

Efficacy of Recovery Program on Self-management for Patients with Schizophrenia

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Abstract

Background: Promoting recovery of patients with schizophrenia contributes to improving their capacity to manage their illness by themselves and reducing their psychological difficulties which in return improve overall quality of life despite their illness. **Aim:** The study aimed to evaluate the efficacy of recovery program on self-management for patients with schizophrenia.

Design: The study followed a randomization control (experimental) design. **Setting:** The study was conducted at the psychiatric, neurology and neurosurgery center and the psychiatric department of Tanta University Hospital. **Subject:** randomized sample of 60 patients with schizophrenia. Those patients were divided randomly into study and control groups (30 patients for each). **Tools:** Data were collected using three tools: Tool I: Recovery Assessment Scale, Tool II: Patient Activation Measures (PAM) and Tool III: Modified Colorado Symptom Index (CSI)

Results: The study revealed that implementation of recovery program among patients with schizophrenia had highly strong positive correlation with self-management and highly strong negative correlation with psychological difficulties immediate and after 3 months of the program

Conclusion: The efficacy of recovery program on achieving higher self-management and lowering psychological difficulties of patients with schizophrenia in comparison to before the program. **Recommendation:** Recovery program should be incorporated with pharmacological therapy for treatment of patients with schizophrenia to help them reach optimal recovery level and gaining their ability to manage their illness by themselves.

Keywords: Recovery, Psychological Difficulties, Relapse Prevention, Schizophrenia, Severe mental illness, Egypt.

Introduction

Schizophrenia is officially renamed “integration dysregulation syndrome” and “attunement disorder” respectively.⁽¹⁾ It is

one of the most puzzling yet disabling of all brain diseases, with its severe and persistent psychotic manifestations accompanied by variable cognitive dysfunction and profound

psychosocial impairment.⁽²⁾ This disease estimated about 1% of population worldwide and it is consistently have a major negative impact on their quality of life.⁽³⁾ In Egypt, schizophrenia is the most common variety of psychosis and represents major bulk of inpatient in both mental hospital and psychiatric wards in general hospital, it is prevalence about one million people affected by this disease.^(4, 5)

Schizophrenia is characterized by a range of cognitive, behavioral, and emotional dysfunctions classified into positive and negative symptoms. A positive symptom refers to the presence of a particular symptom such as hallucination, delusion, disorganized thought process or abnormal motor behavior (such as catatonia).^(6, 7) A negative symptom could include a lack of emotional expression, avolition, alogia, anhedonia and asociality.⁽⁸⁾ Besides, cognitive impairments which considered a core and persistent characteristic of schizophrenia with implications for daily functioning.⁽⁹⁾

A long time ago, more than 60 years, antipsychotics were first introduced as medication for schizophrenia. This treatment possibility was satisfied with results like symptom control or stability. However, advances in pharmacological treatment have promoted and raised expectations for outcomes.^(10, 11) Indeed, this conventional treatment is undoubtedly important but does not cover most of the daily problems faced by patients with schizophrenia as they trouble with everyday tasks, thinking clearly, solving problems or making decisions.⁽¹²⁾ As long as, evidence suggests that schizophrenia has a negative functional impact in many life domains, including poor self-management, social and interpersonal

functioning.⁽¹³⁾ Therefore, it is essential to develop different treatment modalities to patients with schizophrenia that help them in identify and self-manage their illness where they take active steps in recognizing and addressing their own health problems rather than just management of clinical symptoms in recent times.^(14, 15)

In the same line, there is a new approach called recovery, it act as a magic wand and become a focus of attention on patient's function, it is the most meaningful to patients and their families especially when recognize that symptoms reduction alone does not sufficient but functionality and subsequent are extremely significant.^(16, 17)

This approach does not focus on fully resolving symptoms but emphasizes capacity to recover and control over mental health problems and life obstacles. Recovery is a process of change through which mental ill patients will improve their health and wellness, live self-directed and strive to achieve their full potential.^(15, 18)

The approach toward recovery is enabling nurses and other health care professionals to see the patients as a holistic being and do not fixate on the symptoms. As a result, allowing them focus on their dignity, self-esteem and well-being through strengthening qualities such as self-knowledge, relapse prevention, coping with stress and life problems, social support, spirituality, hope and willpower.^(19, 20) The recovery process includes practical strategies to improve patient care, shared decision making, regularly assessing medication adherence and enable patients to have adequate quality of life, autonomy, managing self, illness relapses prevention, functionally well in their society and thus raise the expected therapeutic benefit.^(15, 21)

In addition to what mentioned above, recovery from schizophrenia entails strengthening functionality of the patients as well as enhancing their ability to accept personal responsibility, give the meaning of healing and restoring a sense of physical, mental and spiritual balance during episodes of stress and crisis.^(22, 23) It is usually accomplished through a combination of personal empowerment, a sense of self-confident, choice and active self-help. Even though patients share the same wishes as (i.e. the ability to work, live independently and enhance peer relationships), they have difficulty achieving these desires not only because of their illness but also because of limitations of society such as stigma, discrimination and social exclusion.^(24, 25) Therefore, treatment should involve interventions that promote self-improvement, contribute to determining and achieving personal goals and foster the development of skills that patients can use to self-manage their illness and improve their social interactions.^(17, 26)

From this perspective, recovery plays a critical role in helping patients with schizophrenia to self-manage their illness and actively participate in their healthcare. Self-management is defined as "learning and practicing skills necessary to carry on an active and emotionally satisfying life in the face of a chronic condition".⁽²⁷⁻²⁹⁾ Patient's self-management often requires changes that can touch every aspect of their daily life, from diet and physical activity patterns to managing symptoms and treatment regimens at home. It means many patients can learn new skills, manage their emotions and confront and find solutions to new problems as they arise.^(29, 30)

