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A Systematic Review on the Effects of Educational Interventions in Schizophrenia Treatment Programs

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Abstract

Treatment of schizophrenia requires not just antipsychotics but also other measures like education. The purpose of this research is to determine how effective educational interventions are for persons with schizophrenia (PwS) as part of treatment programs. A manual search in addition to searches in two electronic databases (Science Direct and PubMed) were used to identify papers that met the criteria. A number of precise phrases were included in the search, including: ("people with schizophrenia" OR "patients with schizophrenia"), "education" OR "knowledge"), and "medication adherence" OR "medication compliance" OR "medication persistence"). This systematic review followed the PRISMA reporting standards. Articles were screened for inclusion and data was extracted by a team of three reviewers. Using a technique developed by the Cochrane Collaboration to evaluate the risk of bias in randomized trials, the quality of the chosen studies was determined. From 2012 to 2022, a total of 666 studies were considered; however, only seven of them were deemed suitable for a comprehensive assessment. Patients may receive educational treatments as part of their treatment plan or as an independent psychoeducational program aimed at the whole family or caregiver. Many different types of medical experts, such as researchers, therapists, psychiatrists, and pharmacists, provide these treatments. Each intervention has a different length, but often consists of three to eight sessions, with 45 to 120 minutes of each session. When it comes to enhancing adherence, quality of life, stigma, and insight, educational treatments provide mixed results. But their knowledge scores, social functioning, and cognitive abilities all show improvement. Variations in patient characteristics, techniques, and measuring tools are part of the limitations that impact research findings. Clinicians might use these results to personalize educational programs in the future, taking into account each patient's unique requirements and features.

Education, interventions, knowledge, schizophrenia, and systematic review are all terms that pertain to the topic of adherence.

INTRODUCTION

One of the most prevalent mental health issues in the world, schizophrenia is a long-term mental illness. Reports from the Global Burden of Disease indicate that around 20% of the global population, or 20 million individuals, are diagnosed with schizophrenia (Collaborators, 2018). Disorganized thought patterns, delusions, and hallucinations are hallmarks of the schizophrenia spectrum illness as it manifests clinically. Schizophrenia sufferers also struggle to communicate, have a distorted view of reality, and have impaired cognitive function; as a consequence, they have trouble carrying out daily tasks and have worse social functioning (Farah, 2018; Kahn et the year 2015). Insightlessness and poor treatment compliance are hallmarks of schizophrenia, a severe and persistent disorder (Xia et al., 2013). Medication and long-term therapy are necessary for schizophrenia in order to alleviate psychiatric symptoms and avoid recurrence. Positive symptoms may be efficiently managed with antipsychotic medication, according to several studies. However, negative symptoms and cognitive impairment, which are linked to reduced social functioning, are more difficult to address. As a result, helping persons with schizophrenia rehabilitate requires more than just medicine. After leaving the hospital, people with schizophrenia often struggle to adhere to treatment plans, take their medication inconsistently, consult with doctors irregularly, stop taking their medication without a

doctor's permission, and find little social and familial support (Xiao et al., 2015). It is important for people living with schizophrenia to educate themselves on the disorder. A large number of people suffering with this serious mental illness do not have the understanding or tools to deal with its effects (Huang et al., 2018). Medication and psychoeducational therapies should be used together in the treatment of schizophrenia. In order to dispel stigma and increase understanding of mental illness, psychoeducation is crucial. As part of their follow-up therapy after hospitalization, people with schizophrenia should be given information, according to a research by Dastan and Kilic (2014). Hence, it is critical to educate patients well, providing them with pertinent clinical information to help them understand their disease and how to manage it while receiving therapy. Patients are more likely to stick to their treatment plans and have better control of their diseases when they are informed about the beneficial effects of medicine on mental symptoms. Xia et al. (2013), von Maffei et al. (2015), and Novick et al. (2015) all found that psychoeducational therapies improved quality of life, medication adherence, and other outcomes for patients with schizophrenia. Thus, the purpose of this systematic review was to examine educational interventions for people with S and their families and to assess the efficacy of such activities within a treatment program for people with S. The findings from this analysis may be used as a great resource for creating educational interventions that are particular to the features of interventions used in different locations studied.

