

Current approaches to treatments for schizophrenia spectrum disorders, part II: psychosocial interventions and patient-focused perspectives in psychiatric care

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Abstract: Schizophrenia is a disabling psychiatric illness associated with disruptions in cognition, emotion, and psychosocial and occupational functioning. Increasing evidence shows that psychosocial interventions for people with schizophrenia, as an adjunct to medications or usual psychiatric care, can reduce psychotic symptoms and relapse and improve patients' long-term outcomes such as recovery, remission, and illness progression. This critical review of the literature was conducted to identify the common approaches to psychosocial interventions for people with schizophrenia. Treatment planning and outcomes were also explored and discussed to better understand the effects of these interventions in terms of person-focused perspectives such as their perceived quality of life and satisfaction and their acceptability and adherence to treatments or services received. We searched major health care databases such as EMBASE, MEDLINE, and PsycLIT and identified relevant literature in English from these databases. Their reference lists were screened, and studies were selected if they met the criteria of using a randomized controlled trial or systematic review design, giving a clear description of the interventions used, and having a study sample of people primarily diagnosed with schizophrenia. Five main approaches to psychosocial intervention had been used for the treatment of schizophrenia: cognitive therapy (cognitive behavioral and cognitive remediation therapy), psychoeducation, family intervention, social skills training, and assertive community treatment. Most of these five approaches applied to people with schizophrenia have demonstrated satisfactory levels of short- to medium-term clinical efficacy in terms of symptom control or reduction, level of functioning, and/or relapse rate. However, the comparative effects between these five approaches have not been well studied; thus, we are not able to clearly understand the superiority of any of these interventions. With the exception of patient relapse, the longer-term (eg, >2 years) effects of these approaches on most psychosocial outcomes are not well-established among these patients. Despite the fact that patients' perspectives on treatment and care have been increasingly concerned, not many studies have evaluated the effect of interventions on this perspective, and where they did, the findings were inconclusive. To conclude, current approaches to psychosocial interventions for schizophrenia have their strengths and weaknesses, particularly indicating limited evidence on long-term effects. To improve the longer-term outcomes of people with schizophrenia, future treatment strategies should focus on risk identification, early intervention, person-focused therapy, partnership with family caregivers, and the integration of evidence-based psychosocial interventions into existing services.

Keywords: schizophrenia, psychosocial intervention, patient-focused perspectives

Introduction

Schizophrenia is characterized by profound disruptions to cognition and emotions, often resulting in progressive loss of self-care and social functioning in affected individuals. As discussed in another review, “Current approaches to treatments for schizophrenia spectrum disorders, part I: an overview and medical treatments,”¹ a narrowly focused biological model has been shown to be inadequate if treatment and care for schizophrenia and these patients’ potential are to be optimized. Although psychopharmacological treatment is essential and considered the mainstay for achieving better physical and cognitive functioning in schizophrenia, several limitations such as unavoidable adverse effects (eg, acute extrapyramidal symptoms and other neurocognitive impairments in long-term treatment with these drugs) and medication refusal or noncompliance have reduced its efficacy in the treatment of schizophrenia.^{1,2} The optimism that medication use alone can result in full recovery, early discharge, or reduced risk for relapse is not justified in many cases. Recent guidelines on treatment and care for schizophrenia have recommended that sufficient knowledge about the illness and its treatments and other strategies in psychosocial and/or person-focused interventions should be provided to patients (and/or their family carers) to maximize their acceptance and satisfaction with the treatments and to improve the experience and outcomes of care for these patients.^{2,3} Health professionals should work in partnership with patients and their family carers, offering treatment, education, support, and psychosocial care in an atmosphere of hope and optimism.⁴

During the last three decades, clinical research has increasingly indicated that community-based psychosocial interventions can improve the longer-term outcomes of patients with schizophrenia and other severe mental illnesses. A critical review of the common approaches to psychosocial intervention for people with schizophrenia was therefore performed. First, the concepts and research evidence of five main approaches to psychosocial interventions for schizophrenia (ie, cognitive therapy, psychoeducation programs, family intervention, social skills training programs, and assertive community treatment [ACT]) are discussed. Second, this review provides a summary of and discussion on the relative efficacy of the most commonly used approaches to psychosocial interventions in terms of their effect sizes on their most commonly reported patient outcomes. Third, the importance of person-focused perspectives such as quality of life, patient satisfaction and acceptability, and adherence to treatment and its use in research on psychosocial interventions for

schizophrenia are also discussed. Finally, we have made several recommendations for best practice in schizophrenia treatment on the basis of this review, as well as another related review published in *Neuropsychiatric Disease and Treatment*.¹ These findings and discussions can increase our understanding of the most effective means for people with schizophrenia to be better managed within the community, as well as suggesting ways to improve community-based interventions and rehabilitation for schizophrenia.

Psychosocial interventions for people with schizophrenia

Recent research and systematic reviews suggest that both pharmacological and psychosocial treatment, offered early to people presenting with schizophrenia and other psychotic disorders, can improve their prognosis and even help prevent their illness chronicity.^{5–7} There has also been increasing evidence that psychosocial interventions are effective in relieving these patients’ psychotic symptoms and improving their functioning, thus providing support for recommendations that they be considered an indispensable part of the treatment options available for promoting patient recovery from schizophrenia. It is suggested that psychosocial interventions can not only directly address a wide range of patients’ health needs, such as symptom reduction, relapse, and treatment adherence, but also provide a more cost-effective intervention than the standard treatment for schizophrenia.⁸

Five major categories of psychosocial intervention have been used in the community-based treatment of patients with schizophrenia, with evidence of efficacy on relapse prevention and symptom control. The five categories are cognitive therapy (mainly cognitive behavioral therapy [CBT] and cognitive remediation therapy), psychoeducation programs, family intervention, social skills (and other coping skills), training programs, and case management or ACT.^{9,10} Nevertheless, there are also a few other traditional approaches to psychosocial interventions, such as psychodynamic psychotherapy;^{11,12} client-centered, supportive, and insight-oriented psychotherapy;^{13–15} and behavioral modification techniques (eg, token economy),^{16,17} which have been believed to be potentially effective but are lacking empirical, systematic outcome studies that support each as an evidence-based intervention for schizophrenia.

Even though the process of these interventions is not always described clearly, each type of intervention model has an individual set of goals and objectives, as well as a treatment agenda, and all have been found to be effective in improving different aspects of the functioning of patients

with schizophrenia. However, it should be noted that there are difficulties in implementing these interventions in everyday clinical practice in community care settings. First, staff may not be adequately trained to implement the intervention. Second, as these interventions need to be implemented for 9–12 months, there may be insufficient resources to deliver and evaluate them adequately.¹⁸ Finally, there may be inadequate recognition and support from service managers in terms of the service strategy collaboration, resources, and time needed to embed these interventions in existing mental health services.^{4,19}

For this literature review, electronic searches of the most common and major databases were performed. These databases included Biological Abstracts (1980–2012), CINAHL (1982–2012), the Cochrane Library and Cochrane Schizophrenia Group's Register of Trials, EMBASE (1980–2012), MEDLINE (1966–2012), PsycLIT (1887–2012), SIGLE (1990–2012), and Sociofile (1980–2012). Keywords used for the searches were “schizophrenia,” “psychosocial intervention or program,” “psychological treatment or therapy,” “psychotherapy,” “cognitive or cognitive behavior therapy,” “skills training,” “psycho-education,” “family intervention,” and “case management or assertive treatment.” There were 472 articles retrieved from the initial searches. After initial screening of the abstracts, those found relevant to the topic of interest ($n = 145$) were reviewed and checked for methodological rigor and validity by two authors; only randomized controlled trials and review articles and those studies with a primary diagnosis of schizophrenia or its subtypes were considered for inclusion. All reference lists of the selected articles were also searched to identify further relevant trials. Finally, there were 92 articles included in this review, including 25 for psychoeducation, 22 for CBT, 15 for family intervention, 10 for cognitive remediation therapy, and 7 for social skills training. Among them, 15 were review articles.