Self-management permits the patients and nurses to working together in identify problems, set goals and monitor progress of recovery over time which in return reduced admissions to hospital, significant gains in their health status and increased symptom control, allow patients to have a higher levels of trust, satisfaction and reduced emotional burden.^(28, 31) So, they can obtain productive non-disabled roles despite having a mental illness and being able to use appropriate coping mechanisms in order to be functioning members of society.⁽³²⁾ As a result of a study conducted by **Fiorillo et al, (2020)**, patients with schizophrenia who shared decision-making about their treatment demonstrated that more active behavior during psychiatric consultations, overcome the issue of poor adherence to pharmacological treatments which represents the main cause of relapse and re-hospitalizations.⁽³³⁾ Eventually, the nursing roles that will be required to perform as a qualified mental health nurse. They will be expected to work in a recovery-focused and person-centered way with clients who use mental health services. Nurses need to develop a deep understanding of how to promote the recovery approach in contemporary mental health care for patients with schizophrenia.⁽³⁴⁾

Significance of the Study:

Schizophrenia as one of the major psychotic disorders was listed as one of the top contributors to health burden and disability around the world. The costs of treatment which can be long term due to the revolving door syndrome of patient's re-entering hospital, deflecting potential productivity by those patients.^(35, 36) Nonetheless, it is widely accepted that a proportion of patients with schizophrenia have a favorable

prognosis and symptoms can decline over time and patient attain good clinical and functional outcomes (e.g., education, employment and relationships) then it is important to find a way help them in reach to this favorable prognosis.⁽³⁷⁾

Undoubtedly, the way toward recovery which implies that remission of symptoms is not the ultimate goal of treatment but only a basis for better social and cognitive functioning that translates into better quality of life. The mental health nursing is in urgent need for developing and implementing recovery as it is a multifaceted approach for better outcomes of patients and promote active self-management. So, it should be a priority target for therapeutic interventions in schizophrenia.

Aim of the study

This study aimed to evaluate the efficacy of recovery program on self-management for patients with schizophrenia.

Research hypothesis:

Patients with schizophrenia who receive recovery program were expected to show better self-management than those who would not receive it.

Operational definition:

Self-management: means that patient has abilities to manage their long-term mental health condition, reduce relapses, improve patient's social function and satisfy with life.

Subjects & Method

Subjects

Research design:

Randomization control (experimental) design was used in the study.

Settings:

The study was conducted at the following setting:

- a. The psychiatric, neurology and neurosurgery center. This center has capacity (77 beds).
- b. The psychiatric department of Tanta University Hospital. Its capacity is 42 beds divided into two wards for men (26 beds) and two wards for women (16 beds).

Both previously settings are affiliated to Tanta University, they work 24 hours a day, 7 days a week.

Subjects:

Random sampling design was used for selected study subjects. The subjects were 60 patients with schizophrenia. Those patients were divided randomly into study and control group (30 patients for each) by using concealed sealed envelopes. Once the patient consented to include in study, an envelope is opened to randomly assign patients either to study group (30 patients) or control group (30 patients). The sample size was distributed as (36 patient) in 1st setting and (24 patient) in 2nd setting. The sample size was calculated using Epi-Info software statistical package created by World Health organization and center for Disease Control and Prevention, Atlanta, Georgia, USA version 2002.

The criteria used for sample size calculation were as follows:

- 95% confidence level
- 80% power of the study
- Ratio between study and control group 1:1
- Expected self-management before program among participants is 50% compared to 80% after program.

The study sample had the following inclusion and exclusion criteria.

Inclusion criteria:

- Adult hospitalized patient with

schizophrenia.

- Diagnosed according to the Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-5) criteria.

- Able to communicate appropriately.

Exclusion criteria

- Acute stage of schizophrenia.
- Neurocognitive disorders
- Alcohol or substance related disorders
- Other co-morbid psychiatric disorder.

Measures:

Tool I: Recovery Assessment Scale: This tool was consisting of two parts:

Part 1: Socio-demographic and clinical data questionnaire:

It was developed by the researcher after review related literature to elicit socio-demographic data about patient with schizophrenia such as “age, sex, marital status, residence, cohabitation, level of education, occupational status and income level” and patient clinical data such as: “age of the patient at the time of onset, duration of illness, number of previous hospitalization, length of stay during current hospitalization, current medication, method of admission to hospital and patient's symptoms during last hospitalized”

Part 2: Recovery Assessment Scale (RAS)

Recovery Assessment Scale was developed by McCulloch J. (2019) and adopted by the researcher⁽³⁸⁾ This tool is self-reflective assessment used to measure individual perception of their recovery. RAS is a 20-item, the items on the RAS assessment are a 5-point Likert scale: 1 = strongly disagree, 2 = disagree, 3 = not sure, 4 = agree, and 5 = strongly agree. The total score ranged from 20 to 100, the higher score means higher recovery, the level of recovery will be calculated and classified as following:

- (< 50%) Low level of recovery
- (50-75%) Moderate level of recovery
- (>75- 100%) High level of recovery

Tool II: Patient Activation Measures (PAM):

It is American short form patient activation measures adapted by Rademakers J. et al. (2012) and adopted by the researcher⁽³⁹⁾

This tool assessed level of self-management of mental illness. It consisted of 13 items, the responses categorized on 4-point Likert scale, ranged from 1 = totally disagree to 4 = totally agree. The total score ranged from (13-52). It summated, higher scored means higher self-management. PAM was categorized as follows:

- (<50%) from total score Low self-management ability
- (50-75%) from total score Moderate self-management ability
- (>75%) from total score High self-management ability

Tool III: Modified Colorado Symptom Index (CSI):

It was developed by Conrad K. et al., (2001), and adopted by a researcher⁽⁴⁰⁾ It is a self-report scale designed to assess frequency of emotional and psychological difficulties. CSI consisted of a 14-item. Responses of each items rated on 5 point Likert scale from zero= “Not at all” to 4= “At least every day”. The total score ranged from (0-56). It summated, higher scored means higher difficulties or problems. The total score of CSI and its subscales was determined according to the following scoring system.

