BIG DATA AND NETNOGRAPHY ANALYSIS OF MENTAL HEALTH ON X: EVIDENCE FROM INDONESIA

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ABSTRACT

Digital traces of mental health conversations on social media X have become a new culture, especially for the young generation. This study aimed to explain the network, themes and comment of social media discussion posts about mental health in Indonesia. This study has focused on each conversation in the form of tweets using big data analysis from posts with containing keyword related and specific criteria on the theme of mental health. This research was collected 15,200 mental health-themed discussions on X. Further, the researcher conducted a selection based on engagement and specific criteria through the NoLimit tool in 2021. A total of 4969 threads were analyzed further. As a result, researchers found a network that formed 3 clusters, namely the Stress cluster, Depression cluster, and Bipolar cluster. Apart from that, three big themes were found that represent every conversation on social media X in Indonesia, namely, (1) The Story of Survivors, (2) Mental Health as a Trend and Fashion, (3) Stress, Anxiety, or just a Gerd? Through the study of netnography, it is revealed that social media serves as a community's backbone while also perpetuating stigma related to mental health issues. Mental health in Indonesia is still an issue that does not get serious attention, even though the number of cases of mental disorders continues to increase.

Keywords : Big Data, Mental Health, Netnography, Thread, X.

1. Introduction

Social media as a forum for big data and social interaction facilitates users' communication and interaction with others, enabling them to develop virtual social networks and market themselves (Fuchs, 2014). Netizens in all parts of the world currently seem to be experiencing digital panic (Korkmazer, 2020). Social media, especially X, has become one of the media choices where mental health issues can be discussed in a complex manner. Mental health is an increasingly important topic in public discussions, especially in the digital era (Vidamaly & Lee, 2021). The young generation is familiar with technology and social media (Craig, 2020). Most of them are more often exposed to an abundance of information that demands that their lives be perfect in every way (Sueki, 2015). The enormous pressure to excel in the school and work environment creates a heavy psychological burden (Willenberg, 2020). Further, the expectations of parents and a social environment that relies on technologically savvy young people also set unrealistic standards. This can cause feelings of discomfort, depression, cyberbullying and various other mental disorders (Auriemma et al., 2020). Content posts regarding their mental health appear a lot on social media because not all people have direct access to professional staff, such as psychologists and psychiatrists (Cheesmond, 2020).

Mental health in Indonesia is still yet to receive serious attention, even though the number of cases of mental disorders continues to increase. The negative stigma against people with mental disorders causes many people to be reluctant to seek professional help (Balakrishnan & Fernandez, 2018). Access to mental health services is also limited, especially in remote areas (Horigian, 2021), where specialized medical facilities and personnel are minimal. Survey results from the Indonesia-National Adolescent Mental Health Survey, which will be released in 2022, say that there are 2.45 million young millennials who experience mental disorders. The survey found that only 2.6% accessed mental health counseling services (Nababan, 2023). The government has attempted to increase public awareness through various campaigns, but the challenges are still significant. There needs to be collaboration between government, society, and the private sector to improve the mental health system to be more inclusive and accessible to all levels of society.

Regarding several previous literature, it was found that telepsychiatry, telemental health, and telemedicine services that should involve professionals in their fields for decades have yet to be utilized optimally (Carlo, 2021). Young people tend to instantly choose to share personal things (Lisitsa, 2020), one of which is on social media. Many threads also emerged from influencers sharing content about mental health (Vidamaly & Lee, 2021). According to this influencer, one of the causal factors is the large amount of time spent using social media; this phenomenon produces psychosomatic symptoms. However, this symptom was not found in internet users from other gene groups, such as X (Lathabhavan & Padhy, 2022). Evidence that social media is also a source of stress and psychosomatics experienced by young people is also real (Keles, 2020). Sources of harmful content spread on social media should be given special attention by related parties so that the younger generation does not experience even worse effects (Hafiar, 2019b).

A mental disorder is a condition where there is a health disorder that affects mood, prejudice, and actions or a combination of these that occur intermittently or over a long period (Primananda, 2022). Discussions on the theme of mental health and mental illness are currently commonplace among millennial netizens who use social media, especially to get help with health services from experts (Kazdin, 2019). This is due to good mental health is a form of psychological well-being (Ruini & Fava, 2015) and is part of psychosocial well-being and an essential aspect of individual life in the modern era (Farooq, 2020). Unlike mass media, social media is very dynamic and prone to misinformation when seen from where the source is from (Hawke, 2020). However, this competency is optional on social media because anyone can create and disseminate information that could be a lie (Pangrazio, 2020). Relevant parties should monitor sources of harmful content spread on the internet to ensure that the younger generation is not contaminated (Hafiar, 2019).

Based on the explanation regarding the trend of discussions about mental health among users in the social media space, the researcher focused on the following research objectives: how the message posting network about mental health looks like, what are the categorizations of emerging and final themes, and what are the forms of comments from Indonesian netizens regarding mental health-related discussions. The research questions focus on each content post in the form of threads, content, comments from representative posts, and other mental health themes that emerge from conversations about mental health on social media X.

Because of its diverse culture, customs, and high degree of religiosity, Indonesia might be considered to hold a special place in the world. Therefore, a more culturally contextualized approach, including cooperation with religious and traditional leaders, must be taken into account in attempts to lessen stigma and raise awareness.