MATERIALS AND METHODS

In order to find citations of relevant papers, we performed a thorough search for relevant studies in Google and electronic databases like PubMed and Science Direct. The following screening keywords were part of our search strategy: ("people with schizophrenia" OR "patients with schizophrenia"), "education" OR "knowledge"), and "medication adherence" OR "medication compliance" OR "medication persistence" (in any order). We adhered to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) standards (Page et al., 2021) while presenting the findings of this research. Article titles, index words, and abstracts were reviewed in the first round of screening, and then the entire texts were reviewed according to the inclusion criteria that had been previously established. We used the criteria from the Diagnostic and Statistical Manual, DSM-V-TR (APA, 2013) or the International Statistical Classification of Disease, Tenth Revision (ICD-10). Articles that focused on patients with a formal diagnosis of schizophrenia, schizoaffective disorder, or schizophreniform disorder were considered. Medications that are used orally to treat schizophrenia were also the subject of these articles. We searched only for English-language articles published between 2012 and 2022 and included RCTs or randomized trials that assessed the efficacy of educational interventions for PwS with the goals of improving disease or therapy knowledge, medication adherence, or other outcomes associated with these interventions. The following types of research were not considered: recommendations, brief communications, editorials, abstracts, reports, protocol studies, systematic reviews, meta-analyses, and studies for which neither the abstract nor the full text could be located. The use of Mendeley Software made reference management more easier. After importing the search engine results into Mendeley, any duplicates were immediately deleted. Titles, abstracts, and complete texts were subjected to initial screening, with the first screening process including the responsibility of one member of the research team, NC. Subsequently, the results underwent independent verification and validation by another research team member, SAK, to ensure the accuracy and completeness of the search process and to assess the studies' validity. Following the collection of full-text versions of relevant studies, data extraction was carried out by the research teams consisting of NC, SAK, and AWW. They also objectively evaluated the risk of bias in the studies included in this systematic review. We utilized a tool from the Cochrane Collaboration to assess the risk of bias in randomized trials. In disagreements among NC, SAK, and AWW, consensus was reached through discussion, and JG facilitated resolution when necessary.

RESULTS AND DISCUSSION

In the initial search, we identified 659 studies, with an additional seven studies included through citation tracking. After removing duplicate records (n=1), we conducted a screening process based on predefined eligibility criteria, reviewing titles and abstracts. This screening yielded 23 potentially relevant studies on the review topic. Out of these, 16 studies were excluded for specific reasons, which included the use of depot antipsychotics (n=7) and being in the form of protocols (n=9). Ultimately, seven studies met the inclusion criteria for this review. And the PRISMA flow diagram for the literature search process (Figure 1).

To assess the quality of the articles, we employed the Cochrane Risk of Bias Tool, version 1.0, consisting of seven domains. The risk of bias for each domain was evaluated using established criteria, categorized as low

(indicating low risk of bias across all domains), unclear (indicating uncertain risk of bias in one or more domains), or high (indicating high risk of bias in one or more domains) (Higgins *et al*., 2011) (Figure 2).

This review encompassed seven studies that employed a randomized controlled trial (RCT) design. The eligible publications were published within the timeframe of 2012 to 2022 and were conducted in diverse geographical locations, including Japan, Germany, India, Jordan, China, and Vietnam. The majority of these studies featured outpatients as their primary participants. These participants were individuals diagnosed with schizophrenia or schizoaffective disorder according to operationalized criteria, such as DSM

or ICD. The age range of the patients involved in these studies varied from 18 to 65. The sample sizes of the included studies ranged from 23 participants (Mishra *et al*., 2017) to 327 participants (Li *et al*., 2018) (Table I).

Description of educational interventions

Seven studies incorporated educational intervention-based programs as a fundamental component of their research objectives (Table II). The first study, conducted by Chien and Thompson (2014), introduced a Mindfulness-based psychoeducation program (MBPP). This program seamlessly integrated mindfulness-based techniques with psychoeducation to foster overall well-being and encourage healthy behaviors. The MBPP was aimed to facilitate the development of mindfulness skills among PwS, fostering self-awareness, reducing stress, and enhancing overall mental well-being.

In the second study, Hasan *et al*. (2015) conducted a psychoeducational intervention. This intervention involved providing a booklet every two weeks for 12 weeks to people with schizophrenia and their caregivers. The content of the booklet included general information about schizophrenia, symptoms, medication management, problem-solving strategies, and communication skills for people with schizophrenia and their caregivers. The primary objectives of this psychoeducational intervention were to reduce relapse rates, improve the quality of life of people with schizophrenia, and alleviate the burden on caregivers. In addition, it aimed to provide knowledge about schizophrenia disease, medication management, and communication skills for both patients and caregivers.

