

Insight in Schizophrenia – A Comprehensive Update

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Abstract

Objective: To comprehensively review and update the research evidence on insight in schizophrenia.

Methods: Search of electronic databases (up to September 2009) as well as manual search of relevant publications or cross references. The search terms used (in various combinations) were: insight, schizophrenia, psychosis, neuropsychology, neurobiology, instruments, model, prognosis, outcome, psychopathology, therapy.

Results: There are several ways of defining and conceptualizing insight. Clinical concept of insight refers to awareness of a mental disorder and its consequences, awareness of need for treatment, awareness of symptoms and attribution of the symptoms to the disorder. Numerous conceptual models have attempted to explain insight: as a symptom, as a defence, as psychological (misattribution) or neuropsychological phenomenon, or from a sociocultural perspective. Neurobiologically, insight has been associated with frontal and other cortical structures implicated in higher mental functions. Several instruments exist for assessing insight. Clinical correlates of insight are many but always consistent: severity of illness, psychotic symptoms, depressive symptoms, treatment adherence, quality of life, functioning, violence, and competence to consent.

Conclusions: In recent years, there has been a surge of research into the conceptualization and assessment of insight, as well as its relationships with prognosis, compliance, neuropsychological impairment and severity of psychopathology in schizophrenia. However, these studies have yielded inconsistent results. Different dimensions of insight are probably related to different aspects of outcome, and this needs to be reflected in the study planning phase. Although important advances have been made in this area, many questions remain unanswered, and these need to be addressed in future research (German J Psychiatry 2010; 13: 17-30).

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Introduction

Insight is an important concept in clinical psychiatry. Although varying levels of awareness have been observed in many psychiatric and neurological conditions, a lack of insight is particularly common in schizophrenia (Amador et al., 1994; Sanz et al., 1998; Michalakeas et al., 1994). It has always been considered a salient component of phenomenology and clinical examination, and also used as a diagnostic criterion of schizophrenia as in the Flexible System and Present State Examination (Endicott et al., 1982). Previous studies estimate that between 50-80% of patients with schizophrenia do not believe they have a disorder (Amador and Gorman, 1998). In a study of 45 hospitalized

patients with schizophrenia none of the patients had insight (McEvoy et al., 1981). In another sample of hospitalized patients 48% showed insight (Davidhizar et al., 1986). Other hospital based studies have reported 57-63% of their subjects to be insightful (Nelson et al., 1975; Heinrichs et al., 1985). Research has demonstrated that insight is not a dichotomous factor that a person either completely possesses or completely lacks (Markova and Berrios, 1995). Rather, there are varying degrees of insight ranging from complete denial, to vague recognition of illness (eg, trouble with “nerves,” being “unwell”), to full appreciation of one's diagnosis. A recent study showed that there is partial overlap of insight into illness and cognitive complaint which further suggests that insight is modular in schizophrenia (Bayard et al., 2009). The DSM-IV-TR (APA, 2000) addresses the issue of insight in schizophrenia with the following statement: “a majority of

individuals with schizophrenia have poor insight regarding the fact that they have a psychotic illness. Evidence suggests that poor insight is a manifestation of the illness itself rather than a coping strategy.”

In this article we review the literature with regard to insight in schizophrenia. There has been an exponential rise in studies of insight, in part accelerated by the availability of reliable measurement scales since the late-1980s to early-1990s. Many review articles have attempted to address different aspects of insight. This article is an update which attempts at integration of different aspects of studies. This article covers the conceptual issues, definitions and models of insight, instruments for assessment of insight, possible neurobiological underpinning of insight, predictors, clinical aspects of insight and therapeutic avenues to improve insight in patients with schizophrenia.

For this review the search strategies included both search of electronic databases (up to September 2009) as well as manual search of relevant publications or cross references. Electronic search included both PubMed searches and searches using other search engines like Google, Google Scholar etc. Cross-searches of key references (both electronic and hand-search) often yielded other relevant material. The search terms used (in various combinations) were: insight, schizophrenia, neuropsychology, neurobiology, instruments, model, prognosis, outcome, psychopathology, therapy etc. Findings were tabulated and organized into meaningful subheadings.

Definition of Insight

In ordinary usage, insight is defined as the capacity to discern the true nature of a situation. Definition of insight in psychiatric literature can be traced to Jaspers (1913/1963) who distinguished between awareness of illness and insight. In 1934, Sir Aubrey Lewis first provided a temporary definition of the term insight: “A correct attitude to morbid change in oneself.” Carpenter et al. (1973), on the other hand, described insight as a symptom of schizophrenia which was evaluated as merely present or absent. Later, David (1990) came up with the concept of insight which had at least three dimensions: awareness of illness, the capacity to re-label psychotic experiences as abnormal, and treatment compliance. Markova and Berrios (1992) broadened the definition of insight to view “insight as a process allowing the longitudinal and dynamic aspects of insight to be examined”. However, most of the authors and researchers follow the multidimensional concept of insight given by Amador and David (1998) that includes: (1) Awareness of mental disorder, (2) understanding of the social consequences of disorder, (3) awareness of the need of treatment, (4) awareness of specific signs and symptoms of the disorder, (5) the attribution of symptoms to disorder.