This research will be analyzed using the communication netnography method as a form of novelty in this research. The netnographic method known through Kozinets' work seeks to understand the culture of society and the culture that is formed through interactions within the internet network. Netnography uses computer-mediated communication as a data source to understand and present the cultural or cultural phenomena being studied. Meanwhile, communication netnography as a variant form of netnography focuses on analyzing the communication context that occurs in digital media spaces. The communication context studied includes communication styles, patterns, and a focus on the use of media itself in discussions on the theme of mental health in internet villages. all forms of entities from social phenomena will be analyzed further from the perspective of symbolic convergence theory by Bornman (1985). Bornman said the belief that humans are essentially storytelling creatures, exchanging stories or narratives to describe experiences (Littlejohn, 1996).

2. Literature Review

Previous researchers from various countries have studied big data in social media especially health, e-health, and other health-related subjects. However, only a few were specific research on mental health or mental illness from social media sources. Therefore, this study aims to fill the gap in research on mental health and big data approach from social media. The COVID-19 pandemic outbreak then brought positive changes to the world of health, especially mental health, where many people became more aware of this issue.

In the previous five years (2018–2023), researchers have found 571 journal titles with the theme of mental health. These titles were first discovered on Scopus. A visualization map that displays the network between authors, institutions, and keywords in mental health-themed journals was created. An author and institution network map that is distinguished by color can be made from this image. A brighter or yellowish hue distinguished the most recent year's (2021) research on mental health. 2020 research is indicated by a glowing green spectrum, which darkens in 2019 and turns purple in 2018. The overall network map typically shows that most scholars who have published on mental health in Scopus-indexed journals over the past five years fall into the green color spectrum.

First, 'Young Adults Mental Illness Aesthetic on Social Media' is the title of a 2021 study conducted by Somsamay Vidamali and Soon Li Lee. This essay addresses how common it is in today's digital world to find social media posts disclosing mental health conditions like depression. Considering the aesthetics of depressing posts on young people's blogs and social media profiles is essential. This study examines the issues surrounding the usage of mental illness as an aesthetic on social media by young people. The method utilized in this study to analyze online social interactions is known as netnography. Actor-network theory (ANT) is an analytical technique that delves further and produces outcomes. Seven mediators were identified, including victims, emo culture, Tumblr, the media, attention seekers, coping strategies, and victims, emo culture, and mental health awareness, which were considered potential drivers of the use of aesthetics for mental illness (Vidamaly & Lee, 2021).

Secondly, a journal article by Roy A et al. in 2021 in the International Journal of Social Psychiatry entitled "Mental health implications of the COVID-19 pandemic and its response in India". In this study, the researchers attempted to review the existing mental health problems during the COVID-19 pandemic through global experiences and the reactive strategies established in mental health care in the Indian context. The method used PubMed and Google Scholar electronic database searches. It was performed through the search terms "novel coronavirus," "COVID-19," "nCoV," "SARS-CoV-2", "mental health," "psychiatry," and "psychology." The results of the study showed that the primary mental health problems reported were stress, anxiety, depression, insomnia, anger denial, and fear. Children and their parents, frontline workers, and people with mental health disorders are among the vulnerable in this context. COVID-19-related suicides are also becoming increasingly common. In general, efforts have been made to address mental health problems using guidelines and intervention strategies. In this context, the role of social media is also significant. Country-specific intervention strategies, telepsychiatry consultations, and unique toll-free numbers for psychological and behavioral problems have been issued by the Indian government (Roy, 2021). This research is vital because it explains the form of a message-posting network for mental health in Indonesia and the categorizations of themes that emerge from conversations about mental health on X social media.

Regarding several previous literature, evidence that social media is also a source of stress and psychosomatics experienced by young people is also real (Keles, 2020). Sources of harmful content spread on social media should be given special attention by related parties so that the younger generation does not experience even worse effects (Hafiar, 2019a).

3. Research Methods

This study gathered and examined millions of tweets with 20 keywords associated with mental health, like mental health, mental illness depression, mental disorder, anxiety and bipolar using big data approaches. The conversation's cultural and social context is then deciphered using netnographic in qualitative methods. But, this research uses quantitative data in the form of big data as the initial data structure that supports qualitative analysis. So, this research does not use a mixed method. According to Merlyna Lim (2018), big data can be used to analyze social phenomena, especially if the research context involves digital media (Lim, 2018). Nethnographic methods explore and carry out in-depth observations typical of online ethnography. Discussion about the mental health of social media users will be thoroughly analyzed on social media X to identify forms of posts, themes and perceptions among Indonesian netizens. Netnography is a type of research that focuses on understanding everyday

experiences that influence and are influenced by networks of practices and online trace systems. Online "diving" can include text, graphics, photos, videos, music, political fan fiction sponsored by commercial entities, and many other things. Inquiry, interaction, and immersion are the three essential elements of netnography to engage and communicate through this cultural experience (Kozinets, 2015). Netnography offers an alternative to participation with engagement. In engagement, the researcher does not need to participate in the activities of the studied informants, for example, participating in posts, commenting on posts from users, giving likes, shares, and many other activities. Participation is problematic because, in netnography, the data generally exists before the researcher conducts the research. Engagement is a form of researcher involvement with data, how researchers devote and engage with the data being researched (Kozinets, 2020).

