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Cognitive insight and objective quality of life in people with schizophrenia and auditory hallucinations

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Abstract

Poor cognitive insight in schizophrenia has been linked to delusions, hallucinations, and negative symptoms as well as to depressive/anxiety symptoms. Its impact on quality of life has been less studied, especially in schizophrenia subjects with ongoing auditory hallucinations. The Beck Cognitive Insight Scale (BCIS) and the Quality of Life Scale (QLS) were administered to subjects who met DSM IV criteria for schizophrenia after due translation and validation. All subjects reported ongoing auditory hallucinations at recruitment. Mean composite cognitive insight scores from participants (N = 60) (2.97 ± 2.649) were in the lower range as compared to published literature. Cognitive insight scores as well as self-reflectiveness subscale scores, but not self-certainty scores, correlated significantly with the QLS scores $p < 0.001$. Results suggest that better cognitive insight, especially self-reflectiveness, may be linked to better quality of life. Self-reflectiveness could be a useful construct to address in psychotherapy to improve rehabilitation.

Keywords

Insight; Cognitive insight; Quality of life; Schizophrenia

1. Introduction

Between 50% and 80% of individuals suffering from psychotic disorders may lack insight (Amador et al., 2004). Insight has also been described as a condition independent of psychotic symptoms and course of illness (McEvoy et al., 1989). Insight has been viewed as a multidimensional construct, with awareness of illness, symptoms and need for treatment as its dimensions (David, 1990; Amador et al., 1991). Lack of insight may be a coping mechanism to avoid distress and loss of self-esteem for individuals suffering from psychotic illnesses (Cooke et al., 2007). Indeed, research reports an “insight paradox”: wherein individuals with higher clinical insight may report lower well-being and increased distress (Lysaker et al., 2007; Weintraub and Weisman de Mamani, 2015).

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Over the last few years, researchers described two kinds of insight: clinical and cognitive (Donohoe et al., 2009; Lysaker et al., 2013). Clinical insight refers to accurate awareness about the subject's own condition, including a clinically accurate understanding of behavioural issues, cause of illness and need for treatment (Beck and Warman, 2004; Lysaker et al., 2011a). Cognitive insight (CI) was proposed as an extension to the conventional concept of insight, indicating the ability to evaluate and correct distorted beliefs and misinterpretations (Beck et al., 2004). CI refers to the ability to view one's aberrant beliefs and anomalous experiences objectively, to distance oneself from them and to accept feedback from others (Beck et al., 2004; Beck and Warman, 2004).

Beck and colleagues developed a measure of CI which distinguishes self-reflectiveness (SR) and self certainty (SC) in insight. The SR items evaluate whether one can view the inaccuracy of psychotic experiences and accept feedback given by others, whereas the SC items reflect absolute confidence in one's current perceptions and belief systems (Beck et al., 2004; Beck and Warman, 2004). CI is measured in terms of a Composite Cognitive Insight Index (CCII = (SR-SC)), and is considered to be good when SR scores are high and SC scores low (Beck et al., 2004; Beck and Warman, 2004).

Lack of insight is considered a core manifestation of schizophrenia (DSM-IV-TR). Presence of insight may have important implications for outcomes and recovery in schizophrenia, as individuals with poor insight may not be adherent to medications or psychotherapy (Kay et al., 1987; Karow et al., 2008; Joseph et al., 2015). Mohanty and Kumar (2012) reported in their study that CI is an important mediator of response to cognitive behaviour therapy for psychosis, acting as a predictor of improvement in positive, negative as well as general psychopathology symptoms (Granholt et al., 2005; Perivoliotis et al., 2010; Premkumar et al., 2011). Lack of CI may be associated with psychotic symptoms such as delusions (Beck et al., 2004; Beck and Warman, 2004; Bora et al., 2007; Warman et al., 2007; Buchy et al., 2009; Engh et al., 2010). Positive and negative symptoms on PANSS have positive relationship with self-certainty and negative association with self-reflectiveness factor of BCIS among Indian persons with schizophrenia (SZ) (Mohanty and Kumar, 2012).

