

## Hallucinations: How Much Do We Really Know About This Perceptual Disorder??

Sonia\*, Anumol Joseph\*\*

\*Asst. Professor, Dashmesh College of Nursing, SGT University, Gurgaon, Haryana. \*\*Lecturer, Vijay Marie College of Nursing, Telangana, Hyderabad-500047.

### Abstract

Perceptual disorders occur in all sensory modalities. It occurs when there is disruption in perception perhaps caused by physical or mental disorders or toxins etc. They include misinterpretations and distortions of environmental stimuli, as well as self-generated hallucinations. It is more commonly evident in schizophrenia (as a part of first rank symptoms), organic conditions and rarely in mood disorders. People with the disorder may hear voices or see things that aren't there. The voices give instruction to some patient who may or may not feel obliged to carry them out. In some cases the voices talk about the person in the third person and may give a running commentary on his action which is often troublesome. Hallucinatory voices vary in quality, ranging from those which are clear to those which are extremely vague and which patients cannot describe in any way. One special type of hallucination, which is characteristic of schizophrenia, is thought echo that is hearing one's own thoughts being spoken aloud which is called sonorization. The pathogenesis of these phenomena is largely unknown, but disturbances in specific sensory modalities have implications from the perspectives of diagnosis as well as management. However, few etiologies have been identified responsible for causing hallucinations namely sensory deprivation, hallucinogens and drugs, insomnia, sensory defects, stress, emotions, toxins, disorders of central nervous system and neurotransmitter imbalance.

**Keywords:** Charles Bonnet Syndrome; Culture,

**Corresponding Author:** Sonia, H. No 480-481, 2<sup>nd</sup> floor, Pocket-4, Sector-22, Rohini, New Delhi-110086.

E-mail: [soniav2387@gmail.com](mailto:soniav2387@gmail.com)

Received on 07.12.2016, Accepted on 27.12.2016

Hallucination; Perceptual Disorder; Schizophrenia.

### Introduction

Hallucinations are intriguing psychological phenomena- which have a number of important clinical, theoretical and empirical implications but are also among the most severe and puzzling forms of psychopathology, usually regarded as characteristic of psychosis [1,2]. The word "hallucination" comes from the Latin verb "hallucinari" or "allucinere", meaning 'to wonder in mind' or 'idle talk' [3,4]. Hallucinations most commonly occur in schizophrenia. Approximately 7 or 8 individuals out of 1,000 will have Schizophrenia in their life time. Subjectively, a hallucination is indistinguishable from a normal percept. The only clue is that there is no corroborative evidence for the percept in other modalities [5].

### Prevalence

In 2000, one of the few studies of hallucinations in a general Western population reported the following statistics [6]:

- Of a total sample of 13,000 adults, 38.7% reported hallucinations: 6.4% had hallucinations once a month, 2.7% once a week, and 2.4% more than once a week.
- Of the subjects, 27% reported having hallucinations in the daytime. In this group, visual (3.2%) and auditory (0.6%) hallucinations were closely associated with diagnoses of psychotic or anxiety disorders.
- Of the subjects, 3.1% reported haptic (tactile) hallucinations; most of these subjects were

current drug users [6].

There is currently no evidence that hallucinations occur more frequently in some racial or ethnic groups than in others. In addition, gender does not appear to make a difference. The demographics of hallucinations associated with some specific age groups, conditions, or disorders.

#### *Nature of Hallucinations*

The general theory of hallucinations here delineated rests upon two fundamental assumptions.

One assumption states that life experiences influence the brain in such a way as to leave, in the brain, enduring physical changes that have variously been called neural traces, templates, or engrams. Ideas and images are held to derive from the incorporation and activation of these engrams in complex circuits involving nerve cells. Such circuits in the cortex (outer layers) of the brain appear to sub serve the neurophysiology of memory, thought, imagination, and fantasy. The emotions associated with these intellectual and perceptual functions seem to be mediated through cortex connections with the deeper parts of the brain (the limbic system or "visceral brain," for example), thus permitting a dynamic interplay between perception and emotion through transactions that appear to take place largely at unconscious levels [7].

Conscious awareness is found to be mediated by the ascending midbrain reticular activating system (a network of nerve cells in the brainstem). Analyses of hallucinations reported by sufferers of neurological disorders and by neurosurgical patients in whom the brain is stimulated electrically have shown the importance of the temporal lobes (at the sides of the brain) to auditory hallucinations, for example, and of other functionally relevant parts of the brain in this process [7].