3.1 Data Source

The subject of this study is Indonesian social media users who post content, threads, and comments about mental health and mental health issues. On the other hand, the object of the object is content that depicts the big data and conversation about mental health that occurs on every post that includes the topic of mental health through keywords and hashtags, including mental health, mental illness, mental disorder, mental illness, depression, bipolar, mental health, psychiatrist, and psychiatry. The keyword mental health is widely discussed on the social media accounts of social media users X. Content posts will be analyzed using netnography on Indonesia's favorite social media, namely X (Riyanto, 2022). Researchers will conduct in-depth/immersive conversations in online conversations that become data sites to identify social media users' themes, sentiments, and perceptions (Tenderich, 2019). The primary data source in this research is in the form of posts and comments on mental health-themed threads using 20 keywords mental health and mental health in Indonesia. Meanwhile, the hashtags that will be analyzed are #mental health #mentalhealth, #mentalillness, #mentaldisorder, #mental illness, #depression #bipolar #psychological illness. The types of data in this research are qualitative data and quantitative data. Content posts will be analyzed from several social media accounts that are most discussed or have the highest posts based on queries from SNA tools. Meanwhile, secondary sources in this research are from other online sources such as journals and previous research results.

3.2 Data Collection Procedures

For data collection, this study focused X platform. Data collection technique in this study was through online data search methods using tools and sampling on several representative posts through criteria determined by researchers, namely, posts that come from Indonesian citizens, as well as posts that received the highest number of comments and likes that were posted in the 2021. This period was chosen because the trend of discussions about mental health on social media emerged after the COVID-19 pandemic hit Indonesia and the world. As pre-research data, researchers also conducted searches on Google Trends. Surveys on Google Trends are a proxy for representing public opinion (Wibowo, 2018). The survey stated that many fluctuations in discussions about mental health on social media occurred in May and September 2021 (Google Trends, 2023). Next, researchers will collect/scrap data with the help of big data tools such as NoLimit, which allows for data crawling. There are currently 15,200 mental health-themed content posts on X/ Twitter. Researchers then selected, based on the highest engagement (number of comments and likes) through the NoLimit application in 2021, a total of 4968 threads for further netnoghraphic analysis. The thematic categorization in this research refers to Braun & Clarke's (2021) thematic analysis, where the stages are adapted to digital data analysis. Through thematic analysis the author will see patterns of meaning from very large data through stages, namely; (1) Data Familiarization, (2) Initial Coding, (3) Theme Search, (4) Theme Review, (5) Theme Naming and (6) Results Reporting (Braun, V, 2021).

4. Results and Discussions

The research findings are broken down into three analytical contexts. They are the big data form of a message posting network regarding mental health, the categorization of emerging

themes, and the form of comments from Indonesian netizens. Researchers engaged with the data and made observations about emotional involvement with the data being studied. Emotionally involving oneself means that the researcher jeopardizes the integrity of the research by putting oneself in the position of the subject while trying to understand the emotions of netizens to understand more about their culture as users of social media.

Big Data Form About Mental Health

Researchers have extracted data from thousands of mental health-themed contents on X, as many as 15,200 posts to date. Researchers then selected based on the highest engagement (number of comments and likes) through the NoLimit extensive data application, which occurred in 2021, with 4969 posts for further analysis. In the thousands of posts and intensities that make up the network, researchers identified several topics of conversation that form word cloud mentions as follows.
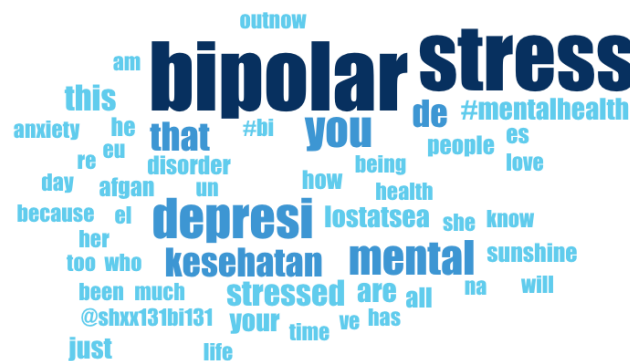

Fig. 1. Word Cloud Mentions About Mental Health in Indonesia (NoLimit, 2023)

From the word cloud mentions graph, as shown in Figure 2, topics originating from the keywords "Bipolar" and "Stress" occupy the most significant rankings and are most frequently discussed by netizens on X social media in Indonesia. There were 2,200 talks about bipolar disorder and stress, and 70,250 talks about mental health. Social media users who discussed this keyword included male and female users. Meanwhile, the cities of Bandung and Jogjakarta have the highest intensity of discussion regarding mental health.
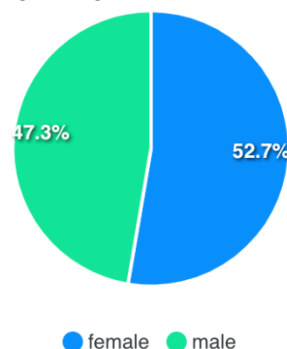

Fig. 2. Engaged User by Gender (NoLimit, 2023)

A look at the users' demographics shows that 16.595 female users (52.7%) and 14.907 male users (47.3%) actively participated in the debates around these subjects. This suggests that compared to male users, female users engage in conversations about mental health at a higher degree.

