Salud, Ciencia y Tecnología. 2025; 5:1096
doi: 10.56294/saludcyt20251096

ORIGINAL

Unlocking the Mind: Using Word Frequency Analysis to Reveal Metaphor Patterns in Schizophrenia Patients' Poetry

Desbloquear la mente: uso del análisis de frecuencia de palabras para revelar patrones de metáforas en la poesía de pacientes con esquizofrenia

Yunita Suryani[1], Bambang Yulianto[1] ✉, Suhartono[1]

[1]Universitas Negeri Surabaya. Surabaya, Indonesia.

Cite as: Suryani Y, Yulianto B, S. Unlocking the Mind: Using Word Frequency Analysis to Reveal Metaphor Patterns in Schizophrenia Patients' Poetry. Salud, Ciencia y Tecnología. 2025; 5:1096. https://doi.org/10.56294/saludcyt20251096

Submitted: 18-04-2024 **Revised:** 22-07-2024 **Accepted:** 22-11-2024 **Published:** 01-01-2025

Editor: Prof. Dr. William Castillo-González

Corresponding author: Bambang Yulianto ✉

ABSTRACT

Introduction: this study investigates the metaphorical language used in poetry by schizophrenia patients, aiming to reveal underlying cognitive and emotional patterns. Understanding these patterns can enhance therapeutic approaches and provide insights into the patients' mental states.
Method: a qualitative analysis was conducted on poetry written by a patient diagnosed with hebephrenic schizophrenia at Menur Mental Hospital in Surabaya, Indonesia. The analysis employed word frequency analysis (WFA) to identify recurring themes and metaphorical expressions, focusing on the emotional and cognitive implications of the language used.
Results: the findings revealed a significant prevalence of metaphors related to pain, voice, and mind, indicating the patient's struggles with emotional distress and cognitive disorganization. The poetry exhibited patterns of repetition, particularly concerning the concept of illness, reflecting the patient's ongoing battle with their mental health condition. Additionally, the analysis highlighted the disorganized thought processes characteristic of schizophrenia, as evidenced by incoherent and fragmented expressions.
Conclusions: the study underscores the therapeutic potential of poetry as a medium for self-expression among schizophrenia patients. By analyzing metaphorical language, clinicians can gain deeper insights into patients' emotional experiences, facilitating more empathetic and effective therapeutic interventions. Future research should explore the implications of these findings across diverse populations to further understand the intersection of mental health and creative expression.

Keywords: Schizophrenia; Poetry Therapy; Metaphor Analysis; Emotional Expression; Cognitive Patterns.

RESUMEN

Introducción: este estudio investiga el lenguaje metafórico utilizado en la poesía por pacientes con esquizofrenia, con el objetivo de revelar patrones cognitivos y emocionales subyacentes. La comprensión de estos patrones puede mejorar los enfoques terapéuticos y proporcionar información sobre los estados mentales de los pacientes.
Método: se realizó un análisis cualitativo de la poesía escrita por un paciente diagnosticado con esquizofrenia hebefrénica en el Hospital Mental Menur en Surabaya, Indonesia. El análisis empleó el análisis de frecuencia de palabras (WFA) para identificar temas recurrentes y expresiones metafóricas, centrándose en las implicaciones emocionales y cognitivas del lenguaje utilizado.
Resultados: los hallazgos revelaron una prevalencia significativa de metáforas relacionadas con el dolor, la voz y la mente, lo que indica las luchas del paciente con la angustia emocional y la desorganización cognitiva.

© 2025; Los autores. Este es un artículo en acceso abierto, distribuido bajo los términos de una licencia Creative Commons (https://creativecommons.org/licenses/by/4.0) que permite el uso, distribución y reproducción en cualquier medio siempre que la obra original sea correctamente citada

La poesía exhibió patrones de repetición, particularmente relacionados con el concepto de enfermedad, lo que refleja la batalla continua del paciente con su condición de salud mental. Además, el análisis destacó los procesos de pensamiento desorganizados característicos de la esquizofrenia, como lo evidencian las expresiones incoherentes y fragmentadas.
Conclusiones: el estudio destaca el potencial terapéutico de la poesía como medio de autoexpresión entre los pacientes con esquizofrenia. Al analizar el lenguaje metafórico, los médicos pueden obtener conocimientos más profundos sobre las experiencias emocionales de los pacientes, lo que facilita intervenciones terapéuticas más empáticas y efectivas. Las investigaciones futuras deberían explorar las implicaciones de estos hallazgos en diversas poblaciones para comprender mejor la intersección de la salud mental y la expresión creativa

Palabras clave: Esquizofrenia; Terapia Poética; Análisis de Metáforas; Expresión Emocional; Patrones Cognitivos.

INTRODUCTION

In language and literature studies, corpus analysis has become an increasingly important method of understanding linguistic and cognitive patterns in texts.[1] Particularly in the context of poetry, this approach allows researchers to explore complex and layered language use. One group that often experiences significant linguistic changes is schizophrenic patients, who often create unique and unexpected language patterns in their literary Works.[2]

In the context of poetry, metaphors serve as an important tool for expressing complex emotional experiences.[3,4] Metaphors in poetry serve not only as an aesthetic tool but also as a window to understanding the psychological state and subjective experiences of the author.[5] According to Lakoff and Johnson (1980), metaphors are not just linguistic devices but also reflect the way we understand the world. In the context of schizophrenic patients' poetry, metaphor analysis can provide valuable insights into the way they construct reality and their inner experiences.[6,7]

Research shows that the use of metaphors in poetry not only reflects the creativity of the writer but can also serve as a coping mechanism to overcome traumatic or difficult experiences.[8,9] In this case, word frequency analysis can help identify recurring patterns of metaphor use, which may reflect certain themes or emotions that are dominant in the works of schizophrenia patients.

Furthermore, research on metaphor detection shows that machine learning-based approaches, such as neural networks and word embedding, can improve accuracy in identifying metaphors in poetry texts.[10,11] Using these techniques, researchers can analyze the poetry corpus of schizophrenic patients in a more in-depth and systematic manner, allowing the unearthing of patterns that may not be apparent with traditional analysis methods. For example, Kesarwani et al. showed that statistical and machine learning-based approaches can provide new insights into the use of metaphors in poetry.[12] The importance of understanding metaphors in the context of schizophrenia is also supported by research showing that individuals with schizophrenia often use figurative language in unique ways, which may reflect the way they process their experiences and emotions.[13,14] Therefore, word frequency analysis can provide insight into how schizophrenia patients construct meaning through metaphors in their poetry, as well as how this may serve as a mirror of their mental state.

