This article provides a comprehensive review of the explanatory models of illness present in schizophrenic patients with diverse cultural backgrounds. Explanatory models are culturally determined beliefs regarding concepts such as health and illness and are key to understanding how patients integrate their illness experience within their cognitive framework, giving perceived meaning to their illness episodes and influencing their treatment choices. The results reveal significant cultural differences in the interpretation of schizophrenia, with Eastern cultures attributing more importance to spiritual and esoteric factors compared to Western ones. These cultural distinctions affect treatment approaches and patient-practitioner relationships, with a notable trend towards explanatory pluralism in many societies. This review stresses the need for medical practitioners to adapt their approach to accommodate cultural differences and patient-specific factors, emphasizing the importance of compatibility between patient and healthcare practitioner models, and highlighting the potential discordance in perspectives that can impact treatment effectiveness.

**Keywords:** cultural psychiatry, schizophrenia, nosognosia

**INTRODUCTION**
Schizophrenia is one of the most life-debilitating mental illnesses, with a prevalence of 0.33% to 0.75% [1]. The age of onset is typically earlier in men (late adolescence to early twenties) than women (early twenties- early thirties) [2]. Psychopathological, schizophrenia is characterized by symptoms ranging from hallucinations and delusions to disorganized speech and behavior, and negative symptoms, such as social withdrawal or flat affect [3].

Explanatory models of illness were first formally defined by Kleinman [4] as “the notions about an episode of sickness and its treatment that are employed by all those engaged in the clinical process”. In the same book, the author also emphasizes the linguistic distinction between the terms illness and disease, stating that illness refers to the psychological experience and meaning of the perceived disease attributed by the affected individual, and it is greatly influenced by the socio-cultural context of the patient. Explanatory models function as a means for the affected individual to integrate their illness experience into their own cognitive system by offering causal explanations, meaning and by guiding them towards choosing specific treatment options.

An important aspect of explanatory models of illness is the compatibility between the models of the patient and those of the healthcare practitioner. Many times, the two paradigms are conceptually incompatible, consequently lowering the effectiveness of the patient's interactions with the medico centric healthcare system. Therefore, a more thorough understanding and awareness of alternative, nonbiological frameworks, as well as knowledge about offering scientific interpretations to individuals who are not familiar with this level of explanation could significantly improve healthcare outcomes.

It is important to note that, in many cases, patients hold multiple simultaneous explanatory models for their illness, which are sometimes contradictory. This inconsistency in an individual's belief system could be maintained, despite it showing as an obvious flaw to others, as a coping mechanism for the patient.
some cases, attributing certain popular interpretations to one's illness would help them avoid the stigma associated with the medical concept of mental illness that is present in some societies. Other times, holding multiple frameworks could render the patient more treatment options, diminishing their hopelessness especially in treatment-resistant cases.

One of the most widely used instruments for evaluating the patients' understanding and personal narrative about their illness or health condition is the Short Explanatory Model Interview (SEMI) [5]. The SEMI consists of five sections, comprised of the individual's personal and cultural background, nature of the problem, help seeking behaviors, interaction with the physician/traditional healer and beliefs related to mental health and illness. The questionnaire is semi-qualitative, and it allows the evaluator to choose what specific questions to ask and what section to focus on, as each section was designed to stand alone. This instrument renders insight into how patients perceive their condition, including their beliefs about causation, the impact on their life, their expectations from treatment, and any concerns they might have.

Due to the fact that explanatory models are greatly influenced by the culture and upbringing of each individual, it is important that studies be conducted highlighting the differences and similarities between patients' attitudes towards their illness, coming from different cultural backgrounds.

### METHODS

This article aims to summarize the existing data regarding explanatory models of schizophrenia in different cultures. The search was conducted from the PubMed database, using the terms “explanatory models” AND “schizophrenia”. Only original studies were included. Eighty-four articles were initially identified using the keywords previously mentioned, and 9 studies were included in the final review, based on the following eligibility criteria: studies investigating either schizophrenia or other psychotic disorders, in adult populations, and only original studies. Due to the small number of articles respecting these criteria, a filter for the year of publication was not added.