There are other definitions as well. According to Gestalt psychologists insight is the sudden appreciation of how parts are related to an organized whole with the accompanying “aha” experience (Harre and Lamb, 1983). In the psychoanalytic domain insight refers to a genuine awareness of unconscious conflicts or drives, as exemplified by Freud’s

(1933) dictum ‘where the id was there ego shall be.’ In our future discussion we will largely be following the definition given by Amador and David to avoid confusion.

Models of insight

Insight in schizophrenia is a complex and controversial phenomenon (David, 1990). Deficit of insight in schizophrenia has been conceptualized in a number of ways but none of them was found to be self-explanatory. A recent review by Osatuke et al. (2008) dealt with etiological models of insight in schizophrenia.

1. Lack of insight as positive symptom

Positive symptoms are defined as presence of abnormal features in individual experience. From this perspective, insight is thought of as a “delusion of health”- a specific type of delusion wherein the individual with schizophrenia forcibly denies the presence of a mental illness even in the face of obvious evidence of interference with daily functioning (Van Putten et al., 1976). Studies that establish correlation between positive symptoms and lack of insight, in absence of correlations between the latter and negative symptoms or perseverative errors reflecting neuropsychological dysfunction, argue in support of this model (Collins et al., 1997).

2. Lack of insight as a negative symptom

Negative symptoms are defined as pathological deficits, for example, in thought and adaptive behavior. An etiological theory that considers lack of insight as a negative symptom explains it as “mental withdrawal” from attempting to understand one’s own phenomenological experience of the world. A link between increasing negative symptoms and decreased insight has been established, but once again, the magnitude of the relationship is insufficient for any confident conclusions (Mintz et al., 2003).

3. Lack of insight as a disorganized symptom

Lack of insight also has been linked to disorganized symptoms or symptoms of formal thought disorder which is often seen in schizophrenia. A self-assessment of mental disorder requires comparing one’s current to premorbid functioning, or one’s own functioning to that of an average healthy other. The cognitive disorganization in schizophrenia may preclude the capacity to engage in abstract thinking needed to make such comparisons, leaving the schizophrenic individual without a coherent concept of normality. Several investigations have examined the relationship between disorganized symptoms and insight and many of them have found significant relationships between insight and disorganized symptoms (Amador et al., 1994; Sanz et al., 1998; Baier et al., 2000; Chen, 1998; Chen et al., 2005; Cuesta et al., 1998; Dickerson et al., 1997; Rossell et al., 2003).

4. Lack Insight as denial

Lack of insight is often seen as a defence against the potentially devastating realization of a person’s illness. It is thus an

active effort to cope with or adapt to distress. In its extreme form – denial – it is a type of self-deception that protects the individual from threats to the self and involves exaggerated perceptions of control and self-efficacy. The frequently reported finding that ‘preserved’ insight is related to depressive symptoms (Mintz et al., 2003) in patients with schizophrenia and inversely related to self-deception (Moore et al., 1999) may be interpreted as evidence that poor insight serves as a defensive function.

5. Lack of Insight as misattribution

Lack of insight may be viewed as misattribution, a form of cognitive error based on lack of information, systematic biases or idiosyncratic beliefs. Misattribution rests on the assumption that there is a correct attribution for symptoms and experiences with respect to some goal. This notion of correctness brings up the question of whether insight is a value-laden concept that is likely to change with changing medical concepts of illness as well as social norms for illness behaviour (Sarvanan et al., 2004).

6. Lack of insight as impaired metarepresentation or metacognition

Another theory that explains lack of insight in terms of impaired metarepresentation is arguably related to the neuropsychological deficit perspective (Gambini et al., 2004). Its strategies and tools of assessment, however, tend to emphasize qualitative data (e.g., patient interviews, vignettes) rather than tests of neurological functioning. It has been found that patients appeared to lack insight when interviewed about their own symptoms, however gained insight about their mental state when perspective was shifted from the first person to third person. Thus, insight into others' schizophrenic illness appeared independent of insight into one's own (Gambini et al., 2004; Startup, 1997). A study of metacognition within schizophrenic patients' personal narratives of self and illness demonstrated that, controlling for age and education, greater understanding of one's own mind was correlated with better neurocognition across multiple domains, whereas greater understanding of other's mind was correlated more specifically with better verbal memory (Lysaker et al., 2005).

A recent study has shown that schizophrenia patients are as capable as comparison subjects of relying on the products of memory retrieval to monitor accurately their awareness of what they do or do not know (Bacon and Izaute, 2009). According to the authors, this finding may be of interest for cognitive remediation. Further, according to Langdon and Ward's (2009) recent conceptualization, insight relies upon a cognitive capacity to adopt the other perspective, which, if intact, contributes to the metacognitive capacity to reflect upon "one's own" mental health from the other perspective ("to see ourselves as others see us"). Lack of insight in schizophrenia is understood as an impairment of this metacognition.

