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Acting on delusions in patients suffering from schizophrenia

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Summary

Background: Schizophrenia patients are more prone to violent crimes because of associated risk factors – delusions, hallucinations, and substance misuse. The phenomenology of delusions associated with action provides a new way of understanding delusions and identifying key targets for risk management intervention secondary to medications.

Aims: To assess the prevalence of delusional action in patients suffering from Schizophrenia and to identify the phenomenological characteristics of those delusions which are associated with action.

Materials and method: A cross-sectional study was conducted on a sample of 77 patients and their informant using DSM – 5 diagnostic criteria for Schizophrenia and Maudsley Assessment of Delusion Schedule was applied.

Results: Fifty one (66.2%) acted on their delusions. Delusion of persecution was commonest being present in 58.4%. Actions on delusions consisted of protecting themselves (32.5%), losing temper (25.9%), hitting self/others (12.9%), moving/leaving house (15.6%), trying to stop it (27.2%). Informants reported that the patients felt unsafe, frightened or scared at home, suspicious of others, violent to someone, showed unusual behavior.

Discussion: Acting on delusion occurs in significant proportion of patients. Significant association was found with acting on delusion and feeling angry. Besides significant association was observed between informant report of patients' feeling frightened or scared at home and violent behavior to others with acting on delusion.

Conclusions: Content of behavior can help understand the treating physician the probable precipitating factor, the psychopathology of the patient's illness.

Acting on delusion, India, phenomenology of delusion

INTRODUCTION

Schizophrenia is a mental disorder that produces an array of disturbances within the domains of thought, perception, affect and volition [1]. Disorders of thought content reflect the patient's ideas, beliefs, and interpretations of stimuli. A delusion is a belief, an idea, a thought, a notion or an intuition, and it arises in the same type of setting as any other idea – in the context of a perception, a memory, an atmosphere or occurring spontaneously [2]. For instance, a person may be accidently bumped on the road and may conclude that this is a government plot to harass him.

A crucial feature of phenomenological psychopathology is its emphasis on the mode, man-

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ner, or form of the experience in question [3]. The content of an experience and the supposedly erroneous nature of beliefs presumably asserted or assumed by the patient, are less important than how the delusional world seems to be experienced and what sort of reality or existence the patient might ascribe to it. Jaspers remarked on "the specific schizophrenic incorrigibility" of true delusions, and their peculiar tendency to be associated with irrelevance for action "inconsequentiality": "Reality for (the patient) does not always carry the same meaning as that of normal reality. Hence the attitude of the patient to the content of his delusion is peculiarly inconsequent at times. Belief in reality can range through all degrees, from a mere play with possibilities via a double reality–the empirical and the delusional– to unequivocal attitudes in which the delusional content reigns as the sole and absolute reality [4].

There are some schizophrenia patients for whom the first act of violence follows the onset of the illness. Psychotic symptoms such as delusions and hallucinations, substance misuse, personality traits, etc have been identified to be associated with violent behaviour in persons with mental illness [5]. For many of these patients, persecutory delusions that make them believe their lives are at risk are a significant contributor to their violent behaviours, and to them these are acts of self-defence [6]. Thus patients suffering from schizophrenia, often incited by these delusions react violently in response to a real or imagined threat. Then the possible sense of threat acts as a catalyst in the event of violent behaviour inspired by the delusional construction [7]. Command hallucinations are auditory hallucinations that instruct the patient to act in a certain manner. People are prone to obey their command hallucinations and that "dangerous" commands increase the likelihood that an individual will engage in violent behaviour [8]. Delusional belief consistent with the command hallucination increases the likelihood of compliance [9].

Prior research has shown the delusions related to perceived threat or an overriding of one's internal controls is associated with increased risk for violent behaviour. These symptoms have been referred as threat/control override or TCO symptoms [10, 11]. Persons who reported TCO symptoms were about twice as likely to engage in assaultive behaviour as those with other psychotic symptoms and six times more likely to engage in such behaviours than those with no mental disorder [12].