Word Frequency Analyzer (WFA) is a tool designed to analyze word frequency in text, providing in-depth quantitative data on language use.[15] This method of utilizing WFA allows researchers to explore how the use of metaphorical language can reflect an individual's psychological state, especially in the context of schizophrenia, where language understanding and use are often distorted. By applying WFA, this study aims to identify patterns of metaphors that appear in the poetry of schizophrenia patients. Through word frequency analysis, we hope to discover the keywords and metaphorical structures that dominate the text, as well as how these reflect the author's psychological and emotional state.

This research is expected to make a significant contribution to the understanding of literature and psychology, particularly in the field of corpus analysis. By integrating quantitative and qualitative methods of analysis, we aim to show how WFA can serve as an effective tool in unearthing hidden layers of meaning in the poetry of schizophrenic patients. In addition, this study also seeks to expand the academic discourse on the relationship between language, art, and mental health, and encourage further research in this area. Against this background, this article will discuss in detail the methodology applied, the results of the analysis, as well as the implications of the findings obtained. It is hoped that the results of this study will not only enrich literary studies but also provide new insights for practitioners and researchers in the field of mental health.

METHOD

Approach and Design

This study employs a qualitative research approach, focusing on the analysis of poetry as a means of understanding the cognitive and emotional experiences of schizophrenia patients. The design is exploratory, aiming to identify metaphorical patterns that reflect the mental states of the participants.

Research Subjects/Informants

The research subjects consisted of patients diagnosed with schizophrenia at Menur Mental Hospital in Surabaya, Indonesia. Specifically, the study focused on one patient diagnosed with hebephrenic schizophrenia, who participated in poetry writing sessions facilitated by the researcher.

Data Collection

Data were collected through poetry writing sessions, where the patient was encouraged to express their thoughts and feelings freely. Additionally, recordings and transcripts of interviews with the patient, along with research diaries documenting the process, were utilized to enrich the data set.

Data Validity

To ensure data validity, the study employed triangulation by combining multiple data sources, including poetry texts, interview transcripts, and observational notes. This approach enhances the credibility of the findings and provides a comprehensive understanding of the patient's experiences.

Data Analysis Techniques

The analysis utilized Word Frequency Analyzer (WFA) as a corpus analysis method to quantitatively assess the frequency of metaphorical language in the poetry. A cognitive linguistic approach was applied to qualitatively interpret the meanings and implications of the identified metaphors, revealing common patterns and themes related to the patient's emotional and cognitive states.

The WFA (Word Frequency Analyzer) method is an artificial intelligence (AI)-based application for analyzing word frequency in a text or corpus.[16] Words or phrases will be calculated for their intensity of occurrence in the uploaded text or corpus. WFA can identify certain linguistic patterns. In this study, WFA can automatically identify dominant words or phrases in poetry and then connect them to relevant themes or concepts, such as metaphors. The data source in this study was schizophrenia patients at Menur Mental Hospital, Surabaya, Indonesia, a case study of US patients. The data is in the form of 3 poetry texts written by patients. The text is copied to Word Office.[17,18] The text is reduced by removing irrelevant characters or symbols and does not eliminate meaning such as commas, periods, apostrophes, and conjunctions to make it easier to analyze. Text normalization, such as converting all words to lowercase for consistency when analyzed. Furthermore, the text is uploaded to the WFA application https://wordfrequency.org/ which can be accessed for free by users. The following is the initial appearance of the WFA application.

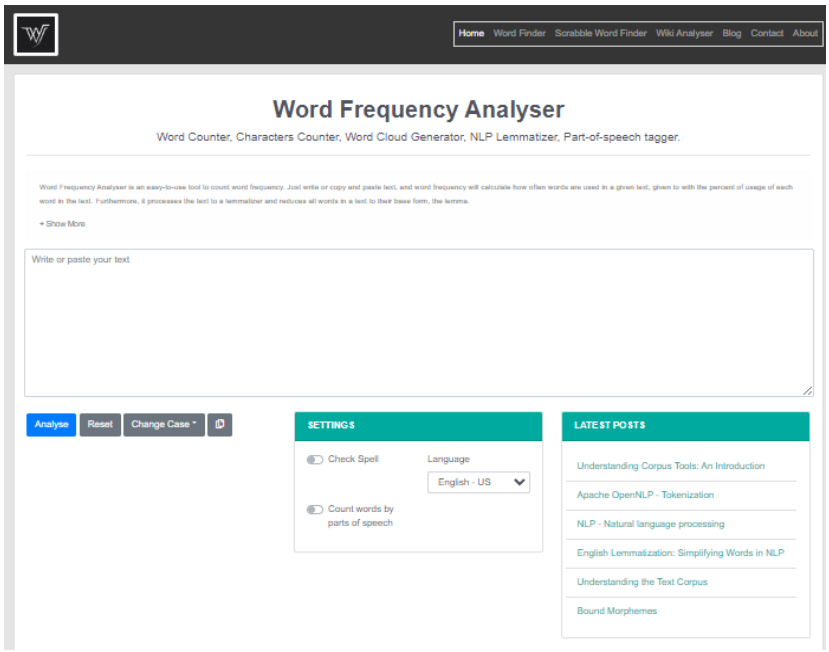

Figure 1. Page Word Frequency Analyzer

The text of the poem that has been typed in Word Office and through the reduction process is then copied and pasted into the write or paste your text column. Click the Analysis button, then the application works to analyze the frequency of words. WFA automatically calculates the frequency of occurrence of each word in the text. Words that appear frequently in poetry are the main focus because they are likely to have important meanings and are relevant to the theme or metaphor pattern.

Word Frequency - Analyser

Rank	Word	Lemma	POS (Part-of-Speech)	% of text	Occurrence
1	sakit	sakit	Proper noun, singular	6.34 %	13
2	suara	suara	Noun, singular or mass	2.93 %	6
3	pikiran	pikiran	Noun, singular or mass	2.44 %	5
4	obat	obat	Noun, singular or mass	2.44 %	5
5	halusinasi	halusinasi	Proper noun, singular	1.95 %	4
6	minum	minum	Noun, singular or mass	1.95 %	4
7	sehat	sehat	Preposition or subordinating conjunction	1.95 %	4

Figure 2. Word Frequency - Analyser view

In figure 2, WFA calculates word frequency. WFA identifies words that frequently appear in a poem. These words are then analyzed using a cognitive linguistics approach to obtain metaphorical meaning. After identifying keywords, WFA also identifies the words in which they appear. This helps determine whether the word is used metaphorically or literally in context.