7. Individual models of insight

The concept of insight has been criticized for being ‘simplistic’ and ‘restrictive’ (Perkins & Moodley, 1993; Beck-Sander, 1998). It has been suggested that individuals' perspectives, beliefs and values should be taken into consideration when assessing something as complex as insight. Some sociological studies of labeling and stigmatization suggest that diagnosis, in effect an imposed biomedical model, has costs in reduced self-esteem and lower social status for the afflicted individual (Link et al., 1987). Many have argued that although acceptance of the mental illness label may increase perceived stigma, this is not necessarily so (Warner et al., 1989). Explicit acknowledgement of mental illness is intimately bound up with a sense of loss; nevertheless, promotion of the medical model may reduce guilt and therapeutic nihilism and need not lead to lack of autonomy. This balance of costs and benefits will be tilted according to the person's social and cultural milieu.

8. Insight as a sociocultural process

Conceptions of mental illness and its treatment often stem from normative social and cultural constructions. People can have various culturally shaped frameworks to explain their illnesses, all possibly valid (Kleinman, 1980). Socially oriented authors contend that technical definitions of insight are Eurocentric. Interestingly, the growing number of non-Western studies (Tharyan & Saravanan, 2000) that examined the components of insight supports its cross-cultural validity and the local adaptability of the assessment instruments. The insight item with the most striking consistency was the ability to relabel psychotic symptoms as pathological. This taps meta-cognition and is evident when a person begins to talk about and reflect upon, say, ‘the voices’ as distinct from either natural or supernatural communications (David, 1990). This aspect of insight may be, at least in part, a form of neuropsychological deficit somewhat independent of cultural influences (Rossell et al., 2003).

9. Neuropsychological model

Lack of insight has been attributed to brain malfunction. A person's recognition that he or she has a mental illness is a specific kind of self awareness or self concern which is characteristically lost after the damage to the frontal lobe (Lishman, 1987). Likewise, excessive self concern was once the prime indication of frontal leucotomy (Robinson and Freeman, 1954). Further evidence comes from studies involving neuropsychological tests, in particular the Wisconsin Card Sorting Test which has shown slight to moderate association with levels of insight (Osatuke et al., 2008).

Pseudo insight

At this juncture we should differentiate insight from pseudo insight where “the patient merely regurgitates overheard explanations arising out of different theoretical perspectives”. (David, 1990) Many authors have suggested that insight need not imply knowledge of causality either, a view

at odds with psychodynamic formulation (Reid and Finesinger, 1952). Rather, it simply requires the acceptance of personal illness affecting the mental apparatus (ability to think, perceive, act, remember etc) whose aetiology may be, and often is, unknown.

Neurobiology of Insight

Historically, insight deficits in schizophrenia have typically been attributed to psychological defenses or adaptive coping strategies (McGlashan et al., 1975; McGlashan and Carpenter, 1976; Van Putten et al., 1976; Lally, 1989). However, evidence is accumulating to suggest that insight deficits may be mediated by enduring cognitive dysfunction, mainly mediated by deficits in frontal cortical systems (Young et al., 1993; Young et al., 1998; Lysaker and Bell., 1994; McEvoy et al., 1996; Startup, 1996; Voruganti et al., 1997; Lysaker et al., 1998; Lysaker et al., 2002, 2003; Mohamed et al., 1999; Smith et al., 2000; Laroï et al., 2000; Marks et al., 2000; McCabe et al., 2002; Buckley et al., 2001; Chen et al., 2001; Drake and Lewis, 2002; Rossell et al., 2003; Shad et al., 2004; Keshavan et al., 2004; Shad et al., 2006; Shad et al., 2007). Although the evidence supporting frontal cortical involvement in mediating insight deficits is primarily based on cognitive test data, there is growing number of structural neuroimaging studies which support the cognitive findings (Flashman et al., 2001; Shad et al., 2004, 2006). The association between impaired insight in schizophrenia and right brain (Shad et al., 2004, 2006) appears to be similar to the relationship between denial of illness, i.e., anosognosia (Babinski, 1914) and right-hemisphere neurological lesions (Stuss and Benson, 1986; McGlynn and Schacter, 1989; Miller, 1991).