A second assumption states that the total human personality is best understood in terms of the constant interplay of forces that continually emanate from inside (as internal physiological activity) and from outside the individual (as sensory stimuli). Such transactions between the environment and the individual may be said to exert an integrating and organizing influence upon memory traces stored in the nervous system and to affect the patterns in which sensory engrams are activated to produce experiences called images, fantasies, dreams, or hallucinations, as well as the emotions associated with these patterns. If such a constantly shifting balance exists between internal and external environmental forces,

physiological considerations (e.g., brain function) as well as cultural and experiential factors emerge as major determinants of the content and meaning of hallucinations [7].

#### *Hallucination and Culture*

- Historical studies indicate that hallucinations of western patients in the past were predominantly visual, a finding similar to those reported with non-western patients. Lenz [8] studied changes in symptoms over the last 100 years in Vienna, and found that there was a decrease in visual hallucinations and an increase in auditory hallucinations
- Jocano [9] described a village in the Philippines where imaginary noises, smells and other images are reinforced. People saw and heard fairy like spirits in nearly every tree and pitted him because he was blind to them. These hallucinations were considered by Jocano as part of the peasant 'idiom of cognition'
- Hechukwu [10] cited many studies indicating that hallucinations are more frequent in the schizophrenia-like psychosis of Africans, giving some support to the hypothesis of a lower threshold of culturally sanctioned experiences in Africa. However, with acculturation in Africa, there may be a shift from traditional hallucinatory experiences to individual ones.
- Among religious groups, Schwab [11] found that black Baptists, black Methodist and Church of God members had the highest number of hallucinations while the Lutherans, Presbyterians, White Methodist and Jew had the lowest.
- Rack [12] has commented that in Asian women, especially teenagers, the commonest cause of hallucinations is not schizophrenia but hysteria.
- It appears that cultural differences may not be found in the processes involved in hallucinations such as expectancy and suggestibility, but in the extent to which social controls influence these processes in various settings.

#### *Types of Hallucinations*

Hallucinations can occur in any of the areas of the five special senses and also with somatic sensation [13,14].

##### *Auditory Hallucination*

Auditory hallucinations also known as Paracusia are the perception of sound without outside stimulus. Auditory hallucinations are the most common type of hallucination in mental disorders. The voice may be heard either inside or outside one's head and is generally considered more severe when coming from outside one's head. Verbal hallucinations may consist

of voices speaking the individuals thoughts aloud, a voice carrying out running commentary on the person's behaviour, a collection of voices speaking about the individuals in the third person, or voices issuing commands or instructions and even both male and female patients hear voices of either sex [13]. Hearing of voices can be grouped into following types:

- *Elementary Auditory Hallucination*: It occurs in the form of voices of bangs, hissing, whistling, an extended tone, and more. In many cases, tinnitus is an elementary auditory hallucination whistle etc. This can occur in organic states and in schizophrenia. Often the noise gives unpleasant and frightening experiences [13].
- *Complex Hallucination*: It occurs in the form of voices and characterized by sustained voices clearly heard, originated in the objective space. The voices may be single or multiple, male or female, or both, and people known by patient [13].
- *Musical Hallucination*: It is common in older women with deafness or brain disease but no history of psychiatric illness. These are experienced as tunes, lyrics and instruments [14].
- *Imperative or Command Hallucinations*: These are subtype of auditory hallucinations in which the voice is experienced as commanding rather commenting. Voices give instruction to some patients who may or may not feel obliged to carry them out [13].
- *Running Commentary*: Here the voice talk about the person in the third person and may even give a running commentary on his actions which is very troublesome [14].
- *Talky-Talky Tongue*: In this special kind, patients hallucinate speech movement and hear speech which comes from their own throat but has no connection with their thinking [14].

- *Visual Hallucination*

Hallucination occurs in visual modality also. A visual hallucination is "the perception of an external visual stimulus where none exists". All varieties of visual hallucinations are frequently observed in organic states. Visual hallucinations are less prominent in schizophrenia compared with auditory hallucinations. Visual hallucinations are seen in Delirium, organic cases and psychosis [15].

Visual hallucinations are separated into simple and complex.

- *Simple Visual Hallucinations (SVH)*: Simple visual hallucinations are also referred to as non-formed visual hallucinations and elementary visual

hallucinations. These terms refer to lights, colours, geometric shapes, and indiscrete objects [15].

