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RESEARCH ARTICLE

Metaphorical analysis of medical school students' perceptions of schizophrenia

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ABSTRACT

Objective: It is widely recognized that physicians' attitudes toward mental disorders significantly influence the prevention, early diagnosis, and treatment of these conditions. This study aimed to evaluate the perceptions of first- and sixth-year medical students regarding schizophrenia through the use of metaphors.

Method: A qualitative research design was employed, utilizing thematic analysis of responses to a specific task. The study was conducted at a faculty of medicine in Turkiye and included both first- and sixth-year medical students. The researchers developed a Metaphorical Perceptions Data Collection Form, which consisted of two parts: the first gathered demographic information about the students, and the second explored students' metaphors for schizophrenia using the prompt, "Schizophrenia is like..., because... (In your opinion, what does schizophrenia resemble? Why?)." A total of 144 medical students' metaphors about schizophrenia were analyzed.

Results: Approximately half of the metaphors created by the medical students related to the symptomatology of schizophrenia, reflecting the diagnostic criteria of the disorder. The remaining metaphors portrayed schizophrenia as uncontrollable, harmful, or as a condition requiring care and attention. No significant difference was found between the metaphors generated by first- and sixth-year medical students.

Conclusion: To reduce negative attitudes toward mental disorders in medical education, more contemporary and innovative educational models are necessary.

Keywords: Intern doctor, medical education, metaphor, schizophrenia, stigma

INTRODUCTION

Schizophrenia is a chronic, complex, and severe psychiatric disorder that affects approximately 20 million people worldwide. It can occur in all societies and across all socioeconomic levels, and it varies in terms of diagnosis, clinical symptoms, and prognosis (1). However, our knowledge about the epidemiology of schizophrenia in Turkiye is still quite limited. A previous systematic review conducted in Turkiye reported the lifetime prevalence of schizophrenia to be 8.9 per 1,000 individuals (2).

The concept of metaphor has long been used as a narrative and pedagogical tool across various fields,

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including rhetoric, linguistics, philosophy, semiotics, psychology, and pedagogy, dating back to Aristotle's time. The term "metaphor" is derived from the Greek roots "metaphrein" or "metafora," where "meta" means "change," and "phrein" means "to carry" (3). Today, most dictionaries define a metaphor as "a word or phrase literally denoting one kind of object or idea used in place of another to suggest a likeness or analogy between them" (4, 5).

Until the 1980s, metaphors, though widely used in various aspects of daily life, were primarily regarded as rhetorical or linguistic devices for effective communication. However, over time, it became evident that metaphors also play a significant role in shaping cognitive processes (6). They are now recognized as powerful cognitive tools that shape, guide, and influence our understanding of events and their functions (7). Metaphors can reveal an individual's cognitive approach to a subject, including what they think, how they think, and from which perspective (8–10). Today, metaphors are employed as tools for data collection across various disciplines due to their capacity to uncover beliefs, values, and attitudes.

In social media and newspapers, the term schizophrenia is often used metaphorically and with negative connotations. Research on the representation of schizophrenia in the media has revealed that it may have become the new "illness as metaphor," with its pejorative use being a key contributor to the disorder's negative public perception (11–13). However, schizophrenia is not commonly evaluated through metaphors in academic research. Perceptions and attitudes toward schizophrenia are typically assessed using other research methods and measurement tools. The use of metaphors, however, could offer an alternative perspective and help uncover deeper, more nuanced perceptions, particularly among students.

It is widely recognized that physicians' attitudes toward mental disorders significantly influence prevention, early diagnosis, and treatment outcomes. Negative attitudes among healthcare professionals toward individuals with mental disorders and toward psychiatric treatment in general can create substantial barriers, deterring patients from seeking help or adhering to treatment (14). As future physicians, medical students' attitudes toward mental illness are of critical importance. Since perceptions strongly shape attitudes, it is essential to understand how medical students perceive schizophrenia. Another important consideration is the impact of medical education on these perceptions.

