INSIGHT AND EXPLANATORY MODELS DURING ILLNESS AND REMISSION, IN PATIENTS WITH SCHIZOPHRENIA.

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CERTIFICATE

This is to certify that the dissertation titled “Insight and explanatory models during illness and remission, in patients with schizophrenia” is the bonafide work of Dr Cheryl Persis Petit towards MD Psychiatry Degree Examination of Tamilnadu Dr M.G.R Medical University to be conducted in April 2011. This work has not been submitted to any university in part or full.

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DECLARATION

I hereby declare that this dissertation titled “Insight and explanatory models during illness and remission, in patients with schizophrenia” is a bonafide work done by me under the guidance of Dr.Anju Kuruvilla, Professor of Psychiatry, Christian Medical College, Vellore. This work has not been submitted to any university in part or full.

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1.1INTRODUCTION

Schizophrenia is a chronic, pervasive, disabling, illness that affects a significant proportion of the world population. It is a leading public health problem that exacts enormous personal and economic cost worldwide [(1)]. Schizophrenia is a devastating mental illness that impairs mental and social functioning and often leads to the development of co-morbid diseases. These changes disrupt the lives of patients as well as of their families and friends. Schizophrenia is found in all societies and geographical areas [(2).]

One of the most common and puzzling features of schizophrenia is lack of awareness of mental disorder. The condition has prognostic and diagnostic implications, and even though the phenomenon has not been formally introduced as a diagnostic criterion, future research may yield evidence supporting this phenomenon as a diagnostic symptom related to treatment outcome[(3)]. As DSM-IV states, "Lack of insight is common and may be one of the best predictors of poor outcome, perhaps because it predisposes the individual to noncompliance with treatment"[(4).] Insight is a complex multidimensional construct which is shaped by individual psychology (i.e. motivation and denial) and the constraints of biology (as in cognitive impairment and anosognosia) , and is influenced by social constructions of illness and culturally specific explanatory models[(5).]
The clinical significance of poor insight is well established in terms of treatment adherence, symptom severity, and poorer global functioning . The relationship between insight and outcome is not unidirectional; however better insight has also been

associated with more severe depressive symptoms and increased suicide rates[6].

Standardised tools for the assessment and quantification of insight have been developed over the past 15 years (e.g. the Schedule for the Assessment of Insight (SAI; David, 1990; Sanz et al al, 1998) and the Scale to Assess Unawareness of Mental Disorder (SUMD;Amador et al al, 1993) which have been found to have clinical utility for diverse populations and patient groups worldwide[7] . Studies have reported a consistent inverse relationship between psychopathology and insight, with the exception of anxiety and low mood,which are positively associated with insight[8]. The influence of treatment on the level of insight has been studied by workers who report that insight improved significantly during the course of in-patient treatment However there are no studies that have looked at insight in the same individual before and after treatment.

Beliefs about illness, distress and disability profoundly influence individuals' experience of, and responses to such problems. Eliciting explanatory models (EMs) (of patients and their relatives) in routine clinical psychiatric practice gives a better understanding of the subjective experience of illness[9]. Such perspectives also reveal attitudes towards and compliance with treatment, and so promote therapeutic adherence and improve clinical outcomes. Though the last few years has witnessed an increase in literature regarding beliefs about causes of schizophrenia there is a paucity of studies evaluating change in EMs in individuals while unwell and after resolution of illness.

This study seeks to assess the EMs and insight in patients with schizophrenia while psychotic as well as following remission of illness and study the associated factors.

1.2 SCHIZOPHRENIA

1.2.1 DEFINITION

The name schizophrenia derives from the early observation that the illness is typified by "the disconnection or splitting of the psychic functions." Unfortunately this has led to the misconception that the illness is characterized by a "split personality," which it is not[10] In 1911, Eugen Bleuler suggested the term schizophrenia (splitting of the mind) for the disorder. Bleuler introduced the concept of primary and secondary schizophrenic symptoms; his four primary symptoms (the four As) were abnormal associations, autistic behavior and thinking, abnormal affect, and ambivalence. Of these four symptoms, Bleuler viewed as central to the illness the loss of association between thought processes and among thought, emotion, and behavior[11].

Schizophrenia is a heterogenous group of disorders with multifactorial etiology. It is hence conceptualized as a clinical syndrome rather than as a singdisease entity. This view holds that, although patients with schizophrenia share asufficient commonality of signs and symptoms to validly differentiate them from patients with other forms of psychosis (e.g., affective disorders and toxic psychoses), more than one disease entity is eventually found within this syndrome[12] .

1.2.2 EPIDEMIOLOGY

The annual incidence of Schizophrenia is 0.2-0.4% per 1000, with a lifetime prevalence of about 1%. The incidence of Schizophrenia appears to be same across sexes though women tend to have a later age of onset[13] . Substantial variations in the prevalence and incidence of schizophrenia across different countries and cultural groups have been reported.However, these differences reduced when stricter diagnostic criteria for schizophrenia are used .In a WHO study, the incidence of schizophrenia was shown to be quite similar across ten countries[14].

1.2.3 AETIOLOGY

Both genetic and environmental factors appear to play a role in the aetiology of schizophrenia .

Genetic factors

Rates of schizophrenia are higher among relatives of patients than in the general population. Adoption and twin studies have shown that this increased risk is genetic, with a tenfold increase in risk associated with the presence of an affected first degree family member. This genetic risk increases with each affected relative,to nearly 50% when both parents are affected and 60-84% when monozygotic twin is affected. The genetic transmission does not appear to follow simple Mendelian single-gene inheritance patterns. More probably, there are multiple susceptibility genes,each with small effect

and acting in concert with epigenetic and environmental factors[15] .Twin and adoption studies have provided compelling evidence that genetic factors rather than shared family environment account for most of the aggregation of schizophrenia.

The most widely accepted model for the transmission of schizophrenia, known as the polygenic threshold model, describes the inheritance of a predisposition to develop the disorder. According to this theory, the liability to develop the disorder is normally distributed in the population, and this distribution reflects the additive effects of several different genes plus environmental factors. Only those individuals who exceed a certain threshold of liability develop the disease[16] .

Traditional methods of linkage analysis for isolating disease-related genes have been extensively applied to schizophrenia. Linkage studies in schizophrenia have used a variety of sampling strategies (eg, affected sibling pairs, nuclear families), sampling pools (eg, geographically and ethnically isolated populations, general population), statistical analyses (eg, parametric in which the mode of inheritance is postulated, nonparametric in which no underlying model is assumed), disease definitions (eg, schizophrenia only, schizophrenia and schizoaffective disorder), disease-associated trait end points (eg, eye tracking abnormalities, evoked auditory potentials), and target genomic regions (eg, genome-wide, candidate chromosomal region). linkages with statistically significant LOD scores have been reported from large international collaborative studies for 22q11-q13, 6p24-p22, 8p22-p21, and 6q[17].

Environmental factors

Environmental risks for schizophrenia include biological and psychosocial factors.The risk of development of schizophrenia is increased by prenatal and perinatal events-including maternal influenza, rubella, malnutrition, diabetes mellitus, and smoking during pregnancy. Obstetric complications associated with hypoxia are particularly related to increased risk, which might be mediated by excitotoxic effects of hypoxia on the fetal neonatal brain[18].Since most cases of obstetric complications do not lead to schizophrenia, such complications might interact with genetic vulnerability to increase risk of the illness. However,it is not yet known whether the high frequency of obstetric complications in schizophrenia is the result of abnormal brain development associated with genetic vulnerability, or an additive environmental factor towards the development of schizophrenia[19].

Several sociodemographic factors are associated with increased risk of schizophrenia.Poverty and lower social class have long been linked to higher rates of schizophrenia.Two hypotheses have been advanced to account for this association: social causation (i.e stressful environmental conditions increase risk of schizophrenia) and downward social drift (i.e schizophrenia reduces social and occupational functioning, both of which have received support. Individuals born in urban areas are more likely to develop schizophrenia than those in rural areas[20].

Adverse Life Events and Stress

Studies have found an association between life events and onset of psychosis. The

direction of the relationship between life events and psychosis has been questioned. It is difficult to fully rule out the possibility that the actual adverse events might have been precipitated by preexisting psychopathology or personality traits of the patient .Among psychosocial factors that can influence schizophrenia, stress, coping skills and social support are the most important. Stress can impinge on biological vulnerability, worsening symptoms and triggering relapses[21].

Pathophysiology

The most frequently confirmed neurobiological finding in schizophrenia is enlargement of the ventricular system, specifically the lateral and third ventricles.Ventricular enlargement is accompanied by overall reductions in brain volume and cortical grey matter.Regions such as the frontal lobes, amygdala, hippocampus, parahippocampus, thalamua, and medial temporal lobe, cingulated gyrus, and superior temporal gyrus have decreased volumes in patients with schizophrenia compared with controls[22] .

Positron emission tomography(PET) which allows examination of cerebral blood flow and receptor function in vivo, has been used to identify different and possibly dysfunctional neural circuitry used in cognitive tasks. Abnormalities in blood flow have been shown in frontal regions, thalamus, and cerebellum in PET studies of patients with schizophrenia perdforming tasks involving executive functions, memory, and sustained attention**.**During active auditory hallucinations, abnormal activation of the thalamus, striatum, limbic (especially hippocampus), and paralimbic regions has been detected. In a study requiring recall of complex narrative material, schizophrenic patients displayed

abnormalities in prefrontal, thalamic, and cerebellar sites, suggesting disruption in pontine-cerebellar-thalamic-frontal circuitry[23] .

Neurodevelopmental Model

The neurodevelopmental hypothesis of schizophrenia postulates that an early event disrupts normal brain maturation, resulting in the obvious appearance of clinical symptoms at puberty or young adulthood[24].Rodent models involving experimental insults during the fetal or neonatal period result in the appearance of behavioural abnormalities, imbalances in central neurochemistry and morphological changes in the brain at these developmental stages that resemble some, but not all, clinical aspects of schizophrenia.Behavioural abnormalities that have been reported in these perinatal or postnatal models for schizophrenia consist of impaired prepulse inhibition (PPI), increased sensitivity to the locomotorstimulant effects of dopaminergic agonists, social withdrawaland a variety of cognitive deficits that reproduce some of the features of schizophrenia[25].

Emphasizing the variety of structural abnormalities in the brains of schizophrenic patients and the increased rates of obstetric complications and aberrant psychological and neurologic functioning during childhood, Weickert and Weinberger suggest that derangements in neurodevelopmental processes contribute to disease pathophysiology. Abnormalities in neuronal cell proliferation, migration, or connectivity, including axonal outgrowth, survival, synaptic regression, and myelination, may be involved[26] .

Neurochemical Studies

Historically, based on the observation that clinically therapeutic APDs worked by binding dopamine receptors, the dopaminergic system has been explored extensively Findings suggest that a complex dopamine dysregulation occurs, with hyperdopaminergic activity in the mesencephalic projections to the limbic striatum and hypodopaminergic activity in the neocortex. Evidence for hyperdopaminergic activity has included correlation be-tween the efficacy of dopamine receptor–binding drugs and reduction in positive symptoms as well as increased D2 receptor levels in postmortem and PET studies[27] .Recent studies have suggested that various positive symptoms correlate with abnormalities in presynaptic dopamine storage, release, transport, and reuptake in mesolimbic systems. Hypoactivity of dopamine systems is suggested by findings of decreased dopamine turnover in patients with negative symptoms, and in some studies dopamine agonists have been shown to improve negative symptoms. Functional imaging studies also suggest that hypofrontality is more pronounced in patients with negative symptoms[22].

Serotonergic, glutamatergic, and other neurotransmittersystems (eg, ©-aminobutyric acid [GABA]) have been investigated in schizophrenia, especially in reference to interaction with dopaminergic systems. In studies of GABAergic systems, decreases in glutamic acid decarboxylase, the GABA-synthesizing enzyme, have been observed in the prefrontal cortex of schizophrenic patients, and alterations in subtypes of GABAergic neurons have been reported[28].