Cognitive therapy CBT

Developed in the 1950s, CBT has been considered an effective therapy for depressive disorder for several decades; this therapy and some of its well-established techniques have eventually come to be used as a promising treatment modality for individuals with schizophrenia whose psychotic symptoms are not controlled by medication.²⁰ CBT is a highly structured and standardized therapy to help patients with schizophrenia cope with their psychotic symptoms by examining and reevaluating their thoughts and perceptions of experiences. It can only be successful if the therapist

accepts the patient's perception of reality (and the illness and its symptoms) and determines how to use this “misinterpretation” to assist the patient in correctly managing his/her life problems.²¹ In CBT, the patient would be encouraged to actively participate by examining the evidence for and against the distressing belief, challenging the habitual patterns of thinking about the belief, and using reasoning and personal experiences to develop rational and acceptable alternative explanations and interpretations for coping, problem solving, and self-management of the illness and its symptoms. Although some studies have found CBT to have positive benefits in terms of reduction of positive symptoms and recovery time over the course of 9–12 months in comparison with standard care and a few psychological approaches, it has not yet shown promising evidence of reduction of negative and persistent severe psychotic symptoms for people with schizophrenia, particularly over a longer-term (ie, 2-year) follow-up.^{22,23} Although CBT for schizophrenia was mainly designed with an individual treatment, there has been some evidence its group delivery may be more cost-effective.²⁴

Previous prospective, nonrandomized controlled trials of CBT for schizophrenia in the 1990s also indicated several limitations, including small sample sizes (eg, 3–30 patients per group), lack of other psychosocial interventions for comparison, lack of blinding for independent assessors, and lack of validity and fidelity checking of the intervention sessions. Although the effect sizes for improving the positive symptoms in more recent randomized controlled trials (2000–2006) were mainly very low to medium (ie, 0.02–0.62; mean weight effect size, 0.37), there were no significant differences in target symptoms (both positive and negative) between individual and group CBT.^{24–27} In addition, controlled trials of CBT for relapse prevention have yielded inconsistent findings. Gumley et al²⁸ showed the significant effect of CBT in identifying prodromal signs of relapse from schizophrenia during a 12-month follow-up, whereas Durham et al²⁹ found a modest effect in relapse prevention and reduction of positive symptoms with newly trained and minimally supervised therapists for psychosis.

Overall, the research evidence on CBT favors its use among people with schizophrenia, and it is recommended in the United Kingdom and United States that it be included as the main approach to interventions for schizophrenia.^{2,3} Although there are differences in duration, number of sessions, comparative treatment, and outcomes in controlled trials, recent systematic reviews of these trials reported a similar significant positive effect of CBT on improving psychotic symptoms over the course of 6–12 months follow-up when

compared with standard psychiatric care.^{28,29} In seven controlled trials reviewed by Gould et al,³⁰ CBT can also produce a large effect size in residual or persistent positive symptoms immediately after the intervention (effect size, 0.65) and over the course of 1 year (effect size, 0.93).

A specific technique used in CBT for patients with schizophrenia is the normalizing rationale, in which the patient with poor coping ability and social withdrawal from mental health services is empowered and facilitated to collaboratively develop effective coping strategies, leading to symptomatic improvement.^{22,23} Tarrier et al²⁴ conducted a multicenter randomized controlled trial with an 18-month follow-up of CBT for in-hospital patients with acute schizophrenia and reported that CBT was more effective in symptom control than routine care. However, there were no significant differences on relapse, rehospitalization, or level of functioning between groups. Similar to the findings of the recent systematic reviews,^{21–23,26} the evidence identified for the effectiveness of CBT in terms of controlling positive, negative, and mood-related symptoms and relapse prevention, particularly in terms of the specificity and durability of these intended benefits, is not conclusive or consistent. When compared with supportive psychotherapy and psychoeducation, CBT for schizophrenia showed relatively lower effects on relapse, reduction of rehospitalization, and mental state both medium term (6 weeks–3 months) and long term (>3 months–1 year).^{21,22}

In addition, CBT requires experienced and skilled practitioners, a clear definition of the essential and effective components in the intervention, and management of the practical demands on patients in terms of time for regular sessions and the necessity for high levels of concentration and insight. As Tarrier et al³¹ and Turkington et al³² point out, these requirements exclude a high proportion of more disabled patients and limit its widespread dissemination into routine practice. These contradictory findings and limitations of CBT for schizophrenia reveal a need for more randomized controlled trials focusing on the durability of the effect, with an expansion of the targeted symptoms, including negative symptoms, depression, and anxiety. As suggested by Barrowclough et al³³ and Addington et al,³⁴ CBT could be used as an adjunct to other psychosocial interventions to improve symptoms or psychosocial functioning, particularly for young people with a high risk for psychosis or for those with a dual diagnosis and/or substance abuse. For instance, although cognitive remediation focuses on neurocognition and social cognition, there is a possibility of synergy with CBT for improving the cognitive and social functioning of patients with schizophrenia.

Cognitive remediation therapy

In response to the impaired cognition that occurs in many patients with schizophrenia, recent research has also raised concerns about the aspects of psychomotor function, attention, working memory, executive function, and other cognitive functions. These impairments could persist in the course of schizophrenia, limiting the psychosocial and work functioning of the patients, and thus reducing the efficacy of CBT, which requires high levels of self-monitoring, attention, rational thought, and insight into the illness and its symptoms. As a result, several approaches to cognitive remediation have been developed since the 1990s to enhance executive function and social cognition through information restructuring or reorganization, effective use of environmental aids and probes, and a wide range of techniques concerning cognitive functioning (mainly neurocognition and social cognition).

Neurocognition refers to the basic cognitive processes involved in thinking and reasoning and supporting attention, memory, and executive function abilities.³⁵ Social cognition is defined by the cognitive abilities that support the processing, interpretation, and regulation of socioemotional information, which involves perspective taking, theory of mind, emotional perception and regulation, social cue recognition, and casual attributions of social phenomena.³⁶ Despite a variety of cognitive remediation approaches or techniques for schizophrenia, a set of practice principles has emerged, including development of mental strategies to optimize cognitive performance and task completion, repetition of cognitive exercises on key and complex targeted tasks, progression of targeted cognitive abilities from basic to complex ones, use and gradual removals of external aids (mainly auditory and visual) to support cognitive performance, adjustment of difficulty and linking of cognitive exercises to real-world behaviors and domains of functioning, and integration of these cognitive performances with other treatments.³⁷ Impairments in social cognition appear to have negative effects on interpersonal relationships, community adjustment, and vocational functioning, and thus functional recovery in schizophrenia.³⁸