- (< 50%) from total score Low level of psychological difficulties
- (50-75%) from total score Moderate level of psychological difficulties
- (>75%) from total score High level of psychological difficulties

Method

- 1) An official letter was addressed from the Dean of the Faculty of Nursing to the head of the two previous studied settings to request their permission and cooperation for data collection.
- 2) Ethical considerations:
 - a) Ethical approval was obtained from the ethical committee of Faculty of Medicine, Tanta University (approval code: 35065/11/21) and in Faculty of Nursing, Tanta University (approval code: 2021/11/1).
 - b) Approval from both the psychiatric, neurology and neurosurgery center and the psychiatric department of Tanta University Hospital were obtained.
 - c) Informed consent was obtained from the participants after explanation of the study purpose.
 - d) The participants were reassured about the confidentiality of their information. A code of numbers was used instead of a person's name on questionnaire sheets.
 - e) Respected the right of the participants to withdraw at any time during the data collection period.
 - f) The study was not causing harm for patients.
- 3) The study tools were translated into Arabic language by the researcher except first part in tool one which developed and write in Arabic language, the tools were tested for internal validity by a jury composed of nine experts in psychiatric nursing and psychiatric medical fields to ascertain the appropriateness of items for measuring what they were supposed to measure.
- 4) The study tools were tested for reliability by using appropriate statistical test

(Cronbach's alpha) which yielded values of ($r=0.824, 0,793$ & 0.915) respectively.

- 5) Before embarking on the actual study, a pilot was carried out on 10% of the study subjects to ascertain the clarity and applicability of the study tools and to identify obstacles that might be faced during data collection. Those subjects were selected randomly and were excluded from the study sample. Pilot study was conducted on six patients using study tools I, II & III after explanation the purpose of study and informed consent was obtained from them. The pilot study lasted nearly 5 days. After implementation, some items added in (tool I, part one) as in options of cohabitation (brothers / sisters & mother of husband or wife), in occupation (receiving a pension).

The intervention

The actual study was divided into four phases:

A) Assessment phase

The study tools were applied on study sample and used interview on an individual basis. The researcher interviewed 2 to 3 patients per day every week. The duration of the interview ranged from 20 to 30 mins.

B) Planning phase

- 1) Based on the result of assessment phase, the researcher developed recovery program after review of related literature under the direction of the supervisors.
- 2) The study group was divided into five subgroups; each subgroup consisted of six patients.
- 3) The control group received usual routine care.
- 4) The recovery program was applied on (12) sessions, three sessions per week.

The duration of each session ranged from one to one & half hours.

C) Implementation phase (Content of the program)

The recovery program was implemented by covering the following twelve sessions. Sequence of each session was as follows:

Session (1): Introductory session: The researcher was introduced herself to participants for established relationship, explained aim of the program, gives a brief overview of the program and and program planned schedule.

Session (2): Meaning of recovery and its strategies: In this session, the researcher revised homework and give feedback about previous session then discussed of how different people define recovery and encouraged each patient to develop his/ her own definition of recovery, gave some suggestions that increase the chance of recovery for a people with schizophrenia, set personal recovery goals and developed plans for achieved these goals. Four exercises were involved in this session:

- 1st exercise: suggestions that increase the chance of recovery.
- 2nd exercise : set personal recovery goals
- 3rd and 4th exercises : working on goals & step-by-step problem-solving to achieve it.

Session (3): Practical facts about schizophrenia: through this session the researcher revised homework and give feedback about previous session thereafter enabled patients to recognize the definitions, prevalence rate, symptoms, diagnosis, myths of schizophrenia and identified how stigma arises and knew the facts. This session included one exercise about patient's

symptoms.

Session (4): Stress-vulnerability model:

This session involved revision about homework about previous session and give feedback by the researcher then gave explanation about stress and biological vulnerability cause symptoms of schizophrenia and taught strategies for reduced stress and biological vulnerability followed by one exercise about listed factors that made the patients more vulnerable to stress and psychological tension exercise.

Session (5): Coping with stress:

The researcher in this session revised homework and gave feedback about previous session later focused on improved abilities of the patients to awareness and recognize main own sources of stress, stressors and learnt cope efficiently with it, followed by seven exercises:

- 1st and 2nd exercises (life events and daily hassles checklist):
- 3rd exercise: signs and symptoms of stress checklist
- 4th exercise: strategies for preventing stress
- 5th exercise: cognitive strategies as Thought stopping technique and positive self-talk.
- 6th exercise: relaxing strategies as deep breathing exercise, progressive muscles relaxations and imagination
- 7th exercise :individual plan for coping with stress.

Session (6): Coping with daily problems: in this session, the researcher revised homework and give feedback about previous session next the patients were knowing the definition of the problem, helped them identified common problems that caused distress, learnt problem-solving method,

followed by one exercise to apply problem solving method.

Session (7): Using medications effectively: during this session researcher reviewed homework and give feedback about previous session subsequently explained the purpose, benefits and side effects of medications, helped patients weighed pros and cons of taking medications and taught ways aid the patients to compliance with medications followed by exercise that trained patients to applied a method

Session (8): Reducing relapses of schizophrenia:

Through this session the researcher revised homework and give feedback about previous session then the patients was learnt the concept of schizophrenic relapse, identified the early warning signs, causes of relapse and learnt how identified them to prevent further relapses and help them to develop a plan to prevent their relapse through applied four exercises:

- 1st exercise: common early warning signs checklist.
- 2nd exercise :color card.
- 3rd exercise : causes that lead to relapses.
- 4th exercise: relapse prevention plan.

Session (9): Coping with persistent psychological symptoms:

Through this session, the researcher revised homework and give feedback about previous session after that patients were trained to identify common persistent symptoms and learnt methods of dealing with them by constructed their own plan through the following four exercises:

- 1st exercise: persistent psychological symptoms checklist.
- 2nd and 3rd exercise : strategies to deal with persistent psychological symptoms.

