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Psychosocial intervention for schizophrenia

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ABSTRACT

Schizophrenia is a serious mental illness. The main treatment of schizophrenia is antipsychotic medications. Meanwhile, psychosocial treatment can be incorporated to improve the efficacy of treatment, including cognitive behavioral therapy, cognitive remediation therapy, family therapy, psychoeducation, social skill training, and vocational rehabilitation. This study aimed to summarize the efficacy of various psychosocial interventions for schizophrenia through a literature review. The literature search was conducted by using the keywords "schizophrenia" and "psychosocial intervention," "cognitive remediation therapy" "cognitive behavior therapy," "family intervention," "psychoeducation," "social skill training" or "vocational rehabilitation" on PubMed, CENTRAL, Wiley Online Library and Web of Science. Psychosocial intervention can further improve the symptoms and functioning of patients, enhance drug compliance, reduce the recurrence and readmission rates, and increase the employment rate when added to treatment as usual.

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KEYWORDS Schizophrenia; psychosocial intervention; cognitive behavior therapy; cognitive remediation therapy

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1. Introduction

Schizophrenia, which is typically characterized by positive symptoms (e.g., hallucinations, delusions), negative symptoms (e.g., anhedonia, apathy), and impaired cognitive functioning, is considered a chronic mental disease of unknown etiology. According to the China Mental Health Survey, the prevalence of schizophrenia among the population aged 18 to 34 in China has reached 1.4%, and its weighted lifetime prevalence has reached 0.6% [1]. The incidence, relapse, and disability rates of schizophrenia are relatively high; together with its protracted course, both the cognitive and social functioning of patients is greatly impaired, which causes immense suffering for the patients and seriously affects their lives. Many patients have trouble managing their disease and returning to society because both their families and themselves lack basic knowledge and correspondingly coping strategies for this disease. Due to the above situation, schizophrenia has an impact in terms of its heavy burden on patients, families, and society worldwide.

Although antipsychotics play a dominant role in treating schizophrenia, there are some problems and limitations to their use. First, antipsychotics have serious side effects such as excessive sedation, fatigue, and endocrine abnormalities. Some patients stop taking their medications because of these unpleasant side effects. This may prevent the disease from being effectively controlled, leading to aggravation or relapse. In addition, antipsychotics have a limited effect in relieving negative symptoms and improving individual well-being, psychosocial functioning, and life opportunities [2]. Some researchers found that 25% to 40% of patients continue to experience psychotic symptoms despite taking a dose of antipsychotics that should be efficacious [3].

Substantial research has investigated the efficacy of psychosocial interventions for schizophrenia with respect to reducing negative symptoms, improving functioning, and increasing well-being. Psychosocial interventions, which aim to provide support and education to people with mental health conditions, as well as their families, include various types of psychotherapy, social and vocational training such as cognitive behavioral therapy, cognitive remediation therapy, family therapy, psychoeducation, social skill training, and vocational rehabilitation. Therefore, this study aimed to summarize the efficacy of various psychosocial interventions for schizophrenia through a literature review. The literature search was conducted by using the keywords “schizophrenia” and “psychosocial intervention,” “cognitive remediation therapy” “cognitive behavior therapy,” “family intervention,” “psychoeducation,” “social skill training” or “vocational rehabilitation” on PubMed, CENTRAL, Wiley Online Library and Web of Science.

2. Cognitive behavioral therapy

Cognitive behavioral therapy (CBT) is considered a common type of structured, goal-oriented talk therapy. CBT has been widely used in the treatment of schizophrenia and was recommended by the National Institute for Health and Care Excellence (NICE) as a supplementary treatment for patients with schizophrenia [4]. Cognitive behavioral therapy for psychosis (CBTp) aims to help patients understand and normalize their experience of disease, alleviate the suffering caused by the disease and improve their functioning.

Many studies have found that treatment as usual (TAU) combined with cognitive behavioral therapy showed a better effect in reducing symptoms than TAU alone. Guo et al. randomly assigned 220 patients with schizophrenia to either brief CBT plus TAU or TAU alone and assessed each patient by experienced experts at baseline, posttreatment, and 6- and 12-month follow-ups [5]. Their study found that CBT plus TAU has positive effects on overall symptoms, general symptoms, and social functioning. Another single-blind, randomized controlled trial compared CBT for hallucinations called cognitive therapy for command hallucinations (CTCH) and TAU with TAU alone for 197 patients. Patients who received TAU and additional CTCH had a significant reduction in harmful compliance with hallucination compared with the TAU group at 18 months. However, there was no significant effect of CTCH at 9 months, which suggested that CTCH might have a delayed effect [6].

