

A Review on Schizophrenia and Its Management

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ABSTRACT:- Schizophrenia is a debilitating mental illness that affects 1 percent of the population in all cultures. It affects equal numbers of men and women, but the onset is often later in women than in men. Schizophrenia is characterized by positive and negative symptoms. Positive symptoms include hallucinations, voices that converse with or about the patient, and delusions that are often paranoid.

Negative symptoms include flattened affect, loss of a sense of pleasure, loss of will or drive, and social withdrawal. Both types of symptoms affect patients' families; therefore, it is important for physicians to provide guidance to all persons affected by the disease. Psychosocial and family interventions can improve outcomes.

Medications can control symptoms, but virtually all antipsychotics have neurologic or physical side effects (e.g., weight gain, hypercholesterolemia, diabetes). There is a 10 percent lifetime risk of suicide in patients with schizophrenia.

I. INTRODUCTION:-

Schizophrenia is the archetypal form of madness. Schizophrenia is a common disorder and has a devastating effect on sufferers and their families—patients typically hear voices in their heads and hold bizarre beliefs. The schizophrenic patient presented to the public in sensational press reports and lurid films bears little resemblance to reality of the illness. This book describes what schizophrenia is really like, how the illness progresses, and the treatments that have been applied.

It also summarizes the most up-to-date knowledge available about the biological bases of this disorder. Finally it attempts to give some idea of what it is like to have schizophrenia and what this disorder tells us about the relationship between mind and brain. The Very Short Introductions series from Oxford University Press contains hundreds of titles in almost every subject area.

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expert authors combine facts, analysis, perspective, new ideas, and enthusiasm to make interesting and challenging topics highly readable. Schizophrenia is a common disorder and has a devastating effect on sufferers and their families—patients typically hear voices in their heads and hold bizarre beliefs.

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This is the first of two articles that discuss higher-order language and semantic processing in schizophrenia. This article reviews clinical characterizations of language output and the phenomenon of positive thought disorder, as well as more principled characterizations of language output in schizophrenia.

It also gives an overview of evidence for the predominant theory of language dysfunction in schizophrenia: that it arises from abnormalities in semantic memory and/or working memory and executive function. The companion article focuses on the study of language in schizophrenia using online psycholinguistic methods and considers how the study of schizophrenia may inform our understanding of normal language processing.

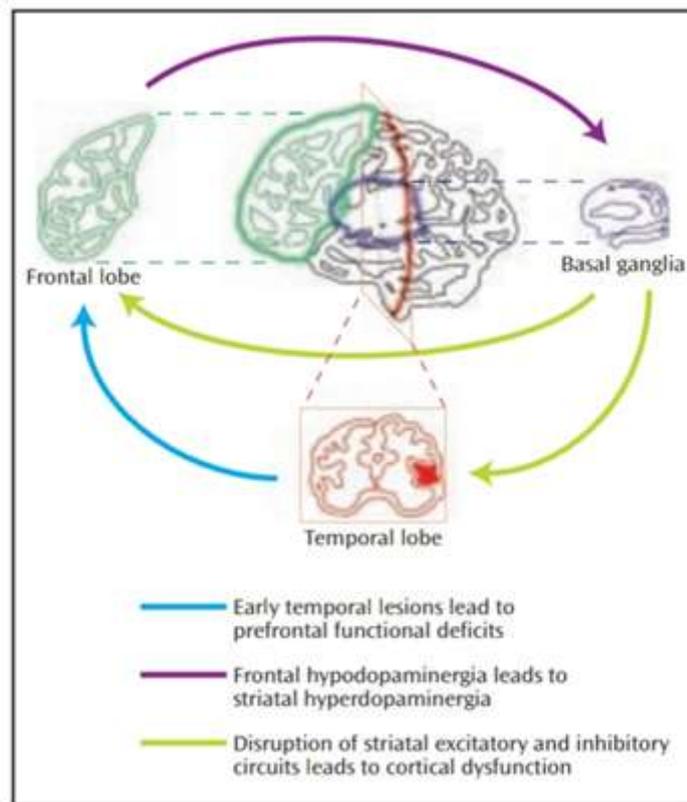
Pathophysiology:-

1)Phenomenology:

Schizotypal personality disorder, like schizophrenia, is characterized by positive or psychotic-like symptoms and negative or deficit-like symptoms. Psychotic-like symptoms include ideas of reference, cognitive or perceptual distortions, and magical thinking. In factor analyses of schizotypal subjects, two other

factors emerge from the more broadly defined deficit-like symptoms: social deficit or interpersonal symptoms and usually a third factor, either cognitive disorganization or paranoid symptoms. These dimensions may have partially distinct underlying pathophysiologies, providing an opportunity to dissect them from each other in studies of schizotypal personality

FIGURE 1. Cascade of Pathology in Patients With Schizophrenia



A) Genetics:-

Although genetic studies, both twin and adoptive, have clearly identified a genetic basis for the schizophrenia spectrum, their range of phenotypic expression remains unclear. The less-than-complete concordance of schizophrenia in identical twins also suggests that other nongenetic factors must influence the expression of this disorder.

Many co-twins of schizophrenia probands show attenuated schizophrenia-like traits, although there is considerable variability in their expression. In general, family and twin studies suggest that the deficit-like symptoms of schizotypal personality disorders or other schizophrenia-related disorders

may be most characteristic of schizotypal individuals with a genetic relationship to someone with schizophrenia. Both family and adoptive studies suggest a greater prevalence of schizotypal personality disorder in the relatives of patients with schizophrenia than in comparison groups.

While a greater prevalence of schizotypal personality disorder is found in the relatives of probands with schizotypal personality disorder than in comparison subjects, a greater prevalence of chronic schizophrenia in the relatives of probands with schizotypal personality disorder is not found as consistently as in studies of probands with schizophrenia.

2) Psychophysiology:-

Patients with schizotypal personality disorder share number of psychophysiological abnormalities found in chronic schizophrenia (Table 1 provides psychophysiological correlates or intermediate phenotypes for schizophrenia and schizotypal personality disorder).

These include the following:

1. A failure of P50 suppression or the capacity to “gate” or appropriately modulate or inhibit sensory input that may result in sensory overload and cognitive disorganization
 2. Deficits in prepulse inhibition, the capacity to inhibit the startle response with a weak prestimulus, which may impair appropriate modulation of responsiveness to the environment
 3. Impairment of smooth-pursuit eye movements, which enable the fovea to maintain its focus on a smoothly moving target, reflecting involuntary attention
 4. Errors in antisaccade tasks, which test saccadic inhibition
 5. Poor performance on a backward masking task that assesses early visual processing
 6. Reduced P300-evoked potentials, which measure auditory attention
 7. Performance on the Continuous Performance Test, a sustained attentional task
- P50 suppression abnormalities are heritable, have also been identified in patients with schizotypal personality disorder as well as in clinically unaffected relatives of schizophrenia subjects, and are modulated by nicotinic receptors in the hippocampus. Indeed, use of the reduced P50 evoked potential as an endophenotype in a linkage study of families of schizophrenia subjects resulted in the demonstration of linkage of this phenotype to a variant of the alpha1 nicotinic receptor gene. Prepulse inhibition in a blink startle paradigm also has been identified in patients with schizophrenia, schizotypal individuals, and relatives of patients with schizophrenia and is modulated by cortical striatal pallidum-thalamic circuitry. Reduced N400-evoked potentials, critically modulated by ventral temporal regions, are reduced throughout the spectrum and may reflect a failure of recurrent inhibition. Evoked potential abnormalities, particularly reduced P300 amplitude, have been reported in schizotypal subjects and have been associated with smaller volumes of the left posterior superior temporal gyrus in patients with schizophrenia.

3) Cognitive Function:-

Schizotypal patients display selective

deficits in cognitive processing similar to those observed in patients with schizophrenia reflecting domains of cognitive performance impaired in schizophrenia for which data is available for subjects with schizotypal personality disorder as well.

While overall IQ seems to be preserved in patients with schizotypal personality disorder, schizotypal individuals show deficits in working memory and verbal learning as well as attentional deficits. Initial studies using a broad survey of cognitive tasks suggest impaired performance on the Wisconsin Card Sorting Test in schizotypal patients as well as in schizotypal relatives of patients with schizophrenia.

Schizotypal individuals also demonstrated less accurate responses on the Stroop Color Word Interference Test and on the Trail Making Test as well as on other tests of executive function and abstraction. These data suggest deficits in executive function that are often compatible with prefrontal cortical impairment.

