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Effect of Positive Emotional Treatment Program on Anhedonia and Apathy among Schizophrenic Patients

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Abstract
The purpose of this study was to investigate the effectiveness of positive emotional treatment program on anhedonia and apathy among schizophrenic patients. Setting: The present study was conducted at the Al-Abbassia Mental Health Hospital. Sample: A purposive sample consisted of thirty schizophrenic patients was recruited in the current study. The sample of the current study was divided into experimental and control groups. Methods: A quazi-experimental design was used in this study. Three tools were used to collect the data for the current study, Personal data sheet, Scale for the Assessment of Negative Symptoms and The Savoring Beliefs Inventory. A constructed positive emotional program was designed to help patients to develop necessary skills for modifying defeatist thinking, to learn and practice a new skill to improve their anticipation or maintenance of pleasure. This program was implemented over thirteen sessions, two sessions per week and each session lasted about 60-90 minutes. Pre and post assessments were carried out for the experimental and control groups. Results: The current study results revealed overall significant effects of positive emotional program regarding decreasing patients' negative symptoms and increasing their anticipation or maintenance of pleasure. Socio-demographic data showed no statistically significant in relation to pre and post assessments, however; anhedonia domain was statistically related with level of education. Conclusion and recommendations: the study concluded that, the positive emotional program was effective with schizophrenic patients' concerning reducing negative symptoms and enhancing anticipation or maintenance of pleasure. The study recommended that, the positive emotional program should be incorporated into treatment regimen of schizophrenic patients. In addition, applying techniques that are proven to be positively correlated with emotional regulation enhancement such as mindfulness practice rather than just using medication that have less effect on patient 'emotions.
Keywords: Schizophrenia, positive emotion, apathy, Anhedonia

1. Introduction

Schizophrenia is a extreme chronic mental health disorder that affects approximately 0.7% of the populace and, quite apart from personal distress, schizophrenia has a huge socioeconomic burden, mostly in terms of indirect costs like loss of employment and social support (Wittchen et al., 2011). Schizophrenia is a severe and debilitating disorder portrayed by unsettling influences in thought, feeling and conduct. Schizophrenia has a direct impact on the lives of individuals at the personal, educational, family and occupational levels.

The manifestations of schizophrenia have profound effects on the lives of patients and additionally their family and companions. Symptoms often frequently make work and social interaction troublesome. Symptoms include positive symptoms such as hallucinations, disordered thinking and delusions, and negative symptoms that include expressive deficits such as blunted affect and impoverished speech, and experiential deficits such as asociality, anhedonia, and avolition. Negative symptoms have been found to have a profound impact on long-term outcomes but current treatment options are limited **(**Kring, & Elis, 2014).

Accoding to Favrod, et al. (2015) negative symptoms constitute a key component of schizophrenia and influence people's capacity to adapt to everyday activities and negatively affect their personal satisfaction. These negative manifestations can altogether add to a reduction in social and professional functioning, and they are connected to a lower personal satisfaction. The syndrome of apathy-anhedonia tends to be associated with a poorer prognosis than the symptoms related to diminished expression, which suggests that it is the more severe facet of the psychopathology.

In schizophrenia, anhedonia is characterized as a powerlessness to experience delight; it is viewed as one of the cardinal side effects of schizophrenia. Recent phenomenological and neurobiological research has added both depth and complexity to our understanding of anhedonia in schizophrenia. This progress is of more than academic interest. Despite the fact that the sensational positive indications of schizophrenia have been the customary concentration of research and the fundamental remedial focus of antipsychotic medications, still; emotional and cognitive deficits play a larger role in determining functional disability and long-term outcome (Wolf, 2006).

Negative symptoms relate to a wide arrangement of dysfunctions related with inspiration and feeling. Construct generally with respect to calculate logical investigations of manifestation rating scales, it creates the impression that negative side effects adhere into no less than two particular detachable develops, one relating to lessened enthusiastic expressiveness (e.g., limit influence and alogia) and the other to decreased emotional experience (Cohen , Minor, &. Najolia. 2010). Anhedonia is a steady attribute in individuals with schizophrenia

which perseveres autonomously of changes in positive symptoms, other negative side effects and psychological deficiencies. Trouble encountering delight and motivational shortfalls are the most noticeable among the negative manifestations in anticipating poor functional outcomes ((Berenbaum et al., 2008; Loas et al., 2009, Foussias et al., 2011 and Rocca et al., 2014).