Meanwhile, the cities of Bandung and Jogjakarta have the highest intensity of discussion regarding mental health. Bandung lead 16.6%, Yogyakarta 15.1% and Surabaya 10.1%. Bandung and Jogjakarta are two well-known places where conversations around mental health were most intensive. This may indicate regional characteristics impact public awareness and interest in mental health issues. Given their high degree of interest in mental health, these cities

could be important locations for focused studies or campaigns on the subject. In other cities, there are Malang, Semarang, Bogor, Bekasi, Tangerang, Depok, Jakarta Selatan, and etc.

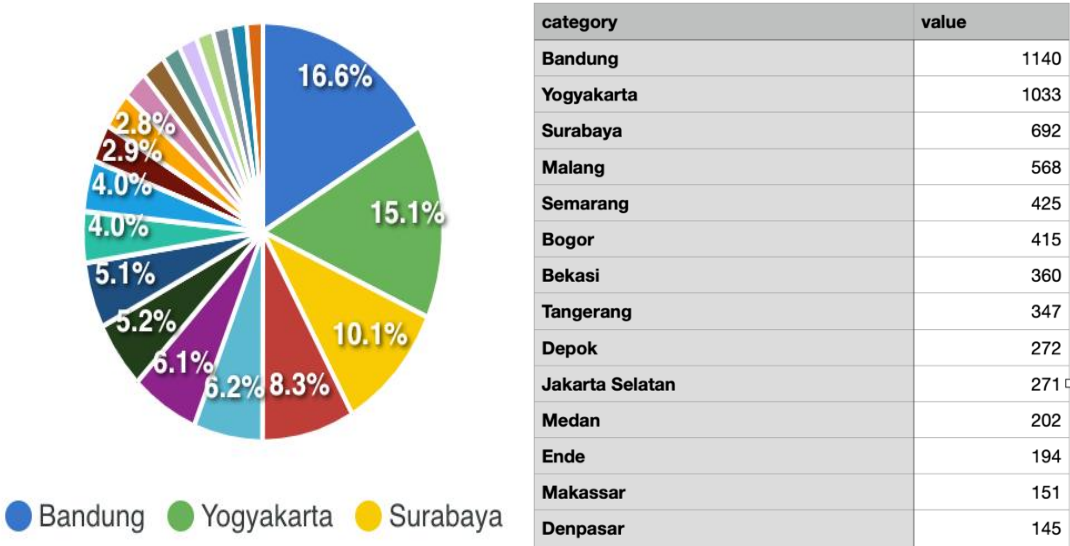| category	value
Bandung	1140
Yogyakarta	1033
Surabaya	692
Malang	568
Semarang	425
Bogor	415
Bekasi	360
Tangerang	347
Depok	272
Jakarta Selatan	271
Medan	202
Ende	194
Makassar	151
Denpasar	145

Fig. 3. Engaged User by Interest (NoLimit, 2023)

Fig. 4. Sentiment Analysis (Source: Brand24, 2023)

From the figure 4. There are 1,948 instances of user-generated content relevant to the study issue, according to the data presented. These postings cumulatively got 1,894,686 social media likes, showing a substantial level of interaction and visibility. Sentiment analysis revealed that 274 mentions, or 54.4% of the material, were categorized as negative while 230 mentions, or 45.6%, were identified as positive. This indicates that even with high user participation, the general tone of the conversation is still a little bit more negative. Based on the data, it appears that even if there is a lot of activity and interest surrounding the topic on social media, most of the talks are colored negatively.

The predominance of negative sentiment may reflect the strong stigma surrounding individuals with mental health disorders, such as depression and bipolar disorder. This stigma is often tied to perceptions that these conditions stem from personal weakness, lack of faith, or are not "real" illnesses. As a result, many individuals hesitate to seek professional help out of fear of social judgment.

On the other hand, the presence of positive sentiment shows that there are groups who support and understand the importance of mental health. The high level of interaction and visibility of this issue on social media presents an opportunity to expand public education, normalize discussions about mental health, and reduce the stigma that persists.

In addition, researchers have studied the structure of social entities on X to understand how social networks occur through conversations on the mental health theme. Intensity forms a culture of digital conversation in various content with the keywords and hashtags "mental

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health, mental illness, mental disorder, *penyakit mental* (mental illness), *depresi* (depression), bipolar, *kesehatan mental* (mental health), *spikier* (Psychiatrist), and *psikiatri* (psychiatry)." As a result, researchers found a network that formed 3 (three) large clusters: bipolar, stress, and depression. The visualization is as follows.
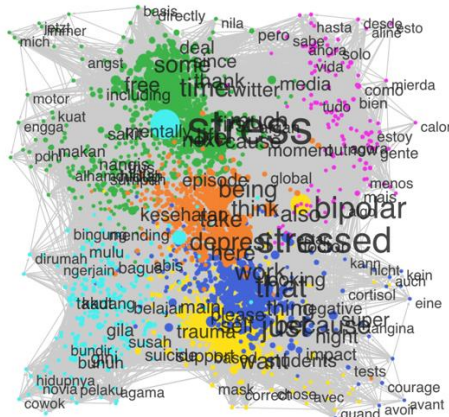

