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Original Article

Effectiveness of family didactic-therapeutic package for managing symptoms of Schizophrenia spectrum disorders

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Abstract

This study was performed to evaluate the effectiveness of family didactic-therapeutic package on symptoms management in patients with schizophrenia spectrum disorders (SSDs). This experiential study with a clinical trial, had a pretest-posttest design and was conducted in a quasi-experimental manner. The population included all families/caregivers of patients with SSDs who had a case in Ardabil Welfare Office in 2020, and were diagnosed by a psychiatrist (a patient's family refers to his/her father, mother, spouse, or child volunteered to attend the didactic-therapeutic sessions). The sample consisted of 40 patients' caregivers, selected by the convenience sampling, and randomly divided into the experimental (n = 20) and control (n = 20) group. Descriptive statistical methods were used to describe the data, while MANCOVA was performed to test the hypotheses. Significant differences were observed between the experimental and control groups in terms of symptoms management ($p < 0.001$, $F = 17.17$). Therefore, the suggested family didactic-therapeutic package could be useful for managing symptoms of patients with SSDs ($p < 0.01$).

Keywords

Family-centered
Symptoms management
Schizophrenia

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Introduction

When a family member is exposed to illness, the vital balance of the family system is disturbed in boundaries, plans, expectations, aspirations and hopes (Maj & Sartorius, 2002). 60% of patients discharged from psychiatric institutions return to their nuclear families. The family in which a mentally ill patient lives often acts as a hidden health care system in parallel to the mental health system (Noghani, Karimi Rad, & Seyed Fatemi, 2018). Mental illness is a serious medical condition that affects thoughts, emotions, mood and behavior (Abolfotouh, Almutari, Almutairi. 2019). When associated with recurrent episodes, mental illness becomes chronic and may severely impair patients' performance (Sanaei, 2001). Among the most debilitating chronic mental illnesses are schizophrenia spectrum disorders, which include schizophrenia, schizoaffective disorder, and other psychotic disorders (DSM5, translated by Seyyed Mohammadi, 2015). Schizophrenia, as a serious psychiatric disorder, is a heterogeneous syndrome characterized by a variety of symptoms and periods (Borda, 2015) which threatens emotional, cognitive and social domains (Halder & Kumar Mahato, 2015). This disorder may interfere with the patient's perception, thinking, speech, movement, and almost all daily functions. A diagnosis of schizophrenia requires two or more positive, negative, or disturbing symptoms for at least a month, while at least one of these symptoms should include delirium, hallucinations, or disturbed speech. Positive symptoms generally refer to distorted reality, while negative symptoms refer to defects in normal behavior, including speech, emotion (e.g., slow emotion or lack of emotional response), and motivation. Disturbing symptoms also include nonsense speech, strange behavior, and inappropriate emotion (Barlow & Durand, 2015). The spectrum of schizophrenia and psychotic disorders are other diseases associated with significant prevalence and mortality. These disorders, which often begin in adolescence, may follow a normal

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trajectory if receive assorted interventions (Abedi, 2017). The average lifetime prevalence of schizophrenia, as a disorder with relatively low prevalence, is almost 1% (Charlson, 2018). However, due to urban inequality and immigration patterns, there are many geographical differences in its prevalence (Caan, 2015). The prevalence of schizophrenia in Iran is reported 0.89% (n = 450,000), close to worldwide statistics (Sheikhi et al., 2017). Acute schizophrenia is basically recognized by delusions, hallucinations, and thought disturbances - called positive symptoms. After passing the acute phase, some patients recover while others enter the chronic phase of the disease. Characteristics of chronic schizophrenia include a lack of emotion, motivation, and isolation - called negative symptoms. After stabilization of the chronic form, just a few patients may fully recover (Abolghasemi & Taheri Fard, 2019).