Clues and hypotheses regarding the pathophysiology of schizophrenia abound, but a

clear and consistent picture of underlying neuroanatomical, neurodevelopmental, and neurochemical disease mechanisms has yet to emerge. Likewise, specific causes of the disease remain obscure, with most evidence indicating some complex combination of genetic and environmental effects[17].Although these various complex factors remain extremely difficult to disentangle, the overwhelming evidence for a substantial genetic contribution to schizophrenia presents an important path forward for our understanding of the disease.

1.2.4 CLINICAL FEATURES

Schizophrenia is a severe and chronic neuropsychiatric disease that affects cognition, emotional processing, and behavior. Although termed a disease, clinical heterogeneity is marked; thus, schizophrenia is probably best described as a symptom complex. Characteristic clinical features of schizophrenia can be classified into 3 symptom clusters:

(1) positive or psychotic symptoms of hallucinations, delusions (including unusual thoughts and suspiciousness), and distorted perceptions;

(2) negative symptoms of flat or blunted affect and emotions, amotivation, avolition, anhedonia, or alogia; and

(3) disorganized symptoms of confused thinking, incoherence or looseness of associations in thought and speech, and odd or bizarre behavior.

Although affected individuals may predominantly display signs and symptoms of 1

cluster type, the occurrence of other symptom types is not precluded. Regardless of predominant symptom type, a general decline in cognitive functions, including attention, executive functions, and working memory, is central to the behavioral disturbance and functional disability[29] .

ICD-10 diagnostic criteria for schizophrenia

At least one present most of the time for a month

_ Thought echo, insertion or withdrawal, or thought broadcast

_ Delusions of control referred to body parts, actions, or sensations

_ Delusional perception

_ Hallucinatory voices giving a running commentary, discussing the patient, or coming from some part of the patient's body

_ Persistent bizarre or culturally inappropriate delusions

Or at least two present most of the time for a month

_ Persistent daily hallucinations accompanied by delusions

_ Incoherent or irrelevant speech

_ Catatonic behaviour such as stupor or posturing

_ Negative symptoms such as marked apathy, blunted or incongruous mood

DSM- IV TR Diagnostic Criteria for Schizophrenia

A. Characteristic symptoms Two or more of the following,* each present for a significant portion of time during a one month period (or less if successfully treated):

• Delusions

• Hallucinations

• Disorganized speech (e.g., frequent derailment or incoherence)

• Grossly disorganized or catatonic behavior

• Negative symptoms (i.e., affective flattening, alogia, or avolition)

B. Social/occupational dysfunction

For a significant portion of the time since the onset of the disturbance, one or more major areas of functioning, such as work, interpersonal relations, or self-care are markedly below the level achieved prior to the onset (or when the onset is in childhood or adolescence, failure to achieve expected level of interpersonal, academic, or occupational achievement).

C. Duration Continuous signs of disturbance persist for at least six months. This six-month period must include at least one month of symptoms (or less if successfully treated) that meet criterion A (i.e., active-phase symptoms) and may include periods of prodromal or residual symptoms.During these prodromal or residual periods, the signs of the disturbance may be manifested by only negative symptoms or two or more symptoms listed in criterion A present in an attenuated form (e.g., odd beliefs, unusual perceptual experiences).

D. Schizoaffective and mood disorder exclusions

Schizoaffective disorder and mood disorder with psychotic features have been ruled out because either

(1) no major depressive, manic, or mixed episodes have occurred concurrently with the active-phase symptoms; or

(2) if mood episodes have occurred during the activephase symptoms, their total duration

has been brief relative to the duration of the active and residual periods.

E. Substance/general medical condition exclusion

The disturbance is not due to the direct physiological effects of a substance (e.g., a drug of abuse, a medication) or a general medical condition.

F. Relationship to a pervasive developmental disorder

If there is a history of autistic disorder or another pervasive developmental disorder, the additional diagnosis of schizophrenia is made only if prominent delusions or hallucinations are also present for at least a month (or less if successfully treated).

The onset of schizophrenia can be abrupt or insidious. Most patients undergo a prodromal phase marked by a slow and gradual development of symptoms, such as social withdrawal, loss of interest in school or work, deterioration in hygiene and grooming, unusual behavior, or outbursts of anger. Family members can find this behavior disturbing and difficult to interpret. They may assume that the person is just "going through a phase." Eventually, the appearance of active-phase symptoms (e.g., psychosis) marks the disturbance as schizophrenia[11].

No single sign or symptom is pathognomonic of schizophrenia. To make a definitive diagnosis, signs and symptoms must be present for a significant portion of one month (or a shorter period if successfully treated), and some must be present for at least six months. These symptoms also must be associated with marked social and occupational dysfunction.

There are five types of schizophrenia: paranoid, disorganized, catatonic, undifferentiated, and residual.

Paranoid type is characterized by a preoccupation with one or more delusions or frequent auditory hallucinations; cognitive function and affect remain relatively well preserved.

Disorganized type is characterized by disorganized speech and behavior, as well as flat or inappropriate affect.

Catatonic type has at least two of the following features: immobility (as evidenced by stupor or catalepsy); excessive, purposeless motor activity; extreme negativism (e.g., resistance to all instructions, maintenance of rigid posture, mutism); or peculiarities of voluntary movement (e.g., posturing, prominent mannerisms, grimacing).

A patient is said to have undifferentiated schizophrenia if none of the criteria for paranoid, disorganized, or catatonic types are met.

Residual type is characterized by the continued presence of negative symptoms (e.g., flat affects, poverty of speech) and at least two attenuated positive symptoms (e.g., eccentric behavior, mildly disorganized speech, odd beliefs). A patient is diagnosed with residual type if he or she has no significant positive psychotic features.

This classic typing of schizophrenia can be limiting because patients often are difficult to classify.

1.2.5 MANAGEMENT

The management of schizophrenia can be divided into pharmacological and psychosocial treatment.

Pharmacological Treatment

Pharmacotherapy is the mainstay of treatment, without which most psychosocial treatment would not be possible. Effective pharmacologic treatment of schizophrenia has been available since the 1950s. In the early 1950s, the term "neuroleptic" was introduced to denote the effects of chlorpromazine and reserpine on laboratory animals. Although "neuroleptic" is still used synonymously with "antipsychotic," the term now usually refers to first-generation antipsychotics that confer an increased risk of extrapyramidal side effects, such as dystonic reactions (e.g., fixed upper gaze, neck twisting, facial muscle spasms), parkinsonian symptoms(e.g., rigidity, bradykinesia, shuffling gait, tremor), and akathisia (e.g., inability to sit still, restlessness, tapping of feet). The term "atypical antipsychotic" refers to newer antipsychotics that confer less risk of extrapyramidal side effects than traditional antipsychotics[30].

Nonadherence to medications is a significant problem; in a recent study, 74 percent of patients discontinued their medication within 18 months. Nonadherence often leads to relapse of symptoms[31]. Atypical antipsychotics were initially thought to help with adherence because of their lower rate of neurologic side effects. However, meta-analyses have found that drop-out rates and relapse prevention are no better with atypical antipsychotics than with neuroleptics. Evidence suggests that delays in initiating therapy with antipsychotics may result in a lifetime deleterious effect on psychotic episodes and social adjustment[32] .

Although newer atypical antipsychotics are associated with fewer neurologic side effects, they confer a higher risk of metabolic side effects such as diabetes,

hypercholesterolemia, and weight gain.

Tardive dyskinesia is a common late side effect of prolonged treatment with antipsychotics. Stopping the causal antipsychotic does not diminish the chronicity and severity.

Meta-analysis has shown that clozapine is the best drug for 20-30% of patients who are resistant to treatment. Clozapine is the only antipsychotic that can reduce positive and negative symptoms in patients with treatment resistance, and it should be prescribed as soon as treatment resistance is confirmed[33] .

Psychosocial Treatment

Individual, group, and family treatments have been developed as therapies for persons with schizophrenia. Family interventions include therapy with individual families, psychoeducation with groups of families, and family group therapy. These interventions offer support, education about the illness, and options for reducing critical and emotionally overinvolved attitudes and behaviors toward the patients[34].

Family treatments have the most empiric support for improving symptoms and reducing hospitalizations. These treatments are based on early findings that family environments that were high in "expressed emotion" (either critical and rejecting or emotionally overinvolved) were associated with relapse in patients with schizophrenia. Multiple studies have shown that family interventions reduce relapse rates and improve symptoms, adherence to medications, and functioning[35] .

Specific interventions that have been shown to improve the outcome of schizophrenia

include assertive community treatment, family psychoeducation, supported employment, social skills training, teaching illness management, cognitive behaviour therapy for psychosis and integrated treatment for comorbid substance use[36].

1.2.6 PROGNOSIS

Patients with schizophrenia have a high rate of substance abuse, and those with substance abuse have their first hospitalizations at earlier ages, have more frequent hospitalizations, and have more interpersonal and family discord. Patients with severe psychotic disturbances have a higher likelihood of aggressive behavior than those with fewer psychotic symptoms. Patients with schizophrenia also have a low marital rate and high divorce rate.

Accelerated heart disease is the most common cause of death in patients with schizophrenia; the risk of dying from cardiovascular disease is two to three times higher than in the general population.This risk is accelerated because their rate of cigarette smoking is two to four times higher than that of the general population.

Suicide also is a common cause of death in patients with schizophrenia; it has a 10 percent lifetime risk.The risk of suicide is strongly associated with depression, previous suicide attempts, drug abuse, agitation or motor restlessness, fear of mental disintegration, poor adherence to treatment, and recent loss[37].

While many patients with schizophrenia have a lifelong vulnerability to recurrent episodes of illness, a large proportion will have few relapses and make a good functional recovery. Poor premorbid adjustment, a slow insidious onset, and a long duration of untreated psychosis together with prominent negative symptoms tend to be associated

with a worse prognosis.An acute onset, an obvious psychosocial precipitant, and good premorbid adjustment all improve the prognosis[38] .

1.3 INSIGHT

1.3.1 DEFINITION

The Oxford Dictionary of English(2007) defines insight as the capacity to understand hidden truths, especially of character and situation.But,the concept of insight in psychiatric context evokes different meanings .In 1911, Karl Jaspers was the first psychiatrist to note that many psychiatric patients are unaware of being ill.Aubrey Lewis expanded on this concept in 1934 when he defined poor insight as being the inability to recognize a morbid process within oneself .This definition of insight went underground and the Freudian concept of denial replaced it.In the era of psychoanalytic dominance, insight meant a specific kind of understanding, usually related to discovering symptoms as connected to unconscious emotions[39] .

Insight is operationally defined by Mintz etal(2003) according to five dimensions, which include the patient's awareness of mental disorder,awareness of social consequences of disorder, awareness of the need for treatment,awareness of symptoms and attribution of symptoms to disorder[8] .

Lack of awareness of mental disorder is a common sign of schizophrenia.This phenomenon, typically termed poor insight, was noted in schizophrenia when the disorder was first named.Lack of insight in schizophrenia has also been reported as one

of the most prevalent signs of this disorder. For example,in the World Health Organization's International Pilot Study of Schizophrenia in different cultures, it was found that over 90% of subjects manifested poor insight . More recent studies confirm the generality of poor insight in this clinical population, reporting that lack of insight is more common in schizophrenia than in other psychotic .People with schizophrenia have poorer insight than patients with depression but may not have more impairment of this kind than do bipolar patients[40] .

In recent years, sophisticated instruments for quantifying insight have been developed, in which different aspects of insight can be considered independently. For instance, a patient may acknowledge that his or her symptoms are unusual but may deny that they are caused by an illness. Alternatively, the patient may acknowledge that he or she was ill but may deny that there is any risk that the symptoms could return. One can also extend the concept of insight to aspects of function, as well as to symptoms. Thus, one can distinguish awareness of symptoms, of impairment, of the views other people have of the patient, of the causes of the impairment (called attribution), of the need for treatment, and of the effects of treatment[41] .