Others reported no associations between better CI and depression (Beck et al., 2004; Pedrelli et al., 2004; Zimmermann et al., 2005; Engh et al., 2007; Tranulis et al., 2008) or even decreased depression with better insight among individuals with schizophrenia (Engh, 2011). Choudhary et al. (2016) reported better CI among schizophrenia patients with depression compared to those who were not depressed. Relationship between insight, awareness of illness and clinical variables was similar among Indian and Western schizophrenia patients (Saravanan et al., 2007).

Quality of life (QOL) in schizophrenia has been studied in terms of subjective QOL (S-QOL) or life satisfaction and objective QOL (O-QOL) i.e. participation in social and occupational activities (Narvaez et al., 2008). The relationship of CI with S-QOL has been mixed across studies as described above. Whether improved insight is really beneficial to all people with schizophrenia is also unknown. Many studies (Lysaker et al., 1998, 2007; Hasson-Ohayon et al., 2009; Montemagni et al., 2014; Kim et al., 2015; Phalen et al., 2015) have reported that SR showed a positive relationship with O-QOL. However, in some of

their participants with more severe symptoms, SC was found to be associated with better QOL. Conversely, better CI has been linked to poorer S-QOL outcomes through increased anxiety (Colis et al., 2006), self-stigma (Mak and Wu, 2006) and depressive symptoms (Granholm et al., 2005; Colis et al., 2006; Warman et al., 2007; Uchida et al., 2009; Mass et al., 2012; Palmer et al., 2015). Thus CI may even show a reciprocal relationship with subjective QOL (Weintraub and Weisman de Mamani, 2015).

Symptoms of mental illness may affect persons to varying degrees, depending on multiple factors- family, environment and culture. On the other hand, cognitive insight is determined by dimensions such as awareness of having a disorder, attribution of one's symptoms to the disorder, and acknowledging the need for treatment. The QLS scale that we have used is a 21 item scale for measuring O-QOL assessing the impact of schizophrenia on the subjects; including personal experiences, interpersonal relations, and efficiency in occupational role. It would be interesting to investigate the relationship between cognitive insight and QOL, keeping the third factor- auditory hallucinations-constant.

While the relationship between CI and S-QOL is unclear, there is a paucity of studies examining the relationship between CI and O-QOL. Previous studies described the role of CI in delusions, but not hallucinations. The objective of this study was firstly, to examine the relationship between CI and O-QOL among patients with schizophrenia who were currently experiencing auditory hallucinations, and secondly, to assess the level of CI in such persons. We hypothesised that improved CI was associated with better O-QOL.

2. Methods

2.1. Participants

Outpatients with schizophrenia currently reporting auditory hallucinations were recruited from a general hospital psychiatry unit at a tertiary care free government hospital in New Delhi after oral consent and referral by the treating clinician. In order to participate in the study, subjects had to be between 18 and 60 years of age, free from any co-morbid severe medical or neurological illnesses or substance use disorders (except nicotine). All subjects were outpatients accompanied by caregivers at the time of assessment. The diagnosis of schizophrenia as per DSM-IV criteria was determined after review by an independent, board-certified psychiatrist, based on detailed interview using the Diagnostic Interview for Genetic Studies and available medical records. All assessments were carried out by the first author (psychiatrist) after due training for the tools. Of 141 subjects screened for participation, assessment was completed for 60 subjects who fulfilled all inclusion and exclusion criteria.

2.2. Instruments

2.2.1. Diagnostic Interview for Genetic Studies (DIGS; Deshpande et al., 1998)

—The Hindi version of DIGS (Deshpande et al., 1998) was used after due training. It is a comprehensive structured interview schedule allowing for detailed evaluation of psychopathology along with evaluation of major mood and psychotic as well as substance use disorders.

2.2.2. Beck Cognitive Insight Scale (BCIS; Beck et al., 2004)—The Beck Cognitive Insight Scale is a 15-item self-report questionnaire, with answers on a 4 point Likert scale (fully agree to not at all agree) designed to evaluate patients' SR (ability to 'objectively assess and reflect on psychotic symptoms and consider feedback' – 9 subscale items) and the strength of their conviction in their interpretations of their experiences and resistance to alteration of belief called SC (6 items). In general psychotic patients score higher on certainty and lower on reflectiveness.