- 4th exercise: developed plan for dealing with persistent psychological symptoms.

Session (10): Building social support: the researcher reviewed homework and give feedback about previous session then discussed the meaning and importance of social support and how building social support. Those were done through the following three exercise:

- 1st exercise: measures level of patient's satisfaction with social relation.
- 2nd exercise: build new social relationship.
- 3rd exercise: maintain social relationship.

Session (11): Spirituality:

At the beginning the researcher revised homework and give feedback about previous session following that gave information about spirituality, its meaning, its importance on wellbeing and mental health and explain some practice to improve personal spirituality following that applied those two exercises:

- 1st exercise: Breathwork technique.
- 2nd exercise: Meditation.

Session (12): Available mental health services:

The researcher revised homework and give feedback about previous session then informed the patients about different mental health services, identified insurance benefits was entitled to, helped them identified strategies to advocate for self in mental health system.

Method of teaching and learning materials:

The researcher used lectures, group discussion, role play, demonstrate & re-demonstrate, learning activities, telling stories, brainstorming. In addition to that, the researcher used materials such as power point, picture, videos, paper & pinches. The

researcher developed a booklet about contents of session and distributed on participants.

D) Evaluation phase

Evaluation of the training was done by reapplying the studied tools on the patient at two times:

- 1) The first evaluation was done immediately after application of the recovery program (post-test 1).
- 2) The second evaluation was performed after 3 months from the application of the recovery program (post-test 2).

The duration of data collection was about eight months from August 2022 to March 2023.

Limitations of the study:

This limitation put on the study during implementation phase:

- Exposure to many interruptions by staff members, security personnel and other patients resulting in distractibility of participants and the researcher repeating some explanation and exercises during some sessions.
- Some patients needed help from the researcher which in return consumed the time and effort.
- Before completing the session, some patients discharged and 2 only patients escaped from the hospital and the researcher
- unable to contact with them to complete the rest of the program, this led to the researcher began from the 1st session with new patients to cover the missed participants that generate time and effort consuming.

Statistical analysis:

The collected data were organized, tabulated and statistically analyzed using SPSS software statistical computer package

version 26. For quantitative data, the range, mean and standard deviation were calculated. For qualitative data, comparison was done using Chi-square test (χ^2). For comparison between means of variables for two groups, independent samples T-test was used. For comparison between means for variables pre and post intervention in a group, paired samples T-test was used. For comparison between means for variables during three periods of intervention in a group, or for more than two variables, the F-value of analysis of variance (ANOVA) was calculated, fisher's exact test (FE) for 2×2 contingency tables.

Correlation between variables was evaluated using Pearson and Spearman's correlation coefficient r . Prediction between variables was calculated by linear regression analysis. A significance was adopted at $P < 0.05$ for interpretation of results of tests of significance (*). Also, a highly significance was adopted at $P < 0.01$ for interpretation of results of tests of significance (**).

Results

Table (1) illustrates socio-demographic characteristics of the studied patients. The results revealed that no statistically significant difference was found in relation to all socio-demographic characteristics between the studied group and control group. As regard to patient's age, it is observed that 43.33% of patients in study group were aged between 30 and less than 40 years, while equal percentage 36.67% of patients in control group were aged (21-<30) and (30-<40) with a mean age (37.50 ± 9.380 & 35.37 ± 9.137) respectively. Regarding to their sex, the percentage of male is 60% and female is 40% in study group and 40% male and 60% were female and in control group. Concerning the

marital status, the results presented an equal percentage of single and married patients in both groups, there were 60% and 16.67% respectively. Meanwhile the majority of the patients were living in rural areas in both groups. Regarding cohabitation, most of the patients in both groups live with their father or mother. For the educational level, 40% of patients in study groups and 13.33% of control group had university education, while 23.33% of patients in both groups had secondarily education. With reference to occupation, 33.33% of study group and 43.33% of control group (38.33% together) were housewife or does not work. Likewise, more than half of patients in both groups had enough income (63.33% and 60% respectively).

Table (2) shows clinical traits of the studied patients. The results revealed that no statistically significant difference was found in all clinical traits between the studied group and control group. In addition, above half of patients 53.33% in both groups aged between (20-<30) with mean age (27.20 ± 3.926). In relation to duration of illness, one quarter of patients 41.67% suffer from schizophrenia less than five years ago with mean (9.21 ± 7.449). Regarding the number of previous hospitalizations, more than half of patients 56.67% admitted less than 5 times with mean (5.50 ± 5.898). With respect to method of admission to hospital, the majority of patients 85% admitted by involuntary way in both groups. Referring to medication of patients, all patients have antipsychotic medication in both groups and most of them 88.33% receiving antiparkinsonian drugs in both groups.

Figure (1) clarifies distribution of the studied patients according to their levels of recovery before and after the recovery program. There is highly statistically significant improvement in recovery levels of patients in the study group before and after the program ($P = 0.003$). While 80% of patients in the study group before program have low level of recovery and 20% of them have moderate level of recovery while nobody has higher level of recovery. After the recovery program, there are one half of patients became have moderate level, 43.33% have higher level and only 6.67% still in low level of recovery. After 3 months of recovery program, 43.33% preserve their moderate level of recovery, 40% of them maintain a higher level of recovery and 16.67% have low level of recovery. Regarding control group, it represents non-significant difference in recovery levels before and immediate after the program.

Figure (2) displays distribution of the studied patients according to their levels of self-management before and after the recovery program. There is highly statistically significant improvement of self-management levels of patients in the study group before and after the recovery program ($P = 0.001$). While before program, almost of patients 73.33% have low level of self-management but immediate after program this percentage dropped into 10% and after 3 months of program had slightly increased and became 20%. Regarding control group, it represents non-significant difference in self-management levels at before and immediate after program.