- *Complex Visual Hallucinations (CVH)*: Complex visual hallucinations (CVH) are also referred to as formed visual hallucinations. CVHs are clear, lifelike images or scenes such as people, animals, objects, etc [16].
- *Charles Bonnet Syndrome*: This is a condition in which individual experiences complex visual hallucinations in association with impaired vision without demonstrable psychopathology or disturbance or normal consciousness. It is more common in elderly but can occur in any age, it is usually associated with central or peripheral reduction in vision [17].
- *Scenic Hallucination*: The most interesting part of this kind of hallucination is the whole scenes are hallucinated like cinema. It is more common in psychiatric disorders associated with epilepsy. The experiences may also have vision of fire and religious scenes [18].
- *Lilliputian Hallucination*: In this patient sees tiny people. Micropsia affect visual hallucination so as Lilliputian Hallucination. This phenomenon is associated with delirium or particularly with delirium tremens [18].

- *Olfactory Hallucination*

Phantosmia is the phenomenon of smelling odours that are not really present. It may or may not be unpleasant and usually has a special and personal significance. The most common odours are unpleasant smells such as rotting flesh, vomit, urine, faeces, smoke, or others. Hallucination of odour can occur in psychotic disorders, schizophrenia, temporal lobe epilepsy, delirium migraine headache, acute organic states [18].

- *Gustatory Hallucination*

This type of hallucination is the perception of taste without a stimulus. Hallucinations of taste are the rarest of the modalities. Gustatory Hallucination occurs in schizophrenia and acute organic states. In schizophrenia, it sometimes occurs with delusion of being poisoned. Changes in gustatory perception may occur among individuals who have certain types of focal epilepsy, especially temporal lobe epilepsy temporal lobe epilepsy [19].

- *Tactile Hallucination*

Tactile hallucinations are the illusion of tactile

sensory input, simulating various types of pressure to the skin or other organs. It can be grouped into superficial, kinaesthetic and visceral [20]

Superficial Hallucinations affects the skin and are further classified into Haptic, Thermic, Hygric.

- **Haptic Hallucination:** It is associated with sensation of touch.

**Formification:** It is form of haptic hallucination and basically a form of feeling that animals are crawling over the body and is sometimes found in acute organic states.

- **Thermic Hallucination:** Superficial hallucination affecting skin sensation is called thermic. It is associated with abnormal perception of heat and cold.

- **Hygric Hallucination:** It is associated with perception of fluid or water, perceived in tactile modality.

**Paraesthesia:** It is associated with sensation of tingling or pins or needles [19].

- *Kinaesthetic Hallucination*

This is associated with muscle or joint sense. The patient feels that his limbs are being twisted. Kinaesthetic hallucination are perceptions of movements of limbs or muscles being squeezed or sense of vibrations in the absence of the said stimulus or the patients feels that the patients limbs have been pulled or moved. Such hallucinations are often seen in schizophrenia like disorders and often linked with bizarre somatic delusions [20].

- *Visceral Hallucination*

These are the false perception of the inner organs. E.g., pain, heaviness, stretching, palpitation etc.

- **Delusional Zoopathy:** Another interesting and unusual variety of somatic hallucinations is delusional zoopathy. This can be of two types-

- **External Delusional Zoopathy:** In which patient experiences that there is an animal crawling about on body.

- **Internal Delusional Zoopathy:** In this, patient believes that there is an animal inside the body.

- **Phantom Limb:** It is another form of Somatic hallucination. Here the experience feels that he has a limb but he does not receive any sensation from it.

- **Hypnagogic and Hypnopompic Hallucination:** These hallucinations can be regarded as special varieties

of organic hallucinations. Though very often found in normal individual also. Hypnagogic hallucinations are vivid perceptual experiences occurring at sleep onset while hypnopompic hallucinations are similar experiences that occur on awakening [21].

### *Causes of Hallucination*

- *Sensory Deprivation*

Sensory deprivations are usually changing visual hallucinations and repetitive words and phrases and it may cause hallucinations even in a normal subjects. 'Black patch disease' is a condition in which individuals after sensory deprivation for several days due to the use of protective patches may often begin to hallucinate [22].

- *Hallucinogens and Drugs of Abuse*

Hallucinogenes such as, LSD (Lysergic acid dithylamide, or acid), mescaline (3,4,5-trimethoxyphenethylamine, or peyote), and psilocybin (4-phosphoryloxy-N, N-dimethyltryptamine, or mushroom) trigger hallucinations. Other drugs such as marijuana and PCP have hallucinatory effects. Certain prescription medications may also cause hallucinations. In addition, drug withdrawal may induce tactile and visual hallucinations; as in an alcoholic suffering from delirium tremens [22].

- *Loss of Sleep*

Progressive sleep loss appears to decrease one's capacity for integrating realistic perceptions of the external environment. Hallucinations probably will occur in anyone if wakefulness is sufficiently prolonged; anxiety is likely to hasten or to enhance hallucinatory production. Research subjects who have undergone sleep deprivation experiments typically begin to hallucinate after 72-96 hours without sleep. It is thought that these hallucinations result from the malfunctioning of nerve cells within the prefrontal cortex of the brain. Physical and emotional exhaustion can induce hallucinations [22].

