



## Research Paper: Effectiveness of Illness Management Program on Positive/Negative Symptoms, and Insight of Schizophrenic Patients



Fatemeh Rangrazian<sup>1</sup> , Azar Kiamarsi<sup>1\*</sup> , Reza Kazemi<sup>1</sup>

1. Department of Psychology, Ardabil Branch, Islamic Azad University, Ardabil, Iran

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**Citation** Rangrazian F, Kiamarsi A, Kazemi R. Effectiveness of Illness Management Program on Positive/Negative Symptoms, and Insight of Schizophrenic Patients. *Caspian J Neurol Sci.* 2021; 7(1):22-29. <https://doi.org/10.32598/CJNS.7.24.3>

**Running Title** Effectiveness of Illness Management on Schizophrenia

**doi** <https://doi.org/10.32598/CJNS.7.24.3>



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### ABSTRACT

**Background:** Schizophrenia is a chronic disorder with positive and negative symptoms, and insight is involved in its prognosis. Illness management is considered a skill and strategy for patients with some mental disorders.

**Objectives:** We aimed to investigate the illness management effectiveness on the positive and negative symptoms and insight in schizophrenic patients.

**Materials & Methods:** This study was a quasi-experimental, controlled study with a pre-test-post-test design. The study population included all schizophrenic patients admitted to the Shafa Hospital, Guilan Province in the North of Iran, from March 2019 to April 2020. The sample included 30 schizophrenic patients selected using the convenience sampling method and was divided into 2 groups (experimental and control groups), with 15 patients in each group. For data collection, the scale for the assessment of negative symptoms, the scale for the assessment of positive symptoms, and the scale to assess unawareness of mental disorders were used before and after the intervention. Illness management was performed on the experimental group as group therapy. The control group did not undergo any concomitant intervention. Data analysis was performed in SPSS software version 24 using the univariate analysis of variance in normal distribution and the non-parametric Kruskal-Wallis test for the variable which didn't follow the normal distribution.

**Results:** Results indicated that illness management could effectively alleviate the positive and negative symptoms and improve the insight in schizophrenic patients ( $P < 0.01$ ).

**Conclusion:** Illness management was influential on the positive and negative symptoms of schizophrenia. Thus, this therapeutic modality can be used as an effective technique in hospitalized schizophrenic patients.

**Keywords:** Disease management; Affective symptoms; Awareness; Schizophrenia

#### Article info:

**Received:** 23 Nov 2020

**First Revision:** 26 Dec 2020

**Accepted:** 26 Dec 2020

**Published:** 01 Jan 2021

#### \* Corresponding Author:

**Azar Kiamarsi**

**Address:** Department of Psychology, Ardabil Branch, Islamic Azad University, Ardabil, Iran

**Tel:**+98 (911) 1308893; **Fax:**+98 (45) 33727799

**E-mail:** [a.kiamarsi52@gmail.com](mailto:a.kiamarsi52@gmail.com)

## Highlights

- Illness management could effectively alleviate the positive and negative symptoms in schizophrenic patients.

## Introduction

**S**chizophrenia is a complex neuropsychological disorder affecting approximately 1% of the global population. The disease is characterized by hallucinations, delusions, disorganized behavior, and progressive cognitive impairments [1]. The outbreak of schizophrenia is similar among women and men, with women having a better prognosis and usually have a better social functioning before the disease onset [2]. The negative symptoms include affective flattening or blunting, poverty of speech or content of speech, thinking blocking or dysfunction, inappropriate grooming and hygiene, lack of motivation, lack of pleasure, social inattentiveness, cognitive impairments, and lack of attention. The positive symptoms include impaired perception, thinking, and behavior such as loosening of associations, hallucinations, bizarre behavior, and tangentially. Patients with positive symptoms usually have a better prognosis than patients with negative symptoms [3].