Neurocognitive impedance is related with negative indications more than with positive or disrupted side effects and has been more than once observed to be the best indicator of functional outcome in schizophrenia. Neurocognitive impedance may bolt patients into cycles of rehashed difficulties and disappointments, including improper objective setting (e.g., taking a full course stack in the wake of coming up short the past semester) and a decreased capacity to gain from blunders (Perivoliotis, & Cather, 2009).

Schizophrenic patients had specific defeatist execution convictions (e.g. "I generally fall flat," "It's not worth the exertion" assume an imperative part in the connections amongst neurocognition and negative symptoms and also between neurocognition and functional capacity. These convictions allude to one's overgeneralization of negative desires concerning execution and have been appeared to connect with negative manifestations among patients with schizophrenia (Quinlan, 2014). Concede and Beck (2009) found that defeatist execution demeanors intervened the connection amongst neurocognition and negative side effects, and also the connection amongst neurocognition and subjective quality of life.

People with schizophrenia showed a lesser capacity to keep up constructive feelings. The outward appearance of feelings can assume a causal part in the subjective experience of those feelings. Despite the fact that detectable outward indications of passionate expression are decreased in schizophrenia, studies indicate that sufferers continue to display very subtle facial muscle movements that are similar to and in accordance with their responses (Favrod, et al. 2015).The Positive Emotions Program for Schizophrenia (PEPS) is a new psychological treatment that has been developed to tackle the symptoms of apathy and anhedonia in people with schizophrenia. It is new therapy that intended to enhance lack of concern and anhedonia by expanding subjective control of positive feelings, including the foresight and support of those feelings (Favrod, et al. 2015).

Strauss, (2013) recommended amplifying positive passionate encounters by utilizing systems created in the field of full of feeling science to expand the recurrence and span of positive emotional experiences. Five strategies have been found to explicitly and dependably increment the recurrence, force, and term of positive emotions. They include anticipating the enjoyment; behavioral display (expressing emotions via nonverbal behaviors); being 'in the moment' (directing controlled attention toward positive experiences when they occur—savoring); communicating and celebrating positive experiences with others; and recalling previously pleasurable events (Quoidbach, Berry, Hansenne, & Mikolajczak, 2010).

Significance of the Study

Schizophrenia is a serious, long term mental health condition that causes a wide range of psychological symptoms broadly categorized as positive and negative. The negative symptoms associated with a diminished capacity to experience (anhedonia, a sociality, and volition) from those which are associated with a limited capacity for expression (emotional blunting, alogia). These negative symptoms can fundamentally add to an abatement in social and professional, and they are connected to a lower personal satisfaction. The adequacy of medication based medications and mental intercessions stays constrained.

The majority of schizophrenia patients suffer from negative symptoms. Negative symptoms of schizophrenia include apathy, anhedonia, blunted affect, alogia, and avolition. These symptoms are an important predictor of poor functional outcome by negatively influencing patients' ability to perform activities of daily living, or maintain stable relationships and employment.

Despite considerable advances in the management and treatment of schizophrenia, negative symptoms have remained to a great extent treatment-recalcitrant. Indeed, for many individuals affected by schizophrenia, the negative symptoms, namely, restricted affect, emotional expression, poverty of speech, anhedonia, asociality and diminished motivation and sense of purpose, appear to be the rate-limiting steps in terms of quality of life and their achieving optimal functional outcomes (e.g., integration into the community and workplace). As such these negative symptoms have emerged as a treatment target in their own right, distinct from positive symptoms. Recently, anhedonia has been identified as an important factor that contributes to the health-related quality-of-life deficit observed in individuals with schizophrenia.

Deficits in multiple domains of "neurocognition" are marked, ranging from attention to working memory to executive function, and they are little improved by medication, though cognitive remediation therapy is attracting interest as an alternative therapeutic approach. The negative symptoms of schizophrenia, which encompass blunted affect, poverty of speech (alogia), a-motivation, anticipatory anhedonia and asociality, are likewise poorly-treated and severely interfere with the functional status of patients.

