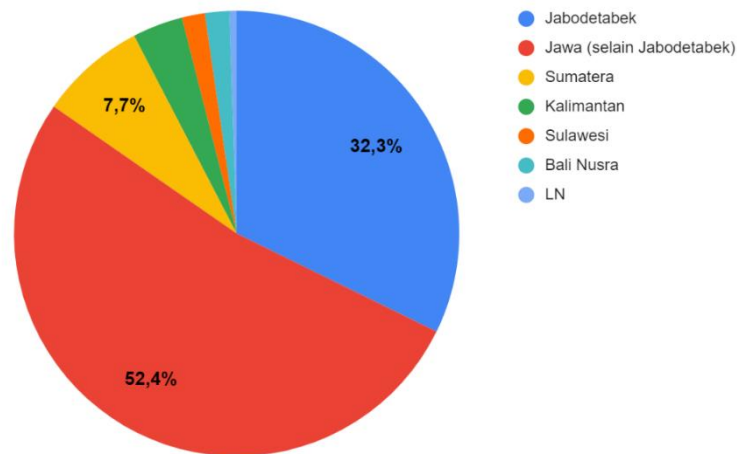


Figure 4. Mamaberclodi's class participant Location Demographics
(Source: Mamaberclodi Internal Data, Processed, 2023)

The participant comes from various location across Indonesia, the 32.3% from Greater Jakarta (Including Tangerang, Bogor, Bekasi, Depok), 52.4 % for Java (Excluding Bogor, Bekasi, Depok), 14.8% outside Java, 0.5% outside Indonesia. Most of the participants are satisfied with the Mamaberclodi class. From the internal Mamaberclodi Surveys, the satisfaction level is 3,8 out of 4 scores, including the content, and the material deliverables. From Mamaberclodi post-class surveys, 100% of participants said that they will recommend this class to their friends/families who are interested in cloth diapers.

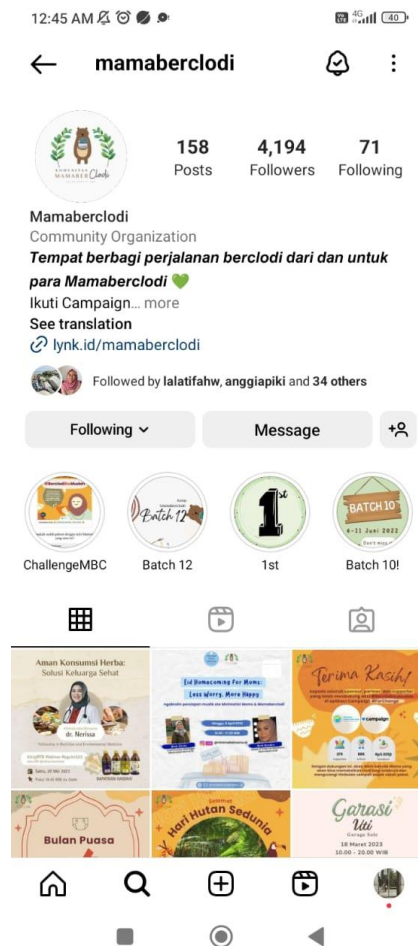


Figure 5. Screen Captures from Mamaberclodi official Instagram Account
(Source: Instagram Account, @mamaberclodi, 2023)

3.4 Interview with Andaruni Trina, Mamaberclodi Co-Founder

Andaruni Trina (Uni), co-founder of Mamaberclodi, is the initiator of Mamaberclodi communities. Uni, as a founder, just started using clodi since her child was 1 year old, no longer after she knew about clodi from one of the social media influencers that she followed. She is interested in using clodi because clodi has so many beautiful patterns and designs. Moreover, clodi also has a more economical impact by reducing the budget to buy disposable diapers and an environmental impact by reducing disposable diaper waste. Before she knew about clodi, she used disposable diapers for her baby, adding traditional cloth diapers as an alternative only when she ran out of stocks of disposable diapers. She started to learn about clodi on her own by following webinars about clodi, following clodi influencers, and following cloth diaper brands. Since she knew about clodi, she tried to use clodi on her child as full-time as possible and rarely used disposable diapers.

The Mamaberclodi name just came to her mind when she wanted to call her follower when she started sharing about her experience using cloth diapers on her child. Later, she thought about starting the online communities as a platform for her to continue sharing her experience because she thought that the demand for the cloth diaper topics on her account was growing. She then opened the recruitment process for everybody who would like to start the communities. She called this co-founder Mama-Pioneer. There are about a dozen of her followers interested in joining and becoming co-founders of Mamaberclodi.

Most of the first member is Uni's virtual friend whom she never met who come from different location across Indonesia, and from different background. Apart from Uni's activities in another online platform community for mothers, Mamaberclodi becomes a support system and reminder for her to actualize herself and keep learning and spread

kindness. She hopes that the impact of Mamaberclodi community can be sustainable in the future.