WFA maps keywords metaphorically. Once metaphorical patterns are identified, WFA groups the metaphors into certain categories based on type or theme. WFA also groups metaphors based on their frequency of occurrence in the text. The main theme in a poem can be identified based on frequently occurring metaphors, and conversely, metaphors that rarely appear may be additional themes.

In addition to mapping keywords metaphorically, WFA also identifies the lemma or basic form of a word, including those that represent all its inflectional variations. WFA tags each word with its POS which helps in finding and understanding the grammatical function of the word or word class, such as noun, verb, adjective, etc. However, the words used in the poems written by patients use unique metaphors because they are influenced by cognitive disorders, so they can change the POS and not be by its function.

% of Text and Occurance in WAF show how often a word appears in the text. For example, if the word sakit in a poem written by a patient appears 7 times in a text containing 100 words, the percentage is 7 %. While Occurance or accuracy, refers to the number of occurrences of a word or lemma in the text. If the word sakit appears 7 times in a text containing 100 words, then the accuracy number is 7.

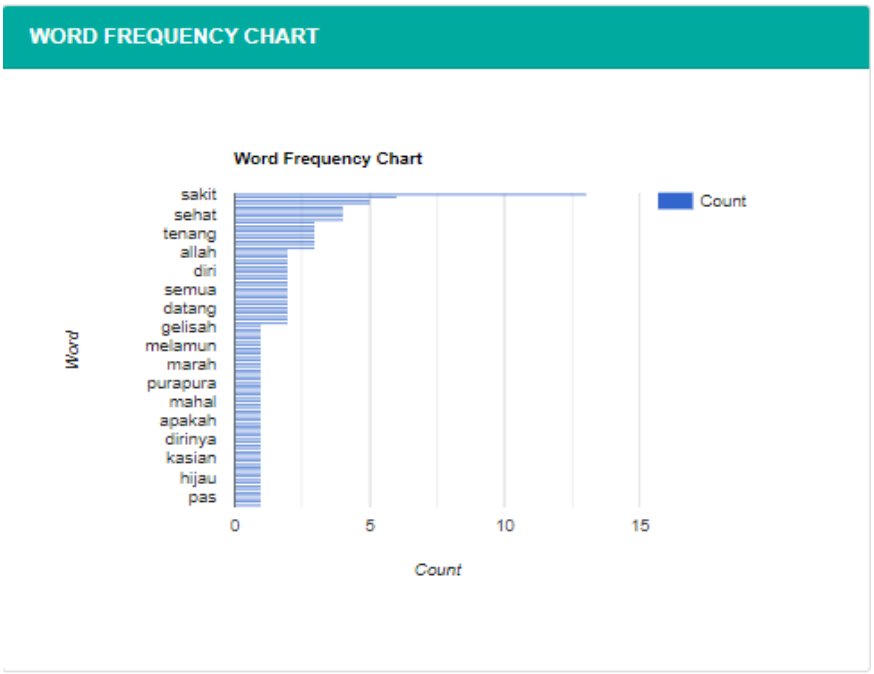

Figure 3. Word Frequency Chart Display

After identifying and categorizing metaphor patterns, WFA then visualizes the data in the form of a Word Frequency Chart. The chart helps researchers focus on important words without reading the entire text. Words with positive or negative connotations that appear frequently can indicate the dominant theme or feeling of the text. In cognitive studies, the graph displayed can show the patient's mental state through words that describe their emotions or perceptions of reality. In addition, the graph shows lexical diversity. The more varied the words used, the higher the lexical diversity of the text. Conversely, if the same word appears repeatedly, it can indicate a low variation in vocabulary. This helps researchers understand whether the patient's language tends to be repetitive or varied.

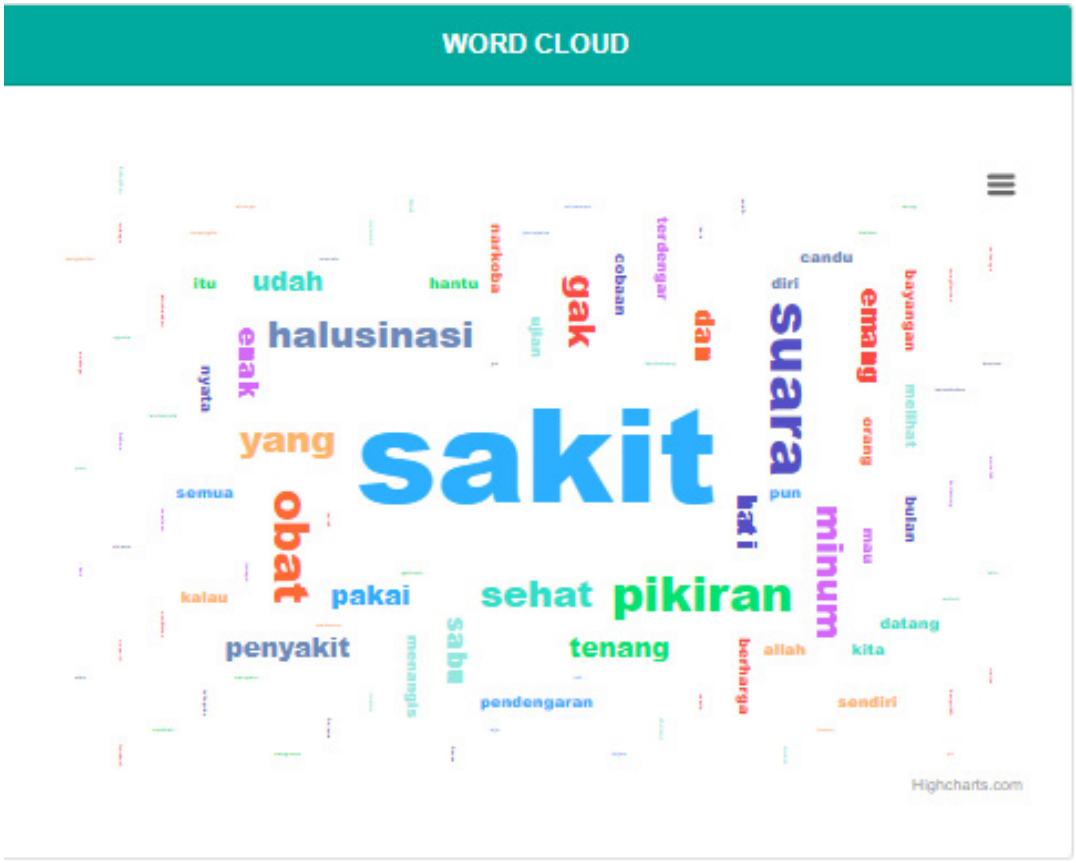

Figure 4. Word Cloud display

Furthermore, through the word cloud display, researchers can identify trends in the use of metaphors through the visualizations displayed. Word clouds display words that frequently appear in the corpus in visual form. The size of each word appears proportionally according to the frequency of its appearance. Words that frequently appear appear larger, and those that rarely appear will appear smaller. This makes it easier for researchers to identify keywords or dominant themes in the text quickly and efficiently.