Within each of these realms, insight is not an all-or-nothing phenomenon. A patient may have excellent insight into one aspect of the illness—for instance, that his or her voices are abnormal—but may lack insight into another aspect, for instance, that the medications decrease the severity of the voices. Within a realm of insight, the patient's understanding can also be partial: One patient may be convinced that voices, for instance, are not due to an illness, whereas another patient may think it is possible that his voices are due to an illness but may not be sure[42] .

Insight can also vary over time. Educating a patient may change his or her level of insight, and clinical improvement in other aspects of the illness may be associated with improved insight. Resolution of an exacerbation of psychotic symptoms can be associated with better insight.

1.3.2 ASSESSMENT

Standardised tools for the assessment and quantification of insight have been developed over the past 15 years (e.g. the Schedule for the Assessment of Insight (SAI; David, 1990; Sanz et al al, 1998) and the Scale to Assess , Unawareness of Mental Disorder (SUMD;Amador et al al, 1993) which have been , found to have clinical utility for diverse populations and patient groups worldwide[43] .

Scale to Assess Unawareness of Mental Disorder (SUMD)

-The SUMD has six general items and four subscales. The general items estimate the three most widely used definitions of insight: awareness of having a mental disorder, awareness of the achieved effects of medication and awareness of the social consequences of having a mental disorder, and include assessment of both current and past-time periods. Four other subscales, each composed of 17 items, assess awareness and attribution of specific current and retrospective symptoms as well as deficits with severe mental disorders[43].

Schedule of Assessment of Insight-Expanded version (SAI–E)

The expanded version of the Schedule of Assessment of Insight (SAI–E; Kemp & David, 1997; Sanz et al, 1998) is the other tool used for assessment of insight. This has

been applied widely in Western and non-Western countries (Kulhara et al, 1992; Aga et al,1995) and comprises questions to assess three dimensions of insight: awareness, relabelling of symptoms and adherence, plus a 'hypothetical contradiction' item added to evaluate the person's capacity to consider another's perspective. Each dimension comprises two or three questions which are scored on a 3-point scale from 0 (no insight) to 2 (good insight), with a maximum total score of 24. The supplementary question is scored from 0 to 4 and this is added to the total score. This expanded version also includes items on awareness of change, difficulties resulting from the mental condition and insight into key symptoms[7] .

Insight and Treatment Attitude Questionnaire (ITAQ).

McEvoy, Aland, Wilson *et al.* developed a semi-structured interview and assessment tool termed the Insight and Treatment Attitude Questionnaire (ITAQ). This is a widely used assessment tool, and it demonstrates an advance in the evolution of available methods. However, several flaws exist with this measurement instrument. Eleven items are assessed to evaluate three areas of insight—insight into mental illness, need for treatment, and need for medications. Ratings are scored by consensus using a three-point scale, but "how such scores were decided is not made clear"[44] .

1.3.3 NATURE AND FACTORS ASSOCIATED WITH INSIGHT

1.3.3.1 PSYCHOLOGICAL FACTORS

Work has continued to attempt to conceptualize the roots and nature of poor insight in schizophrenia. Osatuke *et al.* identified seven major models of the etiology of poor insight, none of which are necessarily mutually exclusive. The first two

of the models noted by this group suggest that lack of awareness of illness may itself sometimes be a positive or a negative symptom of schizophrenia. Framed as a positive symptom, lack of awareness of illness would itself be considered conceptually as a delusion. Framed as a negative symptom, lack of awareness would itself be considered conceptually as a form of withdrawal from a socially validated portrait of reality[45].

The next four models proposed by Osatuke and colleagues point to the possibility that unawareness of illness results from some form of cognitive dysfunction: cognitive disorganization, neurocognitive impairment, impaired metacognitive capacity or neuroanatomic deficit. This group of theories shares the contention that some form of diminishment in previously available cognitive resources probably clouds a person's ability to recognize or label a series of chaotic and confusing experiences in the face of schizophrenia. The final model noted by Osatuke and colleagues suggests that lack of awareness is essentially a form of adaptation to illness; that is, a self-protective act or means of coping with the difficulties linked with the illness[46].

A range of cross-sectional studies have found that participants with schizophrenia who were unaware of their illness demonstrated significantly poorer performance on neurocognitive assessments, particularly those linked to the function of the prefrontal cortex[47]. With limited flexibility in abstract thought or poorer overall brain function, it may be that it is especially difficult to perceive and construct a meaningful account of the naturally complex and often poignant losses and life changes related to the onset and development of schizophrenia. Studies supporting this possibility include those that link poor insight to poorer executive function , lesser capacity for perceptual organization

and lower grey matter volumes in the temporal and parietal regions of the brain[48] .

1.3.3.2 DEFENSE MECHANISM

Lack of insight is often seen as a defence against the potentially devastating realization of a person's illness. It is thus an active (motivated) 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. Sociopsychological research suggests that such biases in cognitive appraisal are the 'norm' and not exclusive reactions to crises. The frequently reported finding that 'preserved' insight is related to depressive symptoms inpatients with schizophrenia and inversely related to self-deception may be interpreted as evidence that poor insight serves as a defensive function[49] . It might be argued that the mechanisms underlying the concept of insight as a defence lie on a continuum encompassing all experiences, whether 'normal' or 'pathological'[50].

1.3.3.3 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[51] .

Individuals' perspectives, beliefs and values should be taken into consideration when we assess something as complex as insight. This can provide the clinician and researcher with a greater understanding of different models of illness, help-seeking and mental health service acceptability[52] . Some sociological studies of labelling 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[53] .

1.3.3.4 INTELLECTUAL ABILITY

Too much and too swift uncovering and self-disclosure might lead to breakdown of the defence mechanism that otherwise protects the ego of the patients with schizophrenia. Risk for the development of depression,hopelessness and likelihood of suicide increases wth the awareness of illness. The risk is particularly high in intelligent high functioning individuals who are educated[54].

1.3.3.5 SOCIOCULTURAL ISSUES

Conceptions of mental illness and its treatment often stem from normative social and cultural constructions. People can have various culturally shaped frameworks toexplain their illnesses, all possibly valid .Socially oriented authors contend that technical definitions of insight are Eurocentric and that the metaphor of insight is profoundly shaped by cultural beliefs and practices. The growing number of non-Western studies that examined the components of insight support 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. This aspect of insight may be, at least in part, a form of neuropsychological deficit somewhat independent of cultural influences.As an analogy, one would expect a lesion of the frontal lobes to disrupt self-awareness and other executive functions regardless of ethnicity and cultural setting[55] .

Even the multi-dimensional framework for insight fails to acknowledge that people with psychiatric disorders can hold multiple beliefs about their problem; indeed, they may be diverse and contradictory. Similarly there is no one-to one correspondence between beliefs and consequent actions. Help-seeking behaviours have a special place in our concept of insight – as a dimension in itself and as an external validator[56] .

Cultural concepts of mental disorder are closely related to insight. International research indicates that the symptomatology, help-seeking and course of schizophrenia, as well as other psychiatric disorders, are strongly influenced by cultural interpretations. The speculations on the underlying mechanisms for the better prognosis of schizophrenia in developing countries have direct implications for the cultural constructions of insight because of the interactions of self and culture. If the individual self is a culturally mediated interpretation, then we might expect that cultures act through self-awareness to shape the natural course of schizophrenia[57].

Insight signifies a variety of ways in which a person's mental life approximates to that of others – in terms of what constitutes an illness, what beliefs are abnormal and what medical advice it is reasonable to follow. A number of shared assumptions allow these aspects to be incorporated in the mental model that psychiatrists have of what constitutes

insight(58) . This takes into account other clinical features, including history, course, culture, etc. In its own way, this is reliable and may even be valid. Hence, if a person could acknowledge some kind of non-visible change in his or her body or mind that affects the ability to function socially, and if he or she feels the need for restitution, then, irrespective of the attribution and the pathways of care that the person seeks, we could call this the presence of 'insight'[59].

1.3.4 RELATIONSHIP BETWEEN INSIGHT AND TREATMENT OUTCOME

The relationship between insight and outcome in patients with psychotic disorders is an important area of inquiry, especially due to its prognostic and treatment implications[60] . Several studies have shown than better insight is associated with favourable outcome. This could be based on treatment adherence and good compliance with medication[61] . Poor insight in schizophrenia is associated with poorer medication compliance, poorer psychosocial functioning, poorer prognosis, increased relapses and hospitalizations, and poorer treatment outcome[62] .

1.4 EXPLANATORY MODELS OF ILLNESS

''Explanatory models'' of schizophrenia powerfully affect community perceptions of whether people who suffer from this illness retain their fundamental ''moral status'' or humanity.Certain cultural groups favor interpretations of mental illness that differentially allow for continued integration of the ill individual into social groups[9] .

Explanatory models of illness encompass a person's ideas about the nature of their problem, its cause, severity, prognosis and treatment preferences.Dissonance between

patients' and professionals' explanatory models may affect help-seeking behaviour, treatment compliance, satisfaction and culturally sensitive clinical practice[63].

Clinical experience suggests that patients can simultaneously seek help (action) from different sources whose frameworks and treatments contradict each other. Hence, naturalistic ('Western') explanations (e.g. disease, abnormality, infection, degeneration) may coexist with personalistic ('Eastern') explanations (e.g. supernatural causation, sin and punishment, karma). Naturalistic explanations are internal whereas personalistic explanations are often external. However, such explanations often coexist in many cultures[64] . For example, it is common for people in India simultaneously to seek help and treatments from practitioners of modern medicine and from traditional healers/shamans and, provided that each does not claim exclusivity. We hypothesise that such multiple models may be advantageous, 'buffering' notions of loss and stigma and preventing social disintegration[65] .

1.5 RATIONALE FOR THE STUDY

Insight is a complex multidimensional construct which is shaped by individual psychology (i.e. motivation and denial) and the constraints of biology (as in cognitive impairment and anosognosia) and is influenced by social constructions of illness and culturally specific explanatory models .Lack of insight was found to be almost invariably associated with a diagnosis of acute schizophrenia across all countries and cultures surveyed within the World Health Organization International Pilot Study of Schizophrenia .Standardised tools for the assessment and quantification of insight have been developed over the past 15 years (e.g. the Schedule for the Assessment of Insight

(SAI; David, 1990; Sanz et al al, 1998) and the Scale to Assess , Unawareness of Mental Disorder (SUMD;Amador et al al, 1993)). which have been , found to have clinical utility for diverse populations and patient groups worldwide. Studies have reported a consistent inverse relationship between psychopathology and insight, with the exception of anxiety and low mood,which are positively associated with insight . The influence of treatment on the level of insight has been studied by workers who report that insight improved significantly during the course of in patient treatment.However there are no studies that have looked at insight in the same individual before and after treatment.

Beliefs about illness, distress and disability profoundly influence their experience of, and responses to such problems. Eliciting explanatory models (EMs) (of patients and their relatives) in routine clinical psychiatric practice gives a better understanding of the subjective experience of illness . Such perspectives also reveal attitudes towards and compliance with treatment, and so promote therapeutic adherence and improve clinical outcomes. The last few years has witnessed an increase in literature regarding beliefs about causes of schizophrenia there is a paucity of studies evaluating change in EMs in individuals while unwell and after resolution of illness.

This study seeks to assess the EMs and insight in patients with schizophrenia while psychotic as well as following remission of illness and study the factors a

AIMS

This study aims to examine the insight and explanatory models of illness among patients with schizophrenia during illness and when in remission.

SPECIFIC OBJECTIVES

i. To assess the insight and explanatory models of psychosis held by patients with schizophrenia during the period of illness.

ii. To assess the insight and explanatory models of schizophrenia held by the patient following remission of psychosis.

iii. To assess the relationship between insight and the explanatory models of psychosis held by patients with schizophrenia and selected relevant demographic characteristics (gender, marital status, education, occupation, religion, locality).

iv. To assess the relationship between insight, explanatory models of psychosis held by patients with schizophrenia and disease and treatment characteristics

3.1 STUDY DESIGN

This was an observational study that followed up a group of consecutive patients admitted with a diagnosis of schizophrenia ,who were assessed prior to onset of treatment and following remission of symptoms.