Figure (3) reveals distribution of the studied patients according to their levels of psychological difficulties before and after

the program. There is highly statistically significant improvement in level of psychological difficulties among study group before and after the program ($P=0.005$). Before program, one half of patients have high level of psychological difficulties, 46.67% of them have moderate level and 3.33% has low level of psychological difficulties. While immediately after the program, there are 70% of them have low level of psychological difficulties, 23.33% have moderate level and only 6.67% still have high level. After 3 months of the program, 63.33% of patients hold low level, 20% of them possess moderate level and 16.67% have high level of psychological difficulties. Regarding control group, it represents non-significant difference in levels of psychological difficulties before and immediate after program.

Table (3) describes correlation between recovery of patients with schizophrenia in study group, their self-management and psychological difficulties, it was found that recovery had highly strong positive correlation with self-management immediate and after 3 months of program ($r=0.134$; $P=0.001$ & $r=0.475$; $P=0.008$) respectively. This means that the patients who have a high

level of recovery have high self-management. Also, the findings showed that recovery had highly strong negative correlation with psychological difficulties immediate and after 3 months of program ($r= -0.216$; $P=0.005$ & $r= -0.028$; $P=0.038$) respectively. This means that the patients who have a high recovery level have low psychological difficulties.

Table (4) illustrate that efficacy of recovery program on self-management and psychological difficulties among patients with schizophrenia in study group by simple linear regression analysis, it was found that recovery had significant positive predictor of higher self-management immediate and after 3 months of intervention ($\beta= 0.134$; $P= 0.005$ & $\beta= 0.475$; $P= 0.008$), this means that the efficacy of recovery program on achieving higher self-management. Also, it was found that recovery had significant negative predictor of lower successfully the psychological difficulties immediate and after 3 months of program ($\beta= -0.116$; $P= 0.002$ & $\beta= -0.028$; $P= 0.009$), this means that the efficacy of recovery program on lowering psychological difficulties of patients with schizophre

Table (1): Distribution of the studied patients according to socio-demographic characteristics.

Socio-demographic characteristics	The studied patients (N=60)						χ^2 P
	Both groups (N=60)		Study group (N=30)		Control group (N=30)		
	N.	%	N.	%	N.	%	
Age (in years)							
(21-<30)	17	28.33	6	20.00	11	36.67	2.113 0.549
(30-<40)	24	40.00	13	43.33	11	36.67	
(40-<50)	12	20.00	7	23.33	5	16.67	
(50-60)	7	11.67	4	13.33	3	10.00	

Range Mean ± SD	(23-60) 36.43±9.243		(23-60) 37.50±9.380		(24-55) 35.37±9.137		t=0.796 P=0.376
Sex							
Male	30	50.00	18	60.00	12	40.00	FE
Female	30	50.00	12	40.00	18	60.00	0.196
Marital status							
Single	36	60.00	18	60.00	18	60.00	2.333 0.506
Married	10	16.67	5	16.67	5	16.67	
Separated	12	20.00	5	16.67	7	23.33	
Widow	2	3.33	2	6.67	0	0.00	
Residence							
Rural	51	85.00	24	80.00	27	90.00	FE
Urban	9	15.00	6	20.00	3	10.00	0.472
Co-habitation							
Alone	10	16.67	4	13.33	6	20.00	2.679 0.102
Father or mother	34	56.67	18	60.00	16	53.33	
Husband/wife	10	16.67	5	16.67	5	16.67	
Children	11	18.33	5	16.67	6	20.00	
Brothers/Sisters	19	31.67	9	30.00	10	33.33	
Mother of husband/wife	3	5.00	3	10.00	0	0.00	
Education level							
Illiterate	11	18.33	5	16.67	6	20.00	6.924 0.226
Read and write	8	13.34	3	10.00	5	16.67	
Basic educations	11	18.33	3	10.00	8	26.67	
Secondarily	14	23.33	7	23.33	7	23.33	
Universal	16	26.67	12	40.00	4	13.33	
Occupation							
Craft work	10	16.67	7	23.33	3	10.00	4.402 0.354
Professional work	12	20.00	5	16.67	7	23.33	
Employee	2	3.33	2	6.67	0	0.00	
Housewife/ does not work	23	38.33	10	33.33	13	43.33	
Receiving a pension	13	21.67	6	20.00	7	23.33	
Income level							
Not enough	18	30.00	7	23.33	11	36.67	2.716 0.257
Enough	37	61.67	19	63.33	18	60.00	
Enough and saving	5	8.33	4	13.33	1	3.33	

Table (2): Distribution of the studied patients according to their clinical traits.

Clinical traits	The studied patients (N=60)						χ^2 P
	Both groups (N=60)		Study group (N=30)		Control group (N=30)		
	N	%	N	%	N	%	
Age of patient at onset illness (in years)							
< 20	3	5.00	2	6.67	1	3.33	2.060 0.660
20- < 30	32	53.33	15	50.00	17	56.67	
30- < 40	21	35.00	12	40.00	9	30.00	
40- < 50	4	6.67	1	3.33	3	10.00	
Range	(18-43)		(18-40)		(19-43)		t=0.209 P=0.649
Mean ± SD	27.20±3.926		27.43±4.264		26.97±3.615		
Duration illness (in years)							
(<5)	25	41.67	12	40.00	13	43.33	1.841 0.398
(5-10)	18	30.00	10	33.33	8	26.67	
(>10)	17	28.33	8	26.67	9	30.00	
Range	(0-30)		(0-30)		(0-22)		t=0.841 P=0.363
Mean ± SD	9.21±7.449		10.10±7.884		8.33±7.009		
Number of previous hospitalizations							
(<5)	34	56.67	14	46.67	20	66.67	2.517 0.284
(5-10)	19	31.66	12	40.00	7	23.33	
(>10)	7	11.67	4	13.33	3	10.00	
Range	(1-20)		(1-20)		(1-15)		t=2.126 P=0.150
Mean ± SD	5.50±5.898		6.60±7.228		4.40±4.005		
Length of hospital stay (in days)							
15-<20	32	53.33	18	60.00	14	46.67	3.341 0.188
20-<25	15	25.00	6	20.00	9	30.00	
25-30	13	21.67	6	20.00	7	23.33	
Range	(16-30)		(16-29)		(16-30)		t=2.090 P=0.154
Mean ± SD	21.63±4.145		20.87±3.893		22.40±4.312		
Method of admission to hospital							
Voluntary	9	15.00	6	20.00	3	10.00	FE 0.472
Involuntary	51	85.00	24	80.00	27	90.00	
Medication of the patient							
Antianxiety	13	21.67	7	23.33	6	20.00	1.176 0.278
Antipsychotic	60	100.00	30	100.00	30	100.00	
Antiparkinsonian	53	88.33	26	86.67	27	90.00	
Antidepressant	7	11.67	4	13.33	3	10.00	
Anticonvulsant	5	8.33	1	3.33	4	13.33	