In addition to a reduction of symptoms, many studies found that CBT could improve the functioning of patients. Garety et al. performed a multicenter randomized controlled trial to compare the efficacy of TAU, TAU + CBT, and TAU + family intervention. Although the results did not show the benefits of CBT and family intervention for relapse and days in the hospital, there were benefits of CBT in relieving depression, symptoms, and improving social functioning [7]. Van der Gaag et al. recruited 201 subjects at ultrahigh risk for developing psychosis and randomly allocated them to the TAU + CBT group or TAU group. There was a significant reduction in the transition to psychosis in the TAU + CBT group at the 18-month follow-up [8].

In addition to clinical randomized trials, many meta-analyses have also tested the effect size of psychosocial intervention. A meta-analysis including 36 randomized controlled trials found that CBT might have a positive effect on satisfaction with treatment. However, their results showed no difference in rehospitalization, mental state, or social functioning between CBT and other psychosocial therapies [9]. Jauhar et al. found that CBT only had a small effect size on improving positive (especiall auditory hallucinations) and negative symptoms, and overall symptoms [10]. This

may be because this meta-analysis applied strict criteria of "good quality research", thus, the effect size of CBT might be underestimated. Additional large clinical randomized trials are needed to draw firm conclusions in favor of CBT.

3. Cognitive Remediation therapy

Cognitive remediation therapy (CRT) is a form of behavioral treatment to fortify psychosocial functioning by improving neurocognitive functioning such as attention, working memory, executive function, etc. According to the theory of cognitive remediation therapy, the first aim of CRT is to improve the cognitive deficits of patients. Ikezawa et al. conducted a CRT program named the Neuropsychological Educational Approach to Cognitive Remediation (NEAR). In comparison with the control group, subjects who accepted 6 months of NEAR sessions showed significant improvements in overall cognitive functioning [11].

In addition to the changes of the scores on the clinical scales, many studies have also provided physiological evidence for cognitive remediation therapy in improving cognitive functioning by using neuroimaging technology. A triple-blind, placebo-controlled trial found that patients who received CRT had significantly increased activation in the left lateral prefrontal cortex, and their working memory was significantly improved [12]. Morimoto et al. found that after 12 weeks of twice-weekly computer-assisted CRT sessions and weekly group meetings, the CRT group showed not only a significant improvement in verbal fluency and global cognitive scores but also a significant increase in right hippocampal volume in comparison with the control group [13]. Based on the efficacy of CRT in improving the cognitive deficit across the full course of schizophrenia, CRT might have the highest effect in the early phase of schizophrenia, as in the early phase, the cognitive deficit is still developing [14,15].

Many studies also found an effect of CRT in reducing symptoms. Sánchez et al. examined the effect of CRT by randomly allocating 84 patients into the CRT group or control group and separately performing interventions for 3 months. Their results showed that the CRT group had a significantly greater improvement in cognitive functioning, negative symptoms, disorganization, and emotional distress than the control group [16]. For the efficacy of CRT in reducing negative symptoms, Heydebrand et al. thought that it might be due to the overlap of negative symptoms and cognitive deficits, and there was a link between the severity of negative symptoms and neurocognitive deficits such as memory, verbal fluency, psychomotor speed, and executive function [17]. In summary, the effect of CRT in improving

cognitive functioning and reducing symptoms has been demonstrated in many studies by both clinical assessment and neuroimaging technology.

4. Family intervention

Family intervention offers professional knowledge and guidance to patients and their families to help them cope with the disease. It could help family members develop more bonding relationships, improve communication, and manage contradictions and conflicts within families. Studies have identified a link between the expressed emotion in patients" families and the relapse rate. Patients who live in a family with high levels of criticism, hostility, and overinvolvement experience more frequent relapses [18]. Therefore, family intervention may enhance drug compliance and reduce relapses and rehospitalization by abating expressed emotion and stress in the family. Girón et al. conducted a biennial randomized controlled trial to test the effect of family interventions on clinical and social functioning and the family burden. The results showed that family intervention significantly reduced hospitalizations in the family intervention group and was associated with fewer relapses, hospitalizations, and adverse events [19]. Moreover, Girón found that empathy and lack of dominance by family members were independent mediators of the efficacy of family intervention [20]. A meta-analysis including 53 clinical randomized trials found that family intervention may reduce the relapse rate and hospital admission, but there was no evidence for the efficacy of the family intervention in preventing suicide [21].