According to various studies, negative symptoms have a more severe effect on reducing the quality of life and functional disability in these patients than the positive symptoms [4]. Lack of insight into the disease is one of the most common symptoms of schizophrenia. The insight into the disease ranges from the initial awareness of the condition to a deep and reasonable understanding and emotional touch of the disease. Lack of insight is more common in schizophrenia than in other disorders. Also, it is highly involved in the disease prognosis and can lead to disease recurrence and an increased number of hospital admissions [5]. Impaired insight is associated with impairments in cognitive functions, self-awareness, empathy, and self-control, and poor cooperation for treatment, and subsequently forced hospitalization. Decreased insight is correlated with the psychopathology of the disease. The lack of insight leads to a lack of cooperation in treatment and subsequently persistence of the patients' problems and the family/friends [6]. There is significant evidence that schizophrenic patients not only lack insight into their psychotic symptoms but also have neurocognitive disorders. The patients likely show low metacognitive awareness of the cognitive functions involved in the delusional symptoms [7]. Akbari and Saeidi found that psychosocial rehabilitation had

a significant effect on reducing the negative symptoms and improving the social skills in patients with chronic schizophrenia [8]. Esmkhani et al. showed that the interventional programs aimed at improving treatment adherence could enhance the quality of life in schizophrenic patients [9]. Haji Aghaei et al. showed that psychological education of the family was effective in decreasing the symptom severity and recurrence of schizophrenia [10].

Illness management is a program with a combination of psychosocial interventions that helps patients have more control over their problems and also helps in disease management and supports recovery [11]. In general, self-management is a new type of education in caregiving for patients with chronic diseases. In this therapeutic method, the process of problem-solving is done by the patient, and the necessary coping skills are taught to the patient by the treatment team. Therefore, patients learn to control the complications by relying on their skills and self-confidence using problem-solving skills. Finally, the main goal in the self-management educational program is managing the illness by the patients themselves [12]. A study by Burlingame et al. showed that group therapy was effective in treating schizophrenic patients [13].

It seems that teaching illness management to schizophrenic patients needs further attention. Also, limited education has been provided to these patients in Iran. Few studies have been conducted on the Iranian society focusing on the illness management education among these patients, and there is a need for such research in this field. Therefore, the present study aimed to investigate the effectiveness of the illness management program on the positive symptoms, negative symptoms, and insight of schizophrenic patients.

## Materials and Methods

This present study was a quasi-experimental study with a pre-test, post-test design and a control group. The study population consisted of all the schizophrenic patients (n=796) admitted to the Shafa Hospital, Rasht City, from March 2019 to April 2020. A total of 30 patients were selected using the convenient sampling method in a purposeful manner and randomly divided into 2 groups of the experimental group and the control group, with 15 patients in each group. The pre-test was performed in

both groups. Then, the experimental group underwent the intervention of illness management in 20 sessions, each with 90 minutes duration (Table 1), twice a week as group therapy in the hospital. During this time, both groups received medication as directed by a psychiatrist, while the control group did not undergo any psychological interventions. Finally, both groups underwent the post-test after the treatment course. A 4-question questionnaire on the precision of illness management therapy was prepared with yes/no answers to examine the validity of the illness management therapy, and 6 assessors (therapists) answered the questions. The coefficient of agreement between the answers of the 6 assessors was then calculated as being 0.894 ( $P < 0.05$ ).

The inclusion criteria included the diagnosis of schizophrenia by a psychiatrist, being in the schizophrenia chronic phase, being affected by the disease for at least 2 years, and age from 20 to 45 years old. Also, the exclusion criteria included receiving another type of psychotherapy simultaneously, being absent for more than 3 sessions, and treatment cessation.

### Study tools

#### The Scale for the Assessment of Negative Symptoms (SANS)

It is designed and standardized by Andreasen et al. The Scale for the Assessment of Negative Symptoms (SANS) scale has 24 items assessing 5 classes of negative symptoms of schizophrenia, including affective flattening or blunting, poverty of speech, avolition, apathy, lack of pleasure, social inattentiveness, and lack of attention [14]. A general question assesses the set of related symptoms at the end of each group. The answers are scored on a 6-point scale ranging from 0 for the absence of symptoms to 5 states of symptom severity. The higher the score of the patients, the severer their symptoms would be. The questionnaire is filled by the researcher using the information obtained from questioning the patient. The reliability values of the Persian version of the scale using the methods of internal consistency, test-retest, and inter-rater reliability were found as 0.94, 0.92, and 0.89, respectively [15]. The reliability of the negative symptoms in the Iranian culture was calculated to be 0.78 using the methods test-retest [16]. The Cronbach alpha was calculated to be 0.81 for the internal consistency of the negative symptoms [17].