FE: Fisher' Exact test *Statistically significant at P<0.05 # Not mutually exclusive

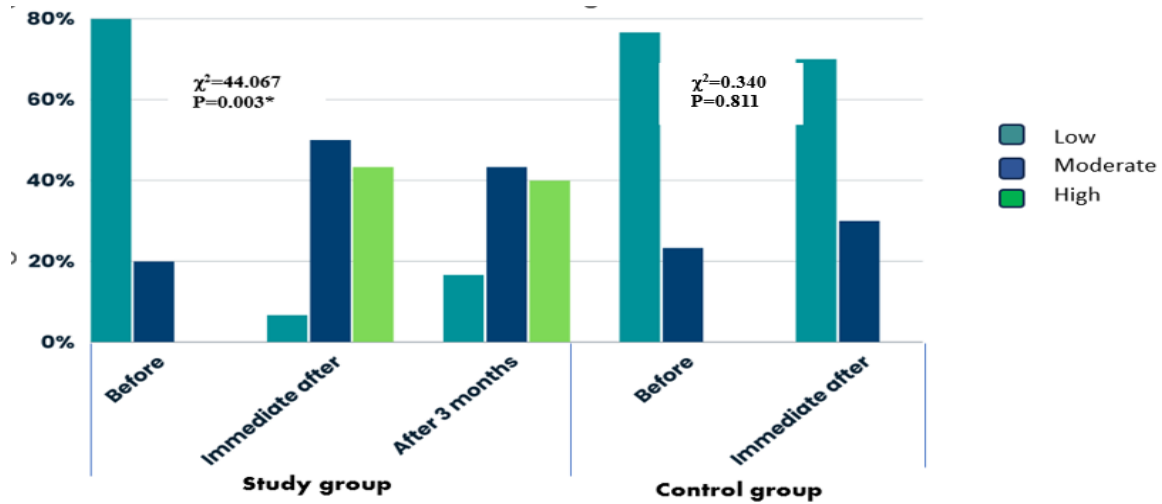


Figure (1): Distribution of the studied patients according to their levels of recovery before and after the recovery program.

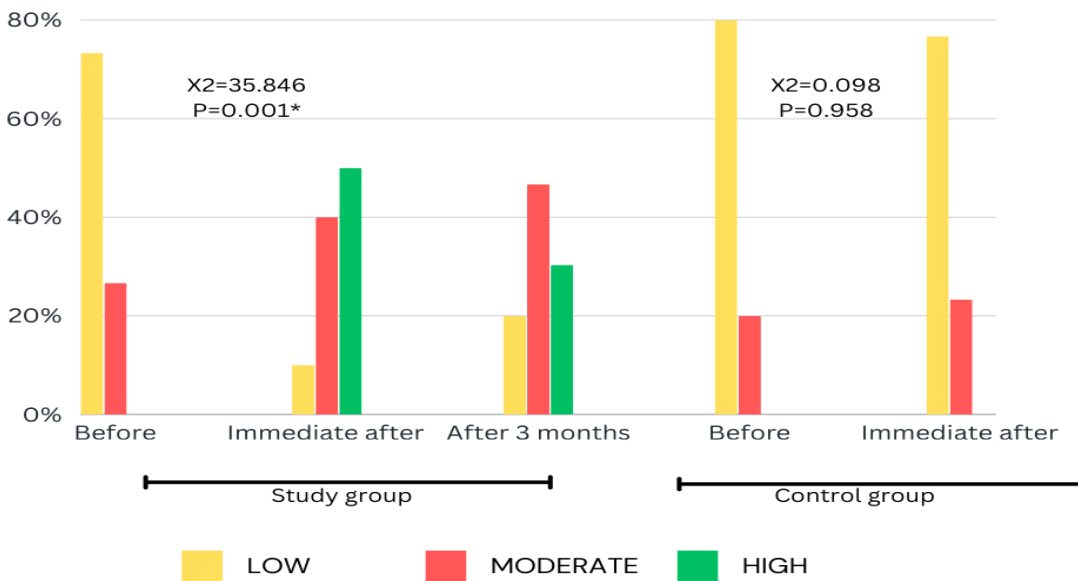


Figure (2): Distribution of the studied patients according to their levels of self-management before and after the recovery program.