- *Sensory Defects*

Visual hallucinations may occur in cases of cataract (opaque lens in the eye) and have been compared with phantom limb experiences (e.g., "pain" in the toes of a missing foot), since there is an absence of normal stimuli from the environment in both cases. Individuals who suffer a progressive loss of hearing

may experience auditory hallucinations. So hallucinatory voices may occur in ear disease and visual hallucinations in eye disease [22].

- *Stress*: Prolonged or extreme stress can impede thought process and trigger hallucinations [22].
- *Neurotransmitter Imbalances*: Some neurotransmitters inhibit the transmission of nerve impulses, while others excite or intensify them. Hallucinations in some conditions or disorders result from imbalances among these various chemicals [22].
- *Emotions*: Intense emotions may give rise to hallucinations for example, a very depressed patient with delusion of guilt may hear voices reproaching him [22].
- *Post-traumatic Memory Formation*: Hallucinations in trauma survivors are caused by abnormal patterns of memory formation during the traumatic experience.
- *Toxins*: Toxins may be introduced from without, i.e., exogenous, or produced by the patient, endogenous.
  - *Exogenous Toxins*: probably the drug which has been used more than any other for the purpose of experimentally producing hallucinations is cannabis indica.
  - *Endogenous Toxins*: There are numerous records of hallucinations occurring in diseases accompanied by pyrexia.
- *Disorder of CNS*: Lesions of the diencephalon and cortex can produce hallucinations usually visual but it can be auditory. For example, hypnagogic and hypnopompic hallucinations [22].

#### Assessment of Hallucination

Hallucination is one of the core features of psychosis. Its presence, nature and severity must be understood not for making the diagnosis or explaining psychosis but also for further management and rehabilitation of the patients. There are many tools available for assessment, which are follows.

- *Mental Status Examination(MSE)*

In MSE, Perceptual disorders are covered under following:

- *Present Status Examination*: It is a structured interview schedule for conducting the mental status examination and scoring the findings. It is designed for adult patients suffering from a functional psychosis or neurosis [24].

- *Schedules for Clinical Assessment in Neuropsychiatry (SCAN)*: The schedules for clinical assessment in neuropsychiatry (SCAN) is a semi-structured clinical interview used by trained clinicians to assess and diagnose psychiatric disorders among adult. A major purpose of the SCAN is to allow comparisons of psychiatric diagnoses to be made across the world [17].
- *Brief Psychiatric Rating Scale*: The BPRS was designed to measure clinical symptoms in patients with schizophrenia. The BPRS includes 18 items with one item devoted to hallucinatory behaviour [15].
- *Positive and Negative Syndrome Scale (PANSS)*: The Positive and Negative Syndrome Scale (PANSS) is a 30-item scale with 7 positive symptom items, 7 Negative symptom items, and 16 general psychopathology symptom items [26].
- *The Psychotic Symptom Rating Scale (PSYRAT)*: The PSYRAT evaluate the clinical characteristics of auditory hallucinations [27].
- *Distressing, Voices Questionnaire (DVQ)*: This questionnaire was designed by the authors for the purposes of this study to measure dimensions of auditory hallucinations on the same subscales as the DTQ.
- Launay- Slade Hallucination Scale
- Baylors Hallucinations Questionnaire
- Rush Hallucinations inventory
- Verbal hallucinations scale.
- Rorschach

#### Treatment

Hallucinations are treated with regard to the underlying disorder. Depending on the disorder, treatment may involve antipsychotic, anticonvulsant, or antidepressant medications. A Significant number of patients with schizophrenia experiences persistent auditory hallucinations despite their continue use of antipsychotic medication. 25-30% patients are refractory to traditional antipsychotic drugs [28]. Apart from pharmacological treatment it is very important to deal with such disabling problem through non-pharmacological method [28]. These are psychotherapy; brain or ear surgery; or therapy for drug dependence. Other most commonly used strategies could be grouped as: 1) modification of behaviour, 2) modification of sensory input, and cognitive techniques. The most common behavioural approaches were lying down or walking, attending to hobbies or reading, listen to music/ television, having

interpersonal contact and taking medication. Sensory modification achieved by relaxing or sleeping, and taking physical exercise.