### RESULTS

A study by Saravanan et al. (2007) [6] aimed to classify the different categories of explanatory models of illness present in a sample of 131 South Indian patients with first episode schizophrenia. Additionally, the authors also tested the consistency between the patients' beliefs and their help seeking behaviors, as well as the manner in which insight is correlated with the patients' disease attribution. Explanatory models were evaluated using the Short Explanatory Model Interview (SEMI). Additionally, the authors also evaluated the patients' insight and used the Brief Psychiatric Rating Scale (BPRS) and the Global Assessment of Functioning Scale (GAFS) to measure psychopathology, and the Schedule for Assessment of Insight Expanded (SAI-E) for evaluating insight. Seventy-three percent of the patients reported non-medical explanatory models of their psychosis, consisting of causes such as black magic, evil spirits, punishment by god or previous deeds. Spiritual and mystical factors were correlated with female gender and traditional healer consultations. The most common psychosocial explanations were conflicts among relatives, workplace-related problems and relationship difficulties. Unexpectedly, psychosocial explanatory models were also associated with traditional healer visits, as well as symptom severity and older age, thus highlighting the adaptive character of pluralism in the Indian culture. The authors explain that older people seeking out traditional treatments is the expected thing to do in their culture, and is supported by them perceiving such solutions as experientially closer to them. Only 22% of the individuals presented multiple beliefs and treatment models. Finally, higher insight scores were associated with a biomedical/hereditary causal model.

A study published in 2007 by Conrad et al. [7] investigated the differences between the illness concepts of German and Jordanian schizophrenic patients, thus aiming to identify how European and Arab-Islamic cultural backgrounds differ in influencing illness perception. Twenty-four Jordanian and 23 German patients were included. Psychopathology was measured using the BPRS, and the concept of illness was evaluated using 2 questionnaires, namely the Illness Concept Scale for Schizophrenic Patients, which focuses on attitudes towards treatment options and gives insight about the patients' compliance, and the Causal Belief Questionnaire, which classifies the explanatory models of illness into 5 different dimensions. Both patient groups identified psychosocial stress as the main cause of the illness, while the esoteric factors were the least mentioned causal category. More Jordanian subjects believed in esoteric causes for their illness (10.1% compared to 7.7%), and there were no group differences regarding the biological factors domain. Jordanian patients also perceived schizophrenia to be more threatening than German patients, which parallels with the esoteric causal model in that their locus of control is predominantly external. Similar to the article previously reviewed, 50% of the Germans and 61% of the Jordanians reported only one cause of their illness. Both groups reported similar trust in using medication for the treatment of schizophrenia, suggesting a possible attitude shift caused by the modernization of the healthcare
system in Jordan. Jordanian patients also trusted the physician more than German patients, highlighting the manner in which Arab societies view the doctor as an authority figure more than European ones. Socio-cultural aspects differentiated the two groups, with issues such as loneliness viewed as a cause of illness in Germans and a positive influence in Jordanians, the latter patients frequently stating the need for “more freedom” in the interviews, and the socio-political conditions (Germans tended to individualize the responsibility for the disease, while Jordanians collectivized it) supporting the distinction.

Napo et al. (2012) [8] analyzed 15 Malian patients with psychotic symptoms in the context of either schizophrenia or schizoaffective disorder, using a semi-structured interview based on the patient’s perception of their illness, their experience, the way they integrate it both socially and in their life experiences and their view of the treatment possibilities. External causes for the illness were predominantly stated by the patients, with first rank symptoms of schizophrenia, such as thought insertion, being explained in terms of local, mystical beliefs. The dominance of external perceived causes for their psychotic symptoms could help the patients manage and process the negative feelings they experience regarding their illness, such as guilt or shame. The study also highlights the importance of the community in the Malian village, both as a representative of the patient in society, and as a crucial factor in the treatment process of illness.

In a prospective study published in 2012, Johnson et al. [9] aimed to conduct a longitudinal assessment of the insight, psychopathology, and explanatory models of illness in 131 Indian schizophrenic patients at 4 different time points during a 5-year interval. The following scales were used: the Structured Clinical Interview for DSM-III R Patient version (SCID-P), GAFS and BPRS to assess psychopathology, the SAI-E for insight, and the SEMI for explanatory models. Seventy-three percent of the patients stated black magic as a causal model of their illness, followed by evil spirits (17.6%), disease (13.7%), psychosocial factors (10.7%), punishment by God (10.7%), previous deeds (9.2%) and finally, hereditary factors (0.8%). Longitudinally, non-medical explanatory models of illness were associated with poor outcome and longer remission of the illness. During the first year of illness, symptom and functionality improvement was associated with an increase in disease explanatory models and a decrease in non-medical ones. At the 5-year time point, insight score was positively correlated with the number of non-medical illness models, and the number of patients holding the disease model plateaued at about 50% of the individuals. The authors conclude that the fact that people with more chronic, debilitating diseases hold multiple explanatory models for their illness could act as a coping method for such patients, in the context of perceived hopelessness regarding medical issues such as treatment resistance, adverse effects of medication or poor prognosis. Additionally, the authors hypothesize that the persistence of multiple simultaneous explanatory models throughout different cultures could indicate an evolutionary advantage.