Chronic diseases usually go through three periods: progression, stability, and relapse. In the relapse period, associated with an increase in the need for care, the physical, psychological, and financial pressures imposed on the family leads to a decline in quality of life (Noghani, 2018). The concept of family function directly influences members' needs, goals, expectations, life satisfaction, and emotional attention (Rostami, 2019). Principles of a family-centered approach emphasize the involvement of the family in decision-making, cooperation and mutual communication (family and therapist), mutual respect, acceptance of family choices, supporting the family, sharing information with the family, providing specific and flexible psychological services, and empowering families (Dunst, 2002). The intervention in a family-centered approach is delivered in the context of the home, and the parents are educated on how to intervene with the patient's acts. Families are involved in setting functional goals by participating in the therapeutic process. On the other hand, valuable information provided by the therapist helps the family determine the therapy direction and gives them the opportunity to monitor the patient's performance in the functional environment (Law, 1998; Lammi, 2003). A family-centered approach engages the family without blaming the parents or patient, or labeling them as a dysfunctional family system (Katzman et al., 2013). Evidence suggests that a family-centered approach focuses on the patient, family, and health care providers in achieving therapeutic achievements (Dunst et al., 2002; Law et al., 2005). Khachian et al. (2017) reported that the family-centered approach had a positive effect on the self-care of patients with chronic heart failure. Recent Western studies validate the effect of performing interventions in the family context on reduction of relapse in schizophrenia and other mental disorders, as well as improvement of adherences to drug therapy (Chein, 2018). Chein, Chan, and Thompson (2011) observed that a family-centered approach was both useful for reducing the caregivers' pressure, and symptoms recurrence. Bernhard et al. (2016) also noted that psychoeducation improved the knowledge of families/relatives of bipolar patients about this disease. Among chronic mental illnesses, schizophrenia is a long-term illness, and its treatment generally involves a combination of pharmacological and psychosocial interventions (interpersonal or awareness-raising techniques, which aim to help people understand and become familiar with its function) (Ontario, 2018). In fact, schizophrenia is a heterogeneous psychological disorder that is not significantly improved by current treatments (Winship, 2019), while currently, the goal of treating schizophrenia is expanded to include recovery, instead of just managing its psychological symptoms. Recovery is a multidimensional concept consisting of clinical, psychological, and social dimensions that broadly includes occupational therapy, education, social activities, and the achievement of meaningful interpersonal relationships and independent living (Javed et al., 2018). Dixon, Adam, and DixonL, (2000) concluded that family psychoeducation is an evidence-based method consistently proven to be useful for mitigating the relapse rate of schizophrenia. Jewell, Dowining, and Mcfarlane (2012) also reported the positive effect of family psychoeducation on schizophrenic patients' and caregivers' mental and social health and functioning. Therefore, the present study aims to design an educational package to manage symptoms of patients with schizophrenia spectrum disorders.

Method

Participants

This experimental study with a clinical trial, had a pretest-posttest design and was conducted in a quasi-experimental manner. The population included all families/caregivers of patients with SSDs who had a case in Ardabil Welfare Office in 2020 and were diagnosed by a psychiatrist. A patient's family refers to his/her father, mother, spouse, or child with a close relationship volunteered to attend the didactic-therapeutic sessions. The sample consisted of 40 patients' caregivers, selected by convenience sampling, and randomly divided into the experimental (n = 20) and control (n = 20) group. The experimental group participated in 10 sessions of the family didactic-therapeutic package. In experimental studies, the sample should include at least 15 participants (Delavar, 2008). 20 participants were included in the current study in order to prevent the sample drop, as well as, increase its external credit.

Instrument

Positive and Negative Symptoms Scale (PANSS):

The positive and Negative Symptoms Scale (PANSs) was developed in 1986 by Kay, Fiszbein, and Opler to measure the severity of positive and negative symptoms in schizophrenic patients. This is a medical scale widely used in the evaluation of antipsychotic therapies. The name of this scale refers to two categories of positive and negative symptoms of schizophrenia. PANSS has

30 questions answered on a 7-Likert scale (absent, minimal, mild, moderate, moderate-severe, severe extreme).

In a study conducted by PANSS developers, its Cronbach's alpha was reported 83%, and the correlation between PANSS and The Scale for the Assessment of Negative Symptoms (SANS; Andreasen, 1983) was 58% (Kay, Fiszbein, and Opler, 1986). In two other studies in Iran, Cronbach's alpha of PANSS was 80% (Abolghasemi, 2007) and 77%, and its validity was reported acceptable through factor analysis (Ghamari Givi et al., 2010).