Positive Emotions Program for Schizophrenia (PEPS) is a new psychological treatment that has been developed to deal with the negative symptoms of schizophrenia. PEPS aimed to teach participants various skills to help those overcome feelings of hopelessness, and to increase the anticipation and maintenance of positive

emotions.

Positive Emotions Program for Schizophrenia (PEPS) is a promising intervention to improve anhedonia and apathy which need to be tested further in a controlled study. It is an intervention meant to reduce anhedonia and apathy. The program teaches skills to help overcome defeatist thinking and to increase the anticipation and maintenance of positive emotions. PEPS involves different eight group sessions, that usually involve using visual and audio materials and presented as power point presentation slides projected onto a screen. The hypothesis of the previous researches using this type of treatment is that it would reduce anhedonia and apathy.

A second generation antipsychotics are more effective than first generation antipsychotics in the treatment of negative symptoms. Undisputed, nonetheless, is that negative symptoms continue much of the time notwithstanding pharmacological treatment.. Moreover, it has become clear that it is the negative symptoms (more than the positive symptoms) that account for much of the functional disability of schizophrenia.

There remains a gap in knowledge about effective treatments for negative symptoms and there is significant variability in current approaches of treatment or the effectiveness of interventions with negative symptoms is very limited It is important to understand how change is brought about through a given intervention, specifically what the mechanisms of change may be for negative symptoms. This study will shade the light on whether or not PEP techniques would be successful in targeting negative symptoms of schizophrenia. This is important for understanding the long-term effects of treatments and may aid in adapting interventions to meet individual need. The results of this study were beneficial to mental health nurses to make programs to the prevention and treatment of psychological health problems with schizophrenic patients. Also it is necessary that, apathy and anhedonia take an active part in promoting a positive emotional expression and improvement of psychological health. After reviewing the pertinent literature and researches in this area, it was found that, there is a scanty of researches that have been done in group positive emotional intervention with schizophrenic patients. Therefore, the aim of the current study is to investigate the effectiveness of positive emotional treatment program on anhedonia and apathy among schizophrenic patients.

Aim of the Study

This study is aimed to investigate the effectiveness of positive emotional treatment program on anhedonia and apathy among schizophrenic patients.

Hypotheses

H1: Schizophrenic patients who participated in the positive emotional program will have reduced scores in the negative symptoms scale than those who received conventional hospital treatment.

H2: Schizophrenic patients who participated in the positive emotional program will have higher score in savoring beliefs scale than those who received conventional hospital treatment.

Subjects and Methods

Research Design

A quasi-experimental pre-post-test non-equivalent group design was used in this study.

Sample and Sampling

A purposive sample consisted of thirty schizophrenic patients, the current sample was calculated using G-power analysis version 3.1.1, where the Power of .95 (β = 1-.95 = .05) at alpha .05 (one-sided) was used as the significance level, and effect size= (0.5) was utilized eligible subjects from male in-patient departments who met the inclusion criteria were forty patients and were listed alphabetically, then the researchers blindly selected from a pool till reached the sample size of the current study

The thirsty schizophrenic patients were randomly assigned into two groups as the researchers used thirty colored cards (yellow for control group and red for the study group); then the researchers asked each patient to select a card until the experimental group reached to be fifteen patients and they received group positive emotional program in addition to the usual treatment (drugs as prescribed by their physician and other treatment models if found), and the other (15 patients) were be considered as the control group, who received their care as usual hospital care.

Inclusion criteria

1. According to ICD-10 criteria for a diagnosis of schizophrenia or a schizoaffective disorder at least 5 years ago
2. Aged ranged from 20to 60 years.
3. Married patients.
4. Patients who can read and write.
5. Capacity for consent according to the San Diego Brief Assessment of Capacity to Consent. This tool

measures a patient's understanding of an information sheet. If the potential participant is unable to respond correctly to the questions asked after reading the sheet, the patient is excluded. The procedure can be conducted a maximum of two times.

Exclusion criteria

1- Mental retard.
2- Very young age.
3- Newly admitted patients.
4- Illiterate
5- Disturbed patients (such as excited patients).

Setting

This study was conducted at In-Patient Male Departments in AL-Abassia Mental Health Hospital, Cairo.