Fig. 5. Form of Threads on Big Data Graph About Mental Health in Indonesia (NoLimit, 2023)

As seen in Figure 5, the bipolar cluster is marked in blue. The Stress cluster is marked in yellow and, and the depression cluster is marked in gray. The large amount of data distributed on social media has helped reduce the stigma surrounding depression and other mental disorders with the help of platforms that allow individuals to share their personal experiences openly. This helps to broaden the understanding that depression is a common problem and that a person is not alone in their struggle. Thus, through social media, information about depression, symptoms, treatment, and helpful resources can be easily accessed and disseminated. This helps to increase the general public's understanding of depression and reduces confusion and misunderstandings.
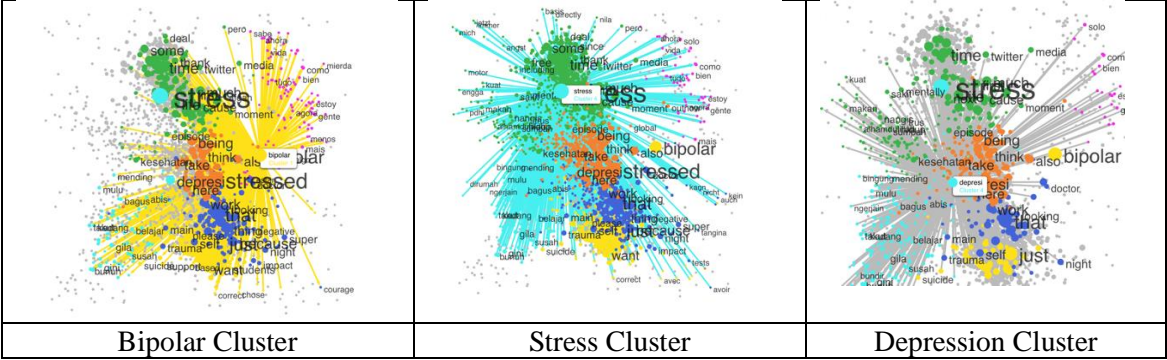

| Bipolar Cluster | Stress Cluster | Depression Cluster |

Fig. 6. Form of 3 Cluster of Bipolar, Stress and Depression (NoLimit, 2024)

Which nodes has the highest to lowest rank in the graph?
Centrality

No.	Node	Score
1	stress	2115
2	stressed	1395
3	that	1081
4	bipolar	1069
5	just	1033
6	this	820
7	time	775

Fig. 7. Rank of Nodes about Mental Health on X (NoLimit, 2024)

With a score of 2115, the node "stress" has the highest rank according to the graph's centrality rating, meaning it is the most central or frequently used phrase in the dataset. With a

score of 1395, "stressed" comes in second after this, indicating a high correlation or conversation about stress and its variations. With a score of 1081, "that" ranks as the third most central node. It is most likely used as a connecting word in numerous discussions, joining disparate thoughts or ideas. With a score of 1069, the node "bipolar" comes in at number four, indicating a strong presence but marginally lower centrality than "stress" and "stressed." There are more nodes that show certain words also have a role, like "just" (score: 1033), "this" (score: 820), and "time" (score: 775)

Classification of Themes Related to Mental Health in Indonesia
The classification of themes that surface from postings on mental health in X will be the first context examined in this study. The conversation graph about mental health peaked in the last three years, and the data-gathering period ran from May to December 2021. The data from the data-reduction procedure is presented in the following manner.

Theme 1: The Story of Survivors
The actor in this theme is Naajmi Wicaksono. Naajmi Wicaksono is a book author, mini herbalist, mini astrologer, owner of the beauty brand Sattva Indonesia, and a mental health influencer known in Indonesia as a bipolar survivor. With 135 thousand followers, the owner of the @hujandisenja account frequently shares knowledge and personal experiences as someone with bipolar disorder and borderline personality disorder (BPD) on her personal X (formerly Twitter) social media.

Fig. 8. The Example of The Story of Survivor (@Naajmi W, X, 2024)

On October 14, 2021, Naajmi posted an entry featuring a photo titled "Thank You Caregivers for All That You Do!" as shown in Figure 3 above. This post received 16 comments, was reposted by over 197 people, and was liked by more than 417 users. As someone with bipolar disorder and BPD, Naajmi's mental health is unstable. Sometimes, during flare-ups, she might push her caregiver harshly, cry for unexplained reasons, experience continuous collapses, or even rage until it leads to depression. Naajmi explains that being a caregiver is challenging. This is reflected in how her husband takes over all responsibilities, including household tasks, calming their child, and managing Naajmi's needs during her flare-ups. Whenever Naajmi's mental health declines, Andi does not force her or say much. He stays with her in silence, never asking questions, but instead comforts her by hugging her and saying that everything will be okay and that he is here for her. The post shows how Naajmi and Andi need and care for each other, and since Naajmi needs him, Andi, as her caregiver and husband, needs to take care of his mental health. Taking care of someone with a mental health disorder is difficult. Therefore, when her husband once experienced burnout and depression while caring for her, Andi did not hesitate to seek treatment, which eventually led both to see a psychiatrist.