Results

Some examples of skills thought to the families of schizophrenic patients in the family didactic-therapeutic package include communication skills, social skills, problem solving skills, differential behavioral reinforcement, dependency management, and emotion regulation.

Table 1. Description of the family didactic-therapeutic package

Sessions	Family didactic-therapeutic package	Contents
First	Awareness about schizophrenia, its etiology and treatment	Explaining goals of the training sessions Recognizing the criteria of mental health and the family role in the development and maintenance of its members' mental health Making awareness of schizophrenia, its etiology, and treatment, as well as general information about pharmacotherapies, medications' side effects, and medications' importance in the disease clinical process.
Second	Communication and social skills (first session)	Teaching communication skills to strengthen the verbal and auditory skills of caregivers in interaction with patients Teaching social skills to improve the social performance of caregivers/patients
Third	Communication and social skills (second session)	Continuing the contents of the previous session
Fourth	Problem solving skills	Teaching problem solving skills for improving use of adaptive solutions
Fifth	Dependency management interventions and differential behavior reinforcement	Teaching dependency management interventions to increase adherence to the treatment regimen, and improve the chance of attending counseling sessions Reinforcing differential behavior to reduce problematic behaviors Rewarding successful behaviors as a homework to shape caregivers' behaviors
Sixth	Constructive coping strategies	Creating a support system: Learning new ways for constructive use of support systems (family, relatives, friends) to deal with stressful life events Internal self-relaxation: Muscle relaxation training Meichenbaum's self-regulated therapy Internal positive self-talk about problems: Preparing to face problems Facing problems and learning new lessons
Seventh	Pharmacotherapies	Knowledge about pharmacotherapies: The need to follow medication instructions Medications' side effects The importance of medications in preventing the disease's relapse
Eighth	Modeling techniques and Behavioral practice	creating new behavior or abandoning old problematic behaviors based on observing and imitating the healthy behaviors of others
Ninth	Emotion regulation (first session)	Identifying emotions Recognizing emotions in the body Learning about how to experience and express emotions
Tenth	Emotion regulation (second session)	Continuing emotion regulation learning
Final	Reviewing learned contents	Talking about relapse Reviewing materials and assignments Answering questions

Table 2. Mean and standard deviation of disease symptoms in the experimental and control groups

Variable	Group	Test	Patient's group		Family's group		T test	Patient's group
			Statistics				T	P
			M	SD	M	SD		
Negative symptoms	Experimental	pretest	20.71	24.2	50.12	20.2	0.883	0.286
		posttest	16.45	10.2	50.17	99.1	1.509	0.122
	Control	pretest	06.20	15.2	80.20	17.2	0.098	0.934
		posttest	19.20	13.2	86.20	40.2	0.102	0.923
Positive symptoms	Experimental	pretest	88.19	03.2	53.20	16.2	0.117	0.930
		posttest	14.15	18.2	03.15	10.2	0.035	0.957
	Control	pretest	72.19	07.2	90.19	11.2	0.080	0.931
		posttest	68.19	11.2	87.19	07.2	0.097	0.910
Mental disturbance	Experimental	pretest	24.15	85.1	10.15	83.1	0.038	0.952
		posttest	10.11	61.1	39.10	50.1	1.007	0.227
	Control	pretest	21.15	88.1	94.10	74.1	0.944	0.297
		posttest	80.14	74.1	77.15	80.1	1.104	0.203
Stimulation	Experimental	pretest	45.14	84.1	09.15	94.1	1.067	0.219
		posttest	20.10	67.1	75.11	91.1	1.372	0.138
	Control	pretest	83.14	90.1	60.15	88.1	1.120	0.219
		posttest	75.14	85.1	42.15	69.1	1.131	0.213
Anxiety and depression	Experimental	pretest	76.19	13.2	20.19	08.2	0.950	0.300
		posttest	63.14	09.2	80.15	09.2	1.139	0.210
	Control	pretest	51.19	16.2	05.19	13.2	0.982	0.295
		posttest	76.19	20.2	11.19	17.2	0.994	0.287
Total symptoms	Experimental	pretest	04.90	11.10	42.91	21.10	1.680	0.121
		posttest	52.67	65.9	47.70	59.9	2.110	0.052
	Control	pretest	33.89	16.10	29.91	03.9	1.914	0.057
		posttest	18.89	03.10	03.91	13.10	1.816	0.063

Table 2 presents the mean and standard deviation of the SSDs symptoms and its components in the experimental and control groups (patients and family) separately for the pretest and posttest.