In the final step, researchers can interpret the patient's mental and emotional condition based on metaphors in poetry that have been identified using the WFA method through a cognitive linguistic approach using Lakoff and Johnson's metaphor theory. Furthermore, researchers can conclude the patient's use of language and metaphors to express their thoughts. WFA is an innovative method in corpus analysis that provides convenience and contributes to the development of linguistic theory.[19]

The results of the analysis using the WFA method can be used to develop more effective language-based therapy methods and strategies. WFA can help understand patients through the language used to express themselves, therapists can design interventions that are more appropriate to the needs of each patient. The results of the analysis using the WFA method are useful for developing more effective language-based therapy strategies. By understanding how patients use language to express themselves, therapists can design interventions that are more appropriate to individual needs.

Ethical Considerations

This research was conducted in accordance with research ethics, ensuring that the patient's rights and confidentiality were protected throughout the study. Informed consent was obtained from the participants, and the research adhered to ethical guidelines for working with vulnerable populations.

RESULTS

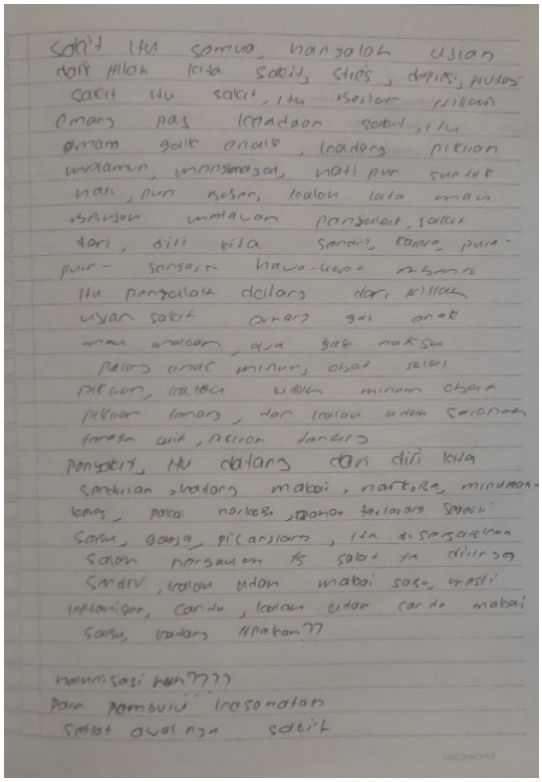

Figure 5. Poetry text is written by the patient US

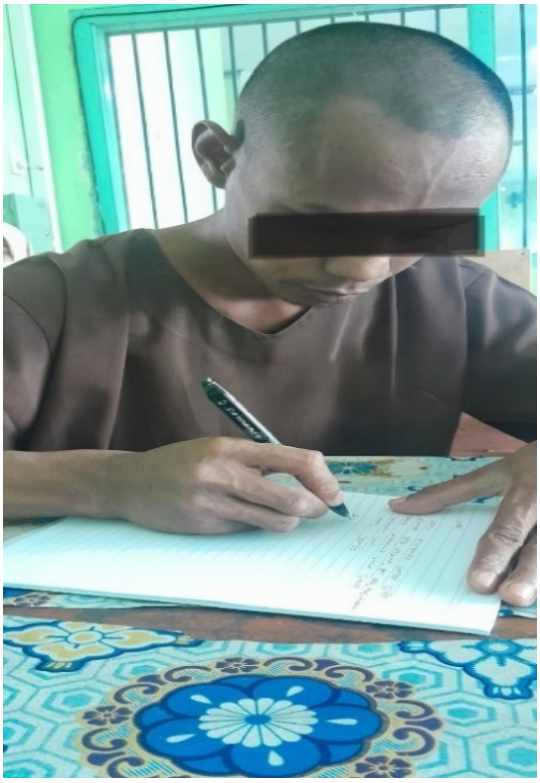

Figure 6. US patient photo

The data in this study were poems written and spoken simultaneously by US patients, as many as 3 poems with themes that were not specifically determined by the researcher. For 3 days at the initial meeting between the patient and the researcher, the US patient was intervened by the researcher to write poems with themes

about what was felt that day. The researcher conducted an unstructured intervention so that the patient could freely express everything he thought through poetry.

Facts of Schizophrenia Language Case Study of US Patients

Schizophrenia according to Carson, Butcher, & Coleman (1988) is a group of psychoses characterized primarily by distortions of reality, often seen in the behavior of withdrawing from social interaction, as well as disorganization and fragmentation in terms of perception, thoughts, and cognition. According to the American Psychiatric Association (APA) in the Diagnostic and Statistical Manual of Mental Disorders (DSM-5) schizophrenia is a mental disorder characterized by cognitive (thought), emotional, and behavioral disorders. People with schizophrenia often experience hallucinations, delusions, incoherent speech, and catatonic behavior (American Psychiatric Association, 2013).

Schizophrenia is the most common and most serious mental disorder because it affects one in a hundred people (Cummings, 2010). Based on this opinion, it can be concluded that schizophrenia is a chronic mental disorder characterized by cognitive, emotional, and behavioral distortions. The mental disorder schizophrenia is included in the category of psychosis. Psychosis in schizophrenia is characterized by hallucinations, delusions, incoherence, and catatonia. The factors that cause psychosis in schizophrenia are social, biological, and psychological.

Social disorders in schizophrenia show different changes than before or during normal times. Difficulty in dealing with and solving problems faced, as well as lack of support from people around them, further worsen the condition of the sufferer. If the early symptoms of schizophrenia can be recognized by family or people around them, these symptoms can likely be treated immediately. However, if the early symptoms are treated too late, the early symptoms can escalate to become more severe.

There is an imbalance of neurotransmitters, especially dopamine, as well as changes in brain structure in the prefrontal cortex. Excessive dopamine activity in the mesolimbic pathway causes loose associations, namely speech that jumps from one topic to another. Changes in the structure of the prefrontal cortex disrupt executive function, especially during language planning and organization, making it difficult to construct coherent sentences and making it difficult to process semantic and contextual information, resulting in inappropriate and difficult-to-understand metaphors.