In the third study, conducted by Ngoc *et al*. (2016), the Family Schizophrenia Psychoeducation Program (FSPP) was implemented. This psychoeducation program was designed for individual patients and their families in Vietnam to reduce stigma, enhance medication adherence, and improve the overall quality of life. The program delivered comprehensive information to families about schizophrenia, instilled realistic expectations regarding the capabilities of people with schizophrenia, and imparted skills to support family members in achieving as normal a life as possible. Additionally, it targeted the reduction of stigma associated with schizophrenia.

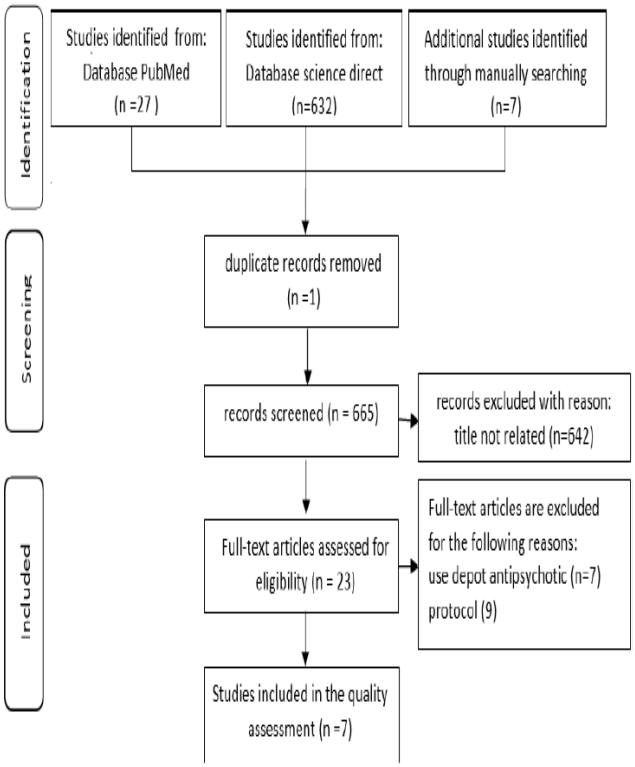

Figure 1. PRISMA screening diagram of retrieved studies

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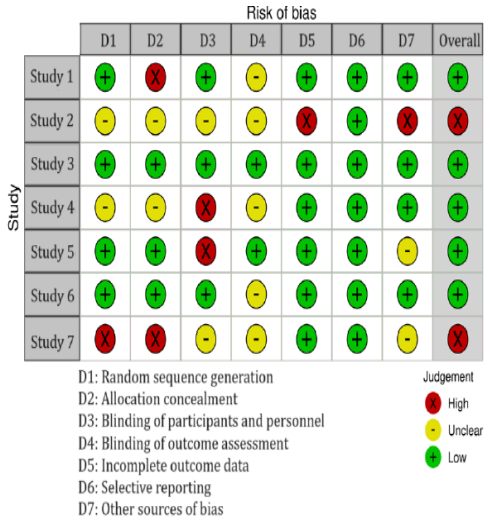