Table 3. Results of covariance analysis of the symptoms management scores in the posttest

Source	Components	Sum of squares	fd	Mean square	F	p	Eta squared	OP
Model	SSDs symptoms	1909.593	1	1909.593	17.169	0.000	0.181	.851٠
Group	SSDs Symptoms	1260.885	1	1260.885	17.174	0.001	0.188	0.850

There was a significant difference between the experimental and control groups in terms of symptoms management ($p < 0.001$, $F = 17.17$). Eta squared shows that the difference between the two groups in the posttest – after controlling the pretest scores - is significant for symptoms management (0.188). Therefore, the research hypothesis is validated; in other words, the family didactic-therapeutic package is effective for improving symptoms management in patients with SSDs ($p < 0.01$).

SSDs Symptoms

A) Checking the Scores' Normal Distribution

To choose the appropriate test for analyzing the studied hypotheses, the normal distribution of scores should be warranted. This presumption is checked by goodness-of-fit tests, including Shapiro-Wilk test.

Table 4. The results of Shapiro-Wilk test for normal distribution of scores

Variable	Index	pretest	posttest
Negative symptoms	Shapiro-Wilk value	0.650	0.991
	Sig.	0.580	0.247
Positive symptoms	Shapiro-Wilk value	0.934	0.900
	Sig.	0.361	0.385
Mental disturbance	Shapiro-Wilk value	1.210	1.173
	Sig.	0.108	0.117
Stimulation	Shapiro-Wilk value	0.841	0.920
	Sig.	0.403	0.376
Anxiety and depression	Shapiro-Wilk value	1.154	0.754
	Sig.	0.130	0.511

Table 4 manifests the results of the Kolmogorov-Smirnov test, which measures the normal distribution of the studied independent and dependent variables. The most important output of this table is its last row, which confirms the normality of data distribution in the studied variables.

B) Checking the Regression Homogeneity

Table 5. Testing the homogeneity of regression slope

Source	Variable	Df	F	P
Group * pretest	Negative symptoms	1	0.890	0.410
Group * pretest	Positive symptoms	1	1.025	0.323
Group * pretest	Mental disturbance	1	1.131	0.298
Group * pretest	Stimulation	1	1.348	0.626
Group * pretest	Anxiety and depression	1	0.912	0.379

The insignificance of F ($p > 0.05$) validates the equality of the regression slope of pretest and posttest in both groups. Therefore, the homogeneity of regression slope is established, and the analysis could be continued.

A) Checking the Homogeneity of Variances

Table 6. Results of Levene's test to check the homogeneity of variances

Variable	F	Fd1	Fd2	Sig.
Negative symptoms	0.962	1	34	0.375
Positive symptoms	1.157	1	34	0.234
Mental disturbance	1.286	1	34	0.211
Stimulation	1.604	1	34	0.102
Anxiety and depression	1.330	1	34	0.174

The homogeneity of variances is validated at $p = 0.05$ in both groups. Since the presumptions of the covariance analysis are established, this analysis can be applied to test the research hypotheses.

D) M-Box's Test for Checking Homogeneity of Covariance

Table 7. M-Box's test to check the homogeneity of variance-covariance matrices

Box index	F	Fd1	Fd2	Sig
27.640	0.740	6	7387.350	0.413

Homogeneity of variance-covariance matrices is confirmed since the significance level (0.413) is greater than 0.05.