It has been suggested that impairment of these executive function tasks may be, in large part, a function of impaired working memory. While the Wisconsin Card Sorting Test involves a component of spatial working memory, more direct tests of visuospatial work

4) Structural Imaging:-

The temporal cortex, the frontal cortex, the striatum, and the thalamus have been particularly implicated as regions of interest in the schizophrenia disorders. CSF volumes are generally increased and cortical volumes reduced in schizotypal personality disorder. Volume reductions in the temporal cortex, particularly the superior temporal gyrus, have been among the most consistent structural alterations reported in chronic schizophrenia.

The reduced size of the temporal cortex also now has been reported in schizotypal personality disorder, both in the superior temporal gyrus and Heschl's gyrus as well as in the inferior and middle temporal gyri. These reductions have been associated with schizophrenia-related psychopathology. Studies of patients with schizophrenia and relatives of patients with schizophrenia also suggest reductions in medial temporal regions, including the amygdala and/or hippocampal complex, but they have not been observed in schizotypal subjects. Thus, these findings are consistent with a model of common temporal abnormalities across the schizophrenia

spectrum.

Frontal cortical volume, on the other hand, appears to be relatively preserved in initial studies of schizotypal personality disorder while reductions in frontal volume have been found in many but not all studies of patients with schizophrenia. However, relative reductions in frontal volume are correlated with the deficit-like symptoms of schizotypal personality disorder in healthy volunteers, implying that patients with lower frontal volume will be more likely to display traits such as asociality.

While a number of factors extrinsic to the illness itself, including sustained neuroleptic treatment, alcohol abuse (rare in schizotypal personality disorder), and chronic psychosis, might contribute to the differences between schizotypal personality disorder/normal comparison subjects and schizophrenia/normal comparisons of frontal cortical volumes, these factors could not easily explain the fact that temporal regions are comparably reduced in both schizophrenia and schizotypal personality disorder.

The finding of normal frontal volume, however, in schizotypal personality disorder requires replication. The thalamus is a critical nodal link that integrates diverse circuits in the brain, including incoming sensory information, with higher cortical regions involved in planning response strategies.

The thalamus as part of the circuitry,

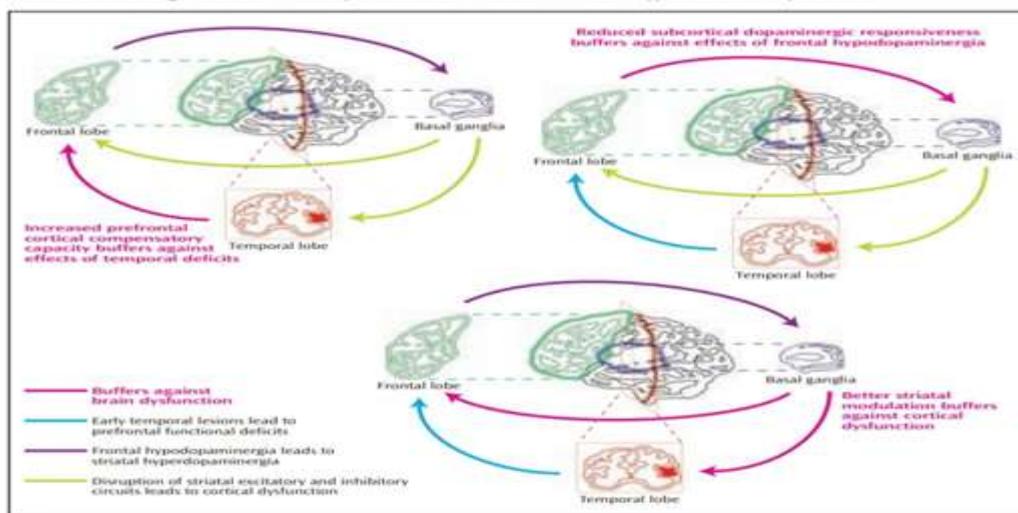
including the cortex and the cerebellum, has been hypothesized to play a central role in the pathophysiology of schizophrenia, and this hypothesis is supported by postmortem and imaging studies. The thalamus encompasses a number of distinct nuclei that have partially different patterns of connectivity to other brain regions.