Most recent controlled trials have used only cognitive remediation for cognitive rehabilitation of people with schizophrenia and have shown its medium-sized effects (effect size, 0.30–0.48) in improving attention, processing and working memory, and executive functioning.³⁹ Despite the inconsistent and questionable generalizability and durability of the benefits found in cognitive and other functional outcomes, one recent meta-analysis of 26 controlled trials (involving around 1,150 patients) proposed that cognitive remediation could significantly improve cognitive performance (effect

size, 0.41), psychosocial functioning (effect size, 0.36), and psychotic symptoms (effect size, 0.28) in people with schizophrenia during a short-term (eg, 1 year) follow-up.³⁹ Similar to the findings of another meta-analysis on 40 controlled trials in 2011,⁴⁰ it is suggested that cognitive remediation can produce moderate improvements in global cognition and functioning when it is provided together with other strategies in psychiatric rehabilitation, such as vocational training, or when patients are mentally stable. Although effect sizes did not differ in terms of types of remediation training used, a larger effect size in verbal memory was associated with more time of remediation training.³⁹ Although the effects of most cognitive remediation programs on most domains of basic cognitive functioning are significant but modest, the intervention is likely to be more successful when the skills trained closely relate to those needed in individual patients' daily living, thus reflecting how patient variables such as intrinsic motivation may interact with the training to produce an optimal response to cognitive remediation.⁴¹

Fewer studies on social cognition training are found. Two recent clinical trials of 12-week individual-based and 20-week group-based (ie, Social Cognition and Interaction Training) social cognition training programs, both with 31 outpatients with schizophrenia, found significant improvements in emotional perception.^{42,43} Another controlled trial compared the effect on social competence and social and occupational functioning between a 12-session social cognitive training program (ie, Training of Affect Recognition) and another 12-session remediation training program among 38 patients with schizophrenia spectrum disorders.⁴⁴ The findings indicate that the social cognitive training program demonstrated significantly greater improvements in social functioning and competence than neurocognition training at the completion of the intervention. Although there were no significant effects found on some domains of social recognition and emotional functioning in this and most previous studies of social cognitive training, more broad-based approaches with a combination of training in social cognitive, neurocognitive, and behavioral skills are recommended to enhance its effect on more functional outcomes in schizophrenia.

A few cognitive enhancement programs such as Cognitive Enhancement Therapy⁴⁵ and Social Cognition and Interaction Training⁴³ have been designed to provide enriched cognitive training and experiences through integrated neurocognition and social cognitive training strategies. More research with longer follow-up and larger, diverse samples is recommended to conclusively show the substantive positive effects of these

integrated cognitive remediation training programs and its active components among people with schizophrenia spectrum disorders.

Psychoeducation programs

The psychoeducational model of patient care, as conceptualized by its pioneers, focused on the plight of people with mental illness, particularly on their higher risk for relapse and rehospitalization and its considerable cost to the patient and to society as a whole.⁴⁶ Although psychoeducation is broadly used to characterize a range of approaches of educational intervention for patients with schizophrenia, there are several features common to the effective ones, including structural components, philosophical perspectives, and the goals and content of the programs. First, their common structural components are that the programs are designed and led by health professionals; they are mainly medium term, lasting between 9 months and 2 years; they are an integral part of the patient's treatment plan, along with medication and other psychiatric treatments; they may be delivered to single or multiple participants at the patient's home or in a clinical setting; and they mainly include both the patient and his/her family members during the intervention sessions.⁴⁷ Second, the philosophical perspectives of these interventions are common in their emphasis on the present situation and improving the future while avoiding delving into the past and placing blame.⁴⁸ The treatment team seeks to establish a collaborative relationship with the patient and/or family to share the burden of managing the illness and working toward patient recovery. Last, in terms of the goals and content of the programs, all focus on providing information about the illness and its treatment, management of the patient's illness behavior, problem-solving and coping skills in illness management, and access to community mental health care services.⁴⁹ Such information is crucial in enabling these patients to cope with the illness and its management.

It is also believed that psychoeducation for the family members of these patients is useful and effective in improving patient outcomes because a positive and supportive family environment and behaviors can encourage patients and enable them to improve their functioning and self-management of the illness, thus reducing their likelihood of relapse.² With the strategies and skills taught in coping with schizophrenia, psychoeducation programs for both patients and their family members have accumulated much evidence regarding their efficacy in overall mental state, treatment compliance, relapse prevention, and satisfaction with mental health services,⁵⁰ and it is therefore suggested that they be integrated into a

family-based or multicomponent psychosocial intervention (including illness management, supported employment, and interpersonal and social skills training for both patients and their families), as well as the standard care, for more effective and longer-term patient outcomes.

During the last 20 years, several models of psychoeducation for schizophrenia have been developed and empirically tested. The theoretical foundations for these interventions are mainly derived from stress vulnerability and coping models and other psychological theories such as cognitive-behavioral, social learning, and crisis theories.⁵¹ Teaching patients (and their families) in a variety of forms according to the ability and interest of the individual or group of patients with a view to improving their treatment compliance and illness management is the main goal in mental health care to minimize relapse and optimize the patients' health condition. Nevertheless, some studies indicate that psychoeducation alone enhanced patients' knowledge about the illness but could not improve other patient outcomes or their behaviors.^{52,53} The nonsignificant changes in psychosocial functioning and illness-related behaviors could be a result of their lack of attention and emphasis on the adequate dose (length) of education and skills practice, as well as the inflexibility of the learning process through progressive changes in behavior, skill, and attitude.⁵⁰

A recent systematic review of 44 randomized controlled trials conducted between 1988 and 2009 indicated that people with schizophrenia ($n = 1,200-1,400$) in psychoeducation programs for schizophrenia reported a significant increase in treatment compliance and reduction in readmission and relapse rates in the short term (ie, within 6 months) when compared with those receiving standard psychiatric care.⁵⁰ Psychoeducation also promoted social and global functioning. In the medium term (ie, 6-18 months), it was found that when treating four participants with psychoeducation instead of standard care, one additional person would show a significant improvement in medication compliance, relapse, and knowledge about the illness. In addition, the participants ($n = 236$) who received psychoeducation were also more likely to be satisfied with mental health services in the short term and with improved quality of life in the medium term. Although most of the 44 trials reported favorable results for psychoeducation, it is noteworthy that there were no significant differences in their primary outcomes (ie, compliance, relapse, and mental state) between psychoeducation and standard care across countries. The review also noted that a majority of the studies reviewed were conducted in hospitals, whereas most people with schizophrenia are taken care of in

the community. It is recommended that further research be conducted to test the efficacy of psychoeducation in the context of community mental health care to understand and apply its "true" effect to the current community-based care.

A prospective randomized study by Feldmann et al⁵¹ examined the influence of pretherapy duration of illness on the effects of psychoeducation for 191 outpatients with schizophrenia in Germany. Psychoeducation showed the most preventive effect in patients with a medium duration of illness (eg, 2-4 years) who had already accepted their illness but were not yet adhering to fatalistic assumptions often established to explain the manifestation of illness as nonretractable and unrecoverable. A randomized, multicenter controlled trial based in Munich, Germany, showed that psychoeducation for schizophrenia, consisting of individual behavioral therapy, self-assertive and problem-solving training, communication skills training, and further family therapy, could produce a significant reduction in rehospitalization rates from 58% to 41% and shortened hospital stays from 78 to 39 days.⁵² The researchers suggest that the effective therapeutic elements of psychoeducation programs were therapeutic interactions (relationships), clarification (about schizophrenia and its causal attributions), and enhancement of coping competence and skills for the illness and patient's life problems.

