

Distinctiveness of Auditory Hallucinations in Indian Patients with Schizophrenia and Substance use Disorder

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ABSTRACT

Background: Auditory hallucination is a core psychiatric symptom. Although observed in 75% patients of Schizophrenia, its occurrence is not simply limited to patients with psychosis. An unexplored domain in which it is of significance is substance use disorders. Aim of the study was to analyze and compare auditory hallucinations in Schizophrenia and substance use disorders. **Methods:** This cross-sectional study was done at a tertiary care hospital. A total of 110 patients of schizophrenia and 52 with substance use disorder were included in the study by purposive sampling. The underwent a physical and psychiatric evaluation to confirm the diagnosis. Thereafter they were evaluated by the Characteristics of Auditory Hallucination Scale. **Results:** Significant difference were noted in between patients of schizophrenia and substance use disorder in some of the domains of the characteristics of auditory hallucinations scale viz. frequency, intensity, and self-control. **Conclusion:** Auditory Hallucinations in patients with schizophrenia are significantly difference from the auditory hallucinations in subjects with substance use disorders.

Key words: Auditory hallucinations, schizophrenia, substance-use disorder, alcoholic hallucinosis, psychosis

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Introduction

Until the eighteenth century, hallucinatory experiences were regarded with spiritual connotations in the background of cultural contexts; signifying enlightenment, religious awakening, messages from higher powers. The medical morphosis was gradual and complete integration into medical sciences occurred only after French psychiatrist, Esquirol, in 1817, attempted to define hallucinations for the first time as “A perception without an object” [1]. He likened it to dreaming in an awake state, due to excessive energetic discharges in the brain, occurring in a state of ‘delirium’, which back then implied *madness* [2]. Falcatre affirmed the same definition as well as the intellectual basis proposed by Esquirol, by saying “hallucination is a perception without an object”. Baillarger was the first to suggest that hallucinations

could be of two types: psychosensorial, as well as psychological [2].

In the twentieth century, Jaspers asserted hallucinations to be false perceptions which occurred independently and originated on their own and not as distorted real percepts. Sladeproposed three criteria for a hallucination as under:

- (i) Absence of provoking stimulus;
- (ii) An experience simulating the strength and impact of a real percept; and
- (iii) Involuntary and spontaneous for the percipient [2].

Of all the hallucinations in different modalities, auditory hallucinations hold supreme relevance in psychiatry from a diagnostic and phenomenological perspective. These experiences can be perceived as coming from anywhere in

the external space of the patient, or from inside the body as well. The content of auditory hallucinations is varied. Besides having characteristic voices of one or more humans, they may also be elementary: monotonous whirring sounds, rattling noises, sounds of machinery, or musical notes. Noise volumes can range from whispers to screaming, and the hallucinatory content is often charged and may elicit significant reactivity from the patient. Functional interference is commonly encountered due to the pervasive and unwilling nature of these experiences [3].

Various cognitive models attempt to explain the occurrence of auditory hallucinations by providing plausible and intuitive explanations, of which the four extensively studied ones are:

- (i) Impaired self-recognition, in which the experiences are perceived as an entity entirely independent of and separate from the ongoing mental processes;
- (ii) Impaired sense of control over one's own consciousness;
- (iii) Impaired processing of sensory information in context of memories, expectations and other sensations;
- (iv) Affective influences [4].

Some neurological models have also been proposed to explain these hallucinations. One such is by Marrazzi in his neurophysiologic dissociation theory, where he posits that hallucinations occur due to due to impaired regulatory influence of cortical association areas over the primary sensory cortices, as a result of disrupted associations between them. West postulated that normally, most of the continually inflowing sensory input is detached from the consciousness by a censorship mechanism. He believed that hallucinations occurred in context of dampened sensory inflow, a period during which previous percepts and/or memories take form in the consciousness [5].

Excessive levels of dopamine and serotonin, deranged levels of acetylcholine levels, and reduced levels of glutamate can also result in hallucinations. A meta-analysis of 46 studies on superior temporal gyrus in schizophrenics suggested a greater involvement of the left superior temporal gyrus in the generation of hallucinations than the right. Reduction of volumes of prefrontal cortices and cerebellum have also been implicated [5].

Auditory hallucinations are very central in psychotic illnesses, most particularly Schizophrenia, being seen in nearly 70% of those diagnosed with it [6]. Auditory hallucinations are found in myriad other conditions, both psychotic and neurotic, as well as substance-induced states, the last being within the scope of this paper. Psychoactive substances may cause hallucinations as a direct effect of the abuse, as well as in withdrawal-related conditions. The auditory hallucinations closely simulate that in Schizophrenia [7]. In patients abusing alcohol, nearly 4.04% to

13% experience hallucinations [8,9]. Nearly 50% of patients with psychotic symptoms give history of concomitant substance abuse. 7.6% of cannabis abusers experience auditory hallucinations, and auditory hallucinations also are a cardinal symptom of early-stage alcohol withdrawal, i.e., in the first 6-24 hours [10].