Early neuroimaging studies of insight, which tended to use global brain measurements, found relationships between poor insight and ventricular enlargement (Takai et al., 1992) and smaller total brain volume (Flashman et al., 2000), although other studies did not replicate these relationships (David et al., 1995; Rossell et al., 2003). Using more sophisticated methodologies, region of interest (ROI) studies have found a number of associations between frontal brain regions and insight. One study (Laroï et al., 2000) involving 21 patients with schizophrenia linked frontal cortical atrophy to poor insight assessed with the Scale to Assess Unawareness of Mental Disorders (SUMD). Another study (Flashman et al., 2001) examined the associations between insight, again assessed with the SUMD, and eight frontal lobe sub-regions (frontal pole, superior frontal gyrus, middle frontal gyrus, inferior frontal gyrus, orbital frontal gyrus, precentral gyrus, gyrus rectus and cingulate) in a group of 15 patients with schizophrenia; the findings revealed large negative associations between awareness of symptoms and bilateral middle frontal gyrus volumes, and between misattribution of symptoms and bilateral superior frontal gyrus volumes. Shad et al. (2004) reported smaller dorsolateral prefrontal cortex (DLPFC) volumes as well as poor performance on the Wisconsin Card Sorting Test in first-episode psychosis patients with poor insight (n=18; assessed with a single question, derived from the insight item of the Hamilton Depression Rating Scale; Hamilton, 1960) relative to those with good insight (n=17). A recent study by the same group involving

14 antipsychotic naïve first-episode schizophrenia patients, and using the SUMD to measure insight, found associations between smaller right DLPFC volumes and impaired awareness of symptoms but also between larger right medial orbitofrontal volumes and misattribution of symptoms (Shad et al., 2006). Sapara et al. (2007) observed associations between smaller total prefrontal grey matter volumes and lower insight into the presence of illness and symptoms assessed using the Birchwood Insight Scale and the Schedule for the Assessment of Insight-Expanded in a sample of 28 chronic patients with schizophrenia.

A number of studies have employed voxel based morphometry (VBM) (Ashburner and Friston, 2000; Good et al., 2001). Ha et al. (2004) reported a negative association between insight and grey matter concentrations bilaterally in the (middle) cingulate and temporal regions in 35 paranoid schizophrenia patients (illness duration 0.1 to 15 years). Bassitt et al. (2007) failed to find any relationship between insight assessed with the SUMD and regional brain volumes examined with VBM in a sample of 50 chronic patients with schizophrenia. A recent study using VBM found that lower grey matter volumes in the temporal and parietal regions that have been implicated in self-monitoring, working memory and access to internal mental states were associated with poor insight (Cooke et al., 2008).

Assessment of Insight

Methods of measuring insight vary greatly. Present State Examination (PSE) by Wing et al. (1974) contains an Insight item. Lin et al. (1979) used dichotomous responses to 10 questions and appeared to measure awareness of illness rather than the more complex construct, insight. Cernovsky et al. (1994) assessed the presence or absence of insight as one of 87 symptoms of schizophrenia, making a dichotomous assessment of each symptom. Heinrichs et al. (1985) studied "early insight" into schizophrenic decompensation by determining whether or not a person had insight about an impending episode of illness.

McEvoy et al. (1989) gave the Insight and Treatment Attitude Questionnaire (ITAQ) which consists of 11 items. Three raters carry out a 10 point rating of insight through an open-ended interview. This scale has an interrater reliability of 0.82. Marcova and Berrios (1992) constructed a 32-item Insight Scale (IS) with dichotomous responses. It is mainly a semistructured interview for qualitative assessment of insight without numerical rating. The Scale to assess Unawareness of Mental Disorder (SUMD) is a comprehensive instrument that has 6 general items and 4 subscales with 17 items each from which 10 summary scores are calculated (Amador et al., 1993). This scale shows high correlation with insight rating from admission note and insight item on Hamilton Depression Rating Scale. Insight scale (IS) by Birchwood et al. (1994) is an 8-item scale with three subscales named awareness, relabel, and need for treatment. This scale possesses adequate internal consistency (Cronbach alpha 0.75). Lack of Insight Index (LII) has three items each rated on 4-point scale then summed to give a global index (Cuesta and Peralta, 1994). However, interrater reliability of insight items of

this scale has not been evaluated. The Schedule for Assessment of Insight-Expanded (SAI-E; Kemp and David, 1997) measures the dimensions of relabeling of unusual mental events as abnormal, awareness of illness, and recognition of the need for treatment included in the original SAI (David et al., 1992). The SAI-E adds items regarding awareness of psychological/ emotional changes, awareness that there is something wrong, awareness of the negative effects of mental illness, and attribution of symptoms to a mental illness. The Beck Cognitive Insight Scale (BCIS) is a 15 item self-report instrument that assesses how individuals evaluate their own judgment (Beck et al., 2004). The scale has two factors: Self-Reflectiveness and Self-Certainty. To compute a Composite Index, the Self-Certainty score is subtracted from the Self-Reflectiveness score. The coefficient α for the Self-Reflectiveness scale was 0.68 and for Self-Certainty was 0.60 for the original sample.