3.5 Interview with Widia Anggia Vicky, CEO Mamaberclodi

Widia Anggia Vicky (Piki), currently lives in Gresik, East Java, is the CEO (Chief Executive Officer) or Leader of Mamaberclodi Community. She knew about clodi since 2020, when she was pregnant with her first child. However, she just started wearing her child's cloth diapers when her baby was 5 months old because she was not confident enough to do it.

She joined Mamaberclodi on the second batch of Mamaberclodi online classes; she was not the co-founder of Mamaberclodi. This time, she got the courage to start wearing clodi on her baby. She found Mamaberclodi accidentally when she was scrolling through her Instagram account and wanted to join the class because she needed a support system to encourage her to wear her baby in cloth diapers.

The first time she knew about clodi, it was just that she would like to find an alternative to disposable diapers because the price of disposable diapers is relatively expensive. The budget for disposable diapers is one of the biggest expenses associated with having a baby during the motherhood journey. And she already knew about clodi since she was pregnant, but she was still not confident enough to start. After the class of Mamaberclodi had ended, Mamaberclodi was hiring new members, and Piki joined to become an internal team, starting from the curriculum and education team to the CEO for now.

Currently, Piki is working as a full-time housewife while volunteering for another online community and organization. Piki is also a content creator who promotes a less-waste lifestyle on her Instagram account. Mamaberclodi has had a big impact on her life; she might not start to wear cloth diapers on her child and might sell the clodi she has bought in advance if she has not found Mamaberclodi.

She hopes Mamaberclodi will exist as a supporting group and keep making the class like this because up to nowadays, Mamaberclodi is the pioneer of the online cloth diapers class and still have no followers. The others only make a webinar, not a comprehensive class like Mamaberclodi occurred. She also hopes that the organizer and the voluntary members can use this platform to grow and empower herself.

3.6 Interview with Oktavia Estri Hanasin, Mamaberclodi Internal Volunteer and Community Member

Oktavia Estri Hanasin (Vivi), lives in Bekasi, West Java, has known clodi since January 2022. After she found out about cloth diapers, she found Mamaberclodi and decided to join the class that Mamaberclodi held. At that time, Vivi had just given birth to her second child. She is interested in wearing her child's clodi because she loves to see clodi's various designs and patterns and because of the possibility of reducing disposable diaper expenses. Then, she joined Mamaberclodi to get a support system and more knowledge about how to take care of cloth diapers.

Vivi loves Mamaberclodi because the knowledge that she got from the class is very comprehensive, and the class scheme is also mother-friendly and can be accessed at each member's pace. Vivi also loves that Mamaberclodi has a lifetime support group on the Telegram application that can be accessed by everyone who has passed the class. In this group, everybody can share and ask anything related to clodi. This group also has "Market Day," which provides any mom-preneur (a term for a mother who is also an entrepreneur in this group) with the opportunity to promote their products.

After joining the class, Vivi also decided to be a part of Mamaberclodi internal organizer in the social media team. This also gives her a platform to actualize herself after her resignation. Vivi currently is a full-time housewife. As she knew about clodi, Vivi stopped using disposable diapers, and purely used clodi/ pants/ traditional cloth diapers for her child.

For Vivi, mamaberclodi not only gives information about clodi but also more knowledge and confidence to start living more eco-friendly. She started to wear reusable

menstrual pads and start less-waste lifestyle after being a part of this community. In the future, Vivi hopes that Mamaberclodi can keep actively sharing and making more educational content.

3.7 Interview With Hanifah Nurawaliah, Mamaberclodi Community Member

Hanifah Nurawaliah (Hanifah), living in Rancaekek, Bandung. She is currently a housewife living with 1-year-old child. She knew clodi since before she was married and gave birth to her first child, and she already planned to wear her child in cloth diapers when she became a mother. She wants to use clodi for environmental, economic, and health reasons. She has used clodi since her baby was 4 months old. Before that, she used traditional cloth diapers to observe the urination volume and frequency of her baby. When her baby was born, and she scrolled through her Instagram, she suddenly found Mamaberclodi, a platform to learn more about clodi. She was interested in joining the class because she wanted to get more knowledge, and the class is free.

Hanifah has a professional background in a green company. She was an officer in an environmental company and when she gave birth, she was a graduate student in environmental engineering. So, she already approached with environmental issues. And for her, joining Mamaberclodi or not will not change her confidence in using clodi. However, Mamaberclodi has helped her a lot and given so much new information about clodi, including clodi recommendations. So, she didn't have to waste time checking and scrolling about all clodi brands.

Currently, she is a housewife and part-time remote worker, still, use clodi and mixed it with disposable diapers when get out only for her child, and though she didn't join the telegram supporting group she would like to join the group if she has a chance and want to be a part of internal organizer.