Most successful or effective psychoeducation programs have consisted of a wide coverage of patient needs and concerns in relation to the illness and its treatment and self-management. Bisbee and Vickar⁵³ recommended that psychoeducation topics for schizophrenia include clear orientation to patienthood, adequate and up-to-date knowledge of the illness and its care, theories and practices of medication, stress and illness management, effective communication and coping skills, satisfactory family relationships and interpersonal interactions, maintenance of good nutrition and health, and prevention of relapse and substance use. Although many psychoeducation programs have shown positive effects in terms of relapse prevention, increase of knowledge about the illness, and medication compliance among people with schizophrenia, there are still uncertainties about their efficacies in other important patient outcomes (eg, global functioning, insight into the illness and its treatment, and quality of life), especially in the longer term (ie, >2 years).^{52,55} More well-structured and standard psychoeducation programs should be designed and evaluated, with clear and detailed descriptions of their contents, to help mental health professionals implement evidenced-based mental health care intervention and services for people with schizophrenia and their families.

Family (or family-based) intervention

Schizophrenia can cause disabling experiences and distress to both people with schizophrenia and their families. Because family members are the main carers for patients in the community, the effect of caring for patients is often described as burdensome and includes the different subjective and objective aspects of physical, emotional, or psychological and socioeconomic health problems.⁴ Although different terminology is used for family-focused interventions in schizophrenia, Pharoah et al⁶ suggested the terms psychosocial, psychoeducation, and behavioral management approaches to family interventions generally refer to those interventions in an individual or group format, in which patient and family members meet together, there is a skills acquisition component in addition to a didactic teaching element, and the primary aim of the program is to reduce patient relapse and readmission. However, family education, consultation, support, and counseling and relatives' groups usually refer to interventions directed at family members alone (excluding the patient), and their primary focus is on family members' needs. Since the early 1960s there has been a better understanding of the effects of the family's expressed emotion in relation to the course of the illness and relapses, resulting in the increased study of family partnership in schizophrenia care over the last three decades.⁵⁶

The National Institute for Clinical Excellence, in their clinical guidelines to National Health Service trusts in England and Wales,³ as well as the Schizophrenia Patient Outcomes Research Team Programs for treatment and research on schizophrenia in the United States,⁵⁷ recommend that pharmacological treatment for people with schizophrenia be better integrated with other psychological, social, and educational interventions at the earliest opportunity. Working with families appears to be one of the most effective ways of delivering community-based intervention to these patients.

There are several other reasons for providing interventions to families of people with schizophrenia. First, studies on expressed emotion, which refers to the critical or emotionally overinvolved attitudes and behavior displayed by family members toward their relative with schizophrenia, has revealed that family dynamics and emotional climate affect the recurrence of positive symptoms, and therefore the course of the illness.⁵⁸ Although a supportive and caring family environment can be induced through family education and partnership in treatment planning and implementation, an enhanced competence and ability of the families to detect and notify mental health professionals about any

warning signs of relapse are crucial for relapse prevention in schizophrenia,^{22,59} to avoid contributing to long delays in treatment and to achieve early recovery. Second, having an intimate relationship with a relative with schizophrenia and providing care for such a person can place a great burden on family members. Reducing caregiver burden is an important goal of family support and care that, in turn, can help these carers take better care of their loved ones while maintaining their own health and well-being. Last, high levels of expressed emotion and perceived burden within a family can have a negative effect on a patient's illness, increasing their vulnerability to relapse.⁶⁰ The intimate relationship and interactions between patients with schizophrenia and their family members warrant the application of family-centered interventions to improve both the families' and patients' ability to cope with the illness management.

Recent reviews of more than 50 controlled trials (>4,800 patients) of different modes of family-based intervention from 1980 to 2010, such as family behavioral management and psychoeducation programs,^{6,61} reveal that family intervention, as an adjunct to drug treatment and routine care, can significantly enhance family members' knowledge about the illness, reduce family burden and patients' relapse up to 2 years, and improve patients' medication compliance. Both single-family and/or multiple-family group programs, lasting from 3 months to 3 years and consisting of a wide variety of psychotherapeutic techniques, were associated with fewer patient relapses and rehospitalizations, with rates about half those of patients receiving routine psychiatric care. Even though these families may have different health needs and expectations across the course of the illness, they have a few common needs for psychoeducation, including understanding about the nature of the illness, ways of coping with psychotic symptoms, methods of medication and illness management, psychological support and practical assistance during times of crisis, and means of getting links to community mental health services.^{3,19}

Family psychoeducation, which has been derived from stress reduction and coping models and other psychological theories such as cognitive-behavioral, social learning, and crisis theories,^{2,7} is the most frequently used model of family-based intervention for people with schizophrenia in both Western and Asian countries. As these psychoeducation programs mainly focused on the patient's mental condition, the studies paid little attention to the family's burden or the family members' perceptions of their problems and needs. Treatment teams seek to establish a collaborative relationship with the family to share the burden of managing the

illness and working toward patient recovery.⁶² Behavioral family management is another frequently used approach to family-based intervention for schizophrenia. Developed by McFarlane et al⁵⁵ in the United States, the program uses family education, training in communication skills, and practice in problem solving and has been delivered successfully across countries in the context of multiple-family groups via 10 sessions during a 3-month period.^{63–65} It has been shown to be effective in reducing patients' symptoms, promoting remission, strengthening social functioning, and reducing family burden.

Other approaches to family-based intervention for schizophrenia care include professional-led or peer-led multiple-family support and education groups (aimed at providing continued education, caregiving skills training, and support for these families), family-aided ACT (providing family crisis intervention and case management for those with chronic or treatment-resistant schizophrenia), and family consultation or supportive counseling (using an individualized approach of support and adaptation training for a family member or the whole family).^{48,64} Most family education approaches adopt a strengths perspective, in which families are encouraged and assisted in developing their stress management and coping skills and improving their psychological well-being and ability to adapt to dealing with their relative's illness.⁶⁴

Comparing the effects of different models of family intervention on patient and family outcomes, studies in mainland China (eg, Chien and Wong⁶⁵ and Li and Arthur⁶⁶), Europe (eg, Stengård),⁶⁷ and the United States (eg, Dyck et al⁶⁸ and McFarlane et al⁵⁵) have consistently demonstrated that family psychoeducation and/or behavioral approaches to intervention spanning at least 10 sessions over the course of 6 months are more effective and have a relatively long-lasting effect (ie, >2 years) in terms of preventing patient relapse than individual psychosocial treatment or medication alone. However, the psychoeducation and behavioral approaches to intervention, as described by researchers in previous studies, expressed variety of content, format, and techniques. The common elements in several of the more effective family psychoeducation programs include social support, education about the illness and its treatment, guidance and resources during a crisis, and training in problem solving.^{2,69} However, little is known about the major therapeutic components of psychoeducation and other psychosocial family-based interventions for schizophrenia. With better understanding of these crucial therapeutic elements within family intervention, it may be possible to develop a more consistent, reliable, and effective family intervention program for people with

schizophrenia. The specific effects of family intervention on family members' psychosocial needs such as family functioning, psychological distress, and burden of care and home-based patient care have not been studied adequately; thus, data are few and equivocal.⁶

Anderson and Adams⁷⁰ and Drake et al⁷¹ have suggested there are difficulties in employing family intervention in everyday clinical practice, with groups of patients with schizophrenia in receipt of community care because of inadequate mental health care services, staff training, and resources. Multiple-family groups may have very high noncompliance or attrition rates resulting from the group members' time constraints on attending groups because of their work and busy domestic lives, as well as the inconvenience of transport and meeting times. In addition, they may not be able to arrange alternative care for the patient when attending the group, and running a family group requires a highly skilled and experienced therapist for effective management of patients' psychotic symptoms and disturbing behaviors and/or those highly distressed family carers.^{19,72}

Stanley and Shwetha⁷³ suggest that an integrated therapeutic approach to family-based intervention consisting of multiple components such as pharmacotherapy, psychosocial therapies, and spiritual therapy is more successful in improving the mental status and psychosocial functioning of people with schizophrenia, together with reducing family burden and increasing quality of life in their family caregivers.