In addition to social and biological disorders, schizophrenia also experiences psychological disorders caused by disturbances in emotions, perceptions, and thought content. Disturbances in emotions, perceptions, and thought content in schizophrenia sufferers result in disturbances in thought forms. Disturbances in thought forms in schizophrenia sufferers appear in the form of speech, including loose associations, word salad, over-inclusiveness, neologisms, blocking, clanging, echolalia, concretization, and alogia. The thought-form disorders analyzed in this article are in the form of written speech by schizophrenia sufferers at the Menur Mental Hospital in Surabaya, Indonesia, a case study of a patient with the initials US.

Based on Modify or medical records, US patients are diagnosed with hebephrenic schizophrenia or hebephrenic-type schizophrenia. The diagnosis of hebephrenic type schizophrenia is based on PPDGJ which appears about language facts in US patients, including hypochondriacal or excessive anxiety about the disease they suffer from so repeated expressions appear as a form of complaint. Every time they write poetry, US patients repeat the use of the word sick as a form of complaint about the disease they suffer from. The thought process is disorganized so that the form of thought appears in uncertain and incoherent speech. Hallucinations and delusions in US patients exist, but do not appear prominently in writing.

Schizophrenia Poetry Case Study of US Patients

Harvard Medical School research (Jusuf, 2023) has proven that writing can improve mental, physical, and emotional health.[20] In his research, Jusuf (2023) explained the benefits of writing activities as therapy for health, physical health, mental health, and social health. Benefits for physical health, writing can stimulate the brain, sharpen memory, improve motor function, improve sleep quality, improve the immune system, and lower blood pressure.[21] The benefits of writing for mental health include improving emotional health, increasing self-awareness, controlling stress, and treating depression. The benefits of writing for social health include being more organized in doing things, and honing communication skills.[22]

Part of the criteria for making a diagnosis of schizophrenia is the presence of functional thought disorders, which can be expressed in verbal and written expressions (Bakare 2009). Miliavskii (1981) said that poetry written by patients in the active phase of schizophrenia can function as a very important diagnostic tool, helping doctors assess the severity of the disorder.[23,24] This provides new insight, especially in the medical world in Indonesia, that poetry, which is part of the science of literature and language, can be a therapeutic tool to help determine the severity of schizophrenia disorders.

Several previous studies have used poetry clinically as a therapy for treating schizophrenia. Around 1970, Shafi 2010 discovered haiku therapy to help treat schizophrenia sufferers in Japan. Haiku therapy is carried

out with the aim that sufferers can organize chaotic thoughts through writing.[25,26] Tamura uses japa and renku poetry to help sufferers express themselves through writing. This therapy is used to overcome linguistic disorders and effusion. Metaphors, ambiguity, and figurative language are typical ways of expression in Japanese poetry.[27] These aspects help personal growth and existence.[28] Based on this, poetry has long been known and used as a treatment or therapy with language media for schizophrenia sufferers and poetry therapy has been proven to help personal growth and the existence of sufferers.[29]

According to Kähmi in his research on schizophrenia groups, figurative language is therapeutic. Metaphors in poems written by patients make it possible to tell, for example, how it feels to be haunted by delusions or hallucinations.[30] In addition, metaphors can tell and express disappointment, pain, and suffering experienced. In this study, metaphors were identified through poems written by schizophrenia patients at the Menur Mental Hospital in Surabaya, Indonesia.

The poems written by US patients in this study are expressions of thoughts felt during the illness. The patient repeated the words pain and voice several times. The patient expressed the pain he experienced which referred to mental illness. The patient also expressed hearing voices that referred to whispers from humans and animals. This is a form of hallucination experienced by US patients. At the same time, the patient also showed delusions, but not too prominent.

Metaphor in Schizophrenia Poetry Case Study of US Patients

In some cases, language disorders in schizophrenia patients cause an inability to understand metaphors, even if the metaphors are understood literally. On the other hand, some people with schizophrenia use language poetically, adding personal metaphors, neologisms, and rhymes to their speech and writing.

Metaphor is an element of poetry that is being studied intensively in the neuroscience and psychotherapy literature (Faust & Mashal, 2007). Metaphor as a therapy is considered by some neurologists as poetic self-expression (Mashal, Faust, & Hendler, 2005). Metaphor processing research has and will continue to develop the science of language processing. Researchers and psychiatrists can integrate poetry therapy case studies with metaphor-processing research to define the neuropathology of poetic expression in schizophrenia.[25]

The brain basis of metaphor processing in schizophrenics,[31] and controls[32] has been explored. Theoretically, metaphor processing research in schizophrenics is useful for clinically proving poetry therapy.[7] In addition, it helps researchers understand the correlation between nerves and metaphors. Neuroscience and poetry as therapy can have a dynamic correlation and be beneficial for poetry therapists, neurologists, and schizophrenics.[33]

The metaphors of poetry in this study will be analyzed using Lakoff and Johnson's (2003) metaphor theory. There are 3 main types of conceptual metaphors used to understand abstract concepts through physical or concrete experiences, namely structural metaphors, ontological metaphors, and orientational metaphors.

Structural metaphors are words or phrases that have abstract concepts understood by using the structure of other, more concrete concepts. In structural metaphors, elements from the source domain (which is more concrete) are transferred to the target domain (which is more abstract) to give a new structure to the target concept. Structural metaphors provide an analogy or understanding of abstract or difficult-to-understand concepts by mapping the structure of familiar physical or social experiences.

DISCUSSION

The following is the identification of metaphor patterns in poems written by schizophrenics at Menur Mental Hospital, Surabaya, Indonesia, a case study of US patients. The identification shown in Figure 1 is a Rank table or ranking of words that often appear in 3 poems. The ranking is displayed in the top 3 as words that appear frequently.

WFA identifies words that often appear in poems, such as sick, mind, hallucination, and healthy. The word sick, whether it refers to a physical condition literally, or describes emotional or mental suffering metaphorically. WFA maps keywords metaphorically. Like the word mind, in poems written by patients in this study, it is associated with words such as dark or heavy. So WFA automatically identifies the metaphor pattern of the word mind as a dark or heavy place. After the metaphor pattern is identified, WFA groups the metaphors into certain categories based on type or theme. Such as metaphors about health (healthy as an ideal state) or suffering (sick as a test).