The scales demonstrates good convergent, discriminant and construct validity (Beck et al., 2004; Pedrelli et al., 2004; Bora et al., 2007; Perivoliotis et al., 2010). Studies have reported adequate to good internal consistency and test-retest reliability (Riggs et al., 2012). The summary score is calculated by subtracting the SC score from the SR score called the "composite cognitive insight index" (CCII) or the "reflectiveness-certainty index" (Granholm et al., 2005; Engh et al., 2007, 2010; Engh, 2011). A score of 10 points or more is taken as an indicator of good CI. Norms are available from an unscreened community sample in Canada (Buchy et al., 2012).

For the present study, the original English language BCIS was translated to Hindi and then back translated into English and pilot tested on a small patient sample before use.

2.2.3. Quality of Life Scale (QLS; Heinrichs et al., 1984; Chakraborty et al., 2011)—QLS is a validated and semi structured instrument, designed to objectively evaluate the current functioning levels of outpatients affected with schizophrenia, apart from the presence or absence of marked psychotic symptoms or need for admission. Hindi translation of QOL by Chakraborty et al. (2011) was used in the study. The objective is for the observer to assess impairments due to psychopathology or personality deficits, including those due to schizophrenia. The items include personal experiences, interpersonal relations, and efficiency in occupational roles. Each item consists of three parts- introduction, suggested questions to help the interviewer begin assessment, and a seven-point scale demarcated for each item, with unlabelled points and a brief description at the fourth point to help the interviewer arrive at a score. The higher the score, better the quality of life (Chakraborty et al., 2011).

2.3. Analyses

Appropriate sample size for evaluating insight among schizophrenia patients with auditory hallucinations was calculated using a paper by (Lera et al., 2011). They reported a 'significant' difference ($p = 0.006$) between the hallucinating and non-hallucinating schizophrenia groups. This difference was taken to indicate moderate effect size (0.5). This value was used to calculate sample size using the t -test means: Wilcoxon signed-rank test (one sample case). The alpha was taken as 0.05 and power as 95%. The sample size was 57, which was then rounded off to 60. Our sample size of 60 was adequate to assess the mean lack of insight in our sample of schizophrenia patients with ongoing auditory hallucinations.

Pearson's correlation analyses were performed between BCIS scores and QLS scores, for subscale as well as total scores. For all analyses the level of significance was taken as $p = 0.05$ (two tailed) and analyses were performed using SPSS v.21 (IBM Corp, Released,

2012). The analysis was controlled for various factors affecting outcome for quality of life, including age, gender and educational status. Possible zero order correlations between the independent variables that might affect later regression analysis were considered as well.

3. Results

A total of 141 persons were screened of which 92 provided oral consent and fulfilled the inclusion and exclusion criteria. Among these, 14 suffered from gross formal thought disorder, 13 had continuous florid auditory hallucinations which interfered with evaluation, 1 participant refused written consent and 2 others withdrew consent during the assessment procedure. Two subjects left the interview midway due to severe persecutory ideas. Finally, interviews along with quality of life and insight assessments were completed for 60 subjects, with sociodemographic characteristics as mentioned in Table 1. All subjects lived in the community in either joint or nuclear families. Most were accompanied by a family member during interview. All participants reported delusions. None of our participants suffered from any other major medical illness or substance abuse, or have a comorbid psychiatric diagnosis.

Mean scores for the key variables on BCIS were lower (composite score 2.97 ± 2.649) than several reported samples (Table 2). While mean SR score was 12.63 ± 2.52 , mean score on SC was 9.67 ± 1.271 . Scores on the two scales did not differ significantly among males and females. SR sub-scale mean score for males was 12.76 ± 2.498 , and for females 12.41 ± 2.612 . The mean score on SC subscale for males was 9.66 ± 1.38 and for females was 9.68 ± 1.086 . The composite cognitive insight index for males was 3.11 ± 2.729 and for females 2.73 ± 2.548 . The current Indian sample scored similar to an unscreened Canadian population sample, but their SC cores were among the highest from published studies. Due to higher SR their composite cognitive insight index was lower. O-QOL measured in our study was lower than a Korean subjective quality of life sample score.

