

# A Study of the Phenomenology of Psychosis Induced by Methamphetamine: A Preliminary Research

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## Original Article

### Abstract

**Background:** Psychotic disorder due to industrial drug, such as methamphetamine addiction, is one of the important causes for referral to psychiatric hospital. Psychotic symptoms in these patients are varied. A group of researchers believe that methamphetamine-induced psychosis is completely similar to schizophrenia. Others believe that at least some cases of permanent psychotic clinical manifestation due to methamphetamine abuse are different from schizophrenia. In the present study, the existence of differences between psychotic symptoms caused by methamphetamine addiction and schizophrenia is investigated.

**Methods:** This study was a qualitative study. Patients with psychosis due to methamphetamine addiction were selected from among patients who were hospitalized in hospitals of the Kerman University of Medical Sciences, Iran. All patients were interviewed using unstructured interview based on self-reporting. Interviews were recorded and reviewed later.

**Findings:** Based on clinical observations, some of the patients with psychotic disorder due to methamphetamine showed rare symptoms that had been mostly reported in psychosis due to organic disorders and some of them showed symptoms that had not been reported before.

**Conclusion:** This study showed that in a group of patients with methamphetamine-induced psychosis, clinical manifestation is different from schizophrenia.

**Keywords:** Psychosis, Methamphetamine, Schizophrenia, Kerman (Iran)

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## Introduction

Methamphetamine addiction treatment centers deal with a spectrum of disorders caused by these emerging substances. One of the most notable disorders is the incidence of psychosis with delusions and hallucinations. It has been reported that over 10% of patients referred to a psychiatric hospital suffer from psychosis caused by methamphetamine (common slang term: glass). The incidence of psychosis caused by methamphetamine was reported 76-92% in a study; according to this study, the risk of psychosis greatly increased after 6 months of use.<sup>1</sup> Despite the fact that methamphetamine-induced psychosis has been reported for over 50 years, its analogy with chronic schizophrenia is still unclear. Some researchers prefer to consider psychosis caused by methamphetamine as a model of schizophrenia. While others believe that there are some differences between the two groups of psychosis (functional and organic psychosis).<sup>2,3</sup>

In a study in 2001 in Japan, patients admitted for psychosis caused by methamphetamine were evaluated by the Scale for Assessment of Negative Symptoms (SANS) and the Global Assessment Scale (GAS) for negative symptoms during hospitalization and 6 months later. It was observed that in negative scores, except for some algorithms, the scores did not change specifically. Based on the results of this study, psychosis caused by methamphetamine differs from schizophrenia in terms of negative symptoms.<sup>2</sup> In another study published by the International Journal of Neuropsychopharmacology (IJNP), it was stated that negative symptoms, in terms of clinical psychosis caused by methamphetamine, vary from schizophrenia.<sup>4</sup> In this study, we sought to find differences between methamphetamine-induced psychotic symptoms and schizophrenic symptoms.

## Methods

This was a qualitative study which aimed to explain the psychotic experience of patients with amphetamine-induced psychosis using the descriptive phenomenological method. Patients diagnosed with psychotic disorder caused by methamphetamine were evaluated in the first 48 hours after hospital admission. Sampling was continued until data saturation, when no new

information was found in the interviews. Ultimately, 16 patients were selected for study. The recorded interviews were reviewed and written down for further analysis. Unstructured interview based on open-ended questions and precise observation was the data collection method.

The analysis was performed according to the seven stage Colaizzi's method.<sup>5,6</sup> In the first stage, all the patients' written descriptions were carefully reviewed. In the second stage, the topics related to the discussion were noted and underlined. In the third stage, the meaning of statements that comprised raw data, and were the exact words of the patients, was determined. In the fourth stage, discovered concepts were categorized and sub-categories, and delineated. In the fifth stage, these subsidiary concepts were interconnected, and formed the main concepts. In the sixth stage, a comprehensive description of each symptom alone and the main phenomenon under study were given. In the seventh stage, to check the reliability of the results they were rechecked with the patients. To increase validity, defined concepts and their sub-themes were reviewed by 3 independent psychiatrists.