Predictors of insight in schizophrenia

1. Neuropsychological predictors

Neuropsychological impairment has been suggested as central to poor insight, especially frontal or parietal dysfunction by analogy with dementia or traumatic brain injury, and was reviewed by David (1999). Of the range of neurocognitive functions assessed in different studies, only the Wisconsin Card Sort Test (WCST) performance, particularly perseverative error score, appears to show a replicated association with measures of insight, with 9 of 17 studies that examined the association finding it (Young et al., 1993; Young et al., 1998; Lysaker and Bell, 1994; Voruganti et al., 1997; Lysaker et al., 1998; Smith et al., 2000; Larøi et al., 2000, Drake and Lewis, 2003; Simon et al., 2009). Moreover, 6 of the 8 negative studies have potential design problems. Two studies (Cuesta et al., 1995; Sanz et al., 1998) investigated acutely unwell in-patients, who often have difficulty performing the WCST; while others used patients with few positive symptoms (Dickerson et al., 1997; Collins et al., 1997), small samples (McEvoy et al., 1996), or a limited insight measures and very heterogeneous sample (Goldberg et al., 2001). The two remaining studies both found relationships between aspects of insight and single measures of set-shifting (Mohammed et al., 1999; Marks et al., 2000). Of the positive studies, only two directly compared perseverative and nonperseverative errors (Lysaker et al., 1998; Larøi et al., 2000) and both found only perseverative errors correlated with insight. A recent study (Raffard et al., 2009) which recruited 60 subjects of schizophrenia and used Test for Attentional Performance to assess the executive function concluded that poor insight in schizophrenia was partially related to executive dysfunction. In their study both awareness of disorder and awareness of response to medication were significantly related to updating whereas awareness of the social consequences of the disease was significantly related to updating, divided attention and inhibition processes.

David et al. (1995) reported that high IQ was associated with better insight as rated on the Present State Examination, whereas tests of frontal lobe function (Trail Making test, versions A and B) did not correlate with insight. Moreover,

the relationship between IQ and insight was found to be non-linear; i.e., insight is not invariably poorer as IQ falls. Goodman et al. (2005) studied thirty-five male forensic patients suffering from chronic schizophrenia and found that poor insight had significant associations with visual object learning, verbal working memory, and identification of facial emotions but not with measures of frontal lobe function. In their study, left-handers displayed better insight than right-handers.

Andre Aleman (2006) did a metaanalysis of insight and neuropsychological functions in psychotic patients and found a small, albeit statistically significant, positive relationship of insight with general cognitive functioning. The relationship between WCST performance and insight was significantly stronger than the association with IQ, with a magnitude corresponding to a medium effect size. Moreover, WCST–insight association was stronger than the IQ–insight association in samples of patients with psychotic disorders in general, but there was no difference between these associations when analyses were limited to samples of patients with a diagnosis of schizophrenia.

2. Metacognition and insight

Metacognition is a term used to distinguish between a person's cognitive abilities and the person's awareness or knowledge regarding those abilities (Koriat and Goldsmith, 1996). Two important aspects of metacognitive functioning are monitoring (the mechanism that is used to subjectively assess the correctness of potential responses) and control (the mechanism that determines whether or not to volunteer the best available candidate answer). Koren et al. (2004) assessed thirty first episode patients of schizophrenia on SUMD and WCST and found that insight into illness had higher correlations with free-choice metacognitive indices derived from confidence ratings and volunteered sorts than with the conventional scores from the WCST. They concluded that metacognition is an important mediator between basic cognitive deficits and poor insight, and might be even more relevant to poor insight than cognitive deficits per se.

3. Other predictors

David et al. (1995) found that contrary to popular belief diagnosis of schizophrenia was not especially linked to poor insight in their sample of 150 inpatients with recent onset psychosis. However, Amador et al (1994) contradicted this view. The same group (David et al., 1995) found that higher social class was associated with full insight despite presence of psychosis.

Clinical aspects of insight in schizophrenia

1. Insight and severity of illness

Unawareness of symptoms is related to severity of illness in schizophrenia (Sevy et al., 2004; Smith et al., 2000; De Hert et al., 2009). Moreover, insight fluctuates depending upon the phase of illness (Smith et al., 1998). Strong positive rela-

tionship between insight deficit and involuntary commitment status was found and insight improved across diagnoses during hospital care in both voluntary and committed patients (Weiler et al., 2000). However, a metaanalysis found that merely 3-7% of the variance in insight was accounted for by the severity of symptoms which play a minor role in the degree of insight (Mintz et al., 2003).

2. Insight and symptoms of schizophrenia

Several studies have examined the relationship between insight and symptoms of schizophrenia. The relationship between lack of insight and global symptoms (David et al., 1992), positive symptoms (Amador et al., 1994) and negative symptoms (Amador et al., 1994) has been investigated. The hypothesis in these investigations was that there should be a negative correlation between insight and severity of global, positive, and negative symptomatology.