Figure 2. Quality assessment of studies

Table I. Summary characteristics of included studies

Study no.	Study author(s) and year published	Country	Sample (N)	Study design	Inclusion criteria	Setting
1	Shimada *et al.*, 2018	Japan	129	RCT	Patients with a diagnosis of schizophrenia or schizoaffective disorder 20-65 years	Inpatients in psychiatric hospitals
2	Bäuml *et al.*, 2016	German	41	RCT	Patients with a schizophrenic or schizoaffective psychosis; an indication of antipsychotic relapse prevention for a period of at least 12 months; age between 18-65 years	Outpatients in study centers
3	Mishra *et al.*, 2017	India	23	RCT	aged ≥18 years, treated for schizophrenia, and literate	Outpatient and has been under treatment for at least six months in the Psychiatry Department
4	Li *et al.*, 2018b	China	327	RCT	Patients with a diagnosis of schizophrenia, aged between 18 and 50 years Years; finished primary school education; took antipsychotic medications with clinical stability; lived in the local community during the study	Participants in the community who have been registered in the system of database for the management of severe mental disorders
5	Hasan *et al.*, 2015	Jordan	121	RCT	Adult patients aged 18 years; diagnosed with schizophrenia or schizoaffective disorder; able to read and write English or Arabic, and willing and able to participate in research.	Outpatient mental health clinics
6	Chien & Thompson, 2014	China	107	RCT	Patients with a diagnosis of schizophrenia according to the DSM-IV criteria; 10 (b) had a history of <5 years of illness at recruitment; (c) were 18 years or older, and (d) were able to understand Chinese/Mandarin	Outpatient clinics
7	Ngoc *et al.*, 2016	Vietnam	59	RCT	Patients with a diagnosis of schizophrenia with no more than three prior psychiatric hospitalizations including the current one, less than three years for their schizophrenia; age between 18 and 30 years; and family living within 50 kilometers of the hospital	Study participants were recruited from the Danang Psychiatric Hospital, the primary mental health facility in central Viet Nam and the third-largest psychiatric hospital in the country,

In the fourth study conducted by Bauml *et al*. (2016), a psychoeducation program was administered to PwS and their families. This program incorporated modules and informational booklets containing details about the disease and its treatment, facilitating the patient learning process. The program encompassed an initial introduction to the disease and its treatment, guidance on managing symptoms and coping with stress, and providing communication skills and problem-solving strategies.

In the fifth study conducted by Mishra *et al*. (2017), the intervention titled 'Pharmacist-led collaborative patient education' was implemented. This intervention involved pharmacists delivering specially designed patient information leaflets (PILs) to educate patients. In the sixth study, conducted by Li *et al*. (2018), a community-based comprehensive intervention was administered. This comprehensive intervention package comprised four distinct components, namely Self-Awareness and Self-Disclosure (SASD), psychoeducation, Social Skills Training (SST), and Cognitive Behavioral Therapy (CBT).

The seventh study, carried out by Shimada *et al*. (2018), focused on an Individualized Occupational Therapy (IOT) program. IOT is a psychosocial

treatment program personalized to meet the unique needs of individual patients with acute schizophrenia. This program includes elements such as motivational interviews, self-monitoring, individual visits, handicraft skills, psychoeducation, and discharge planning. This program aims to encourage active engagement in treatment, enhance cognitive and social functioning among patients, improve medication adherence, and boost intrinsic motivation.

Personnel who delivered

The interventions were administered by trained therapists who had undergone specialized training in delivering psychoeducational interventions (Ba uml *et al.*, 2016; Chien & Thompson, 2014). In the study conducted by Shimada *et al.* (2018), licensed occupational therapists were actively involved in the intervention process. Some studies featured a multidisciplinary team of professionals, comprising an experienced psychiatrist, psychotherapist, and social worker. Conversely, certain studies exclusively engaged psychiatrists (Ngoc *et al*., 2016), while one study enlisted pharmacists in delivering interventions to participants (Mishra *et al*., 2017). In addition to healthcare professionals, some studies involved researchers themselves as personnel directly providing interventions to participants (Hasan *et al*., 2015).

Target of interventions

Several interventions in these studies were specifically targeted at either inpatient or outpatient settings. Furthermore, some programs were designed to benefit not only patients but also their families or caregivers.

Two studies focused on outpatients, specifically individuals with schizophrenia receiving outpatient services at three clinics in Singapore (Chien & Thompson, 2014) and those undergoing treatment for a minimum of six months at the Department of Psychiatry, JSS Medical College & Hospital, Mysore, India (Mishra *et al*., 2017). Another study extended its intervention to people with schizophrenia residing in the community of Guangzhou, China (Li *et al*., 2018), while one study exclusively targeted patients with hospital admissions (Shimada *et al*., 2018). Some studies encompassed patients in both clinic and hospital settings, delivering interventions to both patients and their families, relatives, or caregivers (Ba uml *et al*., 2016; Hasan *et al*., 2015; Ngoc *et al*., 2016).