For example, the pulvinar, which has close connections with temporal lobe structures, is reduced in subjects with schizotypal personality disorder, as it is in patients with schizophrenia, in relation to normal comparison subjects. However, the volume of the medial dorsal nucleus, associated with the prefrontal cortex, is not reduced in schizotypal patients in relation to normal comparison subjects, in contrast to the reductions observed in patients with schizophrenia.

5) Functional Imaging:-

Numerous imaging studies in schizophrenia suggest reduced and/or anomalous activation of the cortex, primarily the frontal cortex. In a single photon emission computed tomography (SPECT) study measuring blood flow conducted in our laboratory, schizotypal patients performing the Wisconsin Card Sorting Test showed lower activation in the left middle frontal gyrus but greater activation in other regions of the brain, particularly the right prefrontal cortex, than in comparison subjects.

FIGURE 2. Buffers Against Deficits and Dysfunctions in Patients With Schizotypal Personality Disorder



These results suggested that patients with schizotypal personality disorder were less effective

in activating prefrontal regions to accomplish the task efficiently than normal subjects. However, the

schizotypal subjects did activate other prefrontal brain regions,

such as right prefrontal cortex, was not activated in healthy volunteers, possibly as a compensatory mechanism to offset reduced efficiency in the left prefrontal cortex. In a fluorodeoxyglucose (FDG) PET study, glucose use in laterality was similar in character but not as severe as that observed in patients with schizophrenia. New blood-oxygen-level-dependent (BOLD)

functional magnetic resonance imaging (fMRI) data from our laboratory also suggest that patients with schizotypal personality disorder do not activate the dorsolateral prefrontal cortex to the degree that normal comparison subjects do, while they do activate Brodmann's area 10 to a greater degree than comparison subjects.

These results suggest compensatory activation of prefrontal regions in schizotypal patients other than those employed by normal comparison subjects. They are consistent with the possibility that patients with schizotypal personality disorder are better able than patients with schizophrenia to use frontal reserves to compensate for inefficiency of task performance.

6) Neurochemistry:- Due to the profound influence of the dopamine hypothesis of schizophrenia, based largely on the efficacy of neuroleptic medication, neurochemical studies of schizotypal individuals initially focused on dopamine and its metabolites in CSF and plasma. Decreased levels of dopamine metabolites have been reported in patients with schizophrenia with poor prognosis and moderately severe social impairment.

Increased levels of dopamine metabolites have been noted in patients with greater psychotic symptoms. In the first report from our laboratory, CSF homovanillic acid (HVA) was found to be increased in schizotypal patients in relation to normal comparison subjects.

However, this increase was entirely accounted for by the psychotic-like symptoms of the disorder, and covarying for these symptoms abolished the difference. Furthermore, significant correlations were found between CSF HVA activity and these psychotic-like symptoms of schizotypal personality disorder.

Pathophysiological Model:-

The results of the various studies reviewed, coming from diverse investigative perspectives, suggest not only that there may be partially distinct susceptibilities to the schizophrenia

spectrum and psychosis but also hint at the beginnings of an understanding of the underlying pathophysiological processes underlying each.

Thus, we propose a model based on the data that can generate testable hypotheses for future research. In this model, schizotypal and schizophrenic individuals are hypothesized to share a common genetic anomaly that renders the temporal cortex particularly vulnerable to environmental insults such as hypoxia.

However, genetic factors independent of the vulnerability to the schizophrenia spectrum per se and/or more favorable environmental influences would leave the schizotypal individual better buffered with regard to frontal volume and function as well as stabilization of subcortical dopaminergic activity.

Thus, phenotype-determining genetic and environmental factors that are partially distinct from those factors directly associated with the susceptibility to schizophrenia, e.g., frontal reserve capacity or, at a cognitive level, general intelligence, serve as mitigating factors in schizotypal personality disorder, diminishing the impact of the genetic susceptibility genes to schizophrenia.

These modifying factors may play an important role in determining whether a susceptible individual develops chronic schizophrenia or a milder spectrum condition, with potentially important implications for early intervention and treatment.

Role Of Psychosocial Treatment In Management Of Schizophrenia :-

1) The community management of schizophrenia: a controlled trial of a behavioural intervention with families to reduce relapse. All patients admitted to the four acute case wards in Salford Health Authority (three at the psychiatric hospital and one at the general hospital) were screened, and patients fulfilling the following four criteria recruited into the study: a diagnosis of schizophrenia elicited by the Present State Examination between the ages of 16 and not suffering from any organic condition that could explain their psychopathology; having lived with their relative for 3 months before admission and intending to return to the household.