Yalvak et al. (2016) [10] investigated explanatory models present in 148 Turkish patients with a diagnosis of schizophrenia, using a specially-designed survey based on Kleinman’s explanatory models of illness [4]. The 148 patients originated from either Van (49 patients), an agricultural region in Eastern Anatolia, or Ankara (99 patients), the capital city of Turkey. The data from the 2 groups was analyzed comparatively, assessing whether there were any significant differences stemming from the two socio-economically distinct regions. Religious help seeking behavior was more prevalent in individuals with lower education levels, in contrast to visiting a psychiatrist as a first choice in patients who had graduated at least secondary school. Explanatory models of illness in the two groups were as follows: in the Ankara group- internal problems (58%), family problems (44%), and financial problems (22%), while in the Van group, most patients did not have an accurate idea regarding the primary cause of their illness. The fact that the people with a more socio-economically developed background perceived financial issues and stress to cause their illness more than those raised in rural areas, indicates the importance of the medical model in more developed societies. Regarding help-seeking behaviors, both groups relied the most on medical help, followed by religious and traditional methods, the main difference between the two groups being that more patients from Van sought religious help, while more individuals from Ankara used self-suggestion as their first means to relieve their illness.

Another study published in 2016 by Awan et al. [11] consisted of a randomized controlled trial of a psychoeducational intervention aiming to change the patients’ explanatory models of illness, and consequently reduce their symptom severity. The groups comprised of all Pakistani patients, 53 individuals in the experimental group and 50 in the control group, which received treatment as usual, usually represented by antipsychotic medication. All patients had been previously diagnosed with schizophrenia. The instruments used were the following: the BPRS, PANSS, GAFS and Compliance Rating Scale for evaluating psychopathology and compliance to treatment, and the SEMI for explanatory models of illness. The scales were applied at baseline and at 3 months follow-up. Most individuals viewed their illness conceptually as mental illness (33%), 18.4% stated they ‘don’t know’, and 16.5% viewed it as physical illness. The
most frequently-reported cause of the patients’ illness was stress (23.3%), followed by other causes, such as THC, head injury, sleep deprivation or suspiciousness (21.3%), and supernatural causes (19.4%). The preferred treatment choices were most often a combination of medication and spiritual healing (55.3%), medication only (23.3%) or spiritual healing only (10.6%). Following the educational intervention, more patients were able to conceptually define their illness as being either schizophrenia, and the percent of people who did not know how to conceptualize their illness reduced significantly. Regarding the perceived cause of their illness, the categories of ‘stress’ and ‘biological causes’ were more frequently mentioned, and less people stated supernatural explanations for their illness. Help seeking behaviors were also changed between baseline and the 3-month timepoint, in that more individuals relied on medication only and less on a combination between medication and spiritual healing. However, this difference was also observed in the control group, casting doubt on whether the educational intervention had the power to change these behaviors. On the other hand, compliance to antipsychotic medication significantly improved in the experimental group at the 3-month timepoint, both when compared to baseline and to the control group at any timepoint.

In 2018, McCabe et al. [12] assessed the differences between 4 ethnic groups in the UK (30 Whites, 30 Bangladeshis, 30 African-Caribbeans and 29 West Africans). All patients included had previously received a diagnosis of schizophrenia. Explanatory models, insight, treatment compliance, health locus of control, quality of life, treatment satisfaction, therapeutic relationships and symptomatology were analyzed, using multiple scales such as: the BPRS, the Schedule for Assessment of Insight into Psychosis (SAI), the Manchester Short Assessment of Quality of Life (MANSA), the Helping Alliance Scale (HAS), the Patient Care Satisfaction Questionnaire (PCSQ), the Health Locus of Control scale (HLC) and the SEMI. When asked about the cause of their illness, 21.4% of the patients stated that they did not know, while 16.2% cited interpersonal factors and 15.4% supernatural causes. The interethnic differences regarding explanatory models were mainly observed in the white group: they cited biological causes more frequently than any other group and supernatural causes less frequently than West-Africans and Bangladeshis. Regarding treatment preference, most patients thought that they should receive medication (19.7%), followed by counselling (18.8%), and 12.5% could not specify what kind of help they wanted. The Bangladeshi group were the least likely to want treatment of any kind for their illness, and the most likely to want non-medical treatments, such as natural remedies and spiritual activities. Whites and African-Caribbeans were most likely to want counselling, and Whites were the most prone to wanting medication, or to not knowing what kind of help they want. When the relationship between the perceived causes and treatment perception was assessed, those with biological models of illness were more satisfied with treatment and had better therapeutic relationships than the individuals stating other causes, such as social ones. However, the cause of illness mentioned was not correlated with treatment compliance. Patients who expressed supernatural causes of illness scored lower on the insight scale, however this fact did not influence treatment compliance.