Psychoeducational interventions can also be extended to the families or caregivers of individuals with schizophrenia, providing significant benefits to the families by enhancing their understanding of antipsychotic medications. This, in turn, enables them to effectively supervise and support their relatives who are undergoing treatment for schizophrenia. Additionally, family members receive information about schizophrenia, learning how to accept, treat, and offer support to their loved ones as they strive to recover and reintegrate into daily life (Ba uml *et al*., 2016; Hasan *et al*., 2015; Mishra *et al*., 2017; Ngoc *et al*., 2016). According to a systematic review, psychoeducation consistently contributes to increased knowledge and coping abilities among family members. However, it has shown less effectiveness in alleviating family members' psychological distress, burden, or emotional expression. The review also recommends that psychoeducation should be provided to family members as early as possible after they come into contact with health services (Sin & Norman, 2013).

Duration and Number of Sessions

In one study (Mishra *et al*., 2017), the duration and number of sessions were not explicitly mentioned. However, the other studies employed varying frequencies and durations for their interventions. These included: 1-2 sessions per week lasting 45-60 minutes each (Shimada *et al*., 2018); four weekly sessions of 60 minutes each, followed by four additional monthly sessions for patients, and 8 weekly sessions lasting 90 minutes each for relatives (Ba uml *et al*., 2016); three sessions of approximately 1.5 hours each over a week and a half (Ngoc *et al*., 2016); 12 sessions held fortnightly for 2 hours each (Chien & Thompson, 2014); and sessions conducted every fortnight for 12 weeks (Hasan *et al*., 2015b). Additionally, the intervention in another study comprised 24 modules completed in eight phases, with each phase involving three modules administered over 120 minutes (Li *et al*., 2018).

Effect of intervention on medication adherence or compliance

Three of the five conducted studies demonstrated a statistically significant improvement in medication adherence compared to the control group. However, the findings outlined in this study also underscore the lack of consistency in the impact of educational interventions on medication adherence outcomes among people living with schizophrenia. Four of the seven studies included in this review assessed patient medication adherence. They employed various rating scales to evaluate adherence, including the Morisky Medication Adherence Scale (MMAS-8), Medication Adherence Rating Scale (MARS), the Dunja Medication Compliance Inventory assessment, and

medication adherence, as rated by a senior psychiatrist on a scale from one to three (Li *et al*., 2018).

The medication compliance inventory is based on an assessment similar to Dunja *et al*. (2007) but adapted for Vietnamese patients. The rating scale comprises eight items, each assessed on a frequency scale ranging from 0 to 2, with higher scores indicating increased non-compliance. The results revealed significant treatment effects on compliance in patients with schizophrenia (Ngoc *et al*., 2016).

The assessment of adherence was conducted using the Morisky Medication Adherence Scale-8 (MMAS-8) instrument in the study by Shimada *et al.* (2018). The results yielded significantly different adherence scores between the intervention and control groups ($p < 0.01$). Additionally, in the research by Mishra *et al.* (2017), the Medication Adherence Rating Scale (MARS) instrument demonstrated a statistically significant overall mean improvement in medication adherence (from the first follow-up to the third follow-up) between the intervention group and the control group. In another study, medication adherence was assessed by a senior psychiatrist, who assigned grades as follows: 1 (complete medication adherence), 2 (partial medication adherence), and 3 (very poor medication adherence). Furthermore, the proportion of each group was calculated to evaluate medication adherence among patients with schizophrenia. The results indicated that there was no significant difference in adherence between the intervention group and the control group ($p > 0.05$) (Li *et al*., 2018).

In the study conducted by Bauml *et al*. (2016), compliance was assessed by quantifying the mean quantity of consumed CPZ (Chlorpromazine) units. This data was assessed at two points in time, specifically two years and seven years following the first discharge. Compliance was evaluated by the treating psychiatrists using a 4-point ordinal scale, with ratings ranging from 1 (very good) to 4 (poor). Upon hospital discharge and again at the seven-year mark, both groups exhibited high levels of compliance, which were categorized as 'good' or 'very good.' Notably, no statistically significant difference was observed between the intervention and control groups.

