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Social cognition of patients with schizophrenia across the phases of illness - A longitudinal study

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ABSTRACT

Aim: This longitudinal study aimed to evaluate social cognition of patients with schizophrenia at two points, i.e., during the symptomatic phase and clinical remission phase. Additional aim was to evaluate the relationship of social cognition with psychopathology and functional outcome.
Methodology: Fifty-one patients (N = 51) were evaluated on Social Cognition Rating Tools in Indian Setting (SOCRATIS), Positive and Negative Syndrome Scale (PANSS), Global Assessment of Functioning (GAF), Socio-occupational functioning scale (SOFS) and Indian Disability Evaluation and Assessment Scale (IDEAS) during the symptomatic phase of illness. These patients were followed-up longitudinally for achieving clinical remission. Out of the 51 patients, 32 patients underwent second assessment after a mean duration of 143 (SD 34.9) days, while in clinical remission. Data of 111 healthy controls was used for comparison.
Results: Social cognitive deficits were present in both the phases of illness. However, when the baseline and follow-up data was compared, it was evident that the severity of social cognition deficits is lower during the clinical remission phase. Higher levels of social cognitive deficits in both phases of illness are associated with higher socio-occupational dysfunction and higher disability.
Conclusion: Present study suggests that impairment in social cognition in patients with schizophrenia is present both in symptomatic and remission phase, with higher level of deficits during the symptomatic phase. Social cognition impairments are associated with poor social and occupational functioning and higher level of disability.

1. Introduction

Social cognition has been defined by many authors (Kirkpatrick and Tek, 2004; Penn et al., 2008; Penn et al., 1997; Mehta et al., 2014). Simply saying social cognition includes understanding of the processes involved in social interaction and it involves ability to observe emotions in others and to infer what other individuals think, together with the ability to comprehend the individual roles and rules that regulate social interactions (Kirkpatrick and Tek, 2004; Penn et al., 2008; Penn et al., 1997; Mehta et al., 2014).

The various domains of social cognition include theory of mind (ToM), emotional processing (EP), social perception (SP) and attributional styles (AS). ToM is defined as ability to infer intentions, dispositions and beliefs of others (Penn et al., 1997). It refers to the ability of a person to represent the mental states and/or to make inferences about another's intentions. It includes understanding false beliefs, hints, intentions, deception, metaphor, irony, and faux pas (Penn et al., 2008). EP is the ability to perceive emotions expressed by others. It includes both facial expression and affective prosody. EP is further understood as having 4 components, i.e., identifying emotions, facilitating emotions, understanding emotions and managing emotions (Mayer et al., 2003). SP involves perception of social cues. It is also conceptualised as a part of larger domain of cognitive skills which includes ToM, emotion recognition, lip reading, understanding body language and social attention, all of which deals with processing of information which culminates in the accurate perception of dispositions and intentions of other individuals (Frith and Frith, 1999; Premack and Woodruff, 1978). AS are defined as the pervasive tendency to explain the cause of social actions in terms of oneself or others or the context of the event (Donohoe et al., 2008). It is now well known that patients with schizophrenia have impairment in the neuro-cognitive functions and social cognition (Keefe et al., 2012). Although neurocognition has received significant attention in research, social cognition is relatively less researched.

Many cross-sectional studies from the west have assessed social cognition among patients with schizophrenia and these have shown that compared to healthy controls and psychiatrically ill controls, patients with schizophrenia exhibit higher deficits in ToM (Sprong et al.,

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2007), EP (Kohler et al., 2010), SP (Hall et al., 2000) and AS (Penn et al., 2008). The social cognitive deficits are present both during the symptomatic phase and in remission, suggesting that these deficits may be trait markers.

Some of the studies have assessed social cognition in different phases of illness. One study examined face and voice affect recognition among patients with early stage of schizophrenia, chronic schizophrenia and compared the same with a healthy control group and reported higher level of impairment in the chronic group (Kucharska-Pietura et al., 2005). Three publications from North American network of early intervention sites compared social cognition performance of patients in the prodromal phase, during the first episode and chronic phase. Findings of the patient groups were compared with healthy control group (Addington et al., 2008; Green et al., 2012; Pinkham et al., 2007). Findings from these studies are somewhat mixed regarding social cognition deficits in the prodromal sample. One study reported no difference in the face and voice emotion perception between subjects in the prodromal phase and healthy controls (Pinkham et al., 2007). Second study reported no differences between these groups on ToM tasks (Couture et al., 2008) and third study reported differences on the emotion discrimination but not on the emotion identification (Pinkham et al., 2007). Two of these studies included a chronic sample and reported comparable levels of social cognitive impairment for both early stage and chronic groups. Another cross-sectional study assessed the social cognitions of 3 groups of patients, i.e., persons with prodromal risk syndrome for psychosis, patients with first episode schizophrenia, patients with chronic schizophrenia and socio demographically matched controls for each group. The study revealed deficits in the domains of social cognition and these deficits were stable across the phases of illness (Green et al., 2012).