A qualitative study by Carter et al. (2018) involving 15 patients from the UK suffering from psychotic disorders [13] used semi-structured interviews to explore their perceived causes of illness. The most frequently mentioned was a psychosocial explanation, such as abuse, bereavement or trauma, specifically in adulthood as opposed to adverse childhood events. Other explanatory categories were biological/genetic, unusual beliefs or drug use. An interesting issue explored in this study was the fact that 6 participants were reportedly aware of the presence of contradictory illness models simultaneously, the authors concluding that this explanatorily pluralistic view of an individual’s illness could possibly appear as a consequence of the social stigma associated with medical models of mental illness.

Finally, Jacob et al. (2018) [14] assessed the relationship between schizophrenic Indian patients’ explanatory models of illness and their quality of life. One hundred and thirty participants were included, and the PANSS, the World Health Organization Quality of Life-BREF (WHOQOL-BREF) Scale and the SEMI were used to evaluate psychopathology, quality of life and explanatory models, respectively. A medical cause of illness was stated by 56.2% of individuals, followed by black magic (33.8%) and punishment from God (30.8%). The majority of the patients (97.7%) had sought medical treatment, 66.9% went to a religious place, and 36.9% resorted to dietary measures. The participants who believed they had an illness had lower quality of life scores than those who did not, and so did those patients who had initially presented to a non-medical site for help, such as religious or mystical places. No category of perceived causal model of illness was found to be correlated with quality of life.

DISCUSSION

This review aimed to analyze and compare data regarding the explanatory models of illness in patients with schizophrenia across different cultures and their implications for treatment and perception of the illness.
The results of the included studies highlight the distinct manner in which specific cultures shape individuals’ perception of their psychiatric illness. Particularly, Eastern and Western cultures can be differentiated by how much significance the patients attribute to esoteric and spiritual factors when integrating them into their cognitive systems. All studies indicated that Eastern cultures value this aspect more than Western ones, although there is an observed tendency for homogenization with regard to this type of hierarchy, explained by the modernization of healthcare systems in Eastern, more traditional countries. This contrast is more pronounced when analyzing minority groups in culturally different countries; in these cases, there is great heterogeneity in the patient-healthcare practitioner relationship. Although Kleinman has argued that higher heterogeneity yields worse healthcare outcomes, this does not mean that medical practice should rely solely on scientific data and disregard patient-specific factors, especially in the therapeutic relationship. On the contrary, Western-based medical practitioners should learn to adapt their perspective and discourse for every individual patient, while trying to acknowledge and minimize their biases as much as possible. A homogenization of illness explanatory models is not always an optimal solution. The fact that many societies have preserved explanatory pluralism in terms of laymen frameworks indicates that there may be some advantage to this system, especially in the case of mental illness. Unlike other medical fields, the quality of life in the context of mental illness development is highly dependent on the patient’s perspectives, therefore requiring more flexibility when applying formal frameworks in clinical settings.

On the other hand, science should not be completely disregarded when interacting with patients, regardless of their cultural upbringing, as it forms the basis of medical practice. Implementing better and more accessible educational resources could help diminish the disparity between patient and practitioner explanatory models of illness. Furthermore, educating healthcare professionals on cultural customs of the region where they practice, and specificities of minority populations if necessary, could also yield higher compatibility between the explanatory models. Finally, all members of a society should benefit from acquiring critical thinking skills, which would help people analyze their own cognitive system and identify possible biases.

In the specific case of schizophrenia or the more general psychotic disorder spectrum, explanatory models are deeply intertwined with the formal thought disorder, and many times it is difficult to distinguish between the patient’s own baseline belief system and the alterations caused by the disorder. Methodologically sound studies in this area could help clarify such issues, offer solutions for helping patients form more pragmatic frameworks regarding the causes of their illness, and consequently choose the most appropriate help-seeking behaviors.

A conscious integration of explanatory models of illness in clinical practice could improve the patient-practitioner relationship, and ultimately improve healthcare outcome. Therefore, research should be conducted investigating the correlations between different explanatory models and clinical parameters, such as treatment compliance, their attitude or knowledge about their illness, or coping strategies.

This review has a number of limitations: only one database was analyzed, no studies included stratified the patients by specific psychotic symptoms, and only a few countries or cultural backgrounds were represented. It would be important to find out whether different symptoms have any influence on the patients’ perspective on their disorders, and to cover and compare multiple cultural environments. Additionally, more longitudinal studies investigating how and whether explanatory models of illness change throughout longer periods of time would be useful.

CONCLUSION

The studies summarized here investigate the explanatory models of illness in patients with schizophrenia across different cultures and their implications for treatment and perception of the illness. Individuals coming from Eastern societies held more spiritual/esoteric explanatory models than those raised in Western countries, and their locus of control was more often external. Most patients held multiple simultaneous explanatory models, many times incompatible. These two aspects could hypothetically act as additional coping mechanisms for individuals suffering from mental illness, specifically schizophrenia. Investigating explanatory models of illness in different cultures is needed in order to optimize the patient-practitioner relationship and hence improve illness outcomes.

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