Table 8. . Results of credit indexes for MANCOVA of the SSDs symptoms

Effect	Credit index	Value	F	Fd for assumption	Fd for error	Sig.	Effect size
Group	Pillai's trace	0.311	12.037	5.000	34.000	0.000	0.311
	wilk's lambda criterion	0.670	12.037	5.000	34.000	0.000	0.311
	Hotelling's trace	0.443	12.037	5.000	34.000	0.000	0.311
	Roy's largest root	0.443	12.037	5.000	34.000	0.000	0.311

The results of the credit scores of MANCOVA, including the Pillai's trace, Wilk's lambda criterion, Hotelling's trace, and Roy's largest root for the SSDs symptoms are reported in Table 8. The group's effect on the composition of the studied components is significant ($p < 0.001$, $F = 12.04$, Wilk's lambda = 0.687). Accordingly, the Eta squared (square of the correlation coefficient between dependent variables and group membership) indicates a significant difference between the two groups in terms of the components of the dependent variable. The value of this difference, according to Wilk's lambda criterion, is 0.311 for the components with group composition. In other words, 31% of the variance of the difference between the two groups in the posttest of disease symptoms – after controlling the pretest scores - is caused by the experimental conditions.

Table 9. Results of MANCOVA for the SSDs symptoms

Source	Components	Sum of squares	fd	Mean squared	F	Sig.	Eta	OP
Model	Negative symptoms	385.2034	1	385.2034	031.22	0.000	238.0	970.0
	Positive symptoms	825.1527	1	825.1527	990.16	0.000	167.0	936.0
	Mental disturbance	206.1860	1	206.1860	574.20	0.000	223.0	940.0
	Stimulation	412.1095	1	412.1095	438.10	0.000	119.0	705.0
	Anxiety and depression	895.1741	1	895.1741	076.18	0.000	211.0	932.0

Group	Negative symptoms	338.2109	1	447.2018	889.28	0.000	247.0	943.0
	Positive symptoms	145.1882	1	422.1912	716.24	0.000	237.0	930.0
	Mental disturbance	120.1297	1	083.3376	631.16	0.000	178.0	864.0
	Stimulation	451.1057	1	083.3376	341.13	0.000	139.0	820.0
	Anxiety and depression	740.1716	1	422.1912	900.22	0.000	221.0	925.0

Table 9 displays the results of MANCOVA to evaluate the groups' differences in terms of the scores of the SSDs symptoms (negative symptoms, positive symptoms, mental disturbance, stimulation, and anxiety and depression) in the posttest – after controlling the pretest scores. Negative symptoms ($p < 0.001$, $F = 28.89$), positive symptoms ($p < 0.001$, $F = 24.71$), mental disturbance ($p < 0.001$, $F = 16.34$), stimulation ($p < 0.001$, $F = 13.31$), and anxiety and depression ($p < 0.001$, $F = 22.9$) are significantly different in the two groups. According to Eta squared, this difference - after controlling the pretest scores - is significant, and it is 0.24 for negative symptoms, 0.237 for positive symptoms, 0.178 for mental disturbance, 0.139 for stimulation, and 0.221 for anxiety and depression. Thus, the research hypothesis is confirmed; in other words, the family didactic-therapeutic package is effective in improving the symptoms of patients with SSDs ($p < 0.01$).

Discussion

The World Health Organization has identified the family as the primary social factor in increasing the health and quality of life of members (Glozman, 2004). The study of psychological dimensions in the context of family members' relationships has been increasingly attended by psychologists and sociologists (Young et al., 2013; Berge et al., 2013; Forozandeh, 2013). This phenomenon can be attributed to the fundamental importance of family functioning in providing the necessary conditions for growth and achieving physical, psychological, and social balance. In addition, family interactions are associated with mental health (Turner, 2013), psychiatric disorders (Stiehausen, Aster, & Goebbels, 1998), and adaptive problems of its members (McDonald, Jouriles, Tart, & Minze, 2009). When a family member is exposed to illness, the vital balance of the family system is disturbed in boundaries, plans, expectations, aspirations, and hopes (Maj and Sartorius, 2002). 60% of patients discharged from psychiatric institutions return to their nuclear families. The family in which a mentally ill patient lives often acts as a hidden health care system in parallel to the mental health system (Noghani et al., 2018). Therefore, the present study was conducted to develop a didactic-therapeutic package for families of patients with SSDs. The didactic stages were designed based on findings of similar studies (including articles and books) and recognizing the special needs of these patients' caregivers. Finally, the suggested family didactic-therapeutic package was performed in 10 weekly 90-minutes sessions with the aim of improving symptoms management and social functions of patients with SSDs.