## Results

According to Colaizzi's analysis method, in this study, 4 themes or concepts and several sub-themes were determined as following:

Main concept 1: Consciousness

Sub-concept 1-1: Oneiroid state: Patient number 12 believed that he was living in a world where much pressure was placed on him, and he was not capable of living in this world. From his explanations it could be understood that he had a good feeling about living in this world, but he considered himself to be weak.

Sub-concept 1-2: scene hallucination: Two patients explain a scene in detail, and it is a combination of a variety of visual and auditory hallucinations. The patient is also present at the scene where several incidents have occurred. For example, the patient's car has been fixed, and he was taken to a restaurant.

Main concept 2: exaggerated body language the main thing that attracted the attention while interviewing patient 15 was his hand gestures. He moved his hands with every word that he said. When reviewing the interview film it was like the

patient wanted to show what he was saying with his hands.

Main concept 3: delusion

Sub-concept 3-1: misidentification

3-1-1: Incomplete Capgras syndrome: The patient believed that the parts of his body that had darker colors and wrinkles did not belong to him.

3-1-2: uncommon subjective double: The patient believed that several people had come and introduced themselves with the patient's name, but they do not look similar to him. Among these people there is only one who is similar to him, and he does bad things?

Sub-concept 3-2: Cotard's syndrome: The patient believed that some of her body parts, such as the heart and hymen, were removed from her body and were transplanted to another person.

Sub-concept 3-3: uncommon somatic delusion: Patient number 3 believed he had a special gland in his throat which could regulate his temper. He believed that his enemies would destroy him by intensifying the performance of this organ.

Sub-concept 3-4: a new variant of lycanthropy: Patient number 5 stated that: "I wanted to kill my boy with a knife because he looked like a sheep".

Sub-concept 3-5: Conditional thought broadcasting delusion: Patient number 6 believed his thoughts were transmitted, but he emphasized that he could prevent this event by blocking the transmission of his thoughts to his tongue.

Sub-concept 3-6: conditional transmogrification: Patient 7 believed that he sees good spirits as humans and bad spirits as animals.

Main concept 4: pathology of perception

Sub-concept 4-1: illusion with intact sensorium: The patient consistently had illusions during his psychotic state.

Sub-concept 4-2: selective synesthesia: Patient number 10 stated that: "I can hear familiar voices but I cannot hear unfamiliar voices".

Sub-concept 4-3: formication with synthetic materials: The patient felt synthetic materials such as methamphetamine under his skin, and he believed that they cause chemical reactions in his body.

## Discussion

According to the researchers of this study, although the general clinical overview of methamphetamine-induced psychosis is similar to schizophrenia, or in some cases it might be the beginning of functional psychosis, detailed

descriptions of patients' experiences can reveal some important points. In this article, patients had reported various rare psychotic symptoms and in some cases symptoms which had not been reported before.

For example in the main concept 1 (change of consciousness), from the descriptions of patient 12 it was concluded that the patient believed he was living in another world. What could be concluded from his descriptions was a rare condition called oneiroid state. In explaining this condition Sims stated that its difference from delirium is not very clear, the patient is confused and experiences detailed hallucinations which are usually visual. The patient also experienced changes of consciousness and changes in emotional state from fear to joy.<sup>7</sup> The patient experienced pleasure along with much pressure in that condition.

Examples of subjects who had this mental condition were seen in a study describing 34 patients with cerebral toxoplasmosis, and 33 of them had a condition similar to oneiroid state.<sup>8</sup> In another study, electroencephalography (EEG) changes were reported in oneiroid state.<sup>9</sup> Although oneiroid state is a very rare phenomena in schizophrenic patients, it could occur in methamphetamine-induced psychosis. Moreover, it occurs in a clear sensorium, while in organic psychosis the patient has problems in consciousness.