Tools of data collection

Data will be collected through utilizing the following tools:

1-Socio-demographic and clinical data developed by researchers, which includes data about the patients' age, sex, level of education, psychiatric diagnosis, duration of illness, and treatment.

2-Scale for the Assessment of Negative Symptoms (SANS) was developed by Anderson, 1931). It is a widely used instrument for measuring negative symptoms in schizophrenia. It comprises of 20 items, scored from 0 to 5. The 20 items are grouped into five domains: (1) withdrawal or emotional poverty; (2) alogia (lack of speech); (3) avolition and apathy (lack of energy, lack of initiative); (4) anhedonia and social withdrawal (loss of interests); (5) attention. The items are rated on a 6-point Likert scale, 0 (absent) to 5 (severe). The total score of the scale was ranged from 0 to 120. The scale of Assessment of Negative Symptoms takes 10-15 minutes to be completed and 5 minutes to score. Translation and back translation were done by the researchers and by experts in psychiatric nursing. The Arabic version of Assessment of Negative Symptoms scale was tested for content validity, revised by psychiatric nursing experts.

The reliability scores range between 0.63 and 0.83 and test-retest reliability ranging from 0.25 to 0.37. Also, the findings indicate good levels of rater agreement ranges from 0.75 to 0.92 (for total score). Factor analysis indicates that the SANS measures two fairly independent dimensions of schizophrenic symptomatology (diminished expression and combined anhedonia - asociality) (Kirkpatrick, 2011& Levine, Leucht, 2013). High score reflect more severe negative symptoms. The reliability is ranged from .83 to .92. Internal consistency for the total scores was 0.90. The Scale for the Assessment of Negative Symptoms (SANS) was translated into Arabic language, reviewed for the accuracy of translation and tested for content validity by three professors in psychiatric nursing, at Cairo University. The Arabic version of SANS proved to be valid. It was also reliable using a test –retest method (r = .88).

3-The Savoring Beliefs Inventory was developed by (Bryant, 2003). The scale was designed to measures a person's thinking regarding their capacity to savor positive experiences in terms of past experiences, current experiences, and future anticipation. It is a 24-item scale including a positive scale (12 items) and a negative scale (12 items). The SBI has three subscales that assess anticipating upcoming positive events, savoring positive experiences, and reminiscing about past positive experiences. Each subscale consists of 8 items that are rated from 1 (strongly disagree) to 7 (strongly agree). Item examples: "I can make myself feel good by remembering pleasant events from my past"; "I feel fully able to appreciate good things that happen to me"; and "I can enjoy positive events in my mind before they actually occur." total scores ranged from 24 to 168. High total scores are reflective of greater savoring beliefs. Total scores can vary between -72 (low savoring beliefs) and +72 (high savoring beliefs) for the overall scale. Scores for the three subscales are calculated according to the same principle and can vary from -24 (low savoring beliefs on subscale) to +24 (high savoring beliefs on subscale).

The SBI has been found to have good internal consistency (α = .89; Bryant, 2003). The SBI has also demonstrated excellent construct validity as evidenced by high positive correlations with gratification and self-esteem and inverse correlations with strain and depression (Bryant, 2003). Higher scores represent stronger beliefs in the ability to savor positive emotional experiences. The SBI has consistently demonstrated good internal consistency (alphas ranging from .88-.94) with all subscales showing high test-retest reliability (rs over 0.80) (Bryant, 2003). The SBI total score also demonstrated a solid test–retest reliability estimate (r = .77). The Savoring Beliefs Inventory was translated into Arabic language, reviewed for the accuracy of translation and tested for content validity by three professors in psychiatric nursing, at Cairo University. The Arabic version of SBI proved to be valid. It was also reliable using a test –retest method (r = .83).

Description of the Program

The study program was designed to be thirteen sessions implemented on three phases, where first three sessions were for assessment, program sessions included eight sessions and the final two sessions were for evaluation.

Program Phases

1- *Assessment phase (three sessions).* This phase was conducted using the study tools: personal data questionnaire, negative symptoms questionnaire and savoring beliefs inventory to collect pre program assessment data for both experimental and control groups. The researchers spent time with the patients to prepare them to be involved in the study and to establish rapport with patients, and introduce each one to other patients; the researchers facilitated the feeling of warmth and maintained the feeling of security to encourage the patients sharing and openness. Also, in this phase the researchers identified groups leaders from the experimental group who will help to facilitate the implementation of the program.