Although many cross-sectional studies have assessed the social cognition in patients with schizophrenia, only occasional studies have assessed social cognition longitudinally, i.e., comparing the same cohort with respect to the level of disease control. A study conducted by Horan et al. (2012) showed that key domains of social cognition (i.e., EP, ToM, SP) are stable during the period of 12 months.

In terms of correlates evidence from cross sectional studies suggests that compared to females, males have poorer emotional processing ability (Hall et al., 2000).

In terms of impact of social cognitive deficits on functional outcome studies suggest that social cognitive deficits in one or more domains are associated with poor social functioning (Toomey et al., 1997), cognitive impairment (Corrigan et al., 1994; Vauth et al., 2004; Wynn et al., 2005), impairment in the quality of inter-personal relationships and community participation (Lysaker and Davis, 2004) and impaired quality of life (Maat et al., 2012). A meta-analysis published in 2010 (Fett et al., 2011) to study the relationship of social cognition and neurocognition with functional outcomes in schizophrenia showed that social cognition was more strongly associated with community functioning than neurocognition, with the strongest associations being between ToM and functional outcomes. Studies which have assessed social cognition longitudinally suggest that higher baseline and 12-month social cognition scores are associated with significantly better work functioning, independent living and social functioning at the 12-month follow-up assessment. However, the study was limited by the absence of assessment for neurocognitive functions (Horan et al., 2012).

With regards to psychopathology, the evidence is inconsistent with some studies concluding that impairment in ToM is not associated with any specific symptom of schizophrenia (Penn et al., 1997), whereas others suggest that presence of highly disorganised thoughts, language and behaviour, higher severity of symptomatology and higher severity of negative symptoms (Corcoran and Maren, 2001) are associated with poor performance on ToM tasks (Andreasen et al., 1986). There is lack of consensus with regard to the relationship of ToM and clinical remission. Some of the studies suggest that these deficits improve with clinical remission (Frith and Corcoran, 1996; Pickup and Frith, 2001), whereas most of the other studies suggest that ToM deficits persist even in clinical remission (Brüne, 2005; Harrington et al., 2005; Sprong et al., 2007).

Few studies from India have evaluated the social cognition deficits in patients with schizophrenia. These studies suggest that social cognition deficits influence functional outcome (Mehta et al., 2011a, b), parental role dysfunction (Mehta et al., 2013), are independent of neurocognitive deficits and are present in the remission phase (Mehta et al., 2013). However, there is no longitudinal data from India. In this background, the present longitudinal study aimed to evaluate social cognition among patients of schizophrenia at two points, i.e., while in the symptomatic phase and clinical remission phase. Additional aim of the study was to evaluate the relationship of social cognition with psychopathology and functional outcome. It was hypothesized that social cognitive deficits will not change with change in the phase (symptoms) of illness and will have association with socio-occupational outcome.

2. Method

This study was conducted at a tertiary care hospital in North India during the period of July 2013 to March 2014. The Institute Ethics Committee approved the study and all the participants were recruited after obtaining a written informed consent.

To be included in the study, the study participants were required to fulfil the diagnosis of schizophrenia as per DSM-IV (based on MINI-PLUS). They were aged between 16 and 55 years, had a duration of illness of 1–10 years, were not in remission at the time of first assessment as defined by Andreasen et al. (2005), were cooperative for assessments and were able to read and understand Hindi/English. Patients with comorbid major chronic physical illness [cerebrovascular accident, epilepsy, head injury, demyelinating diseases, etc.], organic mental disorder or substance dependence/abuse (except for nicotine dependence) were excluded. Patients with comorbid psychiatric disorders, intellectual disability and those who were receiving or had received ECT during the 6 months period prior to assessment were also excluded. Similarly, patients with medically diagnosed and/or self-reported visual and/or auditory impairment were excluded.

The study followed a longitudinal design in which participants were evaluated twice. First assessment was carried out when the patient was symptomatic [i.e., patient did not meet the remission criteria as defined by Andreasen et al., 2005]. Second assessment was done at least 3 months after the first assessment and when patient was in remission as per the abovementioned criteria except for the duration criteria. All the assessments were carried out by the same researcher. The researcher who carried out the second assessment was not blind to the clinical remission status of the patient. The researcher who carried out all the assessment was trained for a period of 10 days by the authors, who designed the social cognition battery for Indian patients (Mehta et al., 2013).

Published data of healthy controls (N = 111) from India was used for comparison (Mehta et al., 2014).

3. Assessments

1. Social cognition was assessed using Social Cognition Rating Tools in Indian Setting (SOCRATIS) (Mehta and Thirthalli, 2014): it has been validated for administration in the Indian sociocultural setting. The SOCRATIS has satisfactory content, concurrent and known groups validity, internal consistency and external validity (Mehta et al., 2011a, b; Mehta and Thirthalli, 2014). It assesses three domains of Social cognition – theory of mind, attributional styles and social perception, the details of which are described hereunder:
   a. Theory of mind (ToM) tasks include two each of 1st and 2nd order false-belief stories, two metaphor-irony detection stories and 10 faux pas recognition stories. These tasks examine, at different complexity levels, the individual's ability to infer

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