The suggested family didactic-therapeutic package was found to be effective for managing the SSDs symptoms and its components (negative symptoms, positive symptoms, mental disturbance, stimulation, anxiety, and depression). These findings are consistent with the results of Jewell et al. (2012), Ontario (2018), Javed et al. (2018), Kurtz et al. (2018), Winthrab (2019), Winship (2019) and Ahmadi et al. (2020). Jewell et al. (2012) reported a reduction in the relapse rate of SSDs (effective symptoms management) after educating the patients' families. Ahmadi et al. (2016) observed that family psychoeducation sessions were effective in reducing the relapse of the SSDs symptoms, negative symptoms, and positive symptoms in patients with SSDs. Seemingly, by educating families about the schizophrenic spectrum disorders, this family didactic-therapeutic package improved the confidence of caregivers, and provided them with new ways of dealing with thoughts, behaviors and symptoms of patients' with SSDs. The participants learned to behave rationally, and to manage their own and patients' behaviors when symptoms (e.g., stimulation anxiety and depression, and negative symptoms) increased (e.g., in Sixth Session, interventions related to dependency management and behavioral differentiation). In other words, this didactic package improves families' perception of mental disorders by providing information about the nature of mental disorders including etiology, therapeutic approaches, consequences, prognosis, progression and relapse. It also, it facilitates families' participation in the care and therapeutic services, as well as accepting the conditions of patients with SSDs. Given the important role of the family in the treatment, care, and rehabilitation of patients with psychiatric disorders (Camacho-Gomez and Castello, 2020), family educating programs emphasize raising awareness of patient's families/caregivers about the SSDs symptoms, their risk factors, and strategies to combat relapse (NikSalehi et al., 2019). Thus, these trainings could bring about outstanding outcomes. In fact, psychoeducation for families both reduces the relapse possibility in patients with SSDs, and mitigates negative caregivers' experiences (Sean et al., 2017). This effect was also observed in the present study.

Furthermore, family-centered education about psychotic disorders reduces caregivers' stress (Chien et al., 2011). Khachian et al. (2017) pointed to the positive effect of family-centered psychoeducation on patients' self-care. Bernhard et al. (2016) also observed that psychoeducation for families of psychotic patients improved symptoms management by prompting illness-related knowledge. These findings illustrate the role of the family in blunting the clinical process of SSDs by understanding their symptoms and mastering the caring skills. Thus, promoting knowledge about the warning

signs of the relapse, and informing the treatment team, is useful in preventing subsequent relapses of periodic mental disorders even if the relapse occurs (Lotfi Kashani, 2010). Seemingly, DixonL et al. (2000) and Jewell et al. (2012) reported that educating families of schizophrenic patients improves families' mental/social health and, consequently, reduces the relapse rate of schizophrenia through proper management of its symptoms.

Finally, the scholars attribute one reason for the effectiveness of the suggested family didactic-therapeutic package to its success in changing the family's attitude toward mental illness, accepting the patient's current status, and hoping for improvement of his/her ability in social interactions and better symptoms management.

Conclusion

This study investigated the effectiveness of a family didactic-therapeutic package on symptoms management in patients with schizophrenia spectrum disorders. This package, designed based on findings of similar studies (including articles and books) and special needs of caregivers of patients with SSDs, aimed to find effective ways of identifying and managing symptoms of SSDs. It was performed weekly in 10 sessions of 90 minutes. The usefulness of the suggested package for managing the SSDs symptoms (and its components including negative symptoms, positive symptoms, mental disturbance, stimulation, anxiety, and depression) was validated. On the other hand, offering education in the home context was successful both in reducing families' expenses, and improving their life quality through enhancing the patients' performance. In conclusion, psychologists and psychotherapists are suggested to use this new family didactic-therapeutic package to mitigate and manage symptoms in patients with SSDs.

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