Chronic mental illnesses are commonly perceived to be associated with the risk of harmful behaviour, with rising public concern about violence by mentally ill person [13]. Schizophrenia patients are four to six times more prone to commit violent crimes [14]. The growing burden of chronic often untreated mental illness has increased the importance of risk assessment, not only to understand and manage the individual but also to generate better services and policies and to safeguard the community. Strauss was the first to point out that delusions can be characterized along several dimensions that are largely independent of their content; he proposed the dimensions of conviction, preoccupation, external determinants, and implausibility [15].

Sparse data is available for patients from India with regards to schizophrenia patients acting on their delusion. Therefore, this study aims to assess the prevalence of delusional action in patients suffering from schizophrenia and to identify the phenomenological characteristics of those delusions which are associated with action.

MATERIALS AND METHOD

Participants

In an observational cross-sectional of patients suffering from schizophrenia, the subjects were recruited from the outpatient unit of a medical school – General Hospital, Department of Psychiatry in Western India through serial sampling. Seventy seven patients (43 male, 37 female) with the diagnosis of schizophrenia were included. The inclusion criteria for the study were patient aged between 18 to 65 years with at least one non-mood congruent delusion, had come with a caregiver and gave informed consent. Exclusion criteria included those who refused to give consent, those who were severe formal thought disordered, co morbid psychiatric illness and mental retardation. The study was approved by the Institutional Ethics Committee. Patients were enrolled in the study after taking informed written consent.

Tools

A semi structured, semi open-ended questionnaire was used for interviewing the patient regarding demographics, the course of illness, past medical illness, the family history of psychiatric disturbances, substance history and mental status examination. For diagnosing Schizophrenia, DSM 5 (2013) Diagnostic criteria for schizophrenia were used [16].

Study tool used for Delusion was Maudsley Assessment of Delusions Schedule (MADS) [17]. The MADS is a semi-structured interview assessing the cognitive, affective and behavioral components of delusions and self reported evidence for delusions. It divides the types of evidence for delusions cited into internal experiences (e.g. mood, anomalous experience) and external events (e.g. the actions of others). It covers the phenomenology of abnormal beliefs (e.g. conviction, preoccupation, and systematization), the associated affect, and the reasons given by the subject for possessing those beliefs, the behavior that has resulted and the insight the subject might have as to the problem.

Statistics

Statistical analysis was carried out using Epi info-7 software. Statistical associations were tested using $\chi 2$ test. Significance was set at $p<0.05$.

RESULTS

Participant characteristics

The sample consisted of 77 patients (43 males and 34 females) with a mean age of 36.6 years (SD= 12.53). Twenty nine (37.7%) were married and 35(45.4%) were single, 57 (74.1%) had received formal education, 19 (24.7%) were currently employed. 18 (23.4%) patients had received no treatment in the past due to lack of awareness and financial issues; 39 (50.7%) patients' treatment details were not known as caregivers had lost the previous case details and no electronic medical records were available to trace the details. 20 (25.9%) patients had received treatment of which 3 were on first generation antipsychotics, 12 on second generation antipsychotics and 4 were on combination of first and second generation antipsychotics.

Types of delusions

In this study, out of 77 patients, 51 (66.2%) patients acted on their delusions. Two main types of delusions were delusion of persecution and delusion of reference, present in 45 (58.4%) and 42 (54.5%) respectively. Delusion of infidelity was present in 9 (11.7%). Less frequent delusions were as follows: somatic delusion, 4 (5.2%); delusion of control, 4 (5.2%); delusional misidentification, 1 (1.3%), delusional infestation, 1 (1.3%) and 4 (5.2%) other delusions.

Acting on delusions and demographic factors

The demographic characteristics: age, sex, marital status, education, religion, family type, or domiciles were similar in patients who acted on delusions and those who did not.