3.2 SETTING

This study was carried out in patients admitted in the Department of Psychiatry, Christian Medical College. This 120-bed hospital provides short-term care for patients with all types of psychiatric diagnoses from the town of Vellore and a wider rural area beyond. It also functions as a tertiary referral centre for management of patients with mental and behavioral disorders from different parts of India. The emphasis is on a multidisciplinary approach and eclectic care using a wide variety of pharmacological and psychological therapies. The hospital has a daily outpatient clinic in which 400-450 patients are seen. Patients were recruited over a period of 12 months.Following recruitment participants were interviewed at two points in time. The first was soon after admission (as soon as possible and within the first 5 days of admission), and secondly when the patient had achieved remission by the defined criteria.All patients received treatment as usual.

3.3 PARTICIPANTS

Consecutive patients who were admitted into the ward at the Department of Psychiatry who satisfied *International Classification of Diseases - 10* (ICD-10) diagnostic criteria

for schizophrenia (WHO, 1992) were contacted for possible recruitment to the study. Informed consent was obtained. Subjects above the age of 18 years, who speak Tamil, were eligible to take part. Subjects with severe language, hearing or cognitive impairment were excluded.Patients with a primary mood disorder,substance use disorder or organic disorder were also excluded.The patient was reassessed when there was a remission of symptoms as identified by the treating physician.

3.4 VARIABLES

Subjects who consented to take part in the study were assessed for sociodemographic and clinical variables (duration and severity of illness,treatment variables etc). Insight was rated using the Schedule for the Assessment of Insight scale (SAI-E). Beliefs about the etiology of the illness, it's course, the time of onset of symptoms, the meaning of sickness, the diagnosis, the methods of treatment and roles and expectations of the subjects involved in the process were assessed with the SEMI.

Clinical parameters ,insight and explanatory models were reassessed when the patient was in remission, defined as PANSS items P1, P2, P3, N1, N4, N6, G5, and G9 $\leq$ 3.

Sources of data included patient,informants and ,case records.

3.5 DATA MEASUREMENT

3.5.1 POSITIVE AND NEGATIVE SYNDROME SCALE(PANSS)

The PANSS (Kay et al, 1986) is designed to assess symptom profile.

The PANSS is an operationalized, standardized ,drug-sensitive instrument that provides a

balanced representation of positive and negative symptoms and gauges their relationship to one another and to global psychopathology. It is used to evaluate persons with schizophrenia and other psychotic disorders in clinical and research settings.

3.5.2 EXPANDED SCALE FOR ASSESSMENT OF INSIGHT(SAI-E)

This is a standard semi structured interview scale developed by Kemp and David, (1997) for assessing insight. It consists of 11 items, with a standardized mode of rating of the items by the interviewer. The questions to be directed to the interviewee are pointed out, but they allow some flexibility in their formulation. It measures illness awareness ,symptom relabelling and treatment compliance , plus labelling a 'hypothetical contradiction' item added to evaluate the person's capacity to consider another's perspective. This expanded version also includes items on awareness of change, difficulties resulting from the mental condition and insight into key symptoms

3.5.3 SHORT EXPLANATORY MODEL-MODIFIED VERSION (SEMI)

Tamil version of the modified Short Explanatory Model Interview (SEMI) was used to assess beliefs about the illness (SEMI; Lloyd et al al, 1998;Joel et al, 2003). This interview explores *emic* perspectives of illness. The language is simple and does not include any medical or technical words or phrases.It is used to elicit patients', attributions of their presenting complaints;

their previous help-seeking behaviour (including visiting a temple, a shamam/ mantrawadi, a traditional healer, or a doctor); their causal models (e.g. previous deeds/karma, evil spirits, punishment by god, black magic, or disease); perceived

consequences (change in the body or mind); and their expectations regarding the index consultation. The SEMI, which combines open-ended questions and a case vignette with a structured coding frame, has been used successfully in a variety of countries and cultures, including India (Manoharam et al al, 2001).

3.5.4 PROFORMA FOR SOCIO-DEMOGRAPHIC AND CLINICAL VARIABLES

Details regarding socio-demographic variables and clinical details were recorded in this proforma.

3.6 STATISTICAL METHODS

3.6.1 DETERMINATION OF SAMPLE SIZE

The sample size for the study was determined using the computer package Epi Info (Version 6.0) (1993). The calculations were based on the following assumptions : Estimated prevalence of poor insight in schizophrenia 50% (based on earlier studies); power 80%,confidence interval 95% . The sample size thus obtained was 90.A total of 93 patients were recruited.

3.6.2 DATA ANALYSIS

The statistical software SPSS for Windows (version 16.0.1) was employed for the analysis of data. Mean and standard deviation were employed to describe continuous variables, while frequency distributions will be obtained for categorical data. Pearson's correlation

test was used to assess the relationship between insight and sociodemographic, clinical and treatment variables. The McNemar test will be employed to assess the change over time in categorical variables .Logistic and linear regressions will be done to exclude confounding. Odds ratio and confidence interval will also be calculated.

4 .1 SUBJECTS

4.1.1 THE STUDY SAMPLE

A total of 102 patients with schizophrenia were admitted to the hospital between January 2010 and September 2010; of these a total of 97 met the study criteria. 2 were excluded owing to psychopathology precluding interview, 1 did not attend both interviews and 1 refused consent. Baseline and follow-up interviews were administered to the 93 remaining consecutive patients who met the inclusion criteria. The age and literacy of those who consented (henceforth known as the sample) and those who refused to participate in the study were compared. These factors were not significantly different between the 2 groups suggesting that the results may be cautiously generalized.

4.2 SOCIODEMOGRAPHIC PROFILE OF SAMPLE

Table 4.2 documents the sociodemographic profile of the sample.60 (64.5 %) were men and 33(35.5 %) were women .The mean age of the participants was 31.27years with a range between 20 and 62 years(s.d=8.9).48.4% were currently single, while 51.6% were married.47.3% lived in a rural area. Most (91%) lived in their own home. The majority was unemployed (54; 58.1%). Many patients were from a low to middle socio-economic background. The mean monthly family income was rupees 15956.99. 10.8% had been unable to buy food in the past month due to financial problems .26(28 %) of the respondents said that the family had financial debts. A majority (74.2 %) of the participants were able to read and write.

Table 4.2 Sociodemographic profile of sample

Characteristic	Score	Range
Age, years: mean (s.d.)	31.27 (8.994)	20-62
Gender: Female (%) Male (%)	33 (35.5) 60 (64.5)	
Marital status1)married 2)unmarried 3)divorced	48 (51.6) 44 (47.3) 1 (1.1)	
Literacy, *n* (%) Read and write Illiterate	69 (74.2) 24 (25.8)	
Schooling, years: mean (s.d)	9.83 (2.907)	1-12
Housing, *n* (%) Own Rented Squatting	63 (67.7) 27 (29.0) 3 (3.2)	
Residence, *n* (%) Rural Urban	44 (47.3) 49 (52.7)	
Number of children	1.61 (0.9)	0-3
Unable to buy food in the past one month, *n* (%) Yes No	10 (10.8) 83 (89.2)	
Number of people living in the house, *n* (%)	4.66 (2.577)	2-25
Type of house: 1)Concrete with more than 2 rooms 2)Concrete with 2 or less rooms 3) Mud thatched house	57 (61.3) 15 (16.1) 21 (22.6)	
Monthly family income, rupees: mean (s.d.)	15956.99 (20617.138)	300-150000
Debt, *n* (%) No Yes	67 (72.0) 26 (28.0)	
Amount of debt, rupees: mean (s.d)	10956.99 (43780.061)	0-400000
Occupation, *n* (%) Unemployed Employed	54 (58.1) 39 (41.9)	
Monthly patient income , rupees: mean (s.d.)	4552.69(11699.615)	0-75000

4.3 CLINICAL PROFILE OF SAMPLE

Table 4.3.1 documents the clinical details of the sample. Among the sample the mean age of onset of illness was 24.31 years (s.d 6.462).The mean duration of illness in years was 6.58 (range 1 to 30, median 4, s.d.6.576). 9.7% had an episodic course while 90.3% had

had a continuous course of illness .The majority were involuntary admissions (79, 82.9%).The PANSS score at first evaluation ranged from 52 to 114 with a mean of 91.12 and standard deviation of 12.5.The SAI-E scores at first assessment ranged from 1 to 35 with a mean of 14.77(s.d 10.62). The vast majority of patients were treated with risperidone. 19 (20.4 %) had been treated with ECTs.12.9% had a history of alcohol use, 34.4% had a history of nicotine use. And 3.2% used other drugs. 17.2 % had co-morbid medical disorders.

Table 4.3.1 Clinical profile of sample

Characteristic	Score Mean (s.d)	Range
Duration of illness (yrs)	6.58(6.576)	1-30
Age of onset of illness	24.31(6.462)	1-53
Course Episodic Continuous	 9 (9.7) 84 (90.3)	
Admission status Voluntary Involuntary	 14 (15.1) 79 (82.9)	
PANSS score	91.12 (12.5)	52 – 114
SAI-E score	14.77 (10.62)	1 – 35
Past treatment	None Yes	21 (22.6) 72 (77.4)
Compliance with past treatment Poor Good Never treated	 36(38.7) 36(38.7) 21(22.6)	
ECT No Yes	74 (79.6) 19 (20.4)	
Duration of admission (weeks)	4.49(2.057)	1-10
Alcohol us No Yes	81 (87.1) 12 (12.9)	
Nicotine use No Yes	61 (65.6) 32 (34.4)	
Other substance abuse No Yes	90 (96.8) 3 (3.2)	
Other physical illness, *n* (%) No Yes	 77 (82.8) 16 (17.2)	
Stressors ,*n* (%) No Yes	 76 (81.7) 17 (18.3)	

Just prior to discharge the respondents were interviewed a second time .The baseline and pre-discharge mean scores on the PANSS and SAI-E scales showed general improvement (Table 4.3.3).

Table 4.3.2 Scores on clinical measures at the two assessment points

Scale	Baseline Mean (s.d)	Predischarge Mean (s.d)
PANSS	91(12.5)	47(6.6)
SAI-E	14.7(10.6)	27.9(6.2)

Using the median score as cut-off, insight at admission was divided into high score (above median) and low scores (below the median).50.5% patients had low scores at admission. This number reduced at the time of discharge.