The rank 1 word that often appears is the word sick. The lemma of the word sakit is sakit because the word *sakit* is the basic form of a word without any affixation that can affect the meaning of the word. *Sakit* in KBBI means a feeling of discomfort in the body or part of the body due to suffering from something. The word sakit with the lemma *sakit*, is an adjective or adjective that refers to a condition or feeling that is not good in physical health. The word *sakit* in poetry written by patients in some contexts is a singular proper noun. The proper noun in Sakit refers to a specific entity that is considered a test or trial from God, which is treated like a concrete concept that has a special meaning. In addition, the use of the word sakit is singular, indicating a very

clear personal meaning. In other contexts, the word sakit is also considered an ordinary noun, especially when describing physical or emotional conditions without specific content, such as in the line kasih bukan emang pas kondisi sakit. The word sakit in poetry functions as a proper noun which is natural, because sakit used in poetry is a form of metaphor.

Data 1

All pain is just a test

In the lines of the poem, no form of thought disorder is found in US patients, because both concepts can still be understood well and are often used in everyday language by others to express difficult life experiences.

The lines of the poem are a structural conceptual metaphor. The target domain is pain, and the source domain is a test. Pain as a target domain does not only refer to physical but also refers to mental, emotional, or other psychological conditions experienced by the patient. Pain is an abstract and complex concept because it can refer to physical and mental suffering. Tests as a source domain have a more concrete or structured concept. Tests involve assessments, challenges, or processes of testing the ability to get results, namely healing.

In the structural conceptual metaphor, pain is understood through the concept of a test, namely a challenge that must be faced, passed, and resolved. The test is understood as a temporary process of difficulty, but also an opportunity to learn, change, and evaluate oneself. US patients through their writings see their experience of pain as something that must be faced and resolved in the hope of getting good results, such as recovery or healing. The lines of the poem show the optimism and belief of US patients that suffering or pain is only temporary and can be passed.

The structural conceptual metaphor in the line "sickness is just a test" has a pattern of understanding that sickness is a challenge or trial, sickness is a learning process that brings change, and sickness is something temporary.

Data 2

Sick is sick

Pity is not just because of the sick condition.

In the line of the poem, sick is sick, it is a form of concretization of thought disorders in US patients. The phrase sick is sick, US patients only repeat literally that sick is sick, without explaining about the experience of being sick. In the next sentence in the same line, there is no attempt by US patients to expand or deepen the metaphor regarding the pain. When writing the line, the patient concretely processes the world.

The line of the poem is a structural conceptual metaphor. The target domain is sick, and the source domain is a pity. Pain as the target domain in the context refers to the mental condition experienced by US patients. This condition includes real and deep suffering. The test as the source domain has a more concrete or structured concept. The test involves assessment, challenges, or the process of testing the ability to get results, namely healing. Pity as the target domain, refers to the emotion or attitude of sympathy, empathy, regret, or helplessness that someone feels towards others who are suffering or in poor condition. In this domain, pity involves emotions that arise from the perception of other people's suffering.

In the structural conceptual metaphor, pain in the sick is understood as the intensity of suffering. The repetition of the word pain is an evaluation of a real, intense experience that causes multiple or very painful suffering. Pain is the center of what US patients feel, so they feel the need to emphasize it through repetition. In addition, pain is understood as a condition that needs to be pitied both for themselves and for others. US patients through their writing see that the pain they experience is a sad condition and needs to be pitied (sympathy and empathy). The lines of the poem show a desire for recognition from others for the very painful suffering experienced by US patients. This shows that pain in the form of mental suffering (target domain) is captured through the projection of the concept of pity (source domain). The structural conceptual metaphor in the line pain is pain. Pity is not really when the state of being sick, has a pattern of understanding that pain is a projection of pity, and pain is seen as an object of sympathy and empathy.

Data 3

My ears hear whispers

In the line of the poem, my ears hear whispers, it is a form of concretization of thought disorders in US patients. The phrase my ears hear whispers shows a concrete perception of auditory hallucinations, namely hearing whispers that are not real). US patients feel the whispering sound as if it happened, without understanding that the whispers are just internal thoughts that do not correspond to reality.

The line of the poem is an ontological conceptual metaphor. The target domain of auditory hallucinations, and the source domain of whispers. Pain as the target domain in the context refers to the experience of hearing voices that are not heard by US patients. My ears hear as the target domain refers to the experience of auditory perception or hallucinations. The target domain is a mental experience and perception that does not come

from the external environment and this is common in schizophrenia sufferers. Whispers as the source domain refer to a soft, gentle voice, with a low-frequency sound made by humans in secret or hidden conversations.

In an ontological conceptual metaphor, abstract or mental experiences are understood through physical or concrete entities. In this context, the experience of auditory perception that may not be real is understood through the physical entity of whispers. The line of the poem shows an abstract experience that is understood through a physical entity. The auditory hallucinations experienced are described as whispers. Whispers are physically soft sounds that are usually unclear or vague, such as the experience of a patient who hears voices that are not real but real to him. In addition, the ontological conceptual metaphor in the line of the poem shows an emphasis on sensory perception. The ear as a medium or tool for hearing becomes an intermediary for this experience. This confirms that the patient experiences sensory perception disorders through his ears. The use of the word ear shows a focus on the sensory organ of hearing that captures stimuli from outside. Furthermore, in the ontological conceptual metaphor, the sound of whispers can give the meaning that unreal voices appear and disturb the patient's thoughts and perceptions. This shows a mental disorder in the form of a concrete metaphor.

The ontological conceptual metaphor in the line of my ears is heard whispering. The mental experience of hallucinations is understood through the physical entity of whispers. The use of whispers as a source domain indicates the patient's experience of hearing voices that are not real, but real enough to be perceived through the ears.

CONCLUSIONS

The study highlights the significant role of poetry as a therapeutic tool for individuals with schizophrenia. The act of writing poetry allows patients to articulate their experiences, emotions, and thoughts, which may otherwise remain unexpressed due to the cognitive and emotional challenges associated with the disorder. The analysis of metaphorical language in the poetry of schizophrenia patients provides valuable insights into their mental states. Metaphors serve as a window into the patient's experiences, revealing underlying themes of distress, confusion, and, at times, hope. This suggests that metaphor analysis could be integrated into clinical assessments to better understand the severity and nature of a patient's condition. The findings indicate that the poetry produced by patients reflects the cognitive disorganization and emotional disturbances characteristic of schizophrenia. The use of disjointed metaphors and imagery illustrates the challenges these individuals face in organizing their thoughts and expressing their feelings coherently. The study emphasizes the importance of considering cultural factors in the therapeutic use of poetry. The specific poetic forms and themes prevalent in Indonesian culture may influence how patients express their experiences and emotions, suggesting that culturally sensitive approaches are essential in therapeutic practices.