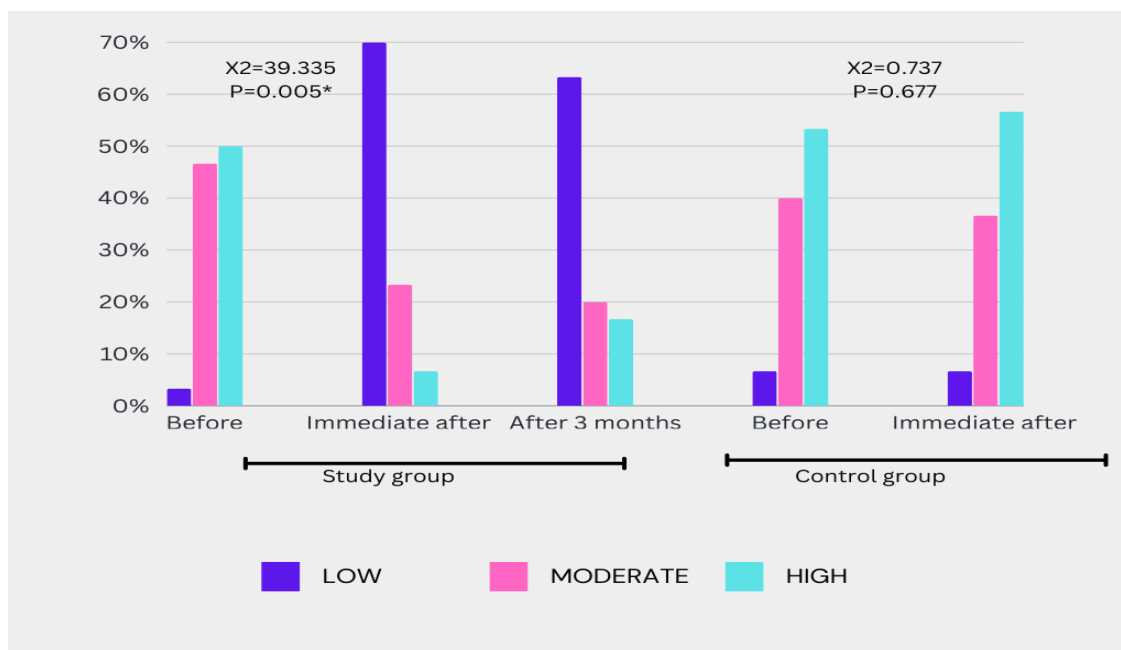


Figure (3): Distribution of the studied patients according to their levels of psychological difficulties before and after the recovery program.

Table (3): Correlation between recovery of patients with schizophrenia in study group, their self-management and psychological difficulties before, immediate and after 3 months of the recovery program.

Items	The study group patients					
	Recovery					
	Before		Immediate after		After 3 months	
	R	P	R	P	r	P
Self-management	-0.001	0.996	0.134	0.001**	0.475	0.008**
Psychological difficulties	-0.048	0.803	-0.216	0.005**	-0.028	0.038**

r: Pearson' correlation coefficient *Statistically significant at $P < 0.05$ **Highly statistically significant at $P < 0.05$

Table (4): Efficacy of recovery program on self-management and psychological difficulties among patients with schizophrenia in study group.

Effect of recovery items program	The study group patients							
	Self-management				Psychological difficulties			
	ΔR^2	F	β	P	ΔR^2	F	β	P
Before the program	-0.036	0.000	-0.001	0.996	-0.033	0.064	-0.048	0.803
Immediate after of the program	0.017	0.513	0.134	0.005**	-0.013	1.368	-0.116	0.002**
After 3 months of the program	0.198	8.153	0.475	0.008**	-0.035	0.022	-0.028	0.009**

* Significant at level $P < 0.05$

** Highly significant at level $P < 0.05$

Discussion

Recently, "recovery programs" are considered a crucial element of care for patients with schizophrenia. It provides them with knowledge and skills essential to cope and manage their illness while pursuing and achieving goals in their recovery.^(41,42) The concept of recovery means being able to create a sense of purpose and live a meaningful life, finding hope, developing self-esteem and resilience, building healthy relationships, gaining independence and staying in control of illness^(43,44) along with this, the present study was conducted to evaluate the efficacy of recovery program on self-management for patients with schizophrenia.

Generally, the present study represented important finding that, there were efficacy of recovery program on achieving higher improvement toward study group compared with control group regarding their levels of recovery, self-management and psychological

difficulties indicating that these changes can be attributed to the program and not influenced by any other factors. Both groups were similar in terms of socio-demographic characteristics and matched in clinical traits such as being young adults, having relapsed, being re-hospitalized multiple times, admitted involuntarily to the hospital, receiving antipsychotic and antiparkinsonian drugs and the most common symptoms reported by both groups were delusions and hallucinations.

The improvement of the study group in recovery, self-management and psychological difficulties related to some possible reasons, one reason is "active participation of patients" in the study group where those patients were more actively engaged in the recovery program, following the instructions provided by the researchers and taking a more proactive stance towards their recovery. However, the patients in control group have received

only usual traditional care, without any specific interventions' modalities.

The next reason may be “individualized intervention”, the recovery program in our study focuses on personalized care to meet a specific need of each patient and addressed their individual symptoms and psychological difficulties. Furthermore “the quality and quantity of care” provided to the study group have been higher than that provided to the control group. Another possible reason may be “patient’s motivation”, the patients in study group were more motivated to participate in the recovery program and more invested in their own recovery. Also worth mentoring, the study group received more effective medication management during the recovery program that helped to reduce their symptoms. Medications such as antipsychotics are typically used to manage symptoms of schizophrenia and prevent relapse, but their effectiveness can vary depending on the individual compliance.