2- *Implementation phase (eight sessions).* PEPS's session includes the following steps. The first part of the session begins with a welcome, followed by a five minute relaxation-meditation exercises. The second part of the session starts with the group leaders who going over the homework task that was given during the previous session. The session continues with an exercise in challenging specific defeatist thoughts which are presented using the program's two fictitious heroes—Ahmed and Mohamed.

Ahmed, for example, expresses the defeatist thinking: "I can't relax; I'm useless." The participant's role is to challenge her belief, first by assigning different reasons to Ahmed's difficulty to relax. They learn to find reasons which might be linked to the program's hero, the other people or to Ahmed's environment. They subsequently try to develop an alternative, a more positive way of thinking. Modifying defeatist thinking appears to be an essential supplementary ingredient to treat negative symptom because of repeated failures in patients' account. Following this introduction, and according to the session theme, participants learn and practice a new skill to improve their anticipation or maintenance of pleasure. The session ends with the setting of the homework task that the patients will accomplish for the next session.

Session one was an overview of positive emotional program, the flow of the program, and the contents of the next sessions. The first session focused on establishing trust relationship with schizophrenic patients, maintaining the schizophrenic patients' engagement with treatment, and orienting the schizophrenic patients to the positive emotional treatment model. The researchers emphasized on confidentiality and maintaining individual's privacy.

Session two was designed to identify defeatist thinking that the schizophrenic patients suffer from which result from their illness chronicity (including apathy and anhedonia) and how to cope with this type of thinking. Then the researchers explained how to change the defeatist beliefs by teaching the patients how to practice new skills to improve their expectations or maintain enjoyment and pleasure.

Four sessions (three, four, five, and five) were divided into two parts; part one: savoring pleasant moments: focused on the identification of savoring pleasant moments and assigning homework to keep diary of pleasant moments during the following weeks. Part two: emphasized on the accentuating the behavioral expression of emotions. The session included enjoyable experience involving pleasure or positive emotions and sharing the feelings the patient had at that given moment.

Session five and six: the main objectives were to help schizophrenic patients acquire the most of pleasant moments by sharing them with others while sharing in physical exercises. The patients were asked to describe their positive feeling associated with physical exercises. This technique was performed in the two sessions.

Session seven and eight: anticipating pleasant moments: the focus of these sessions was on anticipation of pleasant moments. The main aims were to make the most of the enjoyable moments by sharing them with others and express the defeatist thinking which is useless and how it can adversely affects and causes the depressed mood moreover; its effect on the health of the individual. On the other hand, the researchers explain to the patients that sharing pleasant moments with others can improve the individual' mood and immune system. In part two: the patients were asked to imagine the sensations produced by positive events in the future. The researchers asked the patients to imagine that they eating delicious fruits with a sweet, shiny smell, and describe the resulting emotion and physical sensations accompanying this imagination.

3- *Evaluation phase.* This is the final phase of the program. Evaluation for each session was done through, immediate feedback from patients' assignments. The final two sessions were used for the termination of the program using the study tools to collect data for post program assessment for both the experimental and control groups.

Procedure

An official approval was obtained from the Ethical Committee of Scientific Research at The Faculty of Nursing,

Cairo University as well as an official approval from Ethical Committee of Scientific Research at AL-Abassia Psychiatric Mental Health Hospital. Also, an official approval was granted from the director of In-patient Male Departments at AL-Abassia Psychiatric Mental Health Hospital. Afterwards, the researchers interviewed all participants before they enter the program. The purpose of the study was explained and oral consent was obtained, then written consent was obtained immediately before filling the tools. The researchers used semi structured interview to complete tools for patient assessment, this interviewed lasted for about 30-45 minutes, also researchers' observations for patients communications and interactions with other patients, also severity of symptoms. These tools were kept anonymously by using code number. The purpose of the study was explained for psychiatrists and nursing staff of all selected wards for chronic patients to gain support and corporations. Fixed time and room were determined for program sessions.