The suggestions proposed are:

1) Mental health professionals should consider incorporating poetry therapy into treatment plans for schizophrenia patients. Structured poetry writing sessions could facilitate emotional expression and cognitive organization, potentially improving overall mental health outcomes.

2) Training programs for mental health practitioners should include modules on the therapeutic use of creative writing and poetry. This would equip clinicians with the skills to effectively guide patients in expressing their thoughts and emotions through poetry.

3) Future studies should expand on the analysis of metaphor patterns in poetry across diverse populations and cultural contexts. This could enhance understanding of how different cultural backgrounds influence metaphor use and emotional expression in mental health.

4) Conducting longitudinal studies to track changes in metaphor use and emotional expression over time in patients undergoing poetry therapy could provide deeper insights into the therapeutic process and its impact on mental health.

5) Collaboration between mental health professionals and literary scholars could foster innovative approaches to poetry therapy, enhancing the therapeutic experience for patients and enriching the understanding of their poetic expressions.

Practical implications for academic professionals based on the study "Unlocking the Mind: Using Word Frequency Analysis to Reveal Metaphor Patterns in Schizophrenia Patients' Poetry" are:

1) Interdisciplinary Collaboration: academic professionals can foster collaboration between psychology, literature, and neuroscience to explore the intersections of mental health and creative expression. This can lead to innovative research projects that enhance understanding of mental disorders through literary analysis.

2) Curriculum Development: academic programs in psychology and mental health can integrate courses on poetry therapy and creative writing as therapeutic tools. This can prepare students to utilize

these methods in clinical settings, enhancing their therapeutic repertoire.

3) Research Methodology: the study's use of word frequency analysis (WFA) and qualitative analysis can serve as a model for future research. Academic professionals can adopt similar mixed-methods approaches to investigate other forms of artistic expression in mental health contexts, leading to richer data and insights.

4) Professional Development: academic institutions can organize workshops and training sessions for mental health professionals on the use of poetry and creative writing in therapy. This can enhance practitioners' skills and provide them with new tools for patient engagement.

5) Enhanced Understanding of Patient Experiences: academic professionals can emphasize the importance of understanding patients' narratives and cultural contexts in their training programs. This can lead to more empathetic and effective therapeutic practices.

6) Development of Assessment Tools: the insights gained from metaphor analysis can inform the development of assessment tools that help clinicians evaluate the emotional and cognitive states of patients through their creative expressions.

7) Community Engagement: academics can develop community outreach programs that involve poetry workshops for individuals with mental health challenges. This not only benefits the community but also provides students and researchers with practical experience in applying their knowledge.

8) Policy Advocacy: research findings can inform policy discussions regarding the integration of creative therapies into mental health care systems. Academics can advocate for funding and support for programs that utilize poetry and other forms of creative expression in therapeutic settings.

ACKNOWLEDGMENTS

The author thanks the Indonesian Ministry of Education, Culture, and Research for providing the author with a doctoral grant so that the author can conduct and complete the research. The author also thanks the academic community of Surabaya State University, Indonesia for providing support and facilities to the author while completing the study until the article's publication. Thank you also to the academic community of PGRI Ronggolawe University Tuban, Indonesia for the material and spiritual support. Hopefully, this research will be helpful to researchers, readers, and the general public.

REFERENCES

1. Dash NS. Corpus Linguistics and Language Technology. Routledge Handb Lang Test. 2024;12(April):220–45. https://www.researchgate.net/publication/380073601_Corpus_Linguistics_and_Language_Technology

2. Bambini V, Frau F, Bischetti L, Cuoco F, Bechi M, Buonocore M, et al. Deconstructing heterogeneity in schizophrenia through language: a semi-automated linguistic analysis and data-driven clustering approach. Schizophrenia. 2022;8(1). https://doi.org/10.1038/s41537-022-00306-z

3. Shorakhmetov SS. Texas Journal of Philology, Culture, and History "The Power of Metaphor: Exploring the Impact of Figurative Language in Literature." Texas J Philol Cult Hist [Internet]. 2024;28(March):11–4. Available from: https://zienjournals.com

4. Nugraheny A, Yuwita MR. Conceptual Metaphor in SZA's Song Lyrics. Mahadaya J Bahasa, Sastra, Dan Budaya. 2023;3(2):257–70. https://doi.org/10.34010/mhd.v3i2.11289

5. Yang X. A Cognitive Poetic Approach to the Function of Metaphor. Adv Lit Study. 2015;03(03):84–8. http://dx.doi.org/10.4236/als.2015.33013

6. Castaño Castaño E. What is in a word? An exploration of the metaphorical use of schizophrenia in general American English. Lingua [Internet]. 2023;294:103596. Available from: https://doi.org/10.1016/j.lingua.2023.103596

7. Pawełczyk A, Łojek E, Pawełczyk T. Metaphor Processing in Schizophrenia Patients: A Study of Comprehension and Explanation of Metaphors. Psychol Lang Commun. 2017;21(1):287–305. http://dx.doi.org/10.1515/plc-2017-0014

8. Jack K, Illingworth S. Rehearsing empathy: exploring the role of poetry in supporting learning. Arts Heal [Internet]. 2023;16(3):303–16. Available from: https://doi.org/10.1080/17533015.2023.2256361

9. Owton H. Doing Poetic Inquiry. Doing Poet Inq. 2017;(September 2017). http://dx.doi.org/10.1007/978-

3-319-64577-3

10. Ptiček M, Dobša J. Methods of Annotating and Identifying Metaphors in the Field of Natural Language Processing. Futur Internet. 2023;15(6). https://doi.org/10.3390/fi15060201

11. Aggarwal S, Singh R. Metaphor Detection using Deep Contextualized Word Embeddings. arXif [Internet]. 2020;9(11):1–11. Available from: http://arxiv.org/abs/2009.12565

12. Kesarwani V, Inkpen D, Szpakowicz S, Tanasescu C. Metaphor Detection in a Poetry Corpus. In: Proceedings of the Annual Meeting of the Association for Computational Linguistics. 2017. p. 1–9. https://doi.org/10.18653/v1/W17-2201

13. Adamczyk P, Biczak J, Kotlarska K, Daren A, Cichocki Ł. On the specificity of figurative language comprehension impairment in schizophrenia and its relation to cognitive skills but not psychopathological symptoms - Study on metaphor, humor, and irony. Schizophr Res Cogn. 2024;35(July 2023). https://doi.org/10.1016/j.scog.2023.100294