Table 4.3.3. Insight Scores at admission (based on median score of 15)

Insight score		At admission Frequency (%)	At discharge Frequency (%)
	Low insight score	47(50.5)	4 (4.3)
	High insight score	46(49.5)	89 (95.7)

4.4 INSIGHT AND DEMOGRAPHIC AND CLINICAL VARIABLES

4.4.1 Insight at admission:

Age ,monthly income of the family and the duration of illness was positively correlated with the total insight score prior to treatment (pearson's r=0.210;p=0.044; pearson's r=0.287;p=0.005; pearson's r=0.326;p=0.001).Significantly higher scores were found in those living in an urban area (mean score 16.82,s.d.=10.58) rather than a rural area (mean 12.50,s.d.=10.322;p=.50),being literate (mean 16.38 ,s.d.=10.779)rather than illiterate (mean 10.17 ,s.d.=8.850 ;p=.013) ,being admitted as a voluntary patient(mean 22.86 ,s.d 9.147;p=.002) rather than involuntary (mean13.34 ,s.d =10.268) ,continuous

course of illness(mean 15.79,s.d =10.567 ,p.= .004)rather than episodic (mean 5.33 ,s.d =5.385) ,having had treatment in the past(mean 17.10,s.d =10.612 ,p.=.000) rather than not having had any treatment (mean 6.81,s.d.= 5.793) ,having had treatment with ECT in the past(mean 19.37,s.d.= 11.548,p=.034) rather than those who had not had it(mean 13.59 ,s.d.=10.125) and having had good compliance with medication in the past (mean 21.44,s.d.= 9.661,p=.000) ,rather than poor (mean 12.72,s.d.= 9.797).(Table 4.4.1.1)

INSIGHT (SAI-E TOTAL) AT ADMISSION	Pearson's r	p value	t	df	95% confidence interval
Pre-PANSS Positive scale	-.078	.459			
Pre-PANSS negative scale	.022	.834			
Pre-PANSS general psychopathology scale	-.018	.861			
Total PANSS score	-.024	.816			
Age	.210	.044*			
Number of children	-.067	.646			
Years of schooling	.135	.198			
Number of people in the house	-.200	.055			
Monthly income of the family	.287	.005*			
Monthly income of the patient	.140	.181			
Amount of debt	-.168	.108			
Duration of admission	-.017	.870			
Duration of illness	.326	.001*			
Duration of current exacerbation	.175	.094			
Age of onset of illness	-.090	.393			
Gender		.251	-1.15	91	NS
Employment		.888	.141	91	NS
Marital status		.440	-.776	91	NS
Residence		.050*	-1.98	91	-8.632 to -.001 Rural mean 12.50 (SD 10.322) Urban mean 16.82 (SD 10.58)
Literacy		.013*	-2.53	91	-11.071 to -1.350 Illiterate mean 10.17 (S.D 8.85) Literate mean 16.38 (S.D 10.779)
Type of house		.096	-1.67	91	NS
Ownership of house		.074	-1.80	91	NS
Debt		.001*	3.505	91	3.519 to 12.725 No debt 17.04 (S.D 10.211) Debt 8.92 (S.D 9.533)
Status at admission		.002*	3.244	91	3.689 to 15.342 Voluntary 22.86 (S.D 9.147) Involuntary 13.34 (S.D 10.268)
Course of illness		.004*	-2.91	91	-17.571 to -3.334 Episodic 5.33 (S.D 5.385) Continuous 15.79 (S.D 10.567)
Past treatment		0.000*	-4.250	91	-15.096 to -5.480 None 6.81 (S.D 5.793) Yes 17.10 (S.D 10.612)
ECT		0.034*	-2.154	91	-11.098 to -.450 No 13.59 (S.D 10.125) Yes 19.37 S.D 11.548)
Compliance		0.000*	-3.803	70	2.293 to -13.296 No 12.72 (S.D 9.797) Yes 21.44 (S.D 9.661)
Other medical illness		0.076	-1.795	91	NS
Stress		.596	.532	91	NS
Nicotine		.234	-1.199	91	NS
Alcohol		1.195		91	NS

On adjusting for age, gender , literacy and PANSS score, the following factors remained significantly associated with insight on linear regression: literacy (p=.016), duration of illness (p=.004), debt (p=.007), status at admission (p=.016), course of illness (p=.008) and past treatment (p= .001).

Table 4.4.1.2 Linear regression:Insight and sociodemographic and clinical variables at admission (adjusted for age ,gender,literacy and PANSS score)

Characteristic	T (df)	p	Linear regression			
			Beta	95% CI	SE	p
Literacy	-2.538(91)	.013	.249	1.116 to 10.928	2.468	.017
Total duration of illness	r = .326	.001	.437	.235 to 1.177	.237	.004
Debt	3.244(91)	.001	-.292	-11.815 to -1.942	2.484	.007
Status at admission	3.244(91)	.002	-.249	-13.346 to -1.366	3.014	.017
Course of illness	-2.917(91)	.004	.269	2.644 to 16.611	3.514	.007
Past treatment	-4.250(91)	.000	.339	3.471 to 13.691	2.571	.001

4.4.2 Insight at discharge:

The number of individuals living in the house was negatively correlated with the total insight score at the time of discharge (r=-.247;p=.017).Voluntary status at admission (p=.034) had a higher insight score than those who were admitted involuntarily; past compliance with medication was significantly associated with higher insight scores at discharge (p=.038).

Table 4.4.2.1 Insight and sociodemographic and clinical variables at discharge

INSIGHT AT DISCHARGE	Pearson's r	p value	t	df	95% confidence interval
Post-PANSS Positive scale	-.200	.055			
Post -PANSS negative scale	-.099	.344			
Post -PANSS general psychopathology scale	-.131	.212			
Total Post -PANSS score	-.172	.099			
Age	.073	.488			
Number of children	.005	.974			
Years of schooling	.098	.351			
Number of people in the house	-.247	.017*			
Monthly income of the family	.159	.128			
Monthly income of the patient	.184	.077			
Amount of debt	.018	.863			
Duration of admission	-.021	.840			
Duration of illness	.106	.313			
Duration of current exacerbation	-.101	.335			
Age of onset of illness	-.037	.724			
Gender		.953	.059	91	NS
Employment		.069	-1.84	91	NS
Marital status		.595	-.533	91	NS
Residence		.152	-1.44	91	NS
Literacy		.720	-.360	91	NS
Type of house		.796	-.260	91	NS
Ownership of house		.864	.172	91	NS
Debt		.051	1.979	91	NS
Status at admission		.034*	2.154	91	.296 to -7.322 Voluntary 31.21 (S.D 5.056) Involuntary 27.41 (S.D 6.256)
Course of illness		.335	.969	91	NS
Past treatment		.592	-.538	91	NS
ECT		.582	-.552	91	NS
Compliance		.038*	-2.11	70	-6.205 to -.184 No 26.44 (S.D 6.893) Yes 29.64 (S.D 5.876)
Other medical illness		.196	-1.30	91	NS
Stress		.596	-.531	91	NS
Nicotine		.217	1.243	91	NS
Alcohol		.147	-1.46	91	NS
Other substance abuse		.450	-.759	91	NS

On adjusting for age, gender and literacy, the following factors remained significantly associated with insight on linear regression:number of people living in the house and status at admission.However on adjusting for PANSS score in addition to age,gender and literacy,no factors were significant.

Table 4.4.2.2 Linear regression:Insight and sociodemographic and clinical variables at discharge (adjusted for age,gender and literacy)

Characteristic	T (df)	p	Linear regression			
			Beta	95% CI	SE	p
Number of people living in the house	.247	.017	-.246	-1.108 to -.077	.260	.025
Status at admission	2.154(91)	.034	-.219	-7.535 to -0.057	1.881	.047

Insight scores at discharge were also divided into high and low scores based on the median score(15).No variables were significantly associated with insight.

4.5 PSYCHOPATHOLOGY AND DEMOGRAPHIC AND CLINICAL VARIABLES

4.5.1 Psychopathology at admission:

The PANSS score at admission was not significantly associated with any clinical or demographic variable studied.(table 4.5.1)

Table 4.5. 1 Psychopathology and sociodemographic and clinical variables at admission

PSYCHOPATHOLOGY (PANSS TOTAL) AT ADMISSION	Pearson's r	p value	t	df
Age	-.155	.138		
Number of children	.057	.697		
Years of schooling	-.069	.509		
Number of people in the house	.116	.267		
Monthly income of the family	-.161	.122		
Monthly income of the patient	-.073	.488		
Amount of debt	-.031	.769		
Duration of admission	.004	.971		
Duration of illness	-.048	.651		
Duration of current exacerbation	.121	.247		
Age of onset of illness	-.116	.270		
Gender		.754	-.315	91
Employment		.946	.067	91
Marital status		.820	-.228	91
Residence		.344	.951	91
Literacy		.640	.470	91
Type of house		.184	1.340	91
Ownership of house		.805	-.247	91
Debt		.587	-.546	91
Status at admission		.464	-.736	91
Course of illness		.137	-1.501	91
Past treatment		0.308	-1.026	91
ECT		.256	-1.144	91
Compliance		0.813	.238	70
Other medical illness		0.071	1.825	91
Stress		.117	1.583	91
Nicotine		.315	-1.010	91
Alcohol		.796	.260	91
Other substance abuse		.200	1.29	91

4.5.2 Psychopathology at discharge:

The score at discharge was positively correlated with the number of children that the individual had (r=-3.177; p=.002) and the number of people living in the house (r=2.379; p=0.019).Persons with a continuous course of illness had significantly higher scores (p=.002) as compared to those with episodic nature of illness.On linear regression analysis and adjusting for age,gender and literacy,these factors remained statistically

significant.

Table 4.5. 2 .1 Psychopathology and sociodemographic and clinical variables at discharge

PSYCHOPATHOLOGY (PANSS TOTAL) AT DISCHARGE	Pearson's r	p value	t	df	95% confidence interval
Age	-.107	.307			
Number of children	.313	.028*			
Years of schooling	-.119	.255			
Number of people in the house	.254	.014*			
Monthly income of the family	-.158	.130			
Monthly income of the patient	-.176	.091			
Amount of debt	.028	.790			
Duration of admission	-.011	.919			
Duration of illness	-.002	.982			
Duration of current exacerbation	.041	.695			
Age of onset of illness	-.147	.159			
Gender		.452	.756	91	NS
Employment		.456	.748	91	NS
Marital status		.439	.778	91	NS
Residence		.683	.410	91	NS
Literacy		.318	1.004	91	NS
Type of house		.251	1.156	91	NS
Ownership of house		.669	.429	91	NS
Debt		.121	-1.56	91	NS
Status at admission		.231	-1.20	91	NS
Course of illness		.002*	-3.17	91	-11.44 to -2.63 Episodic 40.89 (6.9) Continuous 47.93 (6.2)
Past treatment		.177	-1.36	91	NS
ECT		0. 608	-.514	91	NS
Compliance		0.818	-.231	70	NS
Other medical illness		0.019*	2.379	91	.697 to -7.75 None 47.97 Present 43.75
Stress		.682	.412	91	NS
Nicotine		.106	-1.63	91	NS
Alcohol		.264	-1.12	91	NS
Other substance abuse		0.948	.065	91	NS

Table 4.5.2.2 Linear regression:PANSS and sociodemographic and clinical variables at discharge (adjusted for age ,gender,literacy)

Characteristic	T (df)	p	Linear regression			
			Beta	95% CI	SE	p
Number of children	.313	.028	.316	.213 to 4.749	1.125	.033
Number of people in house	.254	.014	.233	.052 to 1.144	.275	.032
Course of illness	-3.177 (91)	.002	.323	2.775 to 11.635	2.229	.002

4.6 INSIGHT AND PSYCHOPATHOLOGY

Pearson correlation coefficients between insight and PANSS scores at baseline and follow-up assessment points were examined. At the baseline assessment there was no significant correlation between total PANSS score and total insight score. (Pearson's r =-0.024, p= 0.816). There also was no correlation between the subscales of PANSS and the insight score.(Pearson's r =-0.078, p= 0.459 for positive subscale; Pearson's r =0.022, p= 0.834 for negative subscale; Pearson's r =-0.018, p= 0.861 for general psychopathology subscale).

At follow-up also there was no significant correlation between total PANSS score and total insight score. (Pearson's r =-0.172, p= 0.099). There also was no correlation between the subscales of PANSS and the insight score.(Pearson's r =-0.200, p= 0.055 for positive subscale; Pearson's r =0.099, p= 0.344 for negative subscale; Pearson's r =-

0.131, p= 0.212 for general psychopathology subscale).

To find out whether changes in insight might be accounted for by improvement in clinical status, correlations between change scores in PANSS (baseline minus follow-up) and change scores in insight measures were obtained. The correlation coefficient was r = -0.021 (p = 0.844).

4.7 EXPLANATORY MODELS ASSOCIATED WITH SCHIZOPHRENIA

The responses to the Short Explanatory Model Interview are summarized in Table 4.7.1 to 4.7.24.

The majority of the respondents reported that they had been brought to the hospital by force, while many others (30.1%) stated that they had come for evaluation of physical problems. Prior to discharge however, the majority (44.1%) reported their problems to be related to the mind.

Table 4.7.1 Response to the question: "What problem have you come about ?"

	Nature of problem	SEMI 1 Frequency (%)	SEMI 2 Frequency (%)
	Family brought me here by force	33(35.5)	7 (7.5)
	I have physical problem	28(30.1)	26 (28)
	I have mind problem	19(20.4)	41(44.1)
	I hear some voices	8(8.6)	13 (14)
	I am fearful	5(5.4)	6 (6.5)

When the above responses were recoded into two groups based on an emotional reason in

comparison to other reasons, there was a significant change with an increase in the number of people who felt they had an emotional problem.