Social skills training

Social skills represent the constituent behaviors that, when combined in appropriate sequences and used with others in appropriate ways and social contexts, enable a person to have the success in daily living that reflects social competence.⁷⁴ A lack of social skills is one of the major deficits in psychosocial functioning among people with schizophrenia.⁷⁴ It can provoke stressful interactions with the social environment and lead to social withdrawal and isolation. Social skill training originated from the social skills model of Robert Liberman⁷⁵ and consists of three main components: receiving skills (social perception), processing skills (social cognition), and sending information skills (behavioral responding or expression). In contrast, social competence generates social resources and improves community integration and role functioning.⁷⁶ This training, practiced mostly in groups, aims to enhance patients' social competence in terms of interpersonal and communication skills, illness management, community reintegration, workplace social skills, and instrumental activities of daily life. Although the content of the current training programs

can vary, a common set of training strategies found across them included goal setting, behaviorally based instruction, role modeling, behavioral rehearsal, corrective feedback, positive reinforcement, and homework to foster generalization of skills.⁷⁷

When patients with schizophrenia have been equipped with skills to deal with stressful life events and daily hassles, they are proficient in solving their life problems and challenges, and consequently, those life stressors are less likely to trigger exacerbations or social decompositions of schizophrenia.⁷⁸ Social skills compliance can also expand patients' participation and partnership in treatment decisions and partnership, as evidenced by its effectiveness in teaching medication self-management skills. When the patients learn how to properly use medication, they are more in control of their own illness, experience greater responsibility for their treatment, and achieve greater insight into their illness.⁷⁹ Three critical reviews of more than 50 controlled trials of social skills training for schizophrenia and other psychotic disorders suggest that participants in diverse community and in-patient mental health care settings can retain their improvements in knowledge and behaviors in different aspects of learned social skills for up to a 2-year follow-up.^{80–82} Therefore, social skills training programs have demonstrated positive effects on workplace and social functioning generalized to different community settings.⁸⁰ However, the results of most studies during the last three decades are discouraging for transferring the learned social skills (particularly those complex steps/procedures and high stimulus gradients) to participants' real environments. Therefore, recent studies suggest that incorporating generalization techniques into a skill training program, thus creating opportunities for using the skills in the living environment and receiving appropriate feedback and social reinforcements, would increase the likelihood of skill transfer to everyday life situations.⁸²

Of the psychosocial interventions for schizophrenia discussed in this article, social skills training has the longest history, having been used to help patients learn to cope with interpersonal relationships since the 1960s. Although most studies of this training in the 1980s and 1990s reported considerable effects on improving patients' living skills and social adjustment, more recent studies have failed to provide evidence to support its benefits for chronic schizophrenia sufferers, particularly in reducing positive symptoms and improvements in community functioning and other complex social skills such as assertiveness and job-related skills.⁸³ One recent meta-analysis of 22 randomized controlled trials conducted between 1973 and 2007 concluded that such

training programs can produce a moderate but significant and consistent improvement in social functioning (effect size, 0.41–0.52) and negative symptoms (effect size, 0.40–0.47) of people with schizophrenia, and considerably reduce rehospitalization rates over the course of 1–2 years of follow-up.⁷⁷ By using performance-based measures, the participants' mastery of social skills and daily living skills (effect size, 0.48–0.52) could be consistently and sustainably maintained during the follow-up period. However, these training programs could not demonstrate any significant effect on other patient outcomes, such as mild improvements in general psychopathology, relapse prevention and positive symptoms, and cognitive function.^{75–78}

The role of social skills training has also been indicated as important in combination with other psychosocial interventions, such as cognitive remediation, to generalize the learned skills to real-life accomplishments in social and vocational duties. For instance, in the Cognitive Enhancement Program developed by Hogarty and Flesher,⁸⁴ patients with schizophrenia were involved in practicing structured social interactions weekly, solving social dilemmas in real life, and appraising affect and social contexts, conversations with and feedback from other patients, and coaching and home assignments to implement skills in life problems or situations. With concurrent use of computer-aided neurocognition and social cognitive remediation (to improve attention, verbal learning, memory, and social adjustment and competence), the participants receiving social skills training could significantly improve their participation in employment situations and mastery of living and working skills. For achieving an optimal effect of work and living skills accomplishment, innovative combinations of conventional rehabilitation programs and social skills training and/or other psychosocial interventions should be considered. Similar to the results of most recent reviews,^{80,85} Dixon and his patient outcomes research team recommend that social skill training can be used as an adjunct to cognition and community skills training to produce synergic effects in the performance-based social and community skills and functioning of people with schizophrenia.² More research is also needed to examine the predictors of therapeutic effects or responses to social skills training in schizophrenia, as well as the durability and generalizability of its benefits.

ACT

ACT is a persistent, intensive outreach or case management model that targets difficult-to-engage or refractory schizophrenia. This treatment approach was found to be particularly effective for those who make particularly

high use of inpatient services, have a history of poor engagement with services leading to frequent relapse and/or social breakdown (eg, as manifested by homelessness, noncompliance with treatment, social withdrawal, loss of contact with routine services, or seriously inadequate accommodation), or need urgent or immediate access to assistance or support in crises.⁸⁶ These treatment teams are characterized by very low staff-to-patient ratios (eg, 1:10), high frequency of contacts/visits, provision of comprehensive medical and social advice in a home or supervised care environment, and multidisciplinary care with 24-hour coverage and shared caseloads. Although frequent home visits can facilitate medication compliance, crisis intervention, and establishment of therapeutic relationships, health assessment of patients and their families is more accurate and comprehensive because treatment team members can observe patients' behaviors directly rather than depending on patients' self-reporting. Bond et al⁸⁷ suggested that every community have ACT teams with a capacity to serve 0.1% of the general population or 20% of all patients with severe mental illness.

In the 1990s, ACT conducted in the United States was shown to reduce patients' hospitalization and increase community service use at a reduced cost.^{88,89} Bond et al's study⁸⁷ in Australia reported that ACT not only reduced patients' symptoms and rehospitalizations but also improved their housing and quality of life when compared with routine care. Nevertheless, recent studies have suggested that most benefits of ACT could not be replicated outside the United States; for example, in the United Kingdom^{89,90} and other European countries,⁹¹ except for maintaining contact with these patients. The United Kingdom studies indicated that ACT did not demonstrate any consistent positive effect on social adjustment and functioning. In addition, the dynamic and fluid nature of its service provision causes difficulty in identifying or defining the therapeutic components contributing to positive patient outcomes.