This post received a positive response from netizens. From the results of observations and immersion notes, researchers found that they predominantly shared personal experiences, which

seemed to validate the information conveyed in the post. For example, the account @ms_crissy, a caregiver for someone with schizophrenia, stated:

> "*Yep, gak jarang caregiverpun jd ikut depresi* (in my case I do get mild depression hehe) *bener2 ga mudah tapi aku pasti bisa* 🙏☺" (Yes, it is not uncommon for caregivers to experience depression themselves (in my case, I do get mild depression hehe). It is not easy, but I am sure I can do it 🙏☺).

> Another example comes from account @howi442, which said:

> "*waktu dan tenaga habis, masa depan dan kebahagiaan utk diri sendiri hampir nggak ada, sampai pd titik ikut depresi dan pingin ninggalin semua...tapi ttp nggak bisa krn klo ditinggal ia tdk bisa urus dirinya sendiri. Diri seperti dirantai, terikat dng nya.*" (Time and energy are depleted, and there's almost no future or happiness left for oneself. It reaches a point of depression and wanting to leave everything behind... but it's still not possible because if left alone, the person can't manage on their own. It feels like being chained, tied to it."

Another figure who meets the researcher criteria is Brian Immanuel, professionally known as Rich Brian. He is a rapper, international record producer, and songwriter. On October 11, 2021, coinciding with World Mental Health Day, Brian posted something that drew the attention of the online community, both Indonesian netizens and people from abroad. Through his personal X (formerly Twitter) account, which has 1.9 million followers, Brian celebrated this important day by posting a photo of himself crying while smiling at the camera with the caption "Happy Mental Health Day."

Fig. 9. The Example of The Story of Survivor (@Rich brian, X, 2024)

The post received over 221 thousand likes, was reposted by 44 thousand users and was commented on by more than 900 users. This post was met positively by netizens, as seen from the comments under the post. Many comments on the post included netizens sharing their photos or memes of crying while smiling, like an image that @richbrian shared. For example, the account @nattvers shared a meme of a crying man with the text "smile through the pain" in the photo with the caption "same energy" that got likes from over 800 users. Rich Brian's post conveyed the importance of paying attention to mental health as if to tell netizens that it is okay to experience difficult times and that expressing emotions through crying is normal.

Theme 2: Mental Health as a Trend and Fashion

Another actor who meets the researcher criteria is the account @peachyslen, which has 15 thousand followers on social media X. On August 20, 2021, Hellen, the owner of the @peachyslen account, shared a photo showing the back of a shirt designed with names of mental illnesses turned into a trend and fashion. In the post, Hellen wrote the caption:

> "*keren banget penyakit mental jadi tren n fashion*" (so cool, mental illnesses become a trend and fashion)

> The statement went viral, receiving 487 comments, reposted 4 thousand times, and liked by 13 thousand people. Although the title welcomes the trend, Hellen refers to the opposite. In

the post thread, she explains that the clothing brand is trying to raise awareness about mental illness. However, it appears to be poorly conceived and instead comes across as potentially "offensive" in the eyes of netizens.

Fig. 10. The Example of Mental Health as Trend and Fashion (@peachyslen, X, 2024)

Based on the observations and immersion notes, the researcher found several comments that could be representative of other netizens. For example, the account @embunbungaa which stated:

> "Mereka kaga tau apa ya bahwa ada orang di luar sana yang berjuang mati2an biar ttp waras ngejalanin hidup, berobat sana sini, coba berdamai tp susah. Sebagai penyintas aja gue malu untuk mengutarakan, si gblg dijadiin desain☺☐" (They do not understand that there are people out there struggling desperately to stay sane while going through life, seeking treatment everywhere, trying to make peace but finding it difficult. As a survivor, I am embarrassed to talk about it, but that stupid person made this into a design☺☐).

Through the post, many netizens rejected and didn't like mental illness being used as a trend and fashion. For them, this isn't a good idea, especially with the use of inappropriate photos on t-shirts, making people more likely to have a negative stigma and misunderstanding the definition of mental illness that started to romanticize the symptoms of a mental disorder. This can be seen from the account @rosieb0n, which says:

> "terus org yg self diagnosed yg biasanya merusak citra pengidap aslinya. krn mereka gak paham bener2 apa sih yg mereka omongin. efeknya? org yg beneran butuh bantuan, jd gamau share pdhl sharing itu salah satu bentuk terapi loh. stop lah romantisasi mental illness." (People who self-diagnose often harm the reputation of those who really have the condition because they don't fully understand what they're discussing. The result? Those who genuinely need help might be reluctant to share, even though sharing can be a form of therapy. Stop romanticizing mental illness).

Theme 3: Stress, Anxiety, or Just a Gerd?

The next actor in this theme is account @potsumma. The owner of this account, which has the display name "azizi," is a netizen who uploaded a post about the GERD disease she suffers from, which generated discussion on social media X. This post was uploaded on November 22, 2021, and 734 comments, 16 thousand reposts, and 48 thousand likes.