Effect of intervention on cognitive functioning & social functioning

In the study conducted by Shimada *et al.* (2018), the assessment encompassed cognitive and social functions. To evaluate cognitive functioning, the study employed the Brief Assessment of Cognition in Schizophrenia Japanese version (BACS-J) and the Schizophrenia Cognition Rating Scale Japanese version (SCoRS-J). The BACS-J is a comprehensive neuropsychological assessment tool designed to assess various cognitive domains, including verbal memory, working memory, motor speed, fluency, attention, and executive function. On the other hand, the SCoRS-J is a standardized tool consisting of 20 items to evaluate self-reported cognitive impairments and their impact on individuals' daily activities. The study also utilized the Global Assessment of Functioning (GAF) and the Social Functioning Scale Japanese version (SFS-J) to evaluate social functioning outcomes. The GAF assesses an individual's social, occupational, and psychological functioning, while the SFS-J evaluates social functioning across multiple domains, such as social engagement, communication, and independence. The overall assessments revealed a significant improvement in both cognitive and social functions.

The study conducted by Li *et al*. (2018) also involved the measurement of the Global Assessment of Functioning (GAF). The results demonstrated an increase in the total GAF score in the intervention group compared to the control group. In the study conducted by Chien and Thompson (2014), the assessment of psychosocial functioning in patients with schizophrenia was carried out using the Specific Levels of Functioning Scale (SLOF). The SLOF is an instrument employed to evaluate the psychosocial functioning of individuals diagnosed with schizophrenia across three distinct domains: self-maintenance, social functioning, and community living skills. The study's findings indicated that the group receiving the Mindfulness-Based Psychosocial Program (MBPP) intervention demonstrated a statistically significant increase in SLOF scores compared to the group that received the conventional psychoeducational program.

Effect of intervention on symptoms

Three studies have assessed changes in symptoms among individuals diagnosed with schizophrenia using the PANSS scale as their evaluation instrument. The Positive and Negative Syndrome Scale (PANSS) is a validated and widely used clinical assessment instrument. It employs a standardized interview format to assess the severity and presentation of positive and negative symptoms, as well as general psychopathology in individuals diagnosed with schizophrenia, focusing on the preceding week.

In a study carried out by Shimada *et al.* (2018), it was observed that the IOT (Individualized Occupational

Therapy) intervention resulted in a significant improvement in symptoms based on the PANSS scale. The intervention group exhibited a lower mean total score on the PANSS scale, indicating enhancements in the positive, negative, and general psychopathology subscales compared to the control group.

In the study conducted by Li *et al*. (2018), the Chinese version of the PANSS negative scale was employed. Notably, at both the 6-month and 9-month time points, a statistically significant reduction in the PANSS-N total score was evident in the intervention group compared to the control group.

In the study conducted by Hasan *et al*. (2015), similar findings were demonstrated, with a decrease in symptom severity observed during the 3-month follow-up period after the intervention.

Effect of intervention on knowledge

Only one study has assessed the increase in knowledge among patients with schizophrenia following the intervention. Patients with schizophrenia in the intervention group experienced more significant improvement in knowledge scores (4.9 vs -0.5; $p<0.001$) at the post-treatment assessment and (6.5 vs -0.7; $p < 0.001$) during the three-month follow-up period. The enhancement in knowledge about schizophrenia was quantified using the Knowledge About Schizophrenia Questionnaire (KASQ) (Hasan *et al*., 2015).

Effect of intervention on quality of life

The results of the study conducted by Mishra *et al*. (2017) showed an increase in quality of life across all domains, as assessed through the WHOQOL-BREF instrument, in the intervention group. The increase in quality of life in the intervention group was more significant than in the control group during each follow-up assessment, and these differences were statistically significant.

In contrast to the quality of life measurements conducted in other studies, the study by Hasan *et al*. (2015) opted not to assess the quality of life of people with schizophrenia. Instead, they focused on measuring the quality of life of relatives or caregivers responsible for individuals with schizophrenia. The Quality of Life was measured using the Schizophrenic Carers' Quality of Life Scale (S-CQoL), which consists of seven assessment domains. The results of this measurement indicated a significant improvement in the quality of life of primary caregivers.

In the study conducted by Ngoc *et al*. (2016), the quality of life assessment was carried out using the Quality of Life Enjoyment and Satisfaction Questionnaire. The findings of the study indicated a significant treatment effect on the quality of life of the patients in the intervention group.

Effect of intervention on stigma and insight

One of the parameters assessed in these studies is stigma, which was assessed for both patients and their families. A study conducted by Ngoc *et al*. (2016) found that the FSPP intervention significantly reduced stigma in both patients and their families.