However, in agreement with two systematic reviews, Clarke et al,⁹² in their review on 25 randomized controlled trials with 3–36 months' follow-up, suggest that ACT can substantially reduce psychiatric hospitalization by 78% (74% of the trials reviewed), increase housing stability (67%), and moderately improve positive symptoms (44%) and quality of life (58%) among patients with schizophrenia and other severe mental illnesses. In contrast, it has been suggested that ACT has little effect on patients' social and vocational functioning, substance use, and satisfaction with services. Several British studies of ACT have indicated disappointing results, and thus Marshall and Creed⁹³ conclude that low

caseload ratios do not necessarily result in better patient outcomes but, rather, specific organizational characteristics of the ACT model (eg, multidisciplinary collaborations, daily team meetings, comprehensive needs assessment, and shared caseloads and responsibilities) are essential and important to its effectiveness. More evidence on the efficacy and practice standard or the program structure and content of ACT should be found before it can be widely used as an evidence-based intervention. As ACT targets individualized management and intensive care for difficult-to-engage or refractory patients with schizophrenia or other severe mental illness, one of the major barriers to the development of this treatment model may be the absence of valid methods to determine these patients' health needs. Such tiered case management approaches can work best when the functions and roles of multidisciplinary teams are carefully organized.^{87,88}

Relative efficacy of different approaches to psychosocial intervention

From the literature reviewed between 1995 and 2008, the estimated efficacy of the five main approaches to psychosocial intervention for schizophrenia (ie, CBT, psychoeducation, family intervention, social skills training, and cognitive remediation) is presented in terms of the effect sizes on two of their most commonly reported patient outcomes. The effect sizes of CBT in terms of relapse (over the course of 24 months) and positive symptoms (using Hedger's *g*) are 0.20–0.52 and 0.19–0.50, respectively,^{40,94} and those of psychoeducation are 0.25–0.50 and 0.21–0.48, respectively.⁵⁰ For family intervention, the effect sizes in terms of mental state and family burden are 0.21–0.45 and 0.28–0.50, respectively.^{6,63} In addition, the effect sizes of social skills training based on improvements in interpersonal skills and community functioning are 0.58–1.12 and 0.45–0.89, respectively, whereas those of cognitive remediation in terms of cognitive functioning and social behaviors are 0.13–0.70 and 0.28–0.50, respectively.^{26,95}

Table 1 summarizes the mean weighted effect sizes of the controlled trials (between 2000 and 2012) of three most commonly used modalities of psychosocial interventions, namely, CBT, family intervention, and psychoeducation, in terms of four reported outcomes (positive and negative symptoms, level of functioning, and relapse rate). CBT has indicated moderate effects on positive and negative symptoms and functioning (mean effect sizes, 0.40–0.42) during a 12-month follow-up, whereas psychoeducation could have moderate effects on positive symptoms and relapse

Table 1 Mean effect sizes of three psychosocial interventions for schizophrenia on selected outcomes during a 12-month follow-up

Outcome (over 12 months) and intervention	Studies (2000–2012), n	Total sample size	Mean weighted effect size	95% confidence interval	Heterogeneity test (df), P
Positive symptoms					
CBT	20	>1,100	0.42	0.30–0.54	59.2 (19)**
FI	8	>400	0.30	0.19–0.39	41.9 (7)*
PE	21	>1,200	0.45	0.30–0.55	64.1 (20)**
Negative symptoms					
CBT	14	>600	0.40	0.30–0.50	60.8 (13)**
FI	4	>250	0.28	0.21–0.35	28.2 (3)
PE	18	>900	0.29	0.20–0.39	38.3 (17)*
Functioning					
CBT	14	>800	0.36	0.27–0.49	53.8 (13)**
FI	10	>600	0.34	0.24–0.43	48.2 (9)**
PE	20	>1,300	0.38	0.26–0.50	60.3 (19)**
Frequency of relapse					
CBT	22	>1,300	0.42	0.30–0.50	60.8 (21)**
FI	15	>1,000	0.40	0.28–0.50	56.2 (14)**
PE	25	>1,600	0.49	0.38–0.59	78.3 (24)**

Notes: Statistical significance is represented by * $P < 0.05$; ** $P < 0.01$; *** $P < 0.005$. Data obtained from studies on CBT: Dickerson,³⁴ Lecomte et al,²⁷ Penn et al,³⁷ Pinninti et al,⁹⁸ Rathod et al,⁹⁶ and Wykes et al;²⁶ FI: Bäuml et al,⁹⁹ Pharoah et al,⁶ Schultz et al,¹⁰⁰ and Lucksted et al;⁶³ and PE: Rummel-Kluge and Kissling,⁷ Bisbee and Vickar,⁵³ Lincoln et al,¹⁰¹ and Xia et al.⁵⁰

Abbreviations: CBT, cognitive behavioral therapy; FI, family intervention; PE, psychoeducation.

prevention (mean effect sizes, 0.45 and 0.49, respectively). For family intervention, the effects are more prominent on improvement of patient functioning and relapse rate (mean effect sizes, 0.34 and 0.40, respectively). Most consistently, these three kinds of interventions have demonstrated significant reduction of relapse during a 12-month follow-up (mean effect sizes, 0.40–0.49).

Patient-focused perspectives

During the last few decades, approaches to treatments of people with schizophrenia and their outcomes have mainly been judged and directed by paternalistic views of medical or other mental health care practitioners. Despite the emergence of psychosocial interventions or other alternative treatments, there is limited attention and minimal efforts to plan for these interventions and evaluate their outcomes on the basis of the perspectives of these patients.⁶⁹ From the literature review of the psychosocial interventions and pharmacological treatments (in part I of “Current approaches to treatments for schizophrenia spectrum disorders,” by Chien and Yip¹), limited evidence was found on the efficacy of interventions for schizophrenia based on patient-focused perspectives, in which the patients’ quality of life, satisfaction with and acceptability to the service received, and adherence to and uptake with the interventions offered to them are targeted. In contrast, the focus in treatment of these patients has been moving from symptom control and chronic and maintenance

care to improvements in functioning, collaborative decision-making, and recovery from the illness.^{22,69}

For better understanding of the clinical evidence regarding patient-focused perspectives used in current research, a literature search was conducted, mainly using the databases of CINAHL, MedlinePlus, and PubMed (from 1982–2013). Several key words were used independently or in combination to search all the literature published in English, including “schizophrenia,” “intervention,” “treatment,” “quality of life,” “patient perspective or satisfaction,” “service/treatment acceptability,” “adherence,” and “uptake.” The inclusion criteria of the clinical research were experimental, quasi-experimental, or longitudinal cohort studies with at least a single outcome in terms of patient-focused perspectives (eg, patients’ quality of life, treatment adherence and satisfaction with services received), patients primarily diagnosed with schizophrenia or its subtypes, brief and full description of the interventions or services received, and clear description of the outcome measures used. From 260 studies initially retrieved from the databases, only 25 met all of these criteria and are included in this section for discussion. These 25 studies were mainly randomized controlled trials, although three used a longitudinal, prospective cohort design or mixed research methods. Surprisingly, the outcome measures in terms of patient-focused perspectives were mainly medication or treatment adherence ($n = 17$), and only a few studies measured patient satisfaction ($n = 7$), social functioning ($n = 4$),

and quality of life ($n = 8$) as secondary outcomes. Among those with at least a 1-year follow-up ($n = 18$), quality of life and treatment adherence were the most frequently measured patient-focused outcomes.