Table 1. Socio-demographic characteristics and Acting on delusions (N=77)

	Acting on delusion N=51, (%)	Non – acting on delusion N=26, (%)	p=
Age Mean age SD	 37.73 years (11.96)	 32.85 years (12.99)	 0.11
Sex: Male Female	 32 (62.8) 19 (37.2)	 11 (42.3) 15 (57.7)	 0.14

Marital Status: Married Others	 18 (35.3) 33 (64.5)	 11 (42.3) 15 (57.7)	0.72
Education:+ Illiterate Literate	 15 (29.4) 36 (70.6)	 5 (19.2) 21 80.8)	0.49
Religion: Hindu Others	 42 (82.4) 9 (17.6)	 24 (92.3) 2 (7.7)	0.40
Family type:* Joint Others	 17 (33.3) 34 (66.7)	 7 (26.9) 19 (73.1)	0.75
Domicile: Rural Urban	 24 (47.1) 27 (52.9)	 14 (53.8) 12 (46.2)	0.74

+ Illiterate is someone who has never attended school or had 4 or less years of education but is unable or read or write; Literate is someone who had 5 or more years of education,

*Joint family is an extended family consisting of 3 or more generations and their spouses, living together as a single household

Others included a nuclear family or living alone. Nuclear family is considered to be a couple and their dependent children

Delusional belief and acting on delusions

In the study, 74 (96.1%) were convinced that their belief is real. 58 out of 77 (75.3%) patients reported of some incidence since the idea (delusional belief) came to them and 22 (28.6%) reports of some events/states in last week.

The rates of acting of delusions were no different between those who were convinced that their belief is real as opposed to those who were not convinced (p=0.54). Also the rates of acting on their delusional belief were no different between those who had some incidence since the idea (delusional belief) came to them as opposed to those who did not (p=0.24).

Preoccupation or systematization and Acting on Delusion

Seventy four (96.1%) out of 77 patients were preoccupied with their delusional belief while 45 (58.4%) patients showed some degree of systematization with their delusions. The rates of acting on delusion were not significantly different with preoccupation with the delusional belief (p=0.06) as well as systematization of a delusional belief (p=0.18).

Affect with acting on delusions

Table 2. Affect and acting on delusion (N=77)

Affect	Acting on delusion Present N= 51 N, (%)	Acting on delusion Absent N= 26 N, (%)	p=
Elated	6 (11.8)	7 (26.9)	0.17
Unhappy/miserable/depressed	28 (54.9)	16 (61.5)	0.75
Terrified/frightened	27 (52.9)	11 (42.3)	0.52
Anxious/Tense	23 (45.1)	13 (50)	0.86
Angry	26 (50.9)	2 (7.7)	0.0005

In the study, the patients reported their delusional belief made them feel elated (16.88%); unhappy/miserable/depressed (57.1%); terrified/frightened (49.3%) and anxious/tense (23.16%), no associations were found with acting on that delusional belief. We found that a higher proportion of the patients who reported feeling angry acted on their delusions and the difference was statistically significant (p = 0.0005).

Prevalence of specific self reported delusional actions

Table 3. Self reported delusional actions (Positive response) (N=77)

Actions on beliefs – Positive response	Acting on delusion Present N= 51 N, (%)	Acting on delusion Absent N= 26 N, (%)	p=
Talked to anyone about X?	30 (58.8)	11 (42.3)	0.2576
Written to someone	1 (1.9)	0 (0)	0.7297
Tried to stop X happening?	21(41.1)	0 (0)	0.0004
Tried to protect oneself	25 (49.0)	0 (0)	0.0001
X made lose temper	34 (66.6)	11 (42.3)	0.0708
Ever broken anything because of this	20 (39.2)	0 (0)	0.0006
Felt like hitting someone because of it	21 (41.1)	3 (11.5)	0.0166
Hit someone because of it	10 (19.6)	0 (0)	0.0392
Tried to harm self or harmed self accidentally because of X	5 (9.8)	0 (0)	0.2452
Tried to move or leave your house because of X	12 (23.5)	0 (0)	0.0183
Have other changes resulted	1 (1.9)	0 (0)	0.7297