Fig. 11. The Example post about Gerd (@potsumma, X, 2024)

The post, as shown in the Figure above, stated:

"punya gerd selalu jadi reminder bahwa kematian sedekat telat makan. ngausaaaa terlalu kilau dgn ambisimu ituuuuu, u makan telat setengah jam aja hampir mati." (Having GERD always serves as a reminder that death is as close as missing a meal. Don't be too dazzled by your ambitions, if you eat just half an hour late, you could almost die)

The post received a high engagement through many likes, reposts, and comments from other netizens who have had the same experience with @potsumma. For example, a comment from the account @mooneater_ added:

"Gerd ini unik, ga cuma nyerang lambung dan tenggorokan, tapi bisa bikin kebanyakan penderitanya ngalamin anxiety. Akhirnya ya jadi bikin gerd tambah susah sembuhnya." (Gerd is unique, it not only attacks the stomach and throat, but can also cause most sufferers to experience anxiety. As a result, it makes GERD even harder to cure)

The post received plenty of nods from other netizens, resulting in approximately 2 thousand likes, 683 reposts, and over 65 comments. The comment by @mooneater_ on @potsumma's post was supported by account @sthana0606, which stated:

"Benerr susah sembuh.. dulu aku ngalamin kurleb 6th. Sering panic attack. Berobat sana sini juta2 ujung2nya aku mutusin buat kelola stress trs makan teratur. Ga pake telat. Alhmd skrg bisa kontrol si gerd. Bukan sembuh memang. Tapi bisa kontrol apa ngga. ⬛🀫♀□" (It's tough to recover... I experienced it for about six years. I often had panic attacks. I sought treatment everywhere and spent millions... Ultimately, I decided to manage stress and eat regularly without delay. Alhamdulillah, now I can control my GERD. It's not about curing it but controlling it ⬛🀫♀□).

Another example comes from the account @RinaAndriani, which said:

"Dulu punya gerd yg parah, sampe parnoan, takut mati, sesek nafas.. kemudian dengan kemaun yg kuat ingin sembuh, langsung merubah pola makan, hidup sehat, minum hanya air putih (ikut pola makan food combining).. Alhamdulillah sembuh,,gak pernah minum obat obatan lambung lagi.." (I used to have severe GERD, to the point of paranoia, fear of dying, and shortness of breath. Then, with a strong determination to recover, I immediately changed my eating habits, lived healthily, and only drank plain water (following a food combining diet). Thank God, I recovered and no longer take any stomach medications).

Another actor who meets the research criteria is Dr. Andi, who is well-known as a doctor specializing in Psychiatry. Through his personal account @mbahndi, Dr. Andi actively disseminates education on mental health on social media X and has a follower of more than 81 thousand users.

Fig, 12. The Example posts about Gerd (@mbahndi, X, 2024)

The post, as shown in the Figure above, stated:

"GERD alias Gatroesophageal reflux disease sering disalahkan sebagai penyebab kematian. Padahal Prof dr. @DokterAri SpPD-KGEH pernah bilang, GERD tidak bikin orang meninggal" (GERD, also known as Gastroesophageal Reflux Disorder, is often blamed as a cause of death. However, Prof. Dr. @DokterAri SpPD-KGEH has said that GERD does not cause death).

The post received high engagement in terms of likes and comments from netizens. The post was one of Dr. Andi's educational contents. It was uploaded on December 15, 2021, and was liked by 9 thousand users, reposted by 3 thousand users, and commented on 108 times. The posts from Dr. Andi inform netizens that GERD-Anxiety is a new term that has been gaining attention on social media lately and that anxiety symptoms can worsen GERD. However, it cannot cause death, as the mortality rate from GERD is meager, at 0.02 per 100,000.

In the thread post, Dr. Andi also explained death that is mistakenly thought to be caused by GERD is due to a heart attack if it occurs suddenly. GERD symptoms are often misunderstood. If one experiences stomach symptoms along with chest pain or pain around the chest, they should check their heart, at least with an EKG, instead of just focusing on the stomach. For example, this can be seen from a comment by the account @wonderstux which stated:

"BENERRRRR!!!! Ini yang selalu gue bilang, sebagai penderita GERD, GERD itu sakit tapi low chance of death. Gak bikin orang meninggal. Yang bikin orang meninggal itu sakit jantung. Karna GERD sama sakit jantung itu gejalanya mirip banget, heartburn gituuuuu" (THAT'S RIGHT!!! This is what I always say: as someone with GERD, GERD is painful but has a low chance of causing death. It doesn't kill people. What causes death is a heart attack. GERD and heart attacks have very similar symptoms, like heartburn).

Another example comes from @shittwt_, which said:

"Puji Tuhan. Mari tetap jaga pola makan. Masi banyak yg perlu dikejar soalnya. Aku gerd kronis fighter soalnya. Semenjak laura meninggal dan byk yg blg alesannya krna gerd aku gbs mikir jernih lg sampe skrg. Bawaannya takut trs. Tp ternyata ga🙏▨" (Thank God. Let's keep maintaining a good diet. There's still a lot to achieve. I'm a chronic GERD fighter. Ever since Laura passed away and many said it was because of GERD, I haven't been able to think clearly. I've been constantly afraid. But it turns out, it's not the case 🙏▨).

Aside from the two comments above, Dr. Novierta Prima Kusumandara, also known as Dr. Aan, an anesthesiology specialist, replied to Dr. Andi's post. He added:

"Yak benar. Yang sering dikeluhkan kalo penderita GERD, asam lambungnya bikin keselek pas tiduran dan terjadi laringospasme. Nah ini yg sering bikin orang panik, serasa ga bisa napas, tapi sekitar semenit bisa baikan lagi. Ga terlalu bahaya kok kalo km bukan bayi dan anak2" (Yes, that's right. What GERD sufferers often complain about is that stomach acid causes choking when lying down and leads to laryngospasm. This frequently makes people panic, feeling like they cannot breathe, but it usually

improves within a minute. It is not too dangerous if you are not a baby or young child 👆🗟).