The 25 studies reviewed with outcomes in terms of patient-focused perspectives mainly evaluated the efficacy of adherence therapy, the integrated treatment approach, or second-generation antipsychotics for people with schizophrenia (eg, Anderson et al,¹⁰² Gray et al,¹⁰³ Lindenmayer et al,¹⁰⁴ Kilian et al,¹⁰⁵ and Wiersma et al¹⁰⁶) and were conducted in the United States or Europe. Five selected recent studies with outcomes measured in terms of patient-focused perspectives,^{102,103,106–108} mainly including patients' quality of life, satisfaction with services, and medication adherence, are summarized in Table 2. The selected studies are also discussed here to better understand to what extent the patient-focused perspectives are being considered in recent schizophrenia research. Several reviewed clinical trials that evaluated the effects of medication adherence therapy using the techniques of CBT and/or motivational interviewing¹⁰⁹ revealed mixed results on patients' perceived quality of life. Gray et al¹⁰³ compared the effects of adherence therapy and routine psychiatric care for people with schizophrenia on improving medication compliance, quality of life, and several other outcomes in a 52-week European multicenter randomized controlled trial. The study identified no significant differences between the adherence therapy group ($n = 204$) and the control group ($n = 205$) on the patients' quality of life and psychopathology during a 1-year follow-up. Puschner et al¹¹⁰ found that psychotic patients' perceived health-related quality of life after undertaking adherence therapy might have been compromised with their symptom severity and the adverse effects of the antipsychotics used. In another adherence therapy trial, Anderson et al¹⁰² explored the efficacy, acceptability, and patient satisfaction with the adherence therapy used among a small sample ($n = 26$) of patients with schizophrenia in the United States. The results showed that the patients ($n = 12$) reported a high degree of acceptability and satisfaction with the 8-session adherence therapy even though they did not show significant improvements in mental state and medication adherence at the post-tests when compared with the routine-treatment group ($n = 14$). In addition, most of the reviewed studies of adherence therapy for people with schizophrenia found that over a longer-term follow-up, these patients could show neither significant improvements in their level of adherence to medication and quality of life nor satisfactory control or reduction of psychotic symptoms, particularly negative symptoms.

An integrative approach to treatment for people with chronic schizophrenia and persistent hallucinations ($n = 31$) has been evaluated in a randomized controlled trial to ascertain its effect on their quality of life and social functioning compared with routine psychiatric outpatient care ($n = 32$).¹⁰⁶ This approach integrates CBT, coping skills training, community rehabilitation services, and crisis intervention into a family-focused intervention, as well as the use of antipsychotic medication. The treatment group indicated significantly better quality of life and social functioning than seen with those patients receiving routine care at the 8- and 18-month follow-ups, indicating that this integrated approach appeared to be effective for people with chronic schizophrenia in a medium-term follow-up. Recently, there have been an increasing number of integrative treatment programs for these patients, but there is no systematic and empirical evidence of their effects, particularly during a longer follow-up period. Although some of these innovative programs were developed from the service-users' or patients' perspectives or based on a collaborative decision-making model, their components for the integration of schizophrenia treatment varied considerably in terms of structure, format, and content, making it difficult to identify the active and therapeutic components contributing significant benefits to patients, if any. It is recommended that more research be conducted to test the efficacy of these integrative models of care in terms of both illness-related and longer-term patient-focused outcomes and that the therapeutic elements contributing to patient recovery from schizophrenia be explored.

It is interesting that a few comparative studies were conducted in the 1990s to identify the effects of first- and second-generation antipsychotics on the health-related quality of life of people with schizophrenia.^{111–113} Similar to other controlled trials of the effects of antipsychotics in schizophrenia,^{98,105} none of these studies could support the superiority of the second-generation (atypical) antipsychotics in improving patients' quality of life and their cognitive and social functioning. In two controlled trials with 227 and 307 patients with schizophrenia,^{104,114} second-generation antipsychotics could not demonstrate any better quality of life or cost-effectiveness than different types of first-generation antipsychotics during more than a 1-year follow-up. Nonetheless, more recent research and reviews on long-term use of second-generation antipsychotic therapy such as quetiapine^{115,116} and risperidone¹⁰⁴ have shown that it was a more tolerated, acceptable, and satisfactory treatment than the other previously prescribed first-generation antipsychotics.

Table 2 Selected research with outcomes from patient-focused perspectives

Author	Country	Sample size and subject characteristics	Research design	Intervention comparison	Length	Outcomes measures	Conclusion
Gray et al ¹⁰³	The Netherlands, Germany, Italy, and England	409 patients with schizophrenia from general adult inpatient and community care settings	Single-blind, multicenter, randomized controlled trial	Adherence therapy (n = 205) vs health education (n = 204)	52 weeks	Quality of life, adherence, and psychopathology	No significant differences between two intervention groups at baseline or at follow-up in terms of quality of life, medication adherence, and psychopathology. Adherence therapy was no more effective than health education in improving quality of life.
Anderson et al ¹⁰²	United States	26 people with schizophrenia from a community mental health center	An exploratory, single-masked, randomized controlled trial	Adherence therapy (n = 12) vs treatment as usual (n = 14)	8 weeks	Psychiatric symptoms, medication adherence, and patient satisfaction	No significant improvement in symptoms and medication adherence in the adherence therapy group compared with the treatment-as-usual group at follow-up. A high degree of satisfaction with adherence therapy was reported.
Wiersma et al ¹⁰⁶	The Netherlands	63 people with schizophrenia from a community mental health center	A randomized controlled trial	Integrated treatment condition (n = 31) vs routine care (n = 32)	18 months	Quality of life and social functioning	Significant improvements in quality of life and social functioning in the experimental group receiving integrated treatment, but not in the control group receiving routine care.
Kalali ¹⁰⁷	United States	30 patients with schizophrenia randomly selected from a database of patients with psychotic disorders who were receiving quetiapine	Interview with a random sample	Quetiapine vs other antipsychotics	4 months on average (range, 1–12 months)	Patient satisfaction	87% of patients were satisfied with their experience of quetiapine; 83% of patients preferred quetiapine to all their previous medications, and 47% reported no subjective adverse effects. There was a high level of patient satisfaction and acceptability with long-term quetiapine therapy.
Weiss et al ¹⁰⁸	United States	162 outpatients with schizophrenia and other psychotic disorders from an ambulatory psychotic disorders clinic	A cross-sectional and a longitudinal, prospective design	No intervention	1 year and 9 months	Working alliance, treatment adherence, psychosis, and substance use and functioning level	Working alliance was most consistently related to medication adherence during cross-sectional analysis and was the most significant predictor of active adherence and development of active adherence.

It is recommended that the perceived benefits and other patient-focused outcomes of quetiapine, risperidone, and other newly introduced antipsychotics, compared with other second-generation antipsychotics, be the subject of further research. Given that there is promising evidence of the effects of the emerging integrative approaches to different combinations of single and multiple psychosocial interventions as adjuncts to antipsychotics, it is more important to examine how these innovative, integrative treatment approaches can contribute to high-quality patient-centered care, and thus positive outcomes from a patient-focused perspective from immediately after completion of the intervention to a long-term follow-up.

Treatment adherence refers to the degree to which an individual patient is following their clinical prescription or the treatment instructions of a care provider; for example, taking medication and modification of diet and lifestyle have drawn significant attention in the schizophrenia literature.^{117,118} Although there is no specific means of maximizing the level of treatment adherence among people with schizophrenia that is recommended by recent research, various factors influencing such adherence have been identified; for example, social support, encouragement, and supervision from family members or significant others¹¹⁹ and a good working or helping alliance with patients in their treatment planning and decision-making.¹⁰⁸ Results of a recent controlled trial of a family supervisory treatment program in a high-income population in Pakistan indicated that by engaging the family members as key care supervisors to administer and supervise the medication, patients with schizophrenia could significantly improve their medication adherence, psychotic symptoms, and overall functioning during a 1-year follow-up.¹²⁰ Good working alliances between patients and mental health professionals are considered an important predictor of treatment adherence or compliance: the longer a patient stays in a therapy with a favorable and therapeutic alliance, the better the patient-focused outcomes such as satisfaction and adherence to treatments and services received.¹²¹ It has been confirmed by a naturalistic, formative evaluation of cognitive remediation therapy in 49 people with schizophrenia that working alliance was associated with fewer complaints regarding treatment received and more improvement in treatment adherence and outcome.¹²² Nevertheless, most studies on treatment adherence in schizophrenia (except antipsychotic trials) are limited by being descriptive and exploratory in nature and having a smaller sample size and/or nonrandomized, single, or non-equivalent comparison groups; as a result, they are unable

to demonstrate consistent and conclusive evidence on how different treatment approaches could address this important patient-focused outcome.