Pilot study

A Pilot study was carried out on three schizophrenic patients to ensure the clarity and the applicability of the study measures. No modifications were needed to test the feasibility of the study tools. Subjects who participated in the pilot study excluded from the actual study.

Ethical Considerations

An official approval was also obtained from the Patient Rights Committee at Al-Abassia Mental Health Hospital to conduct the study. The researchers contacted the schizophrenic patients who meet the inclusion criteria of the study. At that time; purpose and nature of the study were explained and informed consent was obtained. The researchers assured patients who were will to participate that have the right to refrain or withdraw from participating in the study at any time without experiencing any negative consequences. Informed consent was obtained from all eligible participants who agreed to participate in the study. Data confidentiality and patients' privacy were secured. Code numbers were created for each patient and kept by the researchers. Positive emotional intervention program was given to the control group after finishing the study and the researchers were welcoming to answer any questions about techniques and methods used in the program.

Statistical Design

Data was analyzed by using the Statistical Package for the Social Sciences statistical software (SPSS version 21). Descriptive statistics as range, means, standard deviations, and frequency were determined for each group on each measure for pre, post tests. Paired t-test was used to assess pre- post-test data for the separate treatment group was tested for significant differences in order to determine whether or not the data could be collapsed across treatment group. Analysis of Variance (ANOVA) was used to determine the difference for variables of three categories. Pearson correlation (r) was used to assess the relationship between continuous variables. The significance lvel in the current study was (<0.05).

Results and Data Analysis

This study was conducted on thirty patients with chronic schizophrenia to investigate the impact of positive emotional treatment program on their apathy and anhedonia. Data collection method was utilized and the results of this study were presented in the following four main sequences:

Table (1) Personal data of experimental and control Groups (n=30)

Demographic Characteristics	**experimental group n=15**		**Control group n=15**	
	No.	**%**	**No.**	**%**
Age :				
20-29	-	-	2	6.7%
30-39	3	10%	5	16.6%
40-49	7	46.7%	5	16.6%
50+	5	16.6%	3	10%
Level of education:				
1- Read And Write	2	6.7%	1	3.3%
2- Primary School	1	3.3%	2	6.7%
3- Preparatory	2	6.7%	1	3.3%
4- Secondary	6	20.0%	6	20.0%
5- University	4	13.3%	5	16.6%
Duration of illness: 5- 10- 15- 20+	 - 2 3 10	 - 6.7% 10% 33.3%	 2 3 7 3	 6.7% 10% 46.7% 10%
Diagnosis: 1- schizophrenia 2- schizoaffective	 13 2	 43.3% 6.7%	 14 1	 46.7% 3.3%

Table (1): represents that, the age of the study group ranged between 30-60 years, about half of the experimental group (46.7%), their age were 40-49. In terms of the educational level which they had achieved: three had not finished their mandatory schooling (10%), two participants had finished their mandatory schooling (6.7%), six had a secondary school (20.0%), and four had completed university (13.3%). About one fifth of them were secondary school educational level (20.0%), their duration of illness was more than 20 years (33.3%), about one third of them were hospitalized for more than twenty years and the most of them diagnosed schizophrenia (43.3%). concerning control group, about (16.6%) their age ranged 30-39 years, also the same percentage their age were ranged 40-49 years, about one fifth of them were secondary school educational level (20.0%), their duration of illness was 15-19 years (their duration of illness was more than 20 years (46.7%), and the majority of control group diagnosed schizophrenia (46.7%).

Table (2) Comparison between mean scores of Pre and Post assessment regarding Dependent Studied Variables (n=30)