#### The Scale for the Assessment of Positive Symptoms (SAPS)

It is also designed by Andreasen et al. The scale has 30 items assessing 4 groups of positive symptoms: hallucinations, delusions, bizarre behaviors, and formal thought disorder [18]. This tool can also cover the months before the time of evaluation by considering a suitable duration. The questionnaire is filled by the researcher using a standard clinical interview, in which there should be a 5-10-minute conversation about a neutral topic with the patient for evaluating the speech and response style to find a significant abstract thought disorder. Also, other sources such as direct observation and reports of the family and nurses can be used. The answers are scored on a 6-point scale ranging from 0 for the absence of the symptoms to 5 as the most severe. The higher the scores of the patients, the severer their symptoms would be. The last item of each group needs an overall score on the nature and severity of the certain symptom type. The reliability of the Persian version of the scale using the methods of internal consistency, test-retest, and inter-rater reliability were 0.83, 0.88, and 0.87, respectively [15]. The reliability of the positive symptoms in the Iranian culture was calculated to be 0.77 using the test-retest method [16]. The Cronbach alpha was calculated to be 0.83 for the internal consistency of the positive symptoms [17].

#### The Scale to Assess Unawareness of Mental Disorders (SUMD)

It is designed by Ghaemi et al. with 9 items assessing 3 components of 1. Insight into the symptoms of mental illness; 2. Insight into the need for treatment; and 3. Insight into the social consequences of the mental disorder symptoms [19]. The reliability and validity of the SUMD and its abridged version have been reported to be acceptable [20]. On this scale, the patients with better insight have lower scores. The Cronbach alpha was calculated to be 0.85 for the internal consistency of the SUMD, and the internal consistency coefficient was between 0.81 to 0.90 [21]. The inter-rater reliability coefficient in Iran was in the range of 0.73-0.93, and the improvement in the patients' insight in the acute and recovery phases showed the construct validity of the scale [22].

The study protocol was approved by the Ethics Committee of Ardabil branch, Islamic Azad University presented to the Shafa Hospital, Rasht City, Iran. A total of 30 patients of the said center with schizophrenia were selected using the purposive sampling method and were divided into 2 groups of the experimental group and the

**Table 1.** A summary of the illness management sessions held by Mueser et al. [23]

Sessions	Topic	Goals
1	Recovery strategies	Engage clients in the group Increase awareness of recovery Set personal recovery goals Develop plans for achieving goals
2	Practical facts about schizophrenia	Identify symptoms associated with schizophrenia Dispel myths about schizophrenia Address stigma Help clients become aware of people with schizophrenia who lead productive lives
3	Stress-vulnerability model and treatment strategies	Explain that stress and biological vulnerability cause symptoms of schizophrenia Discuss strategies for reducing stress and biological vulnerability Inform clients about treatment options
4	Building social support	Discuss how building social support can facilitate recovery Teach strategies for increasing support, such as finding places to meet people, conversation skills, and getting closer to people
5	Using medications effectively	Teach clients about the benefits and side effects of medications Increase skills for discussing medication issues with the physician Help clients weigh the pros and cons of taking medications Teach behavioral tailoring to facilitate medication adherence
6	Reducing relapses	Teach clients that relapses are predictable and preventable Develop an individual relapse prevention plan
7	Coping with stress	Inform clients they can reduce stress and improve their ability to cope with it effectively Identify and practice strategies to prevent and cope with stress
8	Coping with problems and persistent symptoms	Teach problem-solving model Help clients identify common problems and symptoms that cause distress Practice coping strategies for persistent symptoms
9	Getting your needs met in the mental health system	Review different mental health services Identify insurance benefits clients are entitled to Help clients identify strategies to advocate for themselves in the mental health system

control group using simple randomization. In the present study, the researcher played the roles of an influencer, participator in the therapeutic sessions, and observer. Then, the researcher provided necessary and clear explanations about the study objectives, method, and data confidentiality, and the patients' main caregivers (parents, spouses) gave written informed consent. Following the establishment of the initial therapeutic relationship, the researcher explained the questionnaires to the participants. In the next step, the experimental group underwent collective trainings by the researcher twice a week at the hospital. At the same time, the control group did not receive any intervention. The medication was similar in both groups according to the instructions of the psychiatrist.