5. Psychoeducation

Psychoeducation provides information on the causes, symptoms, and treatments of diseases to patients with mental health conditions to enable treatment and rehabilitation. Psychoeducation for patients with schizophrenia mainly includes the following topics: the symptoms of schizophrenia, models of disease, the effects and side effects of antipsychotics, psychotherapy for schizophrenia, and relapse prevention [22]. Xia et al. performed a meta-analysis to assess the effects of psychoeducational interventions in treating schizophrenia in comparison with standard care. Their study included 44 trials and found that the psychoeducation group showed a higher level of medication compliance and a lower relapse rate than the control group. Scale-derived data also showed that the social and global functioning of patients in the psychoeducation group was better [23].

In addition to directly providing psychoeducation to the patients themselves, many studies have explored the efficacy of providing psychoeducation to their families. Ngoc et al. randomly assigned 59 patients and their families to the psychoeducation group or control group, and patients and their families in the psychoeducation group received the 6-month Family Schizophrenia Psychoeducation Program (FSPP). The results showed that the FSPP had a moderate to large effect size on reducing stigma and improving quality of life and medication compliance [24]. Another meta-analysis found that psychoeducation had a positive effect on a person"s well-being and that all kinds of psychoeducation significantly reduced the relapse rate at the 9-18 months follow-up. Although they only included 10 studies due to the lack of relevant research, Pekkala thought that because of its low cost and simplicity of implementation, psychoeducation could be used as part of the treatment for schizophrenia and related diseases [25].

6. Social skill training

Social skill training (SST) is a form of behavioral intervention that helps individuals with schizophrenia to develop or improve their social interaction, social performance, and interpersonal skills. Due to long-term hospitalization, persistent negative symptoms, and social prejudice against mental diseases, most patients with schizophrenia have been isolated from society to varying degrees and have had declines in social functioning. Therefore, social skill training usually takes behavioral techniques such as role play, modeling, coaching, and feedback to guide patients to solve interpersonal relationship problems and reasonably express their emotions and needs.

Granholm et al. conducted a randomized controlled trial to test the effect of social skill training on 76 middle-aged and older outpatients with chronic schizophrenia. All patients received 24 weekly group sessions of cognitive behavioral social skills training (CBSST) or treatment as usual. Their results showed that after treatment, the CBSST group performed social activity significantly more frequently and achieved significantly greater cognitive insight than the TAU group. However, the general skill at social functioning activities and symptomatic improvement did not differ between the two groups [26]. In the next 12 months of follow-up, patients in the CBSST group reported a significantly greater skill acquisition and performance of living skills in the community than the TAU group, although there was still no difference in symptomatic improvement between the two groups. Granholm thought this might be because the patients included in this study were middle-aged and older people with a

long course of the disease, and their residual symptoms after years of disease and treatment were difficult to improve [27]. A meta-analysis also found that compared to TAU, patients who received SST had better performance on all measures of social functioning and a lower release rate and rehospitalization rate [28]. Another meta-analysis found that SST demonstrated superiority over TAU for negative symptoms and general psychopathology. However, it did not show better efficacy on overall symptoms [29].

The overriding aim of social skills training is to improve the social functioning of people with psychosis. The course of social skills training often involves breaking long-term goals into many step-by-step goals, and this form of positive attention toward the goal may target dysfunctional attitudes. The changes in dysfunctional attitudes improve negative symptoms and functional outcomes [30].

7. Vocational rehabilitation

Vocational rehabilitation offers help to people who have mental or physical diseases but still have the ability and desire to learn and work. Vocational rehabilitation mainly focuses on education, vocational training, and consolidating skills required for work. If people with schizophrenia want to return to society after discharge from the hospital, they need to be employed or re-employed. However, perennial diseases may lead to residual symptoms, appearance, or performance different from ordinary people and impaired cognitive and social functioning, which limits their employment prospects. The employment rate is inversely proportional to the severity of their mental symptoms, and over a third of those who are employed are poorly paid [31].