3.8 Discussion

Based on the digital report that has been published by We Are Social in early 2023, 77% of Indonesia's population are using internets, and the 60.4% of Indonesia's populations are social media users. The number of internet users grew about 5,2% compared to last year. In this period, 99.4% of internet users in Indonesia aged on 16-64 have their own smart phone and on average, spent about 4hours a day using internet on their mobile phones (Simon Kemp, 2023).

In terms of the social media platform, Instagram became the top campaign platform this year and also become the top social media platform used after WhatsApp. Most of Indonesian, use social media platform to connect with family and friends. However, 50.4% of users are searching for what to do and buy on social media, 33,8% finding like-minded communities, and 31, 1% for sharing and discussing opinions (Simon Kemp, 2023).

From the data that the author gathered on this research, Mamaberclodi already on the right path to promote the awareness and knowledge of disposable diaper waste to Indonesian woman, particularly a mother or soon-to-be a mother. Online platforms, including Instagram, WhatsApp, and Telegram can reach wider audiences regardless of their locations. Furthermore, Mamaberclodi give more confidence to all class participants who become the community member by not only giving the education about modern reusable cloth diapers but also the support system who is ready to answer and share their confusion and challenge on being Mamaberclodi. Not only about their baby's disposable diapers use that change, Mamaberclodi class also open the alternatives in changing the mothers' sanitary napkins to more eco-friendly options, and also the other less waste lifestyle.

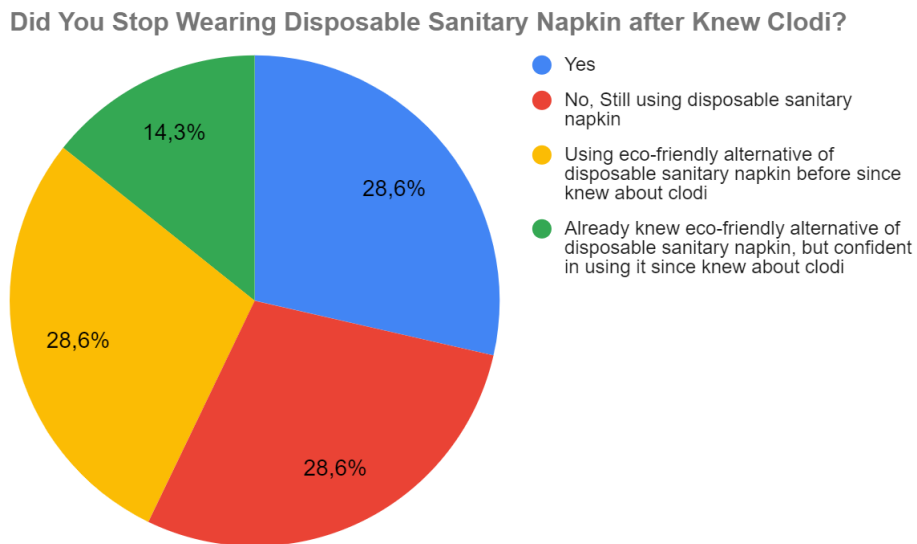


Figure 6. The Changing of Disposable Sanitary Napkin Uses in Clodi Users.
(Source: Mamaberclodi internal survey, processed 2023)

4. Conclusions

This research concludes that online communities, such as Mamaberclodi are needed to reduce the amount of waste generated. The case on this research, Mamaberclodi has been giving the impact to reduce diapers waste by raising awareness and giving support to almost a thousand community members, and more than 4000 followers on social media through online learning management and social media contents.

This research has several limitations. First, there is only a little research done about online communities and their impact on the environment, particularly in the areas of waste and climate change. Furthermore, the available research is mostly outdated. Second, more data is needed to gain more understanding of the community impact, quantitative survey data can be collected with more participants to have more reliable data for further research.

Acknowledgement

The authors would like to thank informants from Mamaberclodi for their supports to this research.

Author Contribution

Conceptualization, Melati, Dewi Arum and Naim, Fira Nadlratan; Methodology, Melati, Dewi Arum and Naim, Fira Nadlratan; Interview; Naim, Fira Nadlratan, and Melati, Dewi Arum; Resources, Naim, Fira Nadlratan, and Melati, Dewi Arum; Writing – Original-Draft Preparation, Melati, Dewi Arum and Naim, Fira Nadlratan; and Writing – Review & Editing; Melati, Dewi Arum, and Naim, Fira Nadlratan.

Funding

This research received no external funding.

Ethical Review Board Statement

Ethical review and approval were waived for this study due to no personal data was collected in this study. The number of informants is six, and the interviews are mainly to gain insights on how food bank operates in Indonesia, no personal information is collected.

Informed Consent Statement

Informed consent was obtained from all subjects involved in the study.

Data Availability Statement

The data is available upon request.

Conflicts of Interest

The authors declare no conflict of interest.

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