In this study, 41 (53.2%) patients out of 77 patients reported of talking about their beliefs while 21 (27.2%) patients reported of trying to stop their delusional belief and 25 (32.5%) patients reported of trying to protect themselves in some way. 45 (58.4%) patients reported that their delusional belief makes them lose their temper while 20 (25.9%) patients reported that they have broken something because of their temper. 24 (31.2%) patients out of 77 patients reported of feeling to hit someone because of their delusional belief while 10 (12.9%) patients had hit someone because of it and 5 (6.4%) patients had tried to harm or harmed themselves accidentally because of their belief. 12 (15.6%) patients reported of moving or leaving their house because of their delusional belief and 1 (1.3%) patient reported of having written to someone about their delusional belief and other changes resulting because of it.

We found that the patients who tried to stop their beliefs had higher rates of acting on their delusions (p=0.004). Also those who tried to protect themselves (p=0.001) or felt like hitting someone (p=0.0006) had higher rates of acting on delusions. All of these differences were statistically significant. We also found that patients who acted on their delusions in the form of hitting someone (p=0.016), breaking things in anger (p=0.03), and moving from their house (p=0.0183).

Self reported Negative acting on delusions

Table 4. Self reported delusional actions (Negative response) (N=77)

Actions on beliefs – Negative response	Acting on delusion Present N= 51 N, (%)	Acting on delusion Absent N= 26 N, (%)	p=
X stopped me from doing things I would normally have done?	1 (1.9)	1 (3.84)	0.7905
X stopped me from meeting friends	0 (0)	2 (7.6)	0.2115
X stopped me from watching television	1 (1.9)	1 (3.84)	0.7905
X stopped me from eating/drinking anything	4 (7.8)	0 (0)	0.2655
X stopped me from using transport	1 (1.9)	0 (0)	0.7297
X stopped me from going to work	4 (7.8)	1 (3.84)	0.6744
X stopped me from going to hospital/my doctor in an out-patient basis?	1 (1.9)	0 (0)	0.7297

In this study, out of 77 patients, 16 (20.7%) patients reported of hearing of voices. 2 (2.6%) patients reported of having stopped doing things they normally would have done, stopped meeting friends and stopped watching television while 4 (5.2%) reported of not eating/drinking because of the heard voices. 5 (6.5%) patients reported of not going to work because of hearing of voices and 1(1.3%) patient reported of not using transport and not visiting a hospital for treatment.

Insight and Acting on delusions

Table 5. Insight and acting on delusion (N=77)

	Acting on delusion Present N= 51 N, (%)	Acting on delusion Absent N= 26 N, (%)	p=
How far you think others share your belief	9 (17.6)	1 (3.8)	0.1785
Ever have arguments about your beliefs	26 (20.9)	7 (26.9)	0.0761
Think that seeing a psychiatrist might help you (has helped you) in any way?	30 (58.8)	12 (46.1)	0.4157
How much have you discussed X with your doctor and the nurses in the ward	39 (76.4)	17 (65.3)	0.4458
Are you psychologically unwell in any way	19 (37.2)	3 (11.5)	0.0361

In this study, out of 77 patients, 10 (12.9%) patients thought that others share their belief and 33 (42.9%) patients had arguments about their beliefs. 42 (54.5%) patients thought that seeing a psychiatrist has helped them in some way and 56 (72.7%) patients reported that they have discussed about their belief with the doctors and nurses to some degree. On asking whether they are psychologically unwell in any way or there is anything wrong with their nerves, 22 (28.6%) reported that they are psychologically unwell. The rates of acting on delusions was not different in those who visited a psychiatrist as opposed to those who did not (p=0.41). The rates of acting on delusions was also not different between those patients who thought others shared their beliefs when compared to those who did not (p=0.17). However, those who had some ideas related to insight had higher rates of acting on delusions and this difference was statistically significant (p=0.03).