14. Karabanowicz E, Tyburski E, Karasiewicz K, Sokołowski A, Mak M, Folkierska-Żukowska M, et al. Metaphor Processing Dysfunctions in Schizophrenia Patients With and Without Substance Use Disorders. Front Psychiatry. 2020;11(April):1–10. https://doi.org/10.3389/fpsyt.2020.00331

15. Dicle MF, Dicle B. Content Analysis: Frequency Distribution of Words. SSRN Electron J. 2018;(October). https://dx.doi.org/10.2139/ssrn.2997101

16. Heryono H, Suganda D, Yuliawati S, Darmayanti N. Word Frequencies in Linguistic Articles Published in SINTA Indexed Journals. J Sosioteknologi. 2023;22(1):100–13. https://journals.itb.ac.id/index.php/sostek/article/view/19509/6145

17. Kusmana S. Development of Poetry Teaching Materials Based on Creative Process. IJIET (International J Indones Educ Teaching). 2020;4(1):155–67. https://e-journal.usd.ac.id/index.php/IJIET/article/view/2326/1726

18. Lynch T, Anderson K. Grammar for Academic Writing. English Lang Teach Cent [Internet]. 2013;1–6. Available from: https://www.ed.ac.uk/files/atoms/files/grammar_for_academic_writing_ism.pdf

19. Al-Hamzi AMS, Gougui A, Sari Amalia Y, Suhardijanto T. Corpus Linguistics and Corpus-Based Research and Its Implication in Applied Linguistics: A Systematic Review. Parol J Linguist Educ. 2020;10(2):176–81. https://doi.org/10.14710/parole.v10i2.176-181

20. Vaillant G, Milad M, Schwartz R, Olds J. Singing in the Shower to Shaking in Your Boots : The science of emotion. Harvard Med Sch. 2012; https://hms.harvard.edu/sites/default/files/assets/Sites/Longwood_Seminars/ScienceofEmotion3.20.12.pdf

21. Mahindru A, Patil P, Agrawal V. Role of Physical Activity on Mental Health and Well-Being: A Review. Cureus. 2023;15(1):1–7. https://doi.org/10.7759/cureus.33475

22. Crocker J, Robert Franks Me, Sosnowski D, Matthew Pecoraro M, Matlin S, Bellonci C, et al. Mental Health and Schools: Best Practices to Support Our Students. 2023. https://www.bakercenter.org/application/files/9116/8433/7525/Executive_Summary_-_FINAL_DRAFT_-_5.1.2023_1004am.pdf

23. Patel KR, Cherian J, Gohil K, Atkinson D. Schizophrenia: Overview and treatment options. P T. 2014;39(9):638–45. https://pmc.ncbi.nlm.nih.gov/articles/PMC4159061/

24. Geretsegger M, Mössler KA, Bieleninik L, Chen XJ, Heldal TO, Gold C. Music therapy for people with schizophrenia and schizophrenia-like disorders. Cochrane Database Syst Rev. 2017;2017(5). https://doi.org/10.1002/14651858.cd004025.pub4

25. Shafi N. Poetry therapy and schizophrenia: Clinical and neurological perspectives. J Poet Ther. 2010;23(2):87–99. https://doi.org/10.1080/08893675.2010.482811

26. Maanmieli K, Ihanus J. Therapeutic metaphors and personal meanings in group poetry therapy for people with schizophrenia. J Poet Ther [Internet]. 2021;34(4):213–22. Available from: https://doi.org/10.1080/08893675.2021.1951900

27. Ihanus J. Therapeutic Poems for Advancing Coping, Empathy, and Cultural Well-Being. Creat Arts Educ Ther. 2022;8(1):18–31. http://www.doi.org/10.15212/CAET/2022/8/8

28. Ketaren SV, Br. Pakpahan EM. Metaphorical Expression Used in Poetry in English Textbook Entitled "Pathway To English." Proj (Professional J English Educ. 2021;4(3):469. https://doi.org/10.22460/project.v4i3.p469-479

29. Rajaei F, Atadokht A, Hajloo N, Basharpour S. Effectiveness of Group Poetry Therapy on Emotional Expression in Patients With Schizophrenia. Asean J Psychiatry. 2016;17(2):217–26. https://doi.org/10.22034/JMP.2023.388439.1051

30. Khairunnisa E. Figurative Languages Used in Robert Frost's Selected Poems. Elit J English Linguist Lit Stud. 2022;2(3):2022. https://doi.org/10.26858/eliterate.v2i1,%20Dec.40689

31. Kircher TTJ, Leube DT, Erb M, Grodd W, Rapp AM. Neural correlates of metaphor processing in schizophrenia. Neuroimage. 2007;34(1):281–9. https://doi.org/10.1016/j.neuroimage.2006.08.044

32. Martin R. "Speaking your mind": analysis locates brain areas for understanding metaphors in healthy and schizophrenic people [Internet]. Vol. 05. 2019. Available from: www.ecnp.eu

33. Cammisuli DM, Castelnuovo G. Neuroscience-based psychotherapy : A position paper. Front Psychol. 2018;14:1–13. https://doi.org/10.3389/fpsyg.2023.1101044

FINANCING

The researcher did not receive financial support from any party.

CONFLICT OF INTEREST

The authors declare that there is no conflict of interest.

AUTHORSHIP CONTRIBUTION

Conceptualization: Yunita Suryani, Bambang Yulianto, Suhartono.
Data curation: Yunita Suryani, Bambang Yulianto, Suhartono.
Formal analysis: Yunita Suryani, Bambang Yulianto, Suhartono.
Acquisition of funds: Yunita Suryani, Bambang Yulianto, Suhartono.
Research: Yunita Suryani, Bambang Yulianto, Suhartono.
Methodology: Yunita Suryani, Bambang Yulianto, Suhartono.
Project management: Yunita Suryani, Bambang Yulianto, Suhartono.
Resources: Yunita Suryani, Bambang Yulianto, Suhartono.
Software: Yunita Suryani, Bambang Yulianto, Suhartono.
Supervision: Yunita Suryani, Bambang Yulianto, Suhartono.
Validation: Yunita Suryani, Bambang Yulianto, Suhartono.
Display: Yunita Suryani, Bambang Yulianto, Suhartono.
Drafting - original draft: Yunita Suryani, Bambang Yulianto, Suhartono.
Writing - proofreading and editing: Yunita Suryani, Bambang Yulianto, Suhartono.