This meta-analytic review sought to answer questions concerning the role of psychosocial treatments in the comprehensive management of patients with schizophrenia. The review focused on the effects of combining

psychosocial treatment with somatic treatment. Findings demonstrated the additive and supplementary effects of psychosocial treatments and the durability of these effects.

Patients with more chronic illness appeared to be more responsive to psychosocial treatments, as were patients in studies conducted in non-Western countries. Among the Western countries, studies from Scandinavian countries reported the least effectiveness for psychosocial treatments.

There was some evidence for differential effect of psychosocial treatments on different dimensions of illness as the measures of disorganized behavior and employment showed little difference in treated and control groups. There was also some evidence for differences between different modalities of treatment as group treatments produced smaller effects.

Implications for practice and Community Management of Schizophrenia a Two-Year Follow-Up of a Behavioural Intervention with Families Nicholas Tarrier, Christine Barrowclough, Christine Vaughn, JS Bamrah, Kathleen Porceddu, Susan Watts, Hugh Freeman The British Journal of Psychiatry.

2) The community management of schizophrenia: a controlled trial of a behavioural intervention with families to reduce relapse Nicholas Tarrier, Christine Barrowclough, Christine Vaughn, JS Bamrah, Kathleen Porceddu, Susan Watts, Hugh Freeman The British Journal of Psychiatry Method

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condition that could explain their psychopathology having lived with their relative for months before admission and intending to return to the household. This review examines the impact of assertive community treatment (ACT) and case management models on the use of inpatient hospitalization and other community mental health services, costs, and other clinical and social outcome.

ACT programs have been found to reduce hospitalization and increase use of community mental health services at an equivalent or reduced cost. Greater fidelity to the ACT model produced better outcomes.

Cognitive Behavior Therapy:-

Cognitive therapy for depression was first described in a clear manualized format by Aaron T. Beck in 1979. This manual that emphasized the need to focus on conscious thinking was a direct challenge to behaviorism and thus became termed the cognitive revolution or "second wave."

The theory developed by Beck built on behavioral principles in that it not only recognized how behavior was the result of learned contingencies between stimuli and events but also emphasized clear relationships between cognition, physiology, and emotion. Beck based his early theory upon an assumption fundamental to psychoanalytical thinking, i.e., that early life experiences and social environment can contribute to the adult emotional problems.

He stressed the salience of early life experiences in forming beliefs or schemas about the self, other people, and the world. These beliefs were then thought to lead to certain cognitive distortions and negative styles of thinking. Beck postulated that through the examination of thought processes and by evaluating their accuracy, many negative emotional reactions due to inaccurate or distorted thinking could be reduced or extinguished.

1) **CBT Techniques:-** Beck used narrative formation or the development of a coherent personal story of one's experience as an explanatory framework to make hypotheses about the development, maintenance and links between different problems. There is evidence that developing a narrative formation is a therapeutic

process in itself and an essential aspect of recovery.

Beck specified how thoughts and beliefs can be examined for their truth by questioning. He showed the usefulness of the “Socratic questioning” technique to encourage the probing of evidence, reason, and rationale. For example, a patient who believed that he was under surveillance was asked to give a rationale for his belief. The CBT therapist used questions to explore the individual’s reasoning (eg, “How do you know that’s happening?” “Can you give me an example of that?” “What do you think causes this to happen?” “When you think it through now, are these reasons good enough?”).

Another technique commonly employed in CBT is “reality testing” where a patient will be encouraged to actively find evidence to test the reality base of a belief or assumption; a process which is done in collaboration with the therapist. For example, a person who believes in the existence of giant moths that will eat people might be encouraged to find some evidence-based information about moths and discover that these insects tend only to live for approximately 1–2

weeks and would be unable to bite a human as they have no teeth

2) CBT for Schizophrenia:-

CBT for schizophrenia, as first described in a single case study by Beck in 1952,⁴ has subsequently been developed in the last 30 years from the traditional model of CBT for depression as described above.^{2,5} However, cognitive theory and interventions for anxiety, social phobia, PTSD, and obsessive-compulsive disorder (OCD) also find application within the practice of CBT for psychosis. Earlier forms of CBT for schizophrenia relied primarily on behavioral strategies to affect change, with a secondary focus on the cognitive components.