Table 4.7.1.1 Response to the question: "What problem have you come about ?"

	SEMI 1 Frequency (%)	SEMI 2 Frequency (%)	McNemar Test p value
Nonemotional cause	61(65.6)	33(35.5)	.000*
Emotional problem	32(34.4)	60(64.5)	

The majority (50.5% and 69.9%) both at admission and discharge acknowledged that they had had a problem over the past year.

Table 4.7.2 Response to the question: "Over the past year have you had any illness or health problems ?"

Have you had a problem?		SEMI 1 Frequency (%)	SEMI 2 Frequency (%)
	Yes	47(50.5)	65(69.9)
	No	46(49.5)	28 (30.1)

When asked to name the problems,the most common response at admission was that that

they did not know. At discharge the number of people who believed that they had a problem of the mind had increased.

Table 4.7.3 Response to the question:"What do you call these problems; If you had to give them names what would they be?"

Name of problem	SEMI 1 Number (%)	SEMI 2 Number (%)
Schizophrenia	5 (5.4)	6 (6.5)
Depression	4 (4.3)	9 (9.7)
Mind problem	19 (20.4)	39 (41.9)
Don't know	65 (69.9)	39 (41.9)

These were recoded as emotional problems and `Don't know 'responses.This showed a significant increase in the number who believed there was a problem in the mind.

Table 4.7.3.1 Response to the question:"What do you call these problems; If you had to give them names what would they be?"

Name of problem	SEMI 1 Number (%)	SEMI 2 Number (%)	McNemar Test p value
Psychiatric problem	28 (30.1)	39(41.9)	.000*
Don't know	65 (69.9)	54(58.1)	

The majority of respondents said that they did not know why these problems had started at that particular time.

Table 4.7.4 Response to the question: "Why do you think these problems started when they did?"

	Time of onset of problems	SEMI 1 Number (%)	SEMI 2 Number (%)
	Don't know	42(45.2)	33(35.5)

	Childhood problem	19(20.4)	19(20.4)
	Problems in family	21(22.6)	26 (28)
	Problems at work	7(7.5)	12(12.9)
	Brain chemical imbalance	4(4.3)	3(3.2)

Common explanatory models for the cause of illness at initial assessment included other individuals (46.2%),due to disease (43%) and black magic (40.9%).Prior to discharge the majority (76.3%) reported a disease model of illness and this was significantly more than at first assessment.

Table 4.7.5 Response to questions regarding the caiuse of illness

Causal model	**SEMI 1 Number (%)**	**SEMI 2 Number (%)**	**McNemar Test P value**
Do you believe that there is anything that you have or haven't done to cause these problems? Yes	19 (20.4)	8 (8.6)	0.013*
Do you believe that there is anything anyone else has or hasn't done to cause these problems? Yes	43 (46.2)	34 (36.6)	.122
Do you believe that your problem is due to black magic?Yes	38 (40.9)	19 (20.4)	.000*
Do you believe that your problem is due to karma?Yes	12 (12.9)	7 (7.5)	.332
Do you believe your problem is due to punishement from God?Yes	24 (25.8)	8 (8.6)	.001*
Do you believe your problem is due to evil spirits?Yes	18 (19.4)	5 (5.4)	.004*
Do you believe your problem is due to a disease?Yes	40 (43)	71 (76.3)	.000*

Of those who believed there was an external cause to their problem,the majority thought it was due to their neighbours (Table 4.7.5).

Table 4.7.6 Response to questions regarding the external cause of illness

	External cause of problem	**SEMI 1 Number (%)**	**SEMI 2 Number (%)**
	No other person	26(28)	38(40.9)
	Neighbours	38(40.9)	35(37.6)
	Family	21(22.6)	18(19.4)
	Failures	8(8.6)	2(2.2)

Most respondents (57% and 61%) did not think that their problem was a serious one.

Table 4.7.7 Responses to the question: "How serious are your problems?"

	Seriousness of problem	**SEMI 1 Number (%)**	**SEMI 2 Number (%)**
	Not serious	57	61.3
	Very serious	29	31.2
	I could not work	7	7.5

30% felt that their problems could lead to death at initial assessment; after treatment this number had reduced.

Table 4.7.8 Responses to the question: "What do you fear most about these problems? "

Fears		**SEMI 1 Number (%)**	**SEMI 2 Number (%)**
	No fear	60 (64.5)	70 (75.3)
	I may die	30 (32.3)	18 (19.4)
	Someone will kill me	3 (3.2)	5 (5.4)

When asked about what would help the problem, the majority (72%) felt that visiting a doctor or nurse would help.This number significantly increased after treatment .

Table 4.7.9 Response to questions regarding treatment

Treatment model	SEMI 1 Number (%)	SEMI 2 Number (%)	McNemar test p value
Will it help you, if you visit a doctor or a nurse for treatment for your problem ? Yes	67 (72)	88 (94.6)	.000*
Will it help you, if you visit a traditional healer for treatment for your problem ?Yes	18 (19.4)	9 (9.7)	.064
Will it help you, if you visit a mantrivadi for treatment for your problem?Yes	13 (14)	5 (5.4)	.057
Will it help you, if you visit a temple or a church or a mosque for your problem ?Yes	23 (24.7)	11 (11.8)	.008*
Will it help you, if you observe any diet restrictions or special diet for your problem ?Yes	5 (5.4)	4 (4.3)	1.00
Do you know if there is anything else which may help your problem ? Yes	3 (3.2)	1 (1.1)	.625

Most respondents (55.9%) believed that the doctor would prescribe medicines for their problems .The number who did not expect any help from the doctor significantly reduced after treatment.

Table 4.7.10 Responses to the question: "What do you hope to gain from seeing the doctor? "

Gain from seeing doctor	SEMI 1 Number (%)	SEMI 2 Number (%)
Medicines	52(55.9)	54(58.1)
Counseling	19(20.4)	38(40.9)
Nothing	22(23.7)	1(1.1)

Table 4.7.10.1 Responses to the question: "What do you hope to gain from seeing the doctor? "

	SEMI 1 Number (%)	SEMI 2 Number (%)	McNemar Test p value
Nothing	22(23.7)	1(1.1)	.000*
Medication or counselling	71(76.3)	92(98.9)	

Table 4.7.11 Responses to the question: "Was it useful talking to the doctor? "

The number of people who felt that talking to the doctor was useful for them increased after treatment .

Useful talking to doctor		SEMI 1 Number (%)	SEMI 2 Number (%)	McNemar Test p value
	yes	56(60.2)	91(97.8)	.000*
	no	37(39.8)	2 (2.2)	

The number of people who were unhappy with treatment had significantly reduced prior to admission.

Table 4.7.12 Responses to the question: "Was there anything about your treatment you are unhappy about? "

Unhappy with treatment		SEMI 1 Number (%)	SEMI 2 Number (%)	McNemar Test p value	
	Yes	28 (30.1)	3 (3.2)	.000*	
	No	65 (69.9)	90 (96.8)		

Table 4.7.12 Responses to the question: "Was there anything about your treatment you are unhappy about? "					
Unhappy with treatment		**SEMI 1 Number (%)**	**SEMI 2 Number (%)**	McNemar Test p value	
	Yes	28 (30.1)	3 (3.2)	.000*	
	No	65 (69.9)	90 (96.8)		

The most common difficulty reported (41.9%) was the inability to work.

Table 4.7.13 Responses to the question: "What are the main difficulties your problem has caused you ?"

Difficulties caused by the problem		**SEMI 1 Number (%)**	**SEMI 2 Number (%)**
	Unable to sleep	10(10.8)	12(12.9)
	Unable to work	39(41.9)	57(61.3)
	Memory problems	19(20.4)	15(16.1)
	Body pain	5(5.4)	4(4.3)
	Unable to study	3(3.2)	3(3.2)
	No difficulties	17(18.3)	2(2.2)

The head (51.6%) and the limbs (23.7%) were the most commonly reported to be affected.

Table 4.7.14. Responses to the question: "Which parts of your body has been most affected?"

Part of the body most affected		**SEMI 1 Number (%)**	**SEMI 2 Number (%)**
	head	48 (51.6)	72(77.4)
	hands and legs	22(23.7)	41(15.1)
	not sure	4(4.3)	1(1.1)
	none	19(20.4)	6(6.5)

Work and home life were reported to be aaffected due to the problems.At second assessment the numbers of people who perceived problems in the different areas had significantly increased.

Table 4.7.15 Responses to the question about what other difficulties the problem has caused

Characteristic	**SEMI 1 Number (%)**	**SEMI 2 Number (%)**	**McNemar test P value**
Affected mobility	56(60.2)	73(78.5)	.002*
Affected social life	54(58.1)	77(82.8)	.000*
Affected home life	69(74.2)	73(78.5)	.424
Affected relationship with other people	41(44.1)	67(72)	.000*
Affected work	65(69.9)	81(87.1)	.002*

All the respondents reported feeling emotionally affected by their difficulties ,and most (59.1%and 66%) reported sadness.

.**Table 4.7.16. Responses to the question:"Have you been affected emotionally?" about what other difficulties the problem has caused**

Emotional effects	**SEMI 1 Number (%)**	**SEMI 2 Number (%)**
Happy	22(23.7)	27(29)
Sad	55(59.1)	66(71)
Angry	7(7.5)	-
Afraid	9(9.7)	-

A small group had asked for advice from sources other than the doctor.

Table 4.7.17. Responses to the question:"Have you asked for advice from anyone else about these problems?"

Others approached for advice from problem	**SEMI 1 Number (%)**	**SEMI 2 Number (%)**
Friends	7(7.5)	2(2.2)
Religion	6(6.5)	0
Internet	3(3.2)	1(1.1)
No one	77(82.8)	90(96.8)

No one reported receiving advice from anyone other than the doctor.

Table 4.7.18 Responses to the question:"Has anyone other than your doctor given you any treatment or advice about this?

Advice received from persons other than doctor	**SEMI 1 Number (%)**	**SEMI 2 Number (%)**
No	93(100)	93(100.0)

Only one respondent mentioned treating himself for the problem.

Table 4.7.19 Responses to the question:"Are you treating yourself for the problem?

Treating self for the problem	**SEMI 1 Number (%)**	**SEMI 2 Number (%)**	**McNemar test P value**
Yes	1(1.1)	1(1.1)	
No	92(98.9)	92(98.9)	1.000

By discharge the number of people who did not know what medication they were taking had reduced.

Table 4.7.19. Responses to the question:"Are you taking medication for the problem?

Medication	**SEMI 1 Number (%)**	**SEMI 2 Number (%)**
Risperidone	43(46.2)	45(48.4)
Olanzapine	28(30.1)	30 (32.3)
Clozapine	13(14)	16(17.2)
Don't know	9(9.7)	2(2.2)

Case vignette on schizophrenia

Following the case description of an individual with schizophrenia,the majority attributed her difficulties to a problem in the mind or a family problem at initial evaluation,and to a problem in the mind at second interview.

Table 4.4.20. Responses to the question "What ,if anything, is her problem?"

Nature of problem	**SEMI 1 Number (%)**	**SEMI 2 Number (%)**
Family problem	34 (36.6)	17(18.3)
No problem	18(19.4)	6(6.5)
Mind problem	34(36.6)	63(67.7)
Mental illness	5(5.4)	5(5.4)
Don't know	2(2.2)	2(2.2)

Following treatment the number of people who thought that the individual in the vignette had a mental illness increased to 51.6%.

Table 4.7.21. Responses to the question "Does she have an illness.If yes what is it?"

Name of illness if present	**SEMI 1 Number (%)**	**SEMI 2 Number (%)**
No illness present	26(28)	8(8.6)
Don't know	41(44.1)	26(28)
Mental illness	18(19.4)	48(51.6)
Schizophrenia	5(5.4)	7(7.5)
Depression	3(3.2)	4 (4.3)

At both interviews the cause of the individual's problems were attributed to problems with her spouse.

Table 4.7.22. Responses to the question "What are the causes of her problems?"