Both SR subscale of BCIS and composite cognitive insight index scores correlated significantly with the QLS scores ($P < 0.001$) suggesting that O-QOL was positively correlated with SR in our sample. However, SC scores were not related to O-QOL in our study. Self-Reflectiveness subscale is said to assess objectivity, reflection, and openness to feedback (Riggs et al., 2012). The composite cognitive insight index indicates awareness of having a mental disorder (Riggs et al., 2012). Since CCII is largely determined by the SR scores, SR and CCII both correlated significantly with objective quality of life scores. Persons with schizophrenia who are able to reflect on their symptoms (and thus possibly, realize their unreality) will be able to deal with problems these symptoms may cause in daily life, tackle them effectively and thus show a better O-QOL. Since self-certainty may indicate resistance to correction, lower self certainty scores lead to a higher total score on the composite cognitive insight index and are not correlated with O-QOL.

Linear regression analysis was carried out to check for the relationship of CCII scores, demographic and clinical variables, with O-QOL: age, sex, marital status, SES, education, age at onset along with SR-SC domains and CCII as independent variables and O-QOL

score as dependent variables. Only CCII was associated with O-QOL scores irrespective of any other clinical or demographic variables (Beta 0.468, $p = 0.0046$).

Scores on SR, and CCII scores, were highly correlated with O-QOL scores ($p < 0.001$). Since SR was high among our subjects, this led to the high correlation of the composite score too (Table 3).

4. Discussion

Cognitive insight has received much research interest as it is said to moderate response to cognitive behavioural interventions in schizophrenia (Granholt et al., 2005). Considering its important role in the formation and maintenance of delusions (Granholt et al., 2005; Bora et al., 2007; Warman et al., 2007; Buchy et al., 2009; Engh et al., 2010; Perivoliotis et al., 2010), its relationship with other positive symptoms such as hallucinations needs to be investigated, especially in terms of outcomes such as quality of life. Our study is the first, to our knowledge, reporting on CI among Indian subjects with auditory hallucinations and schizophrenia. The translation into Hindi for this purpose was done by experienced clinicians and tested on a small sample of patients in the same hospital.

Our sample was comparable in diagnosis with most of the literature on the BCIS (Beck et al., 2004; Engh et al., 2010; Buchy et al., 2012). We administered the BCIS to a relatively younger patient population almost all being married, living with their families, but with ten years or more of illness. Being employed (but in lower level jobs) or housewives, they may have had better occupational outcomes compared with Western literature, where many affected persons are homeless or unemployed. Moreover, they also did not suffer from any psychiatric or medical comorbidities or substance abuse.

Our sample did score highly on SR and lower on SC. Beck and Warman (Beck and Warman, 2004) theorized that delusional thinking, in particular, should be related to CI because low SR and high SC constitute a reasoning style that would maintain delusional beliefs. Conversely, patients who evidence more Self Reflectiveness and less self-certainty are 'less intellectually rigid, are more open to alternative explanations for their experiences, and are predicted to be less delusional' (Riggs et al., 2012). This would explain how individuals with higher SR might have better social interactions, which leads to objectively better quality of life.

The Composite Cognitive Insight Score, as a measure of self-reflectiveness as compared to self-certainty, is more dependent on SR than SC, as higher the SR the higher the composite index of the BCIS. Self-certainty about hallucinations leads to difficulty in realizing their nature and hence, lowers the degree of insight in a person. However, if the person with schizophrenia is able to reflect and ponder on these symptoms, s/he is better able to gain insight into the unreal nature of these experiences and is better able to adjust to realities of life. SC scores were not variable across patients.

Our participants- all of whom suffered from auditory hallucinations-were sure about their experience but they reflected on their hallucinatory experiences. All of them were living with family members, often in a joint family system. Caregivers were closely involved with

the psychiatrist in charge for care of the subjects. We did not measure severity of hallucinations which may be related to subjective belief about their 'voices' (Riggs et al., 2012). In Norway, those with 'delusional hallucinations' scored lower on SR and higher on SC (Engh et al., 2010) although not statistically significantly. Severity of psychotic symptoms, also not measured in our study, was a potential moderator between CI and QOL; SC was associated with better QOL for those with severe symptoms (Phalen et al., 2015).