### Conclusion

It appears that all human behaviour and experience (normal as well as abnormal) is well attended by illusory and hallucinatory phenomena. While the relationship of these phenomena to mental illness has been well documented, their role in everyday life has perhaps not been considered enough. Greater understanding of illusions and hallucinations among normal people may provide explanations for experiences otherwise relegated to the uncanny, "extrasensory," or supernatural. Such understanding may also illuminate the remarkable certainty that individuals express in their contrary interpretations of the same basic information. "Reality," like beauty, lies in the eye of the beholder.

### References

- American Psychiatric Association. Diagnostic and Statistical Manual of Mental Disorders Washington DC:2000.
- Kaplan, Harold I, M.D., and Benjamin J. Sadock, M.D. Kaplan and Sadock's Synopsis of Psychiatry: Behavioural Sciences, Clinical Psychiatry. Baltimore: Williams and Wilkins.
- Blom: A Dictionary of Hallucinations. [Internet] 2010. Available at [www.springerbooks.com](http://www.springerbooks.com).
- Alemen, A., Laroi, F: Hallucinations: The science of idiosyncratic perception. Washington DC; American Psychological Association. 1991.
- Tien A: Distributions of hallucinations in the population. Social Psychiatry and Psychiatric Epidemiology. 1991; 26:287-292.
- Ohayon MM: "Prevalence of hallucinations and their pathological associations in the general population". Psychiatry Res. 2000; 97:153-64.
- Louis Jolyon West: The Editors of Encyclopædia Britannica. Available at: [Internet][2013] <https://www.britannica.com/topic/hallucination>
- Lenz: Verleichende Psychiatrie. Einestudie Sociologieun dpsychopathologic, Vienna: Wilhelm Mandrich. 1991.
- Jocano, E, L (1971), Varieties of supernatural experiences among Filipino peasants: Hallucination or idiom of cultural cognition. Transcultural Psychiatric Research Review. 1971; 8:43-45.
- Hojurwu, S.T.C: Psychiatry in Africa: special problems and unique features. Transcultural Psychiatric research Review. 1991; 28:169-218.
- Sohwab, M.E: A study of reported hallucinations in South Eastern Country. Mental Health and Society. 1977; 4:344-354.
- Rack, P: Race, Culture and Mental Disorder. London and New York: Tavistock Publications. 1982.
- Legg, L., Gilbert, PA: pilot study of gender of voice and gender of voice hearer in psychotic voice hearers Psychology and Psychotherapy. Theory, Research and practice. 2006; 79:517-527.
- Hamilton, M: Fish's Clinical Psychopathology. Oxford: John Wright & Sons Ltd.
- Berrios, G.E., Brook, P: Visual hallucinations and sensory delusions in the elderly. British Journal of Psychiatry. 1984; 144:662-664.
- Manford M, Andermann F : "Complex visual hallucinations. Clinical and neurobiological insights". Brain 1998; 121:1819-40.
- Schultz, G., Melzack, R: The Charles Bonnet Syndrome: 'phantom Visual Images'. Perception. 1991; 20:809-25.
- Das, J, Prajapati, N, Sayeed, N: Disorder of perception: CIP Seminar. 2012.
- Berrios GE: "Tactile hallucinations: conceptual and historical aspects". J. Neurol. Neurosurg. Psychiatr. 1982; 45(4):285-93.
- Sims, A: An introduction to Descriptive Psychopathology. In: Symptoms in the Mind 4<sup>th</sup> edition. London: Saunders 2009; 90-117.
- Ohayon MM, Priest RG, Caulet M, Guilleminault C: "Hypnagogic and Hypnopompic Hallucinations: Pathological Phenomena?" The British Journal of Psychiatry. 1996; 169(4):459-67.
- Hamilton, M: Fish's Clinical Psychopathology. Oxford: John Wright & Sons Ltd. 1964.
- Hinkeldy, N.S., Corrigan, J.D: The structure of Head injured patients neurobehavioral complaints: preliminary studies. Brain. 1990; 125(2):391-403.
- Wing, J: Present Status Examination. Maudsley Hospital, Britain. 1960.
- Overall J.E., Gorham, D.R: The brief psychiatric rating scale, psychological report. 1962; 10:799-812.
- Kay, S.R., Opler, L.A., Lindermyer, J.P: The positive and negative Syndrome Scale (ANSS): Rationale and Standardization. British Journal of Psychiatry. 1989; 155:59-65.
- Haddock, G., McLarron, J., Tarrier, N., Faragher, F.B: Scale to measure dimensions of hallucinations and delusions: the psychotic symptoms rating scales (PSYRATS). Psychological Medicine. 1999; 29: 879-88.
- Shergill, S.S., Murray, R.M., McGuire, P.K: Auditory hallucination: A review of psychological treatments. Schizophrenia Research. 1998; 32:137-150.