Cause of problem		**SEMI 1 Number (%)**	**SEMI 2 Number (%)**
	Problems with husband	50(53.8)	56(60.2)
	Tension	14(15.1)	18(19.4)
	Don't know	26(28)	16(17.2)
	Brain chemical changes	3(3.2)	3(3.2)

Cause of problem		**SEMI 1 Number (%)**	**SEMI 2 Number (%)**
	Problems with husband	50(53.8)	56(60.2)
	Tension	14(15.1)	18(19.4)
	Don't know	26(28)	16(17.2)
	Brain chemical changes	3(3.2)	3(3.2)

Prior to discharge, most people felt that the patient should visit the doctor for her problems.

Table 4.7.23. Responses to the question "What should she do about it?"

Treatment options	**SEMI 1 Number (%)**	**SEMI 2 Number (%)**
Take good care of herself	53 (57)	26(28)
Visit the doctor	29(31.2)	66(71)
Don't know	11(11.8)	1(1.1)

The number of people who thought that the doctor should prescribe medication increased after treatment.

Table 4.7.24. Responses to the question "What should the doctor do?"

Doctor's treatment methods	**SEMI 1 Number (%)**	**SEMI 2 Number (%)**
Medicines	31(33.3)	69(74.2)
Counselling	23(24.7)	10(10.8)
Medicines and counseling	5(5.4)	8(8.6)
Don't know	34(36.6)	6(6.5)

4.8 RELATIONSHIP BETWEEN INSIGHT AND EXPLANATORY MODELS VARIABLES

Table 4.8.1 shows the relationship between insight and responses to the SEMI summarized according to major theme.

The patients who endorsed a disease explanation had significantly higher scores on the SAI–E, indicating greater insight. The mean SAI-E scores increased on the second assessment even among those who continued to hold other explanatory models such as black magic and punishment from God.

Most patients acknowledged social and occupational dysfunction and that their wellbeing had been affected; most of them had higher insight scores than those who did not acknowledge their problems. However the group of people who expressed a difficulty in relating to others had lower insight scores than those who did not.

There were significantly higher insight scores in those who attributed their problem to past deeds prior to treatment; though the pattern persisted even after treatment, it was not statistically significant. Those who believed that others, black magic and evil spirits were the cause of their problems had lower (but statistically non-significant) scores on the insight scale both before and after treatment. Those who believed that their problems were a result of karma or punishment from God had higher insight scores pre-treatment but lower scores after treatment.

Table 4.8 Relationship between insight and explanatory models variables

SEMI questions	SEMI 1 Total number of responses	SEMI 1 SAI-E total score- Mean (SD)	SEMI 1 *t-test* *p*	SEMI 2 Total number of responses	SEMI 2 SAI-E total score- Mean (SD)	SEMI 2 *t-test* *p*
Causal models						
Past deeds	Yes 19 No 74	20.32(9.310) 13.35(10.53)	.010*	Yes 8 No 85	31.88(4.016) 27.61(6.279)	.063
External – other people	Yes 43 No 50	14.12(10.384) 15.34(10.903)	.583	Yes 34 No 59	26.59(7.357) 28.78(5.363)	.102
Black magic	Yes 38 No 55	12.29 (9.650) 16.49 (11.01)	.060	Yes 19 No 74	25.8 (7.229) 28.53(5.862)	.093
Karma	Yes 12 No 81	15.08(10.578) 14.73 (10.698)	.915	Yes 7 No 86	25.57(8.364) 28.17(6.034)	.289
Punishment from God	Yes 24 No 69	17.17(10.167) 13.94 (10.728)	.202	Yes 8 No 85	27.62(7.269) 28.01(6.160)	.868
Evil spirit	Yes 18 No 75	14.22(10.441) 14.91 (10.735)	.808	Yes 5 No 88	26(9.110) 28.09(6.070)	.468
Disease	Yes 40 No 53	21.58(8.599) 9.64 (9.049)	.000*	Yes 71 No 22	29.90(4.608) 21.77(6.768)	.008*
Treatment models						
Doctor	Yes 67 No26	17.99 (9.654) 6.50 (8.406)	.000*	Yes 88 No 5	28.22 (6.1) 21.77(6.768)	.000*
Traditional healer	Yes 18 No 75	15.50(10.913) 14.60 (10.624)	.749	Yes 9 No 84	27.89(6.009) 27.99(6.276)	-.099
Mantravadi	Yes 13 No 80	18.15(8.774) 14.22 (10.845)	.218	Yes 5 No 88	23.60(8.706) 28.23(6.021)	.106
Religious place	Yes 23 No 70	17.83 (8.255) 13.77 (11.167)	.113	Yes 11 No 82	27.64(4.456) 28.02(6.439)	.847
Dietry changes	Yes 5 No 88	20.20(8.379) 14.47 (10.695)	.243	Yes 4 No 89	26 (8.287) 28.07(6.157)	.518
Effects of illness						
Mobility	Yes 56 No 37	17.54(10.471) 10.59(9.552)	.002*	Yes 73 No 20	28.97 (4.98) 24.35(8.764)	.003*
Social life	Yes 54 No 38	17.11 (10.097) 11.68 (10.718)	.015*	Yes 77 No 16	28.81(5.257) 24 (8.764)	.004*
Home life	Yes 44 No 25	17.39 (9.862) 14.36 (10.735)	.240	Yes 57 No 16	28.23(5.819) 30.25(5.053)	.211
Relating to others	Yes 52 No 41	11.29 (10.304) 19.20 (9.408)	.000*	Yes 26 No 67	26.15(7.719) 28.69(5.433)	.252
Work	Yes 65 No 28	17.18 (9.450) 9.18 (11.252)	.001*	Yes 81 No 12	28.73 (5.5) 22.92(8.447)	.002*

4.9 SUMMARY

97 subjects were contacted and 93 subjects (95.88 %) consented to the interview. Subjects who consented and those who refused did not differ with respect to age, lieracy and socioeconomic status. The majority of the subjects who consented were men (64.5%), literate (74.2%), unemployed (58.1%) and lived in an urban area (52.7%). The mean age was 31.27 years (S.D. 8.9). The mean duration of illness in years was 6.58 (range 1 to 30).The majority had a continuous course of illness .The majority were involuntary admissions (79, 82.9%). 17.2 % had co-morbid medical disorders.

The mean scores on PANSS and SAI-E showed an improvement during the course of admission with mean PANSS reducing from 91 to 47 and mean SAI-E scores increasing from 14.7 to 27.9.There was no significant association between insight and psychopathology scores.

At admission on regression analysis, factors associated with better insight included demographic factors such as literacy and absence of debt. Clinical factors that were significantly associated with higher insight scores included voluntary status at admission, longer duration of illness, continuous course of illness and having had treatment in the past. At discharge factors that were associated with greater insight scores were the fewer the number of people living in the house and voluntary status at admission.

Common explanatory models for the cause of illness at initial assessment included other individuals, disease and black magic .Prior to discharge the majority reported a disease model of illness and this was significantly more than at first assessment. The patients who endorsed a disease explanation had significantly higher scores on the SAI–E, indicating greater insight. The mean SAI-E scores increased on the second assessment even among those who continued to hold other explanatory models such as black magic and punishment from God.

5.1 INTRODUCTION

Lack of insight is a problem that has been identified in people with schizophrenia in different languages and cultures. This study attempted to study the relationship between insight, psychopathology and explanatory models in schizophrenia in an in-patient hospital setting in TamilNadu, and to compare these variables at admission as well as prior to discharge after treatment. This section discusses the methodological issues and the results.

5.2 METHODOLOGICAL CONSIDERATIONS

1) Translation During the translation of the screening instruments and interview schedule into Tamil, the translators took care to use language as spoken by the local people, to ensure that it would be appropriate to the study population. This would however mean that this particular version may not be applicable to people who speak other dialects of Tamil.

2) Sample size The number of participants was sufficiently large to draw valid conclusions from the study.

3) Subjects 4.12 % of the subjects contacted did not participate in the study, resulting in a 95.88% second stage response rate. However analysis showed that the refusers did not differ significantly in age and literacy from the consenters, allowing cautious generalization of results to the entire study sample.

4) Setting The interview procedures were carried out in the subject's hospital room. Despite the attempt to ensure privacy, in some cases the lack of it and the sensitive nature of the issues discussed could have influenced the results of the administered instruments.

5) Procedure Though the majority of the subjects were literate, to ensure uniformity, the instruments were not self-administered but were instead read out to them using the recommended procedure.

6) Instruments Subjects were initially interviewed for their sociodemographic and clinical details. The patients were rated on the PANSS for severity of psychopathology .The SEMI and the SAI-E were then administered to assess explanatory models of illness and insight. These instruments were chosen as they have been translated into Tamil and used extensively in the local population(7) .

5. 3 LEVELS OF INSIGHT IN SCHIZOPHRENIA

Impaired insight is known to be present in 49 to 74% of outpatients with schizophrenia (Dickerson et al, 1997) and 50% of inpatients (Fenning, 1996).Our study found that about 50.5% of recently admitted patients with schizophrenia had low insight, using the median score as the cut-off to divide the group into low and high insight groups. These rates are similar to that reported in literature, confirming the presence of impaired insight in schizophrenia in all cultures and settings. At the time of discharge following a period of inpatient stay, the majority had improved in their insight with only 4 (4.3%) having scores of below 15.

5. 4 FACTORS ASSOCIATED WITH INSIGHT IN SCHIZOPHRENIA

The scores on the PANSS showed reduction by the second assessment indicating a reduction in the severity of psychopathology. However there was no significant

correlation between insight and PANSS scores in bivariate as well as multivariate analysis, suggesting that improvement in level of insight during the period of admission was related to factors other than severity of psychopathology alone. This is similar to some earlier findings (53) and points to the complex nature of insight.

Factors that were associated with insight at first assessment were demographic factors such as age, literacy, monthly income of the family, residence, literacy and debt. Clinical features that were significant included duration of illness, status of admission, course of illness, past treatment, past compliance and ECT .On regression analysis after adjusting for variables such as age,gender,literacy and PANSS score, significant demographic factors were literacy and absence of debt. These indicators of socioeconomic status suggest that higher socioeconomic and educational background is associated with greater insight. Regression analysis also showed certain clinical variables to correlate significantly with insight: those with a greater duration of illness with a continuous course had greater insight scores suggesting that over time, insight in schizophrenia improves. Indicators of treatment acceptance such as being admitted voluntarily, having accepted treatment and ECT in the past and having being compliant with medication were also associated with greater insight.

At second assessment the only demographic variable that was associated with insight was the number of individuals living in the house. This was negatively correlated with the total insight score and remained significant after adjusting for age,gender and literacy. This variable is an indicator of socio-economic status and again suggests that better socioeconomic status predicts better insight. Voluntary status at admission and past compliance with medication were significantly associated with higher insight scores at

discharge, however only voluntary status at admission remained significant on adjustment in regression analysis .

The correlates of insight identified in our population are consistent with other studies that have looked into this problem.

5. 5 EXPLANATORY MODELS FOR SCHIZOPHRENIA

A majority of the respondents did not consider an emotional or psychiatric label for their problems at initial assessment; however before discharge, most were able to label it a problem of the mind. Many of the patients were unable to say why their problems had started at the time they did but others explained it as secondary to childhood problems or family problems. These explanations remained similar even at second assessment. While a large group believed their problems to be due to a disease, other common explanatory models included other people and black magic. During the course of admission ,the large majority shifted to a disease model, suggesting that interventions in the hospital had led to a medical model of illness. Those who believed that others had caused their problems mostly attributed it to their neighbours,revealing a common cultural pattern. Most respondents did not consider their problems severe or life-threatening. Even at initial assessment most individuals considered going to the doctor as the best source of help; at second assessment this further increased as the number who considered other options such as traditional healers, mantravadis and religious places reduced. Most people believed that the doctor would offer medication or counseling at initial assessment; at second interview the number of people who did not expect any help from the doctor

significantly reduced. Most people felt that the illness had affected different aspects of their lives; only a very few did not acknowledge any problems. Problems included mobility, social life, family life, work, relating to others and emotions. While many people had looked for advice from different sources, only one had attempted to treat them self. In the case vignette, similar responses were elicited .The majority believed the person's problems were due to difficulties with her husband.