Indian studies have also contributed in this area. A study by India Kulhara et al. (1992) demonstrated a consistent negative correlation between BPRS total and SAI dimension score. However, the correlation did not reach statistical significance until after two weeks of treatment. Another study (Tharyan and Saravanan, 2000) found that severity of psychopathology was significantly correlated with dimensional measures of awareness of the abnormal experiences whereas a similar relationship with global measures of insight could not be demonstrated. Armstrong et al. (2002) examined 25 patients with schizophrenia to explore the relationship between insight and psychopathology and illness severity over a four week period. The average degree of insight improved irrespective of the type of recovery but there was no consistent relationship between the changes in insight and changes in psychopathology. A four week longitudinal study (Mehrotra and Sengupta, 2006) did not find any clear relationship between insight and psychopathology during the acute phase (week 1), while at the end of week 4 a negative correlation emerged between the two meaning the better the insight the lower the scores on psychopathology scales. A study by Saravanan et al. (2007) found weak but significant inverse correlation between total BPRS score and the relabeling dimension of insight, and a positive relationship between insight total score and indices of anxiety and worry.

In a meta-analysis, Mintz et al. (2003) found small but significant mean effect sizes in cross-sectional designs, indicating that higher insight is associated with less global psychopathology as well as with less positive and negative symptoms. A recent study by Hwang et al. (2009) found that positive, negative, and autistic preoccupation (cognitive) factors were the primary predictors of insight with the activation factor mediating between positive and autistic preoccupation factors and insight. Another recent study from Cambridge, UK (Barrera et al., 2009) found that insight was significantly associated with severity of the reality distortion dimension and graded naming test performance, but was not associated with self-reported FTD or severity of FTD as assessed by the clinician or carers.

A review by Tania et al. (2007) identified seven studies which investigated cross-sectional associations of insight and psy-

chopathology at two or more time points. The results of these studies do not support the idea of a stable association of symptom severity and insight. While 2 studies (Amador et al., 1993; Mintz et al., 2004) found insight and symptoms to be significantly correlated at both assessments, the majority (Smith et al., 1998; Chen, 1998; Michalakes et al., 1994; McEvoy et al., 1989) found the association only for the second assessment. In the meta-analysis by Mintz et al. (2003) acute patient status was found to be a moderator for the relationship between symptoms and insight. However, their results suggest that the relationship is stronger for acute patients.

The latest study to address this issue (De Hert et al., 2009) utilized a large Belgian sample (N = 1213), five symptom domains of schizophrenia but only two insight items 'awareness of having a mental disorder' and 'attributing symptoms to a mental disorder'. It found that insight was associated inversely with overall symptom severity, and the positive, negative, excitatory and cognitive symptom domains. At symptom level, the items 'delusions', 'grandiosity', 'poor rapport', 'social withdrawal' and 'guilt feelings' showed the strongest associations with both insight items. Overall, correlations between insight and symptomatology were modest, explaining less than 30% of the variance in insight.

Studies have attempted to explore whether changes in insight are associated with changes in symptoms. Of these, 3 studies (McEvoy et al., 1989; Kemp and Lambert, 1995; Carroll et al., 1999) found change in present insight to be unrelated to change in symptoms, 2 (Jørgensen, 1995; McEvoy et al., 1993) found mixed results, and 4 (Lysaker et al., 2002; Gharabawi et al., 2006; Weiler et al., 2000; Chen, 1998) found significant associations. A latest study found that not only were higher levels of insight at baseline significantly associated with lower levels of schizophrenia symptoms at follow-up, but also change in insight scores over time was associated with declining schizophrenia symptoms (Mohamed et al., 2009).

Very few studies have investigated the impact of insight on rehospitalizations. Three (McEvoy et al., 1989; McEvoy et al., 1993; Yen et al., 2002) of these found that greater insight was connected to fewer rehospitalizations. No study investigated whether insight at first assessment predicts symptoms at the second time point, although Mintz et al. (2004) found stable insight to be associated with lower symptom levels at follow-up assessments.

3. Insight and depressive symptoms

15 studies with a total of 1218 subjects that investigated the association between insight and depression were analyzed in the metaanalysis by Mintz et al. (2003). This analysis resulted in a mean effect size of 0.18, indicating that as depressive symptoms increased, insight increased. A recent review (Tania et al., 2007) found insight to be related with increased suicidal ideation or actions (Schwartz and Smith, 2004; Amador et al., 1996; Schwartz and Peteresen, 1999; Schwartz, 2000; Evren and Evren, 2004; Kim et al., 2003). In contrast, metaanalysis by Mintz et al. (2003) found that insight did not predict either current or lifetime suicidality after controlling for hopelessness. Increase in insight could be causing increase in symptoms of depression, as postulated by

defense theorists (e.g., growing insight into the presence of a mental disorder and its long-term consequences results in feelings of worthlessness and hopelessness). An exception to this is the study by Iqbal et al. (2000) which found that patients who developed postpsychotic depression reported more negative attitudes toward their disorder, such as greater loss, humiliation, and entrapment by the disorder and were more likely to see themselves in a lower social status in future than patients who did not develop postpsychotic depression.