Next, we examined the relationship between CI and O-QOL in our outpatient sample. There was a significant correlation between the SR subscale and the composite cognitive insight index of BCIS with the total score on QLS scale (O-QOL). Previous research has linked higher SR with a better quality of life, with better CI tending towards better quality of life (Phalen et al., 2015). In a sample of Korean schizophrenia subjects, Kim et al. reported that the higher the score on self-reflectiveness subscale of the BCIS, the lower the ratings on quality of life (Kim et al., 2015). However, Kim et al. used SQLS-R4, a subjective QOL rating scale for schizophrenia; which includes emotional distress due to symptoms. We however used the broader, validated and objectively rated QLS scale of Heinrich & Carpenter. This scale does not specifically measure emotional responses to psychopathology, but does measure how well the subject is functioning in society, in spite of active symptoms. Information was also corroborated with the family members of the subjects living with them. We found significant correlation between ability to reflect on symptoms (SR scale of BCIS) and objectively rated QOL in terms of interpersonal relations, occupational roles, emotional interactions and community participation; suggesting that patients of schizophrenia who are able to reflect on their psychotic experiences score better in day to day QOL indices. The O-QOL was used only in the present study, to our knowledge.

Our findings thus suggest that better cognitive insight, especially self-reflectiveness, may be linked to better quality of life. However, the nature of this relationship needs to be determined. Improved SR might lead to improved functioning and relationships as individuals may proceed in such situations cautiously in spite of psychotic symptoms; due to acceptance of feedback from others regarding the anomalous experiences or by allowing for a more cautious and deliberative approach in social situations and relationships leading to improved functioning.

The results of our study also suggest that individualised approaches towards enhancing coping strategies may help in improving CI and ultimately, quality of life. Such approaches help the individuals develop a richer account of their lives, to develop more realistic ideas about their identities and to effectively deal with interpersonal and other challenges in life (Lysaker et al., 2011a).

An observer rated quality of life scale was used in this study. Studies have shown that observer rated and self-rated quality of life scales have different determinants (Fitzgerald et al., 2001) and thus have only low to moderate correlation with self-rated scales (Lobana et al., 2001; Yamauchi et al., 2008). Therefore it is possible that different results might have been obtained if a self-rated scale had been used. Insight was the major factor affecting discrepancy between observer and subjective ratings of QOL (Hayhurst et al., 2014): lower insight was correlated with better subjective but not objective insight. Contrarily, better CI

was correlated with worse quality of life (Hayhurst et al., 2014; Kim et al., 2015). Measured on a self-report scale, self-reflectivity was associated with poor scores on psychosocial functioning domains (Kim et al., 2015). Negative symptoms - predominant in our sample may reduce objective or observer rated QOL measures (Hayhurst et al., 2014). Observer rated quality of life scales capture functional capacity and illness severity which are more relevant in terms of rehabilitation goals (Ruggeri et al., 2001) while self-report scales incorporate affective states, self-esteem and subjective distress as well. Obtaining self-report as well as observer rated measures may be better for estimation of quality of life outcomes taking into account the multifaceted nature of the construct.

The results of our study should be considered keeping in account certain limitations. It was a cross sectional study in the clinical setting. The stability as well as causality of the relationships observed here need to be re-examined using a longitudinal study design. The subjects were outpatients and most of them were in a relatively early phase of the illness. All of them were in the first episode of the illness, were suffering from auditory hallucinations and were having active psychotic symptoms. Thus the results may not be generalizable to a more diverse group of patients.

This study did not include a comparator sample of people with schizophrenia *without* auditory hallucinations. Also a detailed measure of the severity of auditory hallucinations would have provided greater insight into the relationship of auditory hallucinations with quality of life. We also did not perform any standardised clinical insight assessments and psychopathology measure, which might have been useful. Future studies can be designed improving on these limitations.