This study has brought out some of the common beliefs of people in this region regarding schizophrenia. The current psychological methods of treatment of these conditions are derived from the West .Incorporating locally accepted beliefs and appropriate culturally acceptable protocols will help in cost-effectiveness and patient compliance with intervention strategies.

5. 6 RELATIONSHIP BETWEEN INSIGHT AND EXPLANATORY MODELS VARIABLES

The patients who endorsed a disease explanation had significantly higher scores on the SAI–E, indicating greater insight;this was present in both assessments.The mean SAI-E scores increased on the second assessment even among those who continued to hold non-medical explanatory models such as black magic and punishment from God. At initial assessment there were significantly higher insight scores in those who attributed their problem to past deeds; though this pattern persisted even after treatment, it was not statistically significant. Those who believed that others, black magic and evil spirits were the cause of their problems had lower (but statistically non-significant) scores on the

insight scale both before and after treatment. Those who believed that their problems were a result of karma or punishment from God had higher insight scores pre-treatment but lower scores after treatment. This suggests that those who tended to attribute their problems to external factors had poorer insight compared to those who attributed problems to the self or personal factors.

Many patients acknowledged social and occupational dysfunction and that their wellbeing had been affected; most of them had higher insight scores than those who did not acknowledge their problems. However the group of people who expressed a difficulty in relating to others had lower insight scores than those who did not.

Those who had a medical treatment model had significantly higher insight scores at both assessments.

5. 7 IMPORTANCE OF INSIGHT AND EXPLANATORY MODELS IN HEALTH CARE

Insight is a complex and multidimensional mental faculty influenced by other multiple variables. The relationships among insight, explanatory models and psychopathology in psychosis are complex. The relationship between these factors is mediated by the interaction of additional variables such as duration of illness and sociodemographics.

From a clinical point of view, lack of insight is determined to be a key factor in the prognosis of the illness. Explanatory models are an important aspect of treatment acceptance and adherence.

Understanding the relationship between cultural variations of insight and prevailing belief systems will help in designing interventions that will be acceptable to the population and improve engagement of patients with mental health services.

5. 8 STRENGTHS AND LIMITATIONS

Limitations of the study

1. The study was limited to the period of admission and therefore does not give information about the nature or stability of insight and explanatory models over a longer period of time. Longitudinal studies are needed to examine the fluctuating nature of the presentations and changes in their explanatory models.

2. Given the nature of the topic under study, and concerns about socially desirable answers, some respondents may have been reluctant to discuss their true beliefs.

3. The participants in this study were in-patients in a mental health service. This may represent a selection bias. However, this is likely to have resulted in a more severely affected patient cohort than one derived from the community.

4. The initial and second assessment was carried out by the same researcher and would have therefore involved bias.

Strengths of the study

1. The study included a heterogeneous population in terms of age, socioeconomic status, education etc.

2. The participants were selected in a consecutive manner to avoid selection bias during recruitment.

3. A single interviewer who was aware of the social and cultural backgrounds of the participants and was well versed in the local language conducted the interview. This ensured that there was no significant reporting bias.

5. 9 RECOMMENDATIONS AND FUTURE DIRECTIONS FOR RESEARCH

Poor insight is an important aspect of schizophrenia. Insight can affect help seeking behaviour and compliance with treatment. Future research goals should focus on:

- Refining understanding of the relationship between insight,explanatory models and long-term outcome in schizophrenia.
- Developing cost-effective strategies which can be applied in primary care practice
- Qualitative research to focus on attitudes and beliefs of people about schizophrenia which will help us identify areas of deficiency which can help us be more focused on educational efforts and better intervention

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SEMI

Record number Date of interview
Gender Age

1. **INTRODUCTION:**
"Thank you for agreeing to talk about your health. I would like to ask you some questions about your health and how it affects you. The questions have already been written out so it will not sound like a normal interview and some things may not have much to do with your situation. I would like to stress that all your answers will be strictly confidential."

2. **HEALTH & ILLNESS:**

CURRENT HEALTH:
a. I would like to ask you about your visit to the doctor
What have you come about ? .
problem1
problem2
problem3

HEALTH OVER LAST YEAR :.
b .Over the past year have you had any illness or health problems?
Year1
Year2
Year3

a. What do you call these problems? Probe: If you had to give them names what would they be?

Name1
Name2
Name3

d.When did you first notice <specify identified problem>? Probe: how long ago was it, when did it start?
Onset1
Onset2
Onset3

e.Why do you think these problems started when they did?
Why1
Why2
Why3

f. Is there anything you have or haven't done that has caused this? Probe for example.

Internal

g. Is there anything anyone else has done or not done that has caused this? Probe .
external

h. So who or what is the cause of you getting this?
Intext

i. Do you believe that your problem is due to black magic?

1) Yes 2) No

j.Do you believe that your problem is due to karma?

1) Yes 2) No

k.Do you believe that your problem is due to punishment from God?

1) Yes 2) No

l.Do you believe that your problem is due to evil spirit?

1) Yes 2) No

m.Do you believe that your problem is due to any disease ?

1)Yes 2) No

3. PERCEIVED SEVERITY

a. How serious are your problems?

Serious1
Serious2
Serious3

b. What do you most fear about these problems?

Fear1
Fear2
Fear3

c. Why did you go to the doctor? Probe: Had it got worse? In what way? Were you afraid what it might be, did other people advise you to go?

4. EXPECTATIONS OF / SATISFACTION WITH MEDICAL CARE

1.Will it help you, if you visit a doctor or a nurse for treatment for your problem ?

1) Yes 2) No

2. Will it help you, if you visit a traditional healer for treatment for your problem ?

    1) Yes 2) No
3. Will it help you, if you visit a mantrivadi for treatment for your problem?

    1) Yes 2) No

4. Will it help you, if you visit a temple or a church or a mosque for your problem ?

    1) Yes 2) No

5. Will it help you, if you observe any diet restrictions or special diet for your problem ?

    1) Yes 2) No

6. Do you know if there is anything else which may help your problem ?
    1) Yes (list)
    2) No

7. What do/did you hope to gain from seeing your doctor?. What do/did you want the doctor to do?
Expect1
Expect2
Expect3

8. Have you asked the doctor about these problems?

9. What did the doctor do about these problems ?
Gpact1
Gpact2
Gpact3

10. Was it useful talking to the doctor about your problems? Can you say why?

11. Was there anything about your treatment you are unhappy about

5. ACTIVITIES AND FUNCTIONING
a. What are the main difficulties your problems have caused you (list up to 3)?
Difs1
Difs2
Difs3

b. Which parts of your body are most affected by your problems (list up to 3) ?
Body1
Body2
Body3

c.How have you been affected emotionally by what you've described (give e.g)
emotion

d. Have these problems stopped you getting about as well as you used to? (e.g.)
mobile

e . Have these problems affected your social life? (give examples)?
Social

f. Have these problems affected your home life? (give examples)?
Family

g. Have these problems affected how you get on with people in general (give e.g)
Relate

h. Has your work been affected (how?)
Work

6. OTHER HEALTH BEHAVIOUR
a. Have you asked for advice from anyone else about these problems?. Probe: hospital, pharmacist, friends, family, church, healers, osteopaths etc.
advice

b. Has anyone else apart from your doctor given you any Rx or advice about this?
Nongp

c. Are you treating yourself for the problem?
Self

d. If so how?
How

e. Are you taking any medication? (what is it)

Meds1
Meds2
Meds3

f. Are you taking any other cures or remedies?
Cures

g. Do you smoke (how much)
cigs

h. Do you drink alcohol (how much)
alcohol

i. What about any <street/recreational> drugs (what? give examples)
drugs

VIGNETTES:
Read out "You've been kind enough to tell me about yourself and your visit to the doctor. Finally, I'd like to ask your opinion about another person's visit to the doctor. I'd like to read a short account of the problem and then ask you a few questions about them."

7. VIGNETTE I
Mrs A is a 30 year- old housewife with three small children. Her husband works as a manual labourer. For the past 6 months she has stopped doing household work. She does not interact with the children or look after their needs. Her personal care is poor. She has been socially withdrawn and prefers to be alone. Her family has noticed that she smiles to herself and admits to hearing voices of strange people speaking to her. She is convinced that others will harm her. Her sleep is disturbed and her appetite is poor. Her in-laws live next door but are not supportive.

a. What if anything is her problem?

b .Does she have an illness. If yes, what is it?

c. What are the causes of her problems ?

d. What should he do about it.?
e. What should the doctor do about it?

8. Finally is there anything else about your recent trip to the doctor or health we haven't talked about you would like say?

CONSENT FORM

Title of study:
Insight and explanatory models in schizophrenia -in illness and remission.

Institution:
Christian Medical College, Vellore

Nature and purpose of the study:
You are invited to take part in a study that attempts to determine your ideas, views and perspectives on psychosis.

Procedure to be followed:
A doctor from the Department of Psychiatry will conduct this study. She will collect information regarding various aspects of your illness and your views on it by administering some standard instruments. Related information will also be collected from your medical records.

Expected duration of involvement:
The assessment will be done in two sessions that will each last about half an hour. The second session will be held once you and your doctor feel that your problems are better.

Possible benefits of the study:
The information we obtain will help us understand your illness better. Others may also benefit from the overall conclusions at the end of the study.

Confidentiality:
The records and details obtained in this study will remain confidential at all times. Your personal data will be collected and processed only for research purposes. You will not be referred to by name or identified in any report or publication.

Right to withdraw from the study:
You are free to leave the study at any time. Your decision to/ not to participate in this study will not affect your future medical or psychiatric care in our hospital. For further queries you may contact:
Dr. Cheryl Persis Petit
Department of Psychiatry, Christian Medical College, Vellore 632002
Phone:0416 228 4516,email: psych1@cmcvellore.ac.in

Consent:
I, ----------, have been informed about the study on explanatory models in schizophrenia. The investigator has explained the details of this study to me. I am voluntarily entering the study and have agreed on my own free will to participate in the initial interview and follow-up interview.

Signature of the participant **Date:**

Signature of the investigator **Date:**

Insight and explanatory models during illness and remission, in patients with schizophrenia.

SOCIO-DEMOGRAPHIC PROFORMA

1. Hospital number:
2. Age (in years):
3. Gender: 1) Male 2) Female
4. Occupation:
5. Marital status: 1)Married 2)Never married 3)Divorced 4)Separated 5)Widowe/er
6. Occupation of spouse:
7. Number of children:
8. Residence: 1)Urban 2)Rural
9. Years of schooling:
10. Literacy: 1)Read and write 2)Read only 3)Cannot read or write
11. Type of house: 1)Concrete , more than 2 rooms 2)Concrete , 2 or less rooms 3) Mud /thatched house 4)No house
12. House: 1)Own 2)Rented 3)Squatting
13. Number of people staying in same house:
14. Unable to buy food in last month 1)Yes 2)No
15. Monthly income of family:
16. Monthly income of patient:
17. Are you in debt? 1)Yes 2)No
18. If yes, how much?

Clinical:

19. Patient status at admission: 1)Involuntary 2)Voluntary
20. Duration of admission:
21. Diagnosis:
22. Course: 1)Continuous 2)Episodic (number)
23. Total duration of illness:
24. Duration of current exacerbation:
25. Age of onset of illness:
26. Past treatment: 1)Yes 2)No
27. ECT: 1)No 2)Yes (details)
28. Past treatment details:
29. Compliance with past treatment 1)Yes 2)No
30. Current treatment details:
31. PANSS score at initial recruitment:
32. PANSS score at second assessment:
33. Other medical illness 1)Yes (give details) 2)No
34. Stressors: 1)Yes(give details) 2)No
35. Nicotine use: 1)Yes(give details) 2)No
36. Alcohol use: 1)Yes(give details) 2)No
37. Other substance abuse 1)Yes(give details) 2)No