These earlier forms of CBT for schizophrenia focused on improving coping,⁶ building social and independent living skills, and increasing compliance using behavioral strategies such as linking tablet taking to another activity. Similarly, negative symptoms were targeted by providing graded activity programs.



Fig. 1. Mini-formulation of Hallucination Maintenance.

These approaches have continued to be applied where deficit symptoms of schizophrenia and improving functional outcomes are the main focus of intervention. For many years, it was assumed that the positive symptoms associated with schizophrenia lay outside of the realms of normal psychological functioning. Thus, the transition to incorporating more cognitive theory and techniques into practice came much later compared with CBT for nonpsychotic disorders.

3) The Evidence Base for CBT in Schizophrenia:-

There is now a considerable body of evidence that illustrates the efficacy of CBT for schizophrenia.²⁰ Randomized controlled trials (RCTs) have shown moderate effect sizes for positive and negative symptoms at the end stages of therapy with sustained benefits over time.

There is evidence that these research findings are also sustained in clinical settings^{22,23} and are cost effective.²⁴ Virtually, all trials have

been on patients with stabilized antipsychotic medication regimes; however, case series exist showing that there is a potential benefit of CBT being offered to patients who refuse medication treatment.²⁵ Both hallucinations and delusions respond to CBT.

Not only negative symptoms respond²⁸ but also there is a durable effect at medium term follow-up.²³ The cognitive models relating to these presentations have all been recently described in detail. Patients with substance misuse and other comorbidities are likely to be more difficult to engage and treat, but there are promising signs.

CBT struggles more where people have difficulty identifying that they have mental health problems,³¹ delusional systems, or extreme primary negative symptoms.³³ Similarly, when comorbidities accumulate, CBT effects are liable to be significantly less.

4) CBT and Functional Outcome:-

The cognitive model predicts improved functioning, and empirical studies support the efficacy of CBT in this regard. CBT can improve functioning even when symptoms do not improve, which is one reason it is consistent with recovery and an important adjunct to antipsychotic medication.

CBT can be seen to be complementary to dopaminergic blockade that reduces the salience of environmental cues. Lieberman argued that atypical antipsychotic medication improved neurogenesis, and this would also complement a psychotherapy targeted on the acquisition of new skills.

II. CONCLUSION:-

Cognitive models have much to offer in aiding our understanding of the maintenance of the core symptoms of schizophrenia. Cognitive behavioral therapies based on these models have been demonstrated to be effective and valuable treatments for a range of positive and negative symptoms.

However, theoretical developments and advances in cognitive treatments of disorders such as anxiety and depression have also helped to reveal a more complex picture of the transdiagnostic processes operating in schizophrenia. It is becoming clear that it is necessary to develop a broader conceptualization and treatment approach to psychotic symptoms that encompasses the heterogeneity and multifaceted nature of the disorder.

Recent developments in cognitive treatments branded as third-wave approaches illustrate the advantage of not only targeting the content of thoughts and beliefs but also developing alternative methods of changing the way in which people relate to their thoughts and feelings.

Collectively, they present a positive and encouraging developing evidence base with promising results. Evidence of the applicability of such approaches to schizophrenia is apparent, and further research is required to examine the wider feasibility and potential as a treatment for psychosis.

These developments should be regarded as evolving cognitive therapies as opposed to a new wave. It is important to view CBT as a range of therapies and increase our understanding of how they might be applied to specific problems and circumstances, where efficacy is best understood through multifaceted and individualized formulations of patients.]

Role of psychosocial treatments in management of schizophrenia: a meta-analytic review of controlled outcome studies This meta-analytic review sought to answer questions concerning the role of psychosocial treatments in the comprehensive management of patients with schizophrenia.

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Among the Western countries, studies from Scandinavian countries reported the least effectiveness for psychosocial treatments. There was some evidence for differential effect of psychosocial treatments on different dimensions of illness as the measures of disorganized behavior and employment showed little difference in treated and control groups.

There was also some evidence for differences between different modalities of treatment as group treatments produced smaller effects. Implications for practice and future research are discussed.

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