While auditory hallucinations comprise a common psychiatric phenomenon, it may often be overlooked in areas other than Schizophrenia and Schizophrenia-like psychotic illnesses. This provides little scope to evaluate auditory hallucinations as an independent symptom of other psychiatric illnesses, having its own characteristics particular to that illness. There is also a deficiency of studies comparing auditory hallucinations in Schizophrenia and substance use disorders. Hence, this study was attempted as a first of its kind, to analyze and compare auditory hallucinations in Schizophrenia and substance use disorders.

Material and Methods

Sample

This cross-sectional study included subjects having Schizophrenia (n=110) and Substance-use Disorder (n=52), selected by purposive sampling keeping in mind the inclusion and exclusion criteria. All the subjects were admitted to a tertiary care Psychiatric centre.

Tools of assessment

Socio-demographic data sheet

This self-made questionnaire included questions related to sociodemographic and clinical details of the subjects.

Characteristics of Auditory Hallucination Questionnaire (CAHQ)

This is a 7-item, Likert-type instrument on which participants rate the various features of the auditory hallucinations that they experienced during the previous 24 hours. The scale has adequate Test-retest reliability estimated between 0.73 to 0.78 ($p < 0.001$) [11, 12].

Procedure

All the subjects with Schizophrenia and Substance-use Disorder who were included in the study were initially explained the aim, objectives and procedure of the study and written informed consent was obtained. Thereafter the socioeconomic data was collected and Characteristics of Auditory Hallucination scale was filled by each individual.

Statistical Analysis

The analysis of data was done using SPSS-20 (IBM, Atlanta, USA) by applying parametric and non-parametric tests as appropriate.

Results

Schizophrenia and substance use disorder patients were well matched with regards to age, education and occupation. All the substance use disorder patients were males. Significantly more substance use disorder patients belonged to upper/middle socioeconomic status and were married. Whereas a higher number of Schizophrenia patients were unmarried, the converse was true for patients with substance-use disorder (Table 1). Among the illness related variables only the duration of illness showed significant disparity in those suffering from the two conditions being evaluated (Table 2). Auditory hallucinations differed significantly in terms of frequency, intensity, and self-control in Schizophrenia and Substance-use disorders (Table 3).

Discussion

Socio-demographic and clinical variables

Significant difference ($p > 0.001$) was observed in sex parameter between the two sample groups with males are far over represented in substance use disorder. As has emerged in the study, there is a definite gender disparity in treatment-seeking behavior between the male and female sexes. Men are more liable to take treatment for mental illnesses, as compared to women. Male gender was not only associated with more substance dependence, but also with a proportionally higher treatment-seeking attitude. They are more likely than women to disclose problems with alcohol abuse to health-care professionals [13-15]. On the other demographic characteristics there were no significant difference between Schizophrenia and substance use disorder patients (Table 1).

Men are also the primary users of mental health-care in in-patient setups [16]. Women are at a marked disadvantage when it comes to seeking treatment for mental health related ailments, due to social factors. These disparities set in from an early age, as they are inculcated culturally. The male preponderance is due to favorable attitudes towards men, which is seen even more markedly in Indian studies [17].

Significant difference was also observed in socioeconomic status between two groups with 81 patients out of 110 are from lower socioeconomic status in Schizophrenia group as compared to only 37 patients out of 52 in substance use disorder (Table 2). While most studies suggest no role of socioeconomic status on Schizophrenic illnesses [18], some studies do suggest otherwise as well, in support of the finding of this study [19].

Another finding was that schizophrenics were more likely to be unmarried, as compared to those with alcohol use disorders. Schizophrenia and singledom together form a vicious cycle in which one factor perpetuates the other. While

being unmarried bodes poorly for Schizophrenia, development of this psychotic illness is unlikely to result in marriage as well [20]. Other studies also suggest similarly. Various reasons can be attributed to the same, such as, poor social abilities, apathy, loss of sexual drive, and lower rates of fertility. In many cases, the married ones also face divorce or separation [21]. Patients with substance use disorder do not face trouble in getting married, and the rates of divorce and separation are much lower as compared to schizophrenia, occurring mostly due to unemployment of the patient, or domestic abuse endured by the partner.