Davidson et al. performed a national-wide survey in Israel and found that patients with schizophrenia, bipolar disorder, and nonaffective psychotic disorders faced serious employment difficulties even if they had only been admitted to a hospital once [32]. To help patients improve their functioning in the work field, many studies have explored the effect of occupational rehabilitation on the employment of patients with schizophrenia. Falkum et al. conducted a 10-month vocational rehabilitation program called The Job Management Program (JUMP) to improve the employment of patients by randomizing 148 patients to vocational rehabilitation augmented with CBT or vocational rehabilitation augmented with CRT and comparing the efficacy to TAU. After treatment, the proportion of employment in the treatment group increased from 17% to 77%, while the proportion in the TAU group was very low and did not change significantly (16–18%) [33]. Their five-year follow-up

found that approximately 50% of the patients in the treatment group still participated in different forms of employment, and 22% of them participated in competitive employment [34]. In addition to improvements in their employment, some studies have also found that vocational rehabilitation can improve their symptoms and cognitive functioning. A 6-month longitudinal study found that vocational rehabilitation significantly improved patients" executive functions, negative symptoms, and quality of life [35].

8. Conclusion and prospects

Psychosocial interventions provide support, education, and guidance for people with schizophrenia and their families to help patients better manage their disease and return to society. Although various forms of interventions are based on different theories and target different aspects of the disease, many studies have demonstrated that psychosocial interventions have an effect on reducing relapses, improving symptoms and functioning, and increasing medication compliance.

It is worth discussing that some meta-analyses found that there were no or only small effect sizes of some psychosocial interventions [10,36,37]. Birchwood et al. argued that psychosocial interventions were not a "quasi-neuroleptic" for schizophrenia. We should also make it clear for whom and to what stage of the disease these interventions are most effective [38]. Gold et al. also believed that some meta-analyses did not take "dose" into consideration; therefore, they might underestimate the effect of these interventions [39]. In general, psychosocial interventions should be considered as supplementary treatment and aim at further improving the therapeutic effect based on conventional antipsychotic treatment, rather than replacing it. Moreover, apart from antipsychotic treatment, many physical therapies are clinically considered as effective treatments. Electroconvulsive Therapy (ECT) has long been used to relieve severe mental conditions and many researches have found that ECT has great effects on reducing the re-hospitalization [40], alleviating symptoms [41] and improving cognitive functioning [42]. Transcranial Magnetic Stimulation (TMS) has also been proposed to be a new treatment for schizophrenia in recent years and its efficacy has been demonstrated in many studies [43–45]. Follow-up study may attempt to explore whether the combination of psychosocial interventions and physical therapies has better clinical outcomes, especially for treatment-resistant schizophrenia.

In addition, although symptomatic improvement plays a prominent part in evaluating the efficacy of treatment, considering the various needs

of patients and different definitions of "rehabilitation," we should not take symptom relief as the only criterion [46]. It is important to evaluate the therapeutic effect by integrating multiple indicators. In the course of clinic practice, the cost performance of psychosocial interventions should also be considered. There are approximately 10 million patients with schizophrenia in China, and ensuring that every patient receives a psychosocial intervention from professionals will consume huge personnel and financial resources.

However, unlike traditional psychological counseling, many psychosocial interventions do not require counselors to analyze the consciousness of patients, and the behavioral techniques used in many intervention methods are relatively simple to implement. With the development of technology in recent years, many researchers have tried to combine computers, virtual reality, and other technologies to carry out assistant therapy. Bossert et al. conducted computer-assisted cognitive remediation therapy and found a significant improvement in functioning, activity, and participation, and self-reported depression after treatment compared with baseline [47]. Rus-Calafell et al. combined virtual reality techniques and social skill training to improve the social cognition and performance of patients with schizophrenia [48]. Nahum et al. developed and tested the efficacy of an online cognitive therapy program named SocialVille [49]. There are also other studies that used the virtual reality-based AVATAR technique for online psychosocial intervention [50–52]. These studies have made attempts to combine new technologies with psychosocial interventions to reduce the cost of treatment and improve the convenience of treatment. The attempt to combine psychosocial interventions and computer science, as a new type of brain-apparatus communication [53], also provides new perspectives and directions for psychosocial interventions for patients with schizophrenia in the future.

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