In the study conducted by Li *et al*. (2018), the Internalized Stigma of Mental Illness (ISMI) scale, specifically its Chinese version, was employed to assess stigma. The measurement was administered by a questionnaire consisting of 29 items that assessed self-stigma in individuals diagnosed with schizophrenia. The findings indicated that, following a 9-month intervention period, there was no statistically significant decrease in ISMI total scores within the intervention group compared to the control group.

Each study in this review uses a different educational intervention for people with schizophrenia. As a result, the findings across these studies exhibit various effects. Educational interventions designed for individuals with schizophrenia have demonstrated the capacity to enhance the understanding of the condition and its treatment, not only among the affected individuals but also among their families. Additionally, these interventions have shown promise in reducing stigma, enhancing insight into the illness and its treatment, improving cognitive function, mitigating the severity of schizophrenia symptoms, and elevating the quality of life for both patients and their families(Chien & Thompson, 2014; Hasan *et al*., 2015; Li *et al*., 2018; Mishra *et al*., 2017; Ngoc *et al*., 2016).

Psychoeducational interventions can also be extended to the families of individuals with schizophrenia who provide caregiving, and they have demonstrated benefits for these families. These interventions serve to enhance the families' understanding of antipsychotic medications, enabling them to better oversee their relatives undergoing treatment for schizophrenia. Furthermore, these interventions offer essential insights to the patient's family members, guiding them on how to accept, support, and care for individuals with schizophrenia as they work towards recovery and reintegration into everyday life (Ba uml

et al., 2016; Hasan *et al*., 2015; Mishra *et al*., 2017; Ngoc *et al*., 2016). However, according to a systematic review, while psychoeducation consistently proves effective in increasing family members' knowledge and enhancing their coping abilities, it tends to have a limited impact on changing family members' psychological well-being, burden, or emotional expression. This review highlights the importance of providing psychoeducation to family members as early as possible, ideally following their initial contact with health services (Sin & Norman, 2013).

Psychoeducational care is a flexible intervention that a range of mental health professionals can administer to individuals diagnosed with schizophrenia. A study that involved pharmacists in educating and counseling patients with schizophrenia underscored the therapeutic communication skills possessed by pharmacists that can be effectively applied in the realm of psychiatric pharmaceutical services, particularly for individuals with schizophrenia (Mishra *et al*., 2017). In addition, a systematic review emphasized the preference for psychoeducational interventions when addressing individuals with schizophrenia over other forms of psychosocial interventions, such as social skills training and cognitive therapy. This preference is attributed to the adaptability of psychoeducational interventions, which can be implemented in various psychiatric clinical settings, including community, inpatient, and outpatient contexts (Alhadidi *et al*., 2020).

Educational interventions hold significant implications for various stakeholders, including patients, families, healthcare professionals, and pharmacists. These interventions serve to enhance the understanding of schizophrenia's nature, symptoms, and development. They increase patient awareness of their condition and actively engage families in the treatment process, offering support and insights into how to effectively assist the patient. In the future, pharmacists should expand their involvement and collaboration with the healthcare team, which may include physicians, psychologists, and social workers. This collaboration should encompass discussions about patient progress and potential problems related to medication usage and treatment adherence.

Strengths and limitations

Our literature search encompassed two databases and incorporated a manual search for relevant studies. Consequently, it could include most of the relevant studies in the field. Furthermore, we conducted independent reviews of the full-text articles to mitigate selection bias. In assessing the risk of bias, we employed standardized assessment tools, and these assessments were also conducted independently.

Our study is subject to several limitations. Firstly, our inclusion criteria were restricted to studies published in English. As a result, potentially relevant studies in other languages were not included in our review due to language constraints. Secondly, we exclusively considered studies with a randomized controlled trial (RCT) design, thus excluding other study designs, such as quasi-experimental or non-randomized studies. It is crucial to acknowledge that various limitations, including variations in patient characteristics, methodological approaches, and outcome measurement methods, may influence study outcomes.

CONCLUSION

Educational interventions can be administered to patients or their families with the support of healthcare professionals through various methods, as evidenced in each study. However, based on measurements of various outcome variables, the results have displayed inconsistency in terms of improving adherence, quality of life, reducing stigma, and enhancing insight for individuals with schizophrenia or their caregivers. Conversely, the impact on enhancing cognitive and social functioning and knowledge scores has shown positive results. In the future, clinicians can use these results as a valuable reference when tailoring educational interventions to align with patients' specific needs and characteristics within clinical settings.

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