Although the evidence on patient-focused perspectives or their related outcomes in schizophrenia treatment is preliminary and inconclusive, Cañas et al¹²³ recommended that patients' individual health needs and associated risk factors influencing nonadherence to treatments should be carefully considered in practice to improve treatment adherence and patient outcomes in schizophrenia. Personalized treatment strategies should be designed and delivered in mental health care, incorporating patients' mental and psychosocial health conditions, backgrounds, and preferences into their treatment plan. In addition, the active involvement of family caregivers in treatment planning and delivery, together with effective communication among staff members, patients, and family members, should be considered to optimize the continuity of schizophrenia care in the community.

Few studies have been conducted to evaluate the effect of interventions on the quality of life, patient satisfaction, acceptability, and adherence of people with schizophrenia. Some studies had a small sample size that limited the generalization of the results, and some potentially effective interventions require more evidence to support their use in practice. Hence, there is a great need for much more research to identify the significance of patient-focused perspectives in planning and evaluating strategies in treatments and to examine how each approach to treatment can improve the longer-term, patient-focused outcomes of schizophrenia care.

Recommendations for best practice

With the literature review in this article and that of part I¹ for an overview and medical approaches to treatments for schizophrenia, we provide a better understanding of current evidence and several limitations regarding different treatment modalities for this severe mental illness. A few implications for evidence-based practice and research are seen. First, antipsychotics and their combined use with other psychotropic drugs are effective in reducing relapse and psychiatric symptoms, particularly positive symptoms; in contrast, there are great variations of treatment responsiveness, targeting effects, and adverse effects across individual patients with schizophrenia.¹²⁴ With new antipsychotics and medication regimens continuously introduced in the treatment of schizophrenia, it is important and essential to conduct more clinical trials to confirm and select the ones with the best antipsychotic effect and minimal adverse effects across patients. More research is also needed to provide data on the

associations and predictions of specific dose ranges of each effective antipsychotic with the treatment responses of various patient groups, based on individual clinical and illness characteristics.

Second, in view of limiting the first-line treatment to medications, treatment of schizophrenia cannot fully make use of emerging knowledge about the etiological, neuropathological, and clinical nature of the illness and may therefore fail to develop more effective treatments based on this new knowledge. With our current understanding of the molecular, functional, and pathophysiological nature of schizophrenia, new pharmacological and treatment approaches targeting specific stages of pathogenesis and groups of symptoms of the illness may prevent illness progression at different stages and offer the possibility of personalized treatments based on an individual's characteristics and illness condition.⁴⁷ When applied to clinical treatment, their ability to overcome the pitfalls of current treatment modalities in improving the cognitive and functional abilities of different groups of patients with schizophrenia and its subtypes should be examined. Patient-focused perspectives in their own treatment planning, preference, and satisfaction, as well as outcome measurements, should also be enhanced to address their longer-term need for recovery and a better quality of life. To facilitate personalized treatment for people with schizophrenia, it is recommended that those treating them engage in collaborative and informed decision making by evaluating the treatment needs and preferences of every individual patient, the effects and limitations of current treatments they are receiving, and alternative treatment options at different stages of the illness.

Third, the clinical evidence on the efficacy of other approaches to medical treatment for schizophrenia is weak and inconsistent. They are more effective when applied as an adjunct to antipsychotics and targeted at specific illness conditions such as those with catatonic, strong suicidal, and treatment-refractory states. The efficacy of these alternative medical treatments, and their combined use with medication and psychosocial interventions, should be further studied to augment their optimal actions or effects in specific groups of patients with schizophrenia.

Fourth, with increasing evidence that psychosocial interventions are effective in relieving these patients' psychotic symptoms and improving their functioning, some of these interventions are therefore recommended as an indispensable component of the treatment options available in standard care for promoting patient recovery from schizophrenia. However, their applications and potential effects on schizophrenia sufferers have been hindered by the limited access to and

availability of the most suitable and effective treatment options and inadequate preparation for their consistent and appropriate use in mental health care services. Greater efforts are needed to better integrate different interventions into the existing services and better equip mental health professionals psychologically and technically for implementation of these interventions in usual practice. Research should also be conducted to examine the therapeutic components of effective psychosocial interventions, which are limited and seldom explored. Better understanding of the active ingredients of each of these interventions could enhance the synergy of their combined use, and thus their cost-effectiveness in the treatment of schizophrenia.

Fifth, persistent negative symptoms and progressive cognitive impairments are major concerns for the profound functional disability and social disintegration of people in the later stages of schizophrenia. Current treatments have had limited efficacy on these illness-related problems. New pharmacological strategies and products such as agents stimulating metabotropic glutamate 2/3 receptors¹²⁵ and dopamine 1 receptor and 5HT1A agonists¹²⁶ have recently been introduced in adjunct to antipsychotics, with some evidence of their ability to reduce negative symptoms and cognitive impairments, respectively. More research on new pharmacological strategies based on the current ones is needed to combat these two major deficits and concerns in schizophrenia.

Last and most important, it is essential to develop community-based and clinical strategies for detecting risks and early signs and providing early treatment for people with schizophrenia. Population- or community-based assessments of risk factors and symptoms are critical for precisely and accurately detecting at-risk groups and directing them to the most appropriate preventive programs and strategies available in community mental health care services. Early detection and targeted interventions of the illness can reduce its vulnerability progression to the development of more severe behavioral and cognitive problems, as suggested by Birchwood et al in their critical period hypothesis.¹²⁷ To differentiate themselves from the current usual treatment methods while using a very similar approach throughout the course of the illness, future schizophrenia treatments should be specific to the critical periods and stages of the illness; place more emphasis on preventive, risk-identifying, and early-treatment approaches; and use highly personalized treatment strategies.

Conclusion

During the last three decades, pharmacological and psychosocial treatments for schizophrenia have developed

rapidly and evolved across countries, resulting in significant effects on patients' relapse prevention and symptom control. Because of inadequate consistency in implementation and limited availability and access to different models of effective treatments, the dissemination of psychosocial interventions as usual practice within mental health services has been slow and patchy. Although pharmacological treatment has indicated various kinds and levels of adverse effects, most currently used psychosocial interventions cannot demonstrate wide-ranging or long-term (ie, >18 months) effects on patients' psychosocial and functional outcomes and quality of life. In addition, there are wide variations in the treatment responses among these patients, resulting in an inability to accurately predict the treatment efficacy to a particular patient, and in turn making the optimal patient-focused treatment difficult. In addition, little is known about the therapeutic components or mechanisms of most of the current psychosocial interventions, through which they can produce their effects. With continuous increased understanding about the etiology, psychopathology, and clinical manifestations of schizophrenia, more effective methods and personalized treatment plans are developing or emerging to allow mental health professionals to better define and manage the course of and patient recovery from the illness. With better partnership with family caregivers and staff training and resources for psychosocial interventions, more initiatives in personalized treatments for schizophrenia will be seen to address the many unmet health needs of these patients, with promising evidence. However, the research and service gaps in treatments for schizophrenia discussed and revealed in this article (part II) and another one (part I) on "Current approaches to treatments for schizophrenia spectrum disorders" can provide insight into the strengths and weaknesses of current approaches to treatments for schizophrenia;¹ in contrast, both also can stimulate suggestions and discussions about approaches to implementing evidence-based, person-focused therapy for patients in need of personalized care.

Disclosure

The authors report no conflicts of interest in this work.

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