With regard to clinical characteristics the mean duration of illness was 55.09 ± 54.78 months for Schizophrenia and 95.62 ± 69.31 months for substance use disorder. The difference was statistically significant. With regard to other characteristics no significant difference was observed between two groups. So we can state that the groups were matched on various parameters.

Differences in auditory hallucination between Schizophrenia and substance use disorder:

In the domains of frequency, intensity and self-control of characteristics of auditory hallucinations, significant difference was observed between schizophrenic group and substance use disorder group with schizophrenic group have a higher mean score than substance abuse disorder (Table 3).

Studies have shown that the hallucination in Schizophrenia are more intense, continuous, have greater clarity and patient do not have control over these phenomena; whereas auditory hallucinations in substance use disorder, are mostly vague and unstructured. Auditory hallucinations in substance abuse can be due to intoxication states or withdrawal states. Some of the common substances resulting in auditory hallucinations are alcohol, cannabis, amphetamines, cocaine, opioids and phencyclidine, besides various others. Some medications are also abused, such as sedative-hypnotics, anaesthetics, anticholinergics, and antihistaminics [9]. They are one of the most characteristic symptoms of substance-induced psychotic disorders [22].

In our study most of the sample in substance use disorder consists of population from alcohol use disorder, hence it would be more meaningful to compare alcoholic hallucinosis with those schizophrenic hallucinations. *Acute benign hallucinosis* are the most common type of alcoholic psychoses. It has a characteristically acute onset, with predominantly auditory hallucinations. Sensorium remains intact, and there is no overt formal thought disorder. The resolution is quick, in a matter of hours to days [23]. 10-20% of these cases, however, become chronic [9]. Sometimes alcoholic hallucinosis tend to become chronic, moving in the direction of paranoid Schizophrenia. In our study we

Table 1: Comparison of socio-demographic profile between patients of Schizophrenia and substance use disorder

Variables		Schizophrenia n=110 (Mean ± SD/N %)	Substance use disorder n=52 (Mean ±SD/N%)	p value
Age (in years)		30.56±9.12	30.56±9.12	0.067
Education	Illiterate/up to class 9	65	35	0.407
	Matriculate	35	15	
	Graduate	10	10	
Sex	Male	66	52	0.00001
	Female	44	0	
Occupation	Employed	54	31	0.210
	Unemployed	56	21	
Socioeconomic status	Lower	81 (73.64%)	37 (71.15%)	0.002
	Middle/upper	29 (26.36%)	15 (28.85%)	
Marital status	Married	49 (44.55%)	37 (71.15%)	0.002
	Unmarried	61 (55.45%)	15 (28.85%)	

**Significant at p<0.05 level (2-tailed)

Table 2: Comparison of clinical variables between patients of Schizophrenia and substance use disorder

Variables		Schizophrenia (Mean ±SD/N %)	Substance use disorder (Mean ±SD/N %)	p value
Duration of illness (in months)		55.09±54.78	95.62±69.31	0.000
Age of onset (in years)		26.33±7.24	25.27±7.35	0.385
Past history of psychiatric illness	Present	8	6	0.367
	Absent	102	46	
Family history of psychiatric illness	Present	23	11	0.972
	Absent	87	41	
Family history of medical illness	Present	12	5	0.802
	Absent	98	47	

**Significant at p<0.05 level (2-tailed)

Table 3: Comparison of characteristics of auditory hallucination between patients of Schizophrenia and substance abuse disorder

Variables	Schizophrenia (Mean ±SD)	Substance abuse (Mean ±SD)	p value
Frequency	4.527±1.08	3.9423±1.01775	0.001
Intensity	4.5909±.83825	4.1538±.77674	0.002
Self-control	5.3364±.84893	4.4808±.93914	0.000
Clarity	4.3909±.97769	4.2692±.81926	0.438
Tone	5.1182±.82096	5.1923±.65794	0.569
Distractibility	4.4727±.96459	4.4727±1.01646	0.764
Distress	4.6727±2.8202	4.7115±.93592	0.810

**Significant at p<0.05 level (2-tailed)

could not get significant difference in domains of clarity, tone, distractibility and distress between schizophrenic group and alcoholic hallucinosis [9, 23].

Alcoholic hallucinosis can imitate classic hallucinations of Schizophrenia in these domains and in course of time alcoholic hallucinosis can lead to mistaken diagnosis of paranoid Schizophrenia. Hence there exists much common in clinical characteristics of auditory hallucinations between two groups that has been shown by our study also [9].

Conclusion

There are considerable differences in the auditory hallucinations experiences by subjects suffering from Schizophrenia and substance use disorders. Further research is necessary to demarcate the two from each other, as auditory hallucinations play a central role in both conditions.

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