Patient number 13 described a scene with all the details of the various events that occurred and various visual illusions that he had. A somewhat similar case was reported in a patient with Parkinson's, called formed visual hallucination; this hallucination consisted of humans, animals, and small creatures in motion.<sup>10</sup> Given that the patient had described what he had seen as a passing scene and the details and dynamics of the scene are more than a simple optical illusion, these signs are called hallucination scenes. Regarding behavioral and dynamics disorders, psychiatrists have learned to listen to their patients, but observation is very important and useful in discovering scene hallucination.

Patient number 15 moved his hands while talking, but these movements were very quick, thus the meaning was not conveyed. Normally, there is a structured relationship between body language and other non-verbal behaviors. However, our patient showed very fast and

meaningless movements. He tried to describe each word with a movement. Exaggerated, meaningless bodily movements could be considered as a sign of methamphetamine psychosis.

There are various studies on delusions of misidentification disorder. In most categories, delusions of misinterpretation are divided into four main categories and are accepted by many sources; Capgras syndrome, Fregoli syndrome, intermetamorphosis, and syndrome of subjective doubles (believing to have a twin).<sup>7</sup> So far, several rare forms of these groups have been reported.<sup>11,12</sup> Patient number 1 believed that some parts of his skin did not belong to him. The only case that was fairly similar to this concept was entitled incomplete Capgras syndrome. In this sample, a middle-aged woman with schizophrenia believed that the lower half of her body was substituted with that of another person who was considered a prostitute.<sup>13</sup>

In most definitions of subjective doubles, the double is similar to the patient, has his/her own life, but does not introduce himself/herself. The concept extracted from the descriptions of patient number 2 is completely different. He believed in the existence of multiple doubles of himself instead of a single double. However, only one of them was physically and spiritually similar to the patient. This explanation could introduce an unusual syndrome of subjective double.

Unreasonable somatic delusions: When somatic delusions are searched in books and articles, what is mostly found is hypochondriasis.<sup>7</sup> Patient number 3 named one extra organ with a specific function and an exact anatomy, and stated that it exists in everyone's body. In similar studies no case was found to describe this matter. The name anatomical delusion could be appropriate for this delusional conviction. A new variant of lycanthropy: Patient number 5 believed that his son was a sheep and wanted to kill him. There was only one similar case, in which a young man suffering from bipolar disorder believed his mother was a wolf.<sup>14</sup> Therefore, this kind of belief, in which the patient is convinced that another person has transformed into an animal, can be a new variant of lycanthropy.

Believing in the ability to prevent thought broadcasting: In the definition of thought broadcasting and thought withdrawal, the patient does not have control over his thinking process, and

without his control other people can hear his thoughts.<sup>15</sup> However, what can be concluded from the statements of patient 6 is that he can control this process; thus, conditional broadcasting is thought to be an appropriate term for this condition.

In cases of psychopathology of perception, in patients under study, different experiences were observed. Unusual illusion: In definition of illusion, in a short period of time, in certain conditions caused by or arising from the stimulus, the illusion disappears and the observer realizes their mistake. However, the concept that was drawn from the experiences of patient 9 was that his misunderstanding of the stimulus (cotton or body injury) occurred during consciousness and remained unchanged during the entire duration of psychosis.

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Formication with synthetic materials: Patient number 11 felt synthetic material under his skin, with a systematized delusional belief that this material will change in his body and transform into another material under his skin, and little by little it will come out from under his fingernails and hands.