In our sample of Indian outpatients, we found that constructs of SR and SC in Hindi could be understood and evaluated. CI was positively correlated with quality of life, especially the SR domain. This suggests that CI, especially the SR domain more than SC, may be a valuable target for clinical intervention in order to improve O-QOL outcomes; further studies can be designed around this. Using psychotherapeutic methods, individuals suffering from psychosis can be encouraged to consider several alternative possibilities for their experiences and feedback given. For example, metacognitive therapy aims at helping individuals strengthen their self-reflection and develop richly detailed representations of them and people around them thus facilitating the eventual acceptance of imprecision of one's thoughts in comparison to opinions of others (Lysaker et al., 2011b; Borgenquast and Schweitzer, 2013). Such a model may be more helpful to improve quality of life of patients.

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Table 1

Sociodemographic and clinical profile of the sample (n = 60).

Characteristics	Frequency/mean $\pm$ SD
Gender M/F	38/22
Age (in years)	34.22 $\pm$ 8.06
Religious affiliation: Hindu /Muslim/Sikh/Christian	52 /4/3/1
Years of formal education: Mean $\pm$ SD	9.40 $\pm$ 4.23
Employment: Employed /unemployed/housewife/student	25 /13/21/1
Marital status: Married /unmarried/divorced/widowed	39 /15/3/3
Socio economic status: Lower/ Lower- middle /Middle	3/ 43 /11
Mean Age of onset: Mean $\pm$ SD	26.55 $\pm$ 7.53
Onset of illness: Acute/Sub-acute/ Insidious	2/6/ 53
Total duration of illness (weeks): Mean $\pm$ SD	113.53 $\pm$ 26.20

Comparison of scores on Beck Cognitive Insight Scale and Quality of Life Scale with published studies.

Table 2

Study	Current study sample	Kim et al. (2015)	Buchy et al. (2012)	Beck et al. (2004)	Pedrelli et al. (2004)	Warman et al. (2007)	Bora et al. (2007)	Engel (2011)
Site	New Delhi, India	Korea	Canada	USA	San Diego, USA	Midwest, USA	Turkey	Norway
Sample *	SZ	SZ	Community	SZ	SZ/SZA	SZ/SZA	SZ	SZ
Sample size (N)	60	71	142	32	164	49	138	143
Self-reflectiveness	12.6 ± 2.5	20.3 ± 4.0	12.3 ± 3.8	13.0 ± 5.0	12.5 ± 5.8	11.7 ± 2.9	15.3 ± 4.4	14.5 ± 4.8
Mean ± SD								
Self-certainty Mean ± SD	9.7 ± 1.3	13.3 ± 2.9	8.1 ± 3.2	7.9 ± 3.8	7.2 ± 3.1	6.8 ± 2.7	10.8 ± 3.1	8.2 ± 3.4
Composite score BCIS **	3.0 ± 2.6	7.0 ± 4.1	4.2 ± 5.4	5.0 ± 5.8	5.2 ± 5.8	4.9 ± 4.1	4.5 ± 6.0	6.3 ± 6.2
Mean ± SD								
QLS ***	60.8 ± 11.8	Subjective quality of life ****;	NA	NA	NA	NA	NA	NA
Mean ± SD		75.5 ± 26.9						

* Schizophrenia, SZ; Schizoaffective, SZA;

** Composite score on BCIS = (self-reflectiveness subscale total) – (self-certainty subscale total).

*** QLS Quality of Life scale.

**** Subjective Quality of Life Scale Revision 4.

Table 3

Correlation between cognitive insight and quality of life.

	SR	SC	CI	QLS
Self-reflectiveness	–	0.151	0.880 **	0.445 **
Self-certainty	0.151	–	–0.336 *	0.065
Composite score on BCIS *	0.880 **	–0.336 *	–	0.393 **
Quality of Life Score	0.445 **	0.065	0.393 **	–

Data are presented as Pearson's correlation coefficients (r, two-tailed).

Abbreviations – SR = Self reflectiveness, SC = Self certainty, CI = Cognitive insight, QLS = Quality of Life Score

*
P = 0.01.**
p < 0.001.