Then, both groups underwent a post-test after the end of the treatment course. To avoid sample drop in this study, efforts were made to increase the patients' motives of increased function level, returning to the society, developing communication skills, reducing stress, increasing the ability to confront the illness symptoms, and preventing its recurrence, and there was no sample

drop in this study due to the therapeutic relationship between the researcher and the patients. Data analysis was performed in SPSS software version 24 using the univariate analysis of variance in normal distribution and the non-parametric Kruskal-Wallis test for the variable which didn't follow the normal distribution.

Data analysis was performed in SPSS software version 24 using the univariate analysis of variance in normal distribution and the non-parametric Kruskal-Wallis test for the variable which didn't follow the normal distribution.

## Results

Descriptive indices of demographic variables of the research groups are explained in [Table 2](#).

In [Table 3](#), mean and standard deviation indices of the positive/negative symptoms and insight total scores are presented separately for pre-test and post-test of illness management and control groups. The Shapiro-Wilk test was used to test the normality of distribution. The results of this test indicate

**Table 2.** Descriptive indices of demographic variables of the research groups

Variables		No. (%)	
		Illness Management	Control
Gender	Men	8 (53.33)	7 (46.67)
	Women	7 (46.67)	8 (53.33)
Age (y)	Mean±SD	35.47±6.70	33.28±6.04
Hospitalization history	Once	3 (20)	2 (13.33)
	Two to 4 times	7 (46.67)	9 (60)
	Five times and more	5 (33.33)	4 (26.67)



that the distribution of positive and negative symptoms total score is normal ( $P < 0.05$ ), and the total insight score does not follow the normal distribution ( $P < 0.05$ ).

Univariate analysis of variance was used to evaluate the total score of positive and negative symptoms, assuming homogeneity of groups. Because the distribution of total score of positive and negative symptoms in pre-test and post-test during Shapiro-Wilk test was normal and the slope of pre-test and post-test regression of the total score of positive and negative symptoms was obtained homogeneous according to the significance of F statistic ( $P < 0.05$ ). Also, the variance of the dependent variable in the experimental and control groups was equal due to the insignifi-

cance of Levene's statistic ( $P > 0.05$ ,  $F = 2.81$  for positive symptoms and  $P > 0.05$ ,  $F = 0.91$  for negative symptoms).

The results of univariate Analysis of Variance (ANOVA) to examine the difference between the experimental and control groups in terms of positive and negative symptoms are presented in Table 4. The Eta squared shows that the difference between the two groups in these variables is 0.546 for positive symptoms and 0.538 for negative symptoms. This means that experimental conditions have been effective in improving these variables.

Also, the modified means in Table 5 shows that experimental condition within 95% confidence is effective in

**Table 3.** Descriptive indices and results of examining the normalness of the distribution of the research results

Total Score	Group	State	Mean±SD	S-W*	P
Positive	Illness management	Pre-test	68±8.94	0.96	0.61
		Post-test	29.17±5.88	0.94	0.32
	Control	Pre-test	56.59±7.81	0.9	0.06
		Post-test	51.47±5.94	0.97	0.88
Negative	Illness management	Pre-test	62±9.48	0.92	0.15
		Post-test	42.5±9.78	0.95	0.46
	Control	Pre-test	56.94±8.43	0.93	0.22
		Post-test	51.47±5.94	0.95	0.41
Insight	Illness management	Pre-test	24.67±1.68	0.87	0.02
		Post-test	15.28±1.84	0.95	0.51
	Control	Pre-test	24.47±2.01	0.92	0.13
		Post-test	18.47±3.04	0.86	0.02

\* Shapiro Wilk Statistic.