While many studies have examined the effect of education on attitudes toward mental disorders, the findings have been inconsistent. Some research suggests that education has a positive impact on medical students' attitudes toward mental disorders, while other studies indicate that the positive effect is either temporary or minimal (15, 16). However, the impact of education specifically on perceptions has not been sufficiently explored.

The aim of this study is to assess the perceptions of first- and sixth-year medical students regarding schizophrenia through the use of metaphors. Metaphors can serve as powerful tools for revealing underlying thoughts and emotions that individuals may not express directly, providing insight into complex and often misunderstood issues. By analyzing the metaphors students use, this study seeks to uncover both attitudinal and non-attitudinal dimensions of how schizophrenia is conceptualized at different stages of medical training. Specifically, the research explores: (1) what metaphors are generated by first- and sixth-year medical students; (2) how these metaphors can be categorized meaningfully; and (3) whether there are notable differences between the two groups in the types of metaphors they produce.

METHODS

Study Design

This research employed a qualitative design based on the phenomenological approach. Thematic analysis was conducted on students' responses to a specific task, with a focus on how participants interpreted, constructed, and attributed meaning to their concepts and experiences. Phenomenological research aims to explore how individuals perceive and make sense of a particular phenomenon. Through this approach, researchers seek to uncover the deeper meanings underlying the participants' expressions. The study was conducted between May 1 and June 30, 2023.

A male associate professor of public health with expertise in preventive mental health participated in the data collection process. Data categorization was carried out by a team of three researchers: a male professor of psychiatry, a male associate professor of public health, and a female psychologist, all of whom have experience in schizophrenia, stigma, and preventive mental health. None of the researchers had a relative with a psychiatric disorder.

Study Sample

The study was conducted at a faculty of medicine in Turkiye and involved both first-year and sixth-year medical students. At the time of data collection, there were 718 students enrolled in these two cohorts. The study aimed to reach 20% of the total population (17).

First stage: All students were invited to participate via an information note explaining the purpose of the study, which was published on the university's official website. The first 150 students who responded and agreed to participate were included in the sample (75 from the first year and 75 from the sixth year).

Second stage: Students who accepted the invitation were provided with details about the study's location and schedule. Meetings were conducted in groups of 10–15 students, resulting in a total of eight interview sessions.

First-year students were included only if they had some prior knowledge of schizophrenia. For sixth-year students, completion of a psychiatry internship was required for participation.

Before the study began, students were asked whether they had a first-degree relative diagnosed with schizophrenia. Six students who reported having such a relative were excluded to maintain objectivity and avoid potential bias due to personal connections to individuals with schizophrenia.

Data Collection Tools and Implementation

Data were collected using metaphors, a widely used method for exploring experiences and perceptions. The aim was to gain in-depth insights into how individuals conceptualize and interpret schizophrenia. To this end, the researchers developed a Metaphorical Perceptions Data Collection Form specifically for this study.

The form consisted of two parts: the first gathered demographic information, and the second focused on eliciting metaphorical perceptions of schizophrenia. The prompt used was: "Schizophrenia is like..., because... (In your opinion, what does schizophrenia resemble? Why?)." The inclusion of words "like" and "because" was intended to encourage participants to form a metaphor and justify their reasoning, linking the metaphor to its underlying meaning. A pilot test was conducted with a group of 10 students to ensure the form's clarity and effectiveness. Feedback from this pilot was used to revise and finalize the form before full implementation.

Prior to participation, all students were informed about the study's purpose, how the data would be used, and the nature of metaphorical expression. Those who agreed to participate provided verbal consent. Participants were then given the Metaphorical Perceptions Data Collection Form and instructed to reflect on schizophrenia for 10 minutes. During this time, they were asked to refrain from discussing the topic with others and to generate their own metaphors independently. Students completed the form in silence, without engaging in any conversation or group discussion.