As noted above, some of these signs have already been proposed and some are described for the first time, in addition to the above symptoms, which had been previously described such as Capgras syndrome, oneiroid state or lycanthropy are components of rare psychiatric symptoms. In this study, cases which differed from conventional and previously reported cases were described. Regarding etiology, organic disorders and brain changes had been reported for some of these symptoms. For example, for oneiroid state as previously mentioned, EEG changes were recorded and these changes occur when the patient has no symptoms.<sup>9</sup> For Capgras syndrome, it was reported that 25-40% of cases had organic disorders. Furthermore, dysfunctions of frontal

and temporal lobes are considered to be responsible for impaired face recognition in Capgras syndrome.<sup>16</sup>

Regarding psychosis caused by methamphetamine, there are several reports on cases of brain changes.<sup>17</sup> A number of researchers believe that changes in behavior and social function of patients with methamphetamine-induced psychosis is the result of frontal lobe dysfunction.<sup>18</sup> In a reported study, in methamphetamine-induced psychosis, amygdala gray matter volume and the hippocampus were reduced, but unlike other cases, there was a greater reduction in volume of amygdala than hippocampus. In other cases of psychosis, including schizophrenia, hippocampal volume reduction is greater than the amygdala reduction.<sup>19</sup>

Due to the considerable differences between brain structure changes in schizophrenia and other organic psychosis, in spite of the similarities in the phenomenology of these categories, they are separated. Rare psychiatric Syndromes are more prevalent in organic psychosis, including methamphetamine-induced psychosis.

Ghaffarinejad and Kheradmand reported a

subject with schizophrenia who developed another type of psychosis, including somatic delusion and tactile hallucination, when he abused methylphenidate (Ritalin).<sup>20</sup> This means that two separate types of psychosis (functional and organic) can be present at the same time.

## Conclusion

The research evidence showed that patients with methamphetamine-induced psychosis present more rare psychotic symptoms, even ones which have not been reported before. Disturbance of affect is less prominent and exaggerated body language was noted in many of them. Authors concluded that methamphetamine can create a specific clinical feature which can lead the physician to find the correct diagnosis.

## Conflict of Interests

The Authors have no conflict of interest.

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## مطالعه پدیدارشناسی روان‌پریشی ناشی از مت‌آمفتامین: تحقیق مقدماتی

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### مقاله پژوهشی

### چکیده

**مقدمه:** اختلال روان‌پریشی ناشی از مواد صنعتی مانند اعتیاد به مت‌آمفتامین یکی از مهم‌ترین دلایل ارجاع به بیمارستان روان‌پزشکی است. علایم روان‌پریشی در این بیماران متفاوت می‌باشد. گروهی از پژوهشگران اعتقاد دارند که روان‌پریشی ناشی از شیشه شبیه اسکیزوفرنیا است و بقیه بر این باور هستند که تظاهرات بالینی مربوط به روان‌پریشی پایدار مصرف شیشه با اسکیزوفرنی متفاوت است. در مطالعه حاضر تفاوت‌های بین علایم روان‌پریشی ناشی از اعتیاد به شیشه و اسکیزوفرنیا مورد بررسی قرار گرفت.

**روش‌ها:** این پژوهش از نوع کیفی بود. بیماران با روان‌پریشی اعتیاد به شیشه از بین بیمارانی که در بیمارستان دانشگاه علوم پزشکی کرمان بستری شده بودند، انتخاب گردیدند. تمامی بیماران با مصاحبه غیر ساختار یافته و بر اساس گزارش شخصی مورد ارزیابی قرار گرفتند. مصاحبه‌ها ضبط و سپس مرور گردید.

**یافته‌ها:** بر اساس مشاهده‌های بالینی، بعضی از بیماران دارای اختلال روان‌پریشی ناشی از مت‌آمفتامین علایمی را نشان دادند که به عنوان علایم نادر در روان‌پریشی‌های ناشی از اختلالات ارگانیک گزارش شده است و برخی از آن‌ها علایمی نشان دادند که پیش‌تر گزارش نشده بود.

**نتیجه‌گیری:** این تحقیق نشان داد تظاهرات بالینی در گروه بیمارانی که دچار روان‌پریشی ناشی از مت‌آمفتامین شده بودند با اختلال اسکیزوفرنیا تفاوت دارد.

**واژگان کلیدی:** روان‌پریشی، مت‌آمفتامین، اسکیزوفرنی، کرمان (ایران)

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