Good insight into illness in patients with schizophrenia is related not only to medication compliance and high service engagement, but also to depression, low self-esteem, and low quality of life. Thus, paradoxically, the detrimental effects of good insight might pose a problem for treatment (Lysaker et al., 2009; Mohamed et al., 2009). A fresh perspective in this insight debate or “insight paradox” has been provided by Staring et al. (2009). Their results suggest that the associations of insight with depression, low quality of life, and negative self-esteem are moderated by stigma. Patients with good insight who do not perceive much stigmatization seem to be best off across various outcome parameters. Those with poor insight have problems with service engagement and medication compliance. Patients with good insight accompanied by stigmatizing beliefs have the highest risk of experiencing low quality of life, negative self-esteem, and depressed mood. A clinical implication is that when it is attempted to increase insight, perceived stigma should also be addressed. Another study suggested that the relationship between insight and depressive reactions in people diagnosed with schizophrenia may be modulated by social rank appraisal, as Greater awareness of illness was associated with lower social rank appraisals when the participants compared themselves to the general population (McLeod et al., 2009).

4. Insight and treatment adherence

The link between insight and adherence to treatment seems obvious. Tania et al. (2007) identified fifteen cross sectional studies which have attempted to find an association between insight and treatment adherence. Nine of them found an association between insight and adherence (Cuffel et al., 1996; Macpherson et al., 1997; Smith et al., 1999; Coldham et al., 2002; Kozuki and Froelicher, 2003; Yen et al., 2005; Watson et al., 2006; Mutsata et al., 2003; Donohoe et al., 2001), 5 studies (Smith et al., 1997; Moore et al., 2000; Kamali et al., 2001; Agarwal et al., 2004; Garavan et al., 1998) found trends or mixed results, and 1 study (Day et al., 2005) found no relationship. Thus, the majority of these studies speak for a clear association of insight and treatment adherence. While it seems plausible that poor insight leads to poor adherence, it is also possible that poor adherence results in poor insight either directly (e.g., symptoms are denied or mitigated for fear of treatment or future consequences) or mediated by symptom severity. Longitudinal studies in this area do not give a clear-cut answer to this vexing problem either (Coldham et al., 2002; McEvoy et al., 1998; Buchanan, 1992; Tait et al., 2003; Kamali et al., 2006). A review by Buckley et al. (2007) also addressed this issue.

A recent study in this area found that implicit positive attitudes predicted increased insight and perceived need for

treatment (Rüsch et al., 2009). Similarly, a large German study found that, amongst other factors, greater illness insight was found to be significantly predictive for a positive attitude towards adherence at discharge (Schennach-Wolff et al., 2009). Yet another recent study from Germany found that more insight at baseline significantly predicted higher patient ratings of the therapeutic alliance in the treatment of schizophrenia spectrum disorders (Wittorf et al., 2009).

5. Insight and quality of life

In a study of 142 patients of first episode schizophrenia Sim et al. (2006) found that greater subjective sense of well-being was related to improvement in insight over time. Hasson-Ohayon et al. (2006) also pointed that greater sense of emotional wellbeing being was associated with awareness into need for the treatment. A recent study published in this area suggested that increasing the hope of persons with schizophrenia may directly and positively increase both their quality of life and the usefulness of their insight into their illness (Hasson-Ohayon et al., 2009).

6. Insight and functional outcome

Most of the studies of insight and functional outcome in schizophrenia have focused on general level of functioning whereas others concentrated on specific aspects like work and social functioning. Tirupati et al. (2007) in Chennai, India, compared insight in 183 schizophrenia patients who had received treatment with 143 who were never treated (and had less insight). Different variables correlated with insight in the two groups, even after multivariate modeling. The authors argued that this was because treatment improved insight, except in an “unmasked” group of refractory illnesses, with absence of insight in effect being a negative symptom. Thus, the group with poor insight would have a very poor prognosis because their illness itself differed. A recent study by Yoshizumi et al. (2008) found that awareness among schizophrenia subjects of their social behavioral problems is affected by their cognitive capacity and this applies not only to current behaviors but also to the retrospective estimation of their behaviors in the social domain. A review (Tania et al., 2007) on this topic identified 13 studies out of which 8 found significant or at least partially significant correlation while the rest did not find insight to be associated with functioning. Thus, it seems that insight is not related to present functioning but has an impact on improvements in functioning. Another recent review article by Drake et al. (2008) addresses the same issue. A very recent publication from Spain, which measured insight, treatment compliance and functioning longitudinally, found that poor insight correlates with symptom severity and global functioning but also has some trait value for schizophrenia, which is apparent once acute psychotic symptomatology is not prominent (Parellada et al., 2009).