Informant reported action

Table 6. Frequency of informants reported delusional action

	Acting on delusion Present N= 51 n, (%)	Acting on delusion Absent N= 26 n, (%)	p=
Has anything he/she heard on television, radio or in the newspapers, during the past month, seemed to give rise to any odd or unusual behaviour or distress?	12 (23.5)	5 (19.2)	0.88
Has X been writing letters or making telephone calls to unusual people?	2 (3.9)	1 (3.8)	0.5442
Has X been feeling unsafe, frightened or scared at home and taking extra precautions, such as locking the door or putting a chain to the door?	33 (64.7)	10 (38.4)	0.0511
Has there been any change in X's eating and drinking habits? Has he/she been refusing food or drink?	33 (64.7)	13 (50)	0.3179
Has x been dressing in an unusual, inappropriate or different way?	16 (31.3)	3 (11.5)	0.1032
Has X been behaving in the house in any other different or unusual ways?	15(29.4)	8 (30.7)	0.8885
Has X been suspicious of people recently? Has X been checking on anyone, or jealous of anyone	30 (58.8)	12 (46.1)	0.4157
Has X been violent to anyone	10 (19.6)	0 (0)	0.0392
Has X damaged anything, either inside or outside the home?	13 (25.4)	2 (7.6)	0.1186
Has X tried to harm him/herself	3 (58.8)	0 (0)	0.5229
Has he/she attended temple/mosque/church recently	9 (17.6)	1 (3.8)	0.1785
Has he/ she developed any new religious beliefs	5 (9.8)	1 (3.8)	0.6363

In this study, out of 77 informants, 46 (59.7%) informants reported that there was a change in the patient's eating and drinking habits, 43 (55.8%) informants reported that the patients felt unsafe, frightened or scared at home and took extra precautions, such as locking the door or putting a chain to the door and 42 (54.5%) informants reported that patients were recently suspicious of people. 23 (29.9%) informants reported that the patients behaved differently in the house in the last month, 19 (24.7%) reported change in the dressing pattern of the patients,17 (22.1%) reported of some odd or unusual behaviour in the past month. Fifteen (19.5%) informants reported damaging something inside or outside the house, (12.9%) reported that the patients were violent to someone. Only 3 (3.9%) reported that the patients tried to harm self. Less frequently reported behaviours was writing letters or made telephone calls to strangers (3.9%).There was change in religious behaviour, 10 (12.9%) patients attended a religious place recently while 6 (7.8 %) developed a new religious belief.

There was a higher rate of acting on delusions in those cases where the informant reported that the patient was frightened (p=0.05), and had violent behaviour towards others (p=0.039). Both these differences were statistically significant.

DISCUSSION

The prevalence of acting on delusion in patients suffering from schizophrenia was 66.2%. UK study found a self-reported delusional action in 60% people with schizophrenia [18]. Kulhara et al. in Chandigarh, India found acting on delu-

sion in 65.3 per cent of 112 patients diagnosed with Schizophrenia [19].

In this study, delusion of persecution and delusion of reference were the commonest, being present in 45 (58.4%) and 42 (54.5%) patients respectively and delusions of infidelity in 9 (11.7%). Kulhara et al. also found delusion of persecution were being present more frequently (84.6%) followed by delusion of reference (73.5%) and delusional misinterpretation (44.9%) [19]. Appelbaum observed that persecutory delusions and delusion of body/mind control predominated, and persecutory and religious delusions were most likely to have impact on subject's lives [20]. A Pakistan study, found delusion of persecution the most common followed by delusion of grandiose identity. It was also observed that phenomenology of delusion differs with socio-cultural roles and specific vulnerabilities [21].

In this study, 53.2% patients reported of talking about their beliefs while 27.2% patients reported of trying to stop their delusional belief and 32.5% patients reported of trying to protect themselves in some way. 58.4% patients reported that their delusional belief makes them lose their temper while 25.9% patients reported that they have broken something because of their temper. 31.2% patients reported of feeling to hit someone because of their delusional belief while 12.9% patients had hit someone because of it and 6.4% patients had tried to harm or harmed themselves accidentally because of their belief.