Data Analysis

The analysis of the metaphors developed by participants was conducted in four stages:

1. Coding and Extraction Stage: Metaphors from the Metaphorical Perceptions Data Collection Forms were organized alphabetically according to students' class levels. All 144 forms were completed; none were left blank, incomplete, or devoid of a metaphor. The initial evaluation was conducted collaboratively by all researchers.
2. Category Development Stage: Metaphors were analyzed for their source, subject, justification, meaningfulness, and the relationships they implied. Researchers examined what each metaphor fundamentally conveyed about schizophrenia. Based on this analysis, categories were created to reflect the core messages of the metaphors. The team collaborated during this stage and also referred to categories identified in previous studies. Ultimately, the metaphors were classified into seven main conceptual categories (Table 1).
3. Categorization of Metaphors: Each researcher independently reviewed the list of 144 metaphors and the seven conceptual categories, assigning each metaphor to the most appropriate category.
4. Reliability Stage: The lists created by each researcher were evaluated to determine interrater reliability using the formula: Reliability = (Agreement) / (Agreement + Disagreement) x 100 (18). Interrater agreement ranged from 0.86 to 0.95, with the lowest agreement observed between AAA and ÖB, and the highest between SA and ÖB. The overall interrater agreement among the researchers was 0.86, indicating consistent results.
5. Finalization of Categories: The researchers reconvened to re-evaluate the metaphors assigned to different categories. A consensus was reached on the final categorization of all metaphors. No metaphors were left uncategorized or unresolved. Each researcher selected an "exemplar metaphor statement" to represent each category.

Table 1: Conceptual categorization of metaphors developed by medical students regarding schizophrenia

Category		Description
1	Schizophrenia represented through symptomatology	
	a	Reflecting delusional beliefs
	b	Depicting hallucinatory experiences
	c	Illustrating disorganized speech
	d	Representing negative symptoms
	e	Conveying disrupted or distorted thought content
2	Impaired functioning	Metaphors reflecting deterioration in daily functioning, including occupational, interpersonal, or self-care domains.
3	Schizophrenia as uncertainty/ variability	Metaphors emphasizing the unpredictable course and fluctuating nature of the illness.
4	Schizophrenia as lack of control	Metaphors describing the loss of control experienced by individuals with schizophrenia.
5	Schizophrenia as a harmful influence	Metaphors portraying schizophrenia as a danger to the individual or society.
6	Schizophrenia as a need for care, attention, and support	Metaphors that highlight the perceived dependency of individuals with schizophrenia on others for care and attention.
7	Schizophrenia as helplessness/isolation	Metaphors expressing an overwhelming sense of helplessness.

Data Transfer to Computer

All metaphors and their corresponding categories were entered into the SPSS program. The categories are presented in terms of both count and percentage (%). Differences in metaphor categories between first- and sixth-grade students were analyzed using the Chi-square test, with a significance level set at $p<0.05$.

Ethical Approval

The study procedures were developed in accordance with the principles outlined in the Declaration of Helsinki. Ethical approval was obtained from the Ondokuz Mayis University Social and Human Sciences Research and Publication Ethics Committee prior to the start of the study (IRB Approval Date: 29.03.2023, No: 2023/94).

RESULTS

Metaphors developed by 144 medical students regarding schizophrenia were evaluated, with the findings summarized in Table 2. Examples of metaphors for each category are provided in Table 3.

Both first- and sixth-year students primarily used metaphors related to the "symptomatology of schizophrenia" (Category 1). The distribution of metaphors created by the medical school students, categorized by class and type, is presented in Table 4. Among the metaphors related to "symptomatology of schizophrenia," 93% reflected positive symptoms (Categories 1a, 1b, 1c, 1e), while only 7% referred to negative symptoms (Category 1d). Table 5 displays the distribution of these metaphors by academic year. There was no statistically significant difference in the distribution of symptomatology-related metaphors between first- and sixth-year students ($\chi^2=0.69$, $p=0.405$) (Table 4). However, differences in the type of symptomatology were observed: first-year students most frequently used metaphors associated with "disturbance in thought content," whereas sixth-year students more commonly used metaphors related to "hallucinations" (Table 5).