The finding of the present study consisted with previous studies as Egyptian study conducted by **Mohamed O. et al. (2019)** who implement and evaluate the impact of a structured recovery focused self-management program for patients with schizophrenia on their self-efficacy and symptoms severity, their results showed statistical significant differences of recovery, self-management and cognitive difficulties among patients with schizophrenia before and after application of their program.⁽⁴⁵⁾ Along with this, **Liu W. et al. (2022)** who assess the effectiveness of a needs-tailored recovery program for patients with mental illness as schizophrenia and the result pointed to a

significant difference between the experimental group and control groups in the extent of improvement in recovery after carrying out the program among participants.⁽⁴⁶⁾

Additionally, study of **Mak W. et al. (2022)** who examined the effect of brief recovery-oriented program designed for individual with mental illness to improve self-manage symptoms and well-being, their result revealed that significant improvements of depressive and anxiety symptoms which indicates alleviating in psychological distress among study group than control group.⁽⁴⁷⁾ Furthermore, study concerning the effect of recovery program to patients with schizophrenia or other sever mental illnesses (SMIs) which conducted by **Roosenschoon B. et al. (2021)** who confirms that the efficacy of their recovery program in overall illness self-management.⁽²⁷⁾

Whilst, inconsistent with this result was **Loubière S. et al. (2022)** about housing first as a recovery-oriented approach for people with SMIs as patients with schizophrenia, their study founded that both groups recovery group and control group were improved in recovery and psychological difficulties from baseline after 48 months. No statistically significant changes found between the two groups over time after application of intervention.⁽⁴⁸⁾ Moreover, the study conducted by **Jensen S. et al. (2021)** whose examined the effectiveness of their recovery program for people with SMIs as schizophrenia and revealed that no significant differences between the recovery group and the control groups in terms of recovery and all areas of psychological difficulties.⁽⁴⁹⁾

More specifically, the present study focused on three main areas of improvement: recovery, self-management and psychological difficulties. Beginning with “recovery” in which the result of the present study revealed that the recovery program has positive effect on recovery level of patients with schizophrenia immediately and after three months from implementation of the program. This result comes in accordance with study about recovery focused self-management of psychosis by **Chien W. (2023)** who found the level of recovery had significantly greater improved in study group than psychoeducation group at 9 and 18 months follow-ups improved with moderate effect.⁽⁵⁰⁾

Another study conducted by **Bendel-Rozow T. (2021)**, this study established a new recovery program which integrates dance movement therapy with recovery techniques for SMIs as schizophrenia by examine this program compared to the standard recovery program and found that both programs achievement of similar improvement in people with SMIs.⁽⁵¹⁾ In the same direction study carried by **Wong D. et al. (2019)** who examine the impact of a recovery-oriented cognitive–behavior approach among a group of people with schizophrenia that showed improving in the mental health recovery process and a sense of hope for those people.⁽⁵²⁾

While contrast to the result of **Goh Y. et al. (2023)** who examine the effectiveness of their recovery program in improving personal-recovery outcomes among people with psychiatric disorders, their result suggested that a modest improvement in personal-recovery scores among participants during the post-

program periods and follow-ups compared to those in the non-recovery groups.⁽⁵³⁾

In another hand, the results of the present study denote that the patients who have a high level of recovery have a high level of self-management. This explained by the patients who begin experience a sense of recovery, become more motivated to take an active role in managing their condition, working towards achieving their personal goals and aspirations, monitoring and taking control of their symptoms and engage in self-management strategies. In this context the study carried out by **Beentjes T. et al. (2021)** to explored outcome in patient with SMIs who participate in program concerning recovery and showed that the highest statistically significant correlations between recovery and self-management after implementation of their recovery program.⁽⁵⁴⁾ Whilst the study of **Beentjes T. et al. (2018)** who added e-health components to recovery-oriented intervention to people with SMIs and found that the participants in the intervention group scored significantly higher recovery and higher self-management compared to the control group.⁽⁵⁵⁾

It is important to mention that improvement of “self- management” among patients with schizophrenia was that the patients believe in own importance role regarding their health condition, develop a greater understanding of their condition as the signs and symptoms of their illness, gaining their confidence and knowledge needed to take action toward themselves in own way to recovery, empowers them to take action towards their condition in the way of

recovery. The result of the present study is in harmony with the study of **Casey R. et al. (2023)**, they evaluated the impacts of delivering the recovery-oriented psychosocial program for people with SMIs and indicated that patients experienced moderate improvement in their illness management after delivering the program.⁽⁵⁶⁾ Similarly, the study conducted by **Polat S. & Kutlu Y. (2021)**, they conducted the study to clarify the effect of the illness management and recovery program on patients with schizophrenia. Their results indicated that the program has a positive effect on illness management in patients and aids them make progress towards their personal goals.⁽¹⁷⁾

More precisely, the improvement of “psychological difficulties” among patients in the present study included significantly improved emotion, cognitive and behavior after applying the recovery program. Concerning that the patients were helped to understand their illness better which can reduce anxiety and stress, they helped patients retrain their cognitive skills and improve their ability to function in daily life. Also, they learned communicate and interact with others, how reduce their risk of relapse and achieve their own goals related to education, work and social activities, recovery program help patients develop more adaptive and rewarding behaviors.

In this respect, **Leclair M. et al. (2020)** who studied recovery pathways among people with mental illness and found that recovery-oriented interventions resulting in meaningful improvement on psychological problems for those patients.⁽⁵⁷⁾ Also, **Padmakar A. et al.**

(2020) who studied how the transition from mental illness hospital to a community-based recovery model for individual with SMIs can be facilitated, results display a significant reduction of psychiatric symptoms in patients.⁽⁵⁸⁾ In contrast with the study by **Canacott L. et al. (2019)** who applied the wellness recovery action plan (WRAP) for improving recovery outcomes and clinical symptomatology, they revealed that WRAP hadn't significant decreases in clinical symptoms for individuals with mental health difficulties.⁽⁵⁹⁾

Conclusion

Based on the results of this study, it could be concluded that the recovery program had efficacy on achieving higher self-management and brought a significant reduction on psychological difficulties of patients with schizophrenia. Also, induced an improvement in recovery levels of patients in the study group before and after the program.

Recommendations

In the light of the study findings, the following recommendations were formulated:

- 1) Recovery program should be incorporated as apart of rehabilitative services that give for patients with schizophrenia to aid them get optimal level of recovery.
- 2) Integrating recovery lecturers in psychiatric nursing curriculum for both undergraduate and postgraduate nursing students.
- 3) Using higher technology for design and implement recovery intervention for patients with schizophrenia as artificial intelligence, mobile phone applications and chatbots.

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