A UK study found that 35% tried to stop their delusional belief while 25% tried to protect themselves from their delusional belief and 17% tried to escape from their delusional belief. 19% have broken something because of their belief, 18% have hit someone [17]. This finding is similar to the present study. 13% had written to someone about their delusion belief and 14% reported of harming themselves because of their belief. These findings differ from the present study.

In a study from India, it was observed that risk of violence (historical) was reported among 65. 5%, and risk of self-neglect among 53.3%, risk to others (47.4%), risk of coming to harm (24.1%), self-harm (22.6%), risk from others (11.8%), fire risk (3.0%). This differs with the findings of current study; it may be due to different scale and parameter used on the subjects [22]. UK study by Freeman et al observed that 96 % patients had used safety behaviours in the past month because of their delusional belief. The most common safety behaviour was avoidance of threatening situations. Higher levels of safety behaviours were associated with higher levels of acting on delusions as measured by MADS. The use of safety behaviour was modestly associated with higher levels of anxiety and depression. A history of violence and suicide was not associated with acting on delusions [23].

In this study, acting on delusions was no different in the various demographic groups. In the study by Jakhar et al, prevalence of various risks and predictive factors for self-harm, violence and various other risks among randomly recruited schizophrenia found no gender differences [22].

Aspects of phenomenology not associated with action in this study were conviction, preoccupation, systematization, incidences after belief formation, others sharing their belief and seeing a psychiatrist. Those who had some ideas related to insight had higher rates of acting on delusions and this difference was statistically significant. Similar findings were observed by Buchanan et al [17]. Although in Buchanan et al study, significant association was observed between seeking evidence and seeing a psychiatrist with delusional action. No significant association was found between some ideas relating to insight and acting on delusion in that study.

Another Indian study conducted observed hallucinating patients, more in non affective group, described a negative impact of hallucinating voices along with emotional consequences on their lives which lead to distress and disruption. Significant association was observed with conviction and delusional content but no association with respect to preoccupation and insight and socio-demographic variable [24]. Corlett, in a critical overview mentioned the hypothesis involving prediction errors – the mismatches between expectation and experience that guide learning, attention, belief formation and maintenance. If prediction errors are signalled inappropriately, delusions result. They highlighted that patient with delusions lack manifest conviction in their beliefs, e.g. claiming that their food is poisoned but eating it nevertheless. It seems that people do not always

act on their delusions and they may simultaneously endorse and deny them [3, 25]. Buchanan et al study found significant association between belief making subjects feel frightened and sad [17]. This differs from the findings of our study in that a higher proportion of the patients who reported feeling angry acted on their delusions and the difference was found to be statistically significant. This may be because of the higher percentage of patients in the present study, feel like to hit someone, losing their temper and breaking things. Cheung et al observed that violent actions were associated with acting on delusion [26]. Coid and colleagues based on an epidemiological survey of first episode psychosis, during a 2-year period; found a strong association between anger due to delusions and serious violence. Three highly prevalent delusions demonstrated pathways to serious violence mediated by anger due to delusional beliefs: persecution, being spied on and conspiracy. It has being suggested that patients who have acted in any way violently were more likely to report that delusions made them angry. Anger should be a warning signs for serious violence and key targets for risk management intervention [27, 28].

Informants reported of patient's feeling frightened and patients' violent behaviour to others with acting on delusion in this study. This differs with the findings of Wessely et al, no trend for any relationship between acting on delusions and informant – observed violent action towards either self or others [18]. Schizophrenia patients are often aware of the difficulty of conveying their experiences and the likelihood of being misunderstood which can be the possible explanation for the variation in the studies [29].

LIMITATION OF THE STUDY

This is a cross sectional study so the causal direction of association could not be determined. In data collection, it is reasonable to assume that informants were unaware of at least some of the delusional actions exhibited by some patients (false negatives). False positive is as well possible considering informants are not trained observers of unusual behaviour. It is also possible that some behaviour was not admitted to because it was considered either too trivial or too embarrassing.

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