The most frequently used metaphor for schizophrenia was "dream" or "dreaming." A total of 11 "dream" metaphors were categorized into three different groups based on the reasoning provided in the "Because..." section of the responses. Other metaphors that appeared more than once included: "rainbow" (5), "swamp" (2), "bomb" (2), "void" (2), "circle" (2), "children" (2), "darkness" (2), "ocean" (2), "matryoshka dolls" (2), and "taking drugs/being under the influence of drugs" (2).

Table 2: Metaphors developed by medical students regarding schizophrenia, organized by conceptual category

Category		Metaphors
1	a	Film, film writer, illusion, mythology, prophet, dream, dreaming (2), virtual reality, a walking novel
	b	Bluetooth headset, cartoon, being in the desert, staying without water for a long time in the desert, stars shining at night, ghost, hologram, dark shadow, baldness, house of horrors, distorted mirrors in amusement parks, prophet, dream, dreaming, being in a dream, being under the influence of drugs, best friend, living in Alice's Adventures in Wonderland as an adult[a]
	c	Space, cricket, children, rainbow, broken glass, waterfall
	d	Puzzle, our emotions, red cobblestones among gray cobblestones, rock
	e	Love, baby, endless fight, two-headed snake, mouse, dreamer, having a nightmare, darkness, living in your own head, Nasreddin Hodja[b], dream, dreaming, dreaming within a dream, a painful pain, ivy, screenwriter/actor, screenwriting, wizards, eraser, movie, constantly staying in a dream world, arrogant people, unrealistic living, taking drugs, a flashing lamp, seven-headed dragon, living on a different planet
2		Drunk
3		Circle (2), different person, earthquake, stream water, a book reread in different years, a secret box, rainbow (4), gray color, economy, scribble, darkness, catalog, disappearance, cat, losing oneself, book, amusement park, matryoshka dolls (2)[c], ocean, captain on a ship in the ocean, Samsun's weather[d], circus, foggy weather, surprise egg, sleep, bat, ship without sails, dice, zigzag
4		Drifting in the current, a thin rope, bad characters in fairy tales, a bomb ready to explode, the wind
5		Bomb (2), broken glass, worst betrayal, physics lesson, a weapon to be kept under control, horror movie, parasite, Vlad Dracula[e]
6		Swamp, children, chest, truck
7		Swamp, emptiness, a village on top of a mountain, a dystopian novel, the moon visible from the Earth, a ball of string, good people, black hole, falling into a well, a stone in the Mariana Trench, ocean, maturing, death, silence, abyss, horizon line, alone in space, stranded spaceship

a: Alice's Adventures in Wonderland* (a novel by Lewis Carroll); b: Nasreddin Hodja – A legendary figure and humorous folk hero believed to have lived in the 13th century in Turkish folklore; c: Matryoshka dolls – Also known as stacking dolls or Russian dolls; a set of wooden dolls of decreasing size placed one inside another; d: Samsun's weather – Refers to the city of Samsun, where the research was conducted, known for its sudden weather changes; e: Vlad Dracula – A Romanian commander and historical figure who lived in the 15th century.

DISCUSSION

Metaphors are powerful tools for understanding and explaining abstract, complex, or theoretical phenomena. This study aimed to explore medical students' perceptions of schizophrenia through the use of metaphors.

The Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-5) provides widely accepted criteria for diagnosing schizophrenia (19). According to the DSM-5, the diagnostic features of schizophrenia are generally grouped into two main categories: "characteristic symptoms" and "social/occupational dysfunction." Characteristic symptoms include delusions and hallucinations. In categorizing the students' metaphors, the first two of the seven categories, "schizophrenia through symptomatology" and "schizophrenia through impairment of functioning," were derived directly from these diagnostic criteria. Students whose metaphors fell into these categories were essentially drawing on clinical definitions of schizophrenia. These responses reflect a more rational, measured, and clinically informed perspective on the disorder. In our study, 49.3% of the students generated metaphors related to schizophrenia that aligned with the diagnostic criteria, reflecting a rational, measured, and socially acceptable perspective on the disorder.