7. Insight and violent behaviour

While the predicting risk of violence is complex, it appears that violence among patients with schizophrenia most often occurs during periods of active psychosis (Appelbaum et al.,

2000; Buckley et al., 2003). However, clinicians and legal experts go back and forth as to whether patients can be held accountable for such violent acts while they are actively psychotic; contentiously, many would attribute violence to the effects of active illness and the lack of awareness thereupon. However, the studies examining insight and violence in schizophrenia have produced contradictory results. A review by Tania et al. (2007) showed that five (Arango et al., 1999; Buckley et al., 2004; Strand et al., 1999; Grevatt et al., 2004; Foley et al., 2005) studies found a positive relationship between lack of insight and violence while 5 did not (Cheung et al., 1997; Swartz et al., 1998; Carroll et al., 2004; Arango et al., 2006; Yen et al., 2002). Thus, in spite of an intuitive link between insight and violence, the present state of research does not provide clear support for a causal relationship. In order to gain a more definite answer, further studies are needed that apply prospective study designs.

8. Insight and competence to consent

In recent years there has been a growing awareness that the process of obtaining informed consent is central to ethical research and clinical practice (Dunn and Roberts, 2005). Schizophrenic patients perform significantly worse on many measures of treatment decision processes in comparison to those suffering from depression, other medical illnesses (such as heart disease, HIV infection) or healthy control subjects (Grisso and Appelbaum, 1995; Grisso et al., 1997; Moser et al., 2002). Palmer and Jeste (2006) found that level of insight as evaluated by the Birchwood Insight Scale (BIS) was not associated with capacity to consent. On the other hand, Dunn et al. (2007), also using the BIS, found a significant, albeit modest effect size correlation between level of insight and performance on the MacArthur Competence Assessment Tool-Clinical Research (MacCAT-CR). In addition, Wong et al. (2005), using only the G12 item of the PANSS, found a strong correlation as Cairns et al. (2005) with the Expanded Schedule for Assessment of Insight.

A recent study by Capdevielle et al. (2009) found negative correlation between the MacArthur Competence Assessment Tool-Treatment (MacCAT-T) "Appreciation" and "Reasoning" dimensions and the five SUMD dimensions. Moreover, the MacCAT-T "Expressing a choice" dimension was found to be negatively correlated with two SUMD dimensions: "Having a mental disorder" and "consequences of the mental disorder". The authors concluded that these findings suggest an important negative correlation between the competence to consent to treatment and insight, a clinical variable currently assessed by clinicians. However, the correlations were not all pervasive: the MacCAT-T dimension of "Understanding" was not correlated with any of the SUMD dimensions. Thus, more research is needed in this area, especially on the longitudinal trajectories of insight, competence and psychopathology, and their relationship to one another.

9. Patients' insight rated by relatives

Lack of insight into illness of patients with schizophrenia is often perceived as a problem for relatives. In a recent study, Froböse et al. (2009) studied how relatives assess the pa-

tients' insight into illness and their current treatment situation. This assessment was compared with the relatives' feelings of well-being. They found that the relatives rated their patients as lacking insight in 73% cases, and that their (the relatives') own sense of well-being was found lacking in these cases.

Therapy for improving insight

Attempts have been made to devise strategy to improve insight in schizophrenic patients which in turn would be expected to improve adherence to medication. Kemp et al. (1996) proposed a brief pragmatic psychological intervention, namely compliance therapy aimed at improving insight, attitudes to illness and treatment, and medication compliance in acutely psychotic patients. The intervention employs a collaborative approach with patients, and draws from the principles of motivational interviewing as well as cognitive techniques. A study by Kemp and David (1996) found that one of the factors related to insight and compliance prior to discharge was whether or not compliance therapy was given. A Cochrane review of compliance therapy for schizophrenia found that in terms of primary outcome 'non-compliance with treatment' compliance therapy did not show any significant difference compared to non-specific counseling (McIntosh et al., 2006).

In a review of cognitive behaviour therapy for schizophrenia Rathod et al. (2005) found that short insight focused CBT demonstrated significantly greater improvement in insight into compliance with treatment and ability to relabel their psychotic symptoms as pathological. Moreover, the efficacy of cognitive behavior therapy for improving medication adherence seems to be more promising than that of traditional individual psychoeducation approaches, which have been consistently disappointing in their failure to show adherence benefits (Zygmunt et al., 2002).

Conclusion

Lack of insight in schizophrenia is universal but its definition has been varied. In recent years, there has been a surge of research into the conceptualization and assessment of insight, as well as its relationships with prognosis, compliance, neuropsychological impairment and severity of psychopathology in schizophrenia. However, these studies have yielded inconsistent results. Neurobiology of insight is still poorly understood. A precise definition and assessment of insight and insight dimensions is a necessary precondition for conclusive insight research. Very few studies were originally designed to investigate the role of insight. Different dimensions of insight are probably related to different aspects of outcome, and this needs to be reflected in the study planning phase. Many questions remain unanswered, e.g., how does specific dimensions of insight, particularly awareness of the need for treatment, predict adherence to medication? Does insight predict engagement in psychotherapy? What is the impact of insight on prognosis in patients who are in early phase of psychosis?

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