**Table 4.** Results of univariate analysis of variance in terms of positive and negative symptoms

Variables	Variable	SS	df	MS*	F	P	Eta	OP
Positive symptoms	Group	5841.75	1	2920.88	29.46	0.001	0.546	1
	Error	4857.32	49	99.13				
Negative symptoms	Group	2143.65	1	1071.82	28.47	0.001	0.538	1
	Error	1843.79	49	37.63				

\*Mean square.



**Table 5.** The modified means of positive and negative symptom components in the experimental and control groups

Variables	Group	95%CI		
		Modified Mean±SD	Lower Limit	Upper Limit
Positive symptoms	Illness management	-38.83±2.41	-39.91	-30.21
	Control	-14.65±2.35	-19.5	-9.79
Negative symptoms	Illness management	-19.5±1.45	-22.41	-16.59
	Control	-5.47±1.49	-8.46	-2.48



reducing the positive and negative symptoms of patients. Because of the non-normal distribution of total insight scores, the non-parametric Kruskal-Wallis test was used and the post-test results (Table 6) showed a significant difference between the two groups in the average rank of insight to positive and negative symptoms and total insight score components ( $P < 0.05$ ).

## Discussion

The present study aimed to determine the effectiveness of illness management program on positive and negative symptoms in schizophrenic patients. The results indicated that illness management effectively decreased the positive and negative symptoms and improved insight into the disease of schizophrenic patients. Results of the present study are in line with findings of Nakamura et al. [24], Färdig et al. [25], Lin et al. [26], Bartels et al. [27], Ege-land et al. [28], and Liberman and Kopelowicz [29]. In all of these studies, the illness management program for

schizophrenic patients improved performance, reduced positive and negative symptoms, improved insight, reduced recurrence rates, and improved quality of life.

Various studies showed that self-management behaviors improved the therapeutic outcomes and treatment acceptance by helping patients in disease understanding and treatment and increasing the knowledge and skills of the patients and their caregivers for health maintaining and promotion. These behaviors include changes in life-style, decision-making on the present therapeutic methods that are appropriate to the social context of the patient, monitoring the activities, management of the signs and symptoms of the disease, and cooperation with the healthcare team. We can explain these findings by stating that the illness management program educated the patients to use their best ability to seek help from others in case of warning signs of the onset of a disease episode or recurrence. They learned that they could not diagnose the recurrence symptoms independently and seek help

**Table 6.** The Kruskal-Wallis test in the post-test for the total score of insight

Variable	Mean of Ranks				
	Illness Management	Control	$\chi^2$	df	P
Total score of Insight	21.22	39.06	18.06	1	0.001



from a healthy person for timely diagnosis and subsequent discussion with the physician. These results suggest that the self-management program can decrease the positive symptoms, negative symptoms, and stress and prevent a recurrence. Since schizophrenia is a social disease, improvement of the patients' insight into the condition leads to better treatment, reduced prevalence in the community, and decrease the destructive physical, mental, familial, social, and economic burden of the disease. Also, this study was performed in patients with extended hospital stays, so the generalization of the findings to the outpatients should be made with caution.

## Conclusion

Illness management reduced the positive and negative symptoms of schizophrenic patients. This program enables the patient to be active in the treatment process, which reduces the treatment costs and increase the beneficial effects of the healing process. Therefore, it is suggested to provide illness management education to enhance the patients' health after their release to improve their life quality.

## Ethical Considerations

### Compliance with ethical guidelines

The study protocol was approved by the Ethics Committee of Ardabil Branch, Islamic Azad University (IR. IAU.ARDABIL.REC.1399.045). All study procedures were done in compliance with the ethical guidelines of the 2013 version of the Declaration of Helsinki.

### Funding

This article was extracted from the PhD. dissertation of first author at the Department of Psychology, Ardabil branch, Islamic Azad University (Code No. :119481960923099139891662).

### Authors contributions

Investigation: Fatemeh Rangrazian and Azar Kiamarsi; Writing the original draft: Fatemeh Rangrazian; Supervision, writing, review, and editing: Azar Kiamarsi, Reza Kazemi; Methodology and final approval of the version to be submitted: Fatemeh Rangrazian, Azar Kiamarsi, and Reza Kazemi.

### Conflict of interest

The authors declared no conflict of interest.

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