Schizophrenia is one of the most highly stigmatized mental disorders, both in society and among healthcare professionals (20, 21). There are ongoing debates about revising its diagnostic criteria or even changing the name of the disorder altogether (22, 23). Despite these discussions, healthcare professionals continue to rely on the DSM-5 criteria to diagnose schizophrenia, which shapes their understanding and definition of the illness. Notably, nearly half of the medical students in this study developed metaphors focusing solely on the symptoms outlined in the diagnostic criteria, without conceptualizing schizophrenia as "uncertainty, lack of control, or harm." Furthermore, there was no significant difference in the proportion of metaphors reflecting a rational, restrained, and clinically acceptable perspective between sixth-year and first-year students. This suggests that medical education and clinical

Table 3: Examples of metaphors developed by medical students regarding schizophrenia

Category	Schizophrenia is like "……"	Because "……"
1 a	"Virtual reality"	"They live in a dream world that doesn't exist, yet we perceive it as real."
b	"Bluetooth headset"	"They announce things that others do not hear."
c	"Waterfall"	"Constantly humming and making noise."
d	"Crossword"	"A person is constantly searching for their own identity."
e	"Double-headed snake"	"Ideas are not alone."
2	"Drunk"	"Cannot express themselves and has no ability to make decisions."
3	"Dice"	"It is not clear when and what they will do."
4	"Bomb ready to explode"	"It is not clear where and when they will explode."
5	"Parasite"	"They harm both themselves and those around them."
6	"Swamp"	"Without outside help, the more you struggle, the deeper you sink."
7	"Horizon line"	"Everyone sees it, but no one can reach it."

Table 4: Distribution of metaphors developed by medical students regarding schizophrenia by class and category*

Category	Class 1 (first-year)		Class 6 (sixth-year)		Total	
	n	%	n	%	n	%
1	33	45.8	38	52.7	71	49.3
2	0	0.0	1	1.4	1	0.7
3	18	25.0	17	23.6	35	24.3
4	5	7.0	0	0.0	5	3.5
5	7	9.7	3	4.2	10	6.9
6	1	1.4	3	4.2	4	2.8
7	8	11.1	10	13.9	18	12.5
Total	**72**	**100.0**	**72**	**100.0**	**144**	**100.0**

n: Number of participants; %: Percentage. *No statistically significant difference was found in metaphor category distribution between first- and sixth-year students (χ^2=0.69, p=0.405).

Table 5: Distribution of metaphors related to schizophrenia symptomatology developed by medical students, by class year

Category	Class 1		Class 6		Total	
	n	%	n	%	n	%
1a	5	15.2	6	15.8	11	15.5
1b	8	24.2	11	28.9	19	26.8
1c	1	3.0	6	15.8	7	9.9
1d	1	3.0	4	13.2	5	7.0
1e	18	54.5	11	26.3	29	40.8
Total	**33**	**100.0**	**38**	**100.0**	**71**	**100.0**

n: Number of participants; %: Percentage.

exposure may not substantially influence students' conceptualizations of schizophrenia. In other words, students may graduate holding similar perceptions of the disorder as when they first entered medical school.

It was also observed that 34.7% of students' metaphors depicted schizophrenia and individuals with the condition as "uncertain, uncontrollable, or harmful" (Categories 3, 4, and 5). Negative attitudes toward individuals with mental disorders are widespread (24). A study involving approximately 2,000 participants from the UK and the US identified three prevailing societal discourses regarding mental illness: (1) fear and societal exclusion (the belief that individuals with mental disorders are dangerous and should be isolated from society), (2) authoritarianism (the view that such individuals are irresponsible and that others should make life decisions on their behalf), and (3) benevolence (the perception that individuals with mental illness are childlike and require protection and care) (25). In Turkiye, attitudes toward mental disorders, particularly schizophrenia, tend to be negative, and individuals are often stigmatized because of their conditions (26). In a study conducted with nursing students in Turkiye, 22.9% described mental disorders as "desperation," while 28.3% viewed them as "an uncontrollable condition or a damaging element" (27). Another study found that participants perceived individuals with mental disorders as having a higher potential to pose danger (28). However, strong evidence suggests that individuals with mental disorders are unlikely to be violent. Scientific findings alone appear insufficient to counter widespread generalizations and political rhetoric linking mental illness to violence, particularly in the context of mass shootings (29).