The post received support from netizens, resulting in approximately 3 thousand likes, 1 thousand reposts, and over 71 comments.

Social media is considered an effective initial aid for diagnosing mental health disorders in most people (Hinduja, 2022). Moreover, during the COVID-19 pandemic, which requires people to stay home and maintain distance, individual movement is significantly restricted (Aristi et al., 2021). In addition, health services in the form of e-health that rely on advances in communication technology and new media are also available to provide long-distance mental health care for evaluation and management stages of treatment and psychotherapy steps that will be carried out by patients with mental health disorders (Whaibeh et al., 2020).

Social media has emerged as an inevitability of new media, which is a transformation of the rapid growth of the internet (Khatri, 2021). Many studies have analyzed social media's massive use and adoption today (Boehm, 2019). Today, there is a wide choice of available platforms, most of which are shaped by new media. Social media presence as part of new media is a basic need, especially for the younger generation, which is the majority of users. The internet, in this case, social media, is also changing and forming new patterns in their activities. This is because social media is a crucial channel that is often accessed massively by them (Zulhazmi & Hastuti, 2018). For example, understanding a person's current interactions and communication behavior does not require direct access; it can be done simply by looking at social media posts daily. Data collection will be formed from the content they upload and "share" with the public in the social media space, becoming an online or digital footprint in the future.

Many Indonesian netizens wrote about their experiences of being reluctant to face mental health problems, which, at the moment, are limited to self-diagnosis. Thus, to find the diagnosis of a mental illness or certain types of mental disorders, careful observation is required and must be carried out by qualified professionals such as psychologists or clinical psychologists (Barnett & Huskamp, 2020) Some even often dare to consult in the form of comments on psychiatrist accounts to get free consultations. The APA survey released in 2018 explained that Millennials have a higher history of mental disorders compared to other generations, such as Millennials, Gen X, Baby Boomers, and others (American Psychologycal Association, 2018). On the other hand, it is crucial to recognize that the lack of information regarding health services in Indonesia can cause the general public's awareness of health problems to become unbalanced. One of the factors causing the decline in Indonesian public health literacy is the lack of services and media use (Hadisiwi, Purwanti & Suminar, 2017). In Indonesia, misinformation and disinformation often occur regarding health service information, especially on social media platforms (Dida et al., 2021)

Discussions about mental health issues are also growing in America, especially on campuses. The researchers are trying to explore survey results that show increasing levels of anxiety and, depression or other mental health problems among college students, including what are the potential causes of these issues. Mental health stigma in the U.S. is a significant barrier to seeking treatment, with research showing that 35% of individuals with serious mental illnesses and 90% of those with substance use disorders do not receive the care they need. Stigma leads to self-stigma, which lowers self-esteem and worsens symptoms, creating a cycle of avoidance and further distress (Donald, 2019). Meanwhile, in many other Asian countries such as Japan, stigma is still strong, but in a different context, for example, the culture of maintaining a perfect self-perception. In Japan, the culture of withdrawing from the social world, especially among teenagers, is still very strong. This culture is called "Hikikomori", namely the culture of isolating oneself from the social world because one has failed in certain achievements (Horiguchi, 2019).
Indonesia can be said to occupy a unique position because, it has cultural diversity, customs, and a high level of religiosity. Therefore, strategies to reduce stigma and increase awareness must consider a more culturally contextualized approach, including collaboration with religious and traditional leaders.

5. Conclusion

Based on the results, FDS visually presented the occurrence of flames through fire or smoke dispersion. This indicated that the starting point influenced the spread of fire and smoke. The location of the flame origin surrounded by flammable materials and sufficient air supply also led to a high HRR value. Moreover, the achievement of outputs when the HRR value had two peaks was triggered by the burning of different chairs. This was in line with Mowrer and Williamson, where the occurrence of fire was related to the burning of foam on horizontal chair seats, as well as composite products and materials exhibiting complex combustion behaviour capable of producing more than one HRR peak.

The results of big data show that there is a human bias in discussions on mental health, with a significant increase during the COVID-19 pandemic. Analysis indicates that the user base has a relatively high incidence of emotional distress. Through the study of netnography, it is revealed that social media serves as a community's backbone while also perpetuating stigma related to mental health issues. Poor mental health in teenagers, such as the generation, contributes indirectly to the sustainability of a country. The population that lives in regional areas has limited access to professional help, such as psychologists and psychiatrists. Therefore, they prefer to get help through social media. It has even become a trend to show off mental disorders/mental illnesses or mental disorders such as bipolar, depression, excessive anxiety, and other types of mental disorders. This post is widespread to find. Mental health in Indonesia is still an issue that does not get serious attention, even though the number of cases of mental disorders continues to increase. The negative stigma against people with mental disorders causes many people to be reluctant to seek professional help. Access to mental health services is also limited, especially in remote areas, where specialized medical facilities and personnel are minimal. The government has attempted to increase public awareness through various campaigns but remains facing the same challenges. The collaboration between government, society, and the private sector to improve the mental health system must be more inclusive and accessible to all levels of society.

Acknowledgement

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