According to the present study, some medical students used metaphors referencing "lack of control" or "unpredictability," to describe schizophrenia, suggesting that their perceptions may reflect prevailing societal views. Medical education did not appear to significantly change these perceptions.

Schizophrenia was most commonly described using the metaphors of "dream" and "dreaming." Dreaming is a universal human experience that occurs during sleep, in which individuals lack conscious control. Sometimes dreams follow a coherent narrative; at other times, they consist of random objects or body parts. Dream content is inherently psychotic in nature, detached from reality. When schizophrenia is metaphorically compared to dreaming, it implies that patients exist in a constant state of psychosis and lack control over their behaviors. However, individuals with schizophrenia—especially those undergoing treatment—experience psychosis only during specific periods. Outside of these episodes, while some symptoms may persist, they do not lose control over their actions. Even during psychotic episodes, the loss of control is usually confined to specific symptom domains rather than being total. Therefore, the "dream" metaphor inaccurately represents schizophrenia and reinforces a discriminatory perspective.

There was no statistically significant difference in the distribution of metaphor categories between first-year and sixth-year students. First-year students, who are just beginning medical school, tend to reflect the societal attitudes they bring with them. Conversely, sixth-year students, despite receiving six years of medical education and gaining clinical exposure to schizophrenia patients during their psychiatry internship, expressed similar metaphorical perceptions. This may indicate that medical education is insufficient in changing perceptions of schizophrenia, or that societal views on the disorder are deeply ingrained and resistant to change. Furthermore, the limited clinical exposure of sixth-year students to patients with schizophrenia, who are typically in the acute phase or hospitalized, may contribute to this outcome. Medical students often do not encounter individuals in remission who manage their daily lives without major difficulties. However, many people diagnosed with schizophrenia regularly take their medications and function well in everyday life (29). Due to concerns about stigma, these individuals and their families may choose not to disclose the diagnosis, reinforcing an association of the illness primarily with the acute phase and its positive symptoms. A study involving medical students found a significant improvement in fifth-year students' negative beliefs about mental illnesses after visiting a Community Mental Health Center. The same study suggested that providing students with opportunities to interact with patients who have partially regained functionality could help reduce negative attitudes and misconceptions (30). Similarly, we believe that enabling students to observe the recovery process more closely could further contribute to reducing negative perceptions

To our knowledge, this is the first study in Turkiye to explore medical students' perceptions of schizophrenia using metaphor analysis. However, the findings are limited to a single medical faculty, which restricts the generalizability of the results to all medical students in Turkiye.

A metaphor may describe a symptom in an exaggerated or inaccurate manner, or it may refer to something other than symptoms while still offering valuable insight into perceptions of schizophrenia. Schizophrenia is a condition characterized by alternating episodes of exacerbation and remission, with symptoms ranging from mild in some patients to severe in others. Therefore, it is not always possible to determine definitively whether a metaphor referring to a symptom is "exaggerated" or "inaccurate." No conclusive assessment has been established in this regard. Future studies that track the metaphors used by the 'same' students in both their first and sixth years of medical education could contribute to a deeper understanding of how these perceptions evolve over time.

CONCLUSION

Approximately half of the metaphors created by medical students about schizophrenia were related to its symptomatology. Around half of the students conceptualized schizophrenia from a rational, restrained, and acceptable perspective, while the other half viewed it as an uncontrollable or harmful condition that requires care and attention. No difference was found between the metaphor categories created by first-year and sixth-year medical students.

Medical schools play a crucial role in shaping societal understanding of mental health issues. The content of psychiatry modules in medical schools should be evaluated to determine whether they inadvertently reinforce biased or stigmatizing beliefs about mental illness. If such shortcomings are identified, curriculum may be necessary to prevent the stigmatization of mental illnesses. Additionally, early school-based intervention programs are essential for reducing the burden on individuals diagnosed with schizophrenia and other stigmatized groups.

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