Variables	Group	Pre Mean ±SD	Post Mean ±SD	t	p
I- Negative symptoms scale:					
1-flattening /blunted affect	Experimental	26.13±4.95	13.40±7.21	5.632	.000*
	Control	26.33±6.77	24.06±5.14	1.031	.311
2-Alogia	Experimental	10.40±3.15	5.20±4.49	3.668	.001*
	Control	11.73±3.91	10.93±3.03	.625	.537
3-Apathy/avolation	Experimental	12.53±1.45	5.86±2.55	8.766	.000*
	Control	13±2.32	12.13±1.72	1.157	-.257
4-Anhedonia/ asociality	Experimental	17.73±1.48	10.20±4.42	6.248	.001*
	Control	17.33±2.09	15.86±1.76	2.074	.048
5-Attention	Experimental	4.86±.99	4±2.17	1.407	.175
	Control	5.46±1.18	5.46±1.18	-	-
Total score	Experimental	71.66±7.35	38.66±15.78	5.632	.001*
	Control	73.86±12.21	68.46±8.92	1.383	.178
II- Savoring beliefs Scale:					
1- Anticipating upcoming positive events	Experimental	32±3.09	24.07±3.95	6.120	.001*
	Control	30.40±4.15	26.53±2.87	2.964	0.006*
2- Savoring positive experiences	Experimental	30.60±3.52	21.66±2.82	7.669	0.001*
	Control	28.66±3.08	25.93±2.40	2.706	0.011*
3- Reminiscing about past positive experiences.	Experimental	32.40±3.69	22.07±3.15	8.236	0.001*
	Control	31.26±5.35	26.60±3.18	2.903	0.007*
Total scores	Experimental	95±8.86	67.80±7.50	9.071	0.001*
	Control	90.33±9.77	80.77±6.83	3.658	0.001*

*Statistically significant p< 0.05

Table (3): shows the pre and post patients scores for both the experimental and control groups regarding studied variables (Scale for the Assessment of Negative Symptoms and savoring scale). Scale for the Assessment of Negative Symptoms scores for the experimental group was significantly different , between mean score for the pre program (71.66±7.35) and for post program (38.66±15.78).the statistical analysis proved highly significant (t=5.632, P=0.001). For the control group, there was a decline in the patients' post program intervention mean scores (73.86±12.21 to 68.46±8.92 respectively t=1.383, P=0.178).

As regards savoring scale scores for the experimental group there was significant difference between mean scores for the pre program (95±8.86) and for post program intervention (67.80±7.50), the statistical analysis proved highly significant at (t= 9.071, P=0.001). This indicates highly significant improvement.

Table (3) Range of pre to post assessments Improvement Regarding Dependent Variables among the studied Group (n=15)

Variables	Range
I- Negative symptoms scale:	
1- flattening /blunted affect	16.00-26.00
2- Alogia	12.00-12.00
3- Apathy/avolation	5.00-11.00
4- Anhedonia/asociality	5.00-16.00
5- Attention	2.00-7.00
Total scores	25.00-56.00
II- Savoring scale:	
1- Anticipating upcoming positive events	12.00-13.00
2- Savoring positive experiences	13.00-10.00
3- Reminiscing about past positive experiences.	12.00-10.00
Total scores	36.00- 26.00

Table (3): represent rang of improvement regarding dependent variables (negative symptoms scale and savoring scale) in experimental group. This table shows the reduction of negative symptoms that was high and ranged from (16.00-26.00). Concerning dimensions of negative symptoms scale, the Apathy/avolation domain ranged from 5.00-11.00. Flattening /blunted affect ranged from 16.00-26.00. Anhedonia/asociality ranged from 5.00-16.00. Attention ranged from 2.00-7.00. While Alogia domain has not improvement (12.00-12.00).

Concerning dimension of savoring scale, Anticipating upcoming positive events domain ranged from

12.00-13.00. Savoring positive experiences domain ranged from 13.00-10.00. Reminiscing about past positive experiences domain ranged from12.00-10.00. So, total improvement in savoring scale ranged from 36.00- 26.00. Improvement occurred for the experimental group who received positive emotional treatment program.

Table (4) Differences among age groups in experimental group in relation to improvement of dependent variables and their domains (n=15)

Variables	Age				F	P
	20-29years	30-39 years	40-49 years	50+ years		
I- Negative symptoms scale:						
1) flattening /blunted affect	0	30.33±2.51	24.57±4.79	25.80±5.54	1.550	0.252
2) Alogia	0	13±4.58	9.28±2.36	10.40±2.96	1.571	0.248
3) Apathy/avolation	0	13.33±.57	11.85±1.57	13±1.41	1.584	0.245
4) Anhedonia/asociality	0	17±1	18±1.15	17.80±2.16	.444	0.651
5) Attention	0	4	5±1	5.20±1.09	1.630	0.237
Total scores	0	77.66±6.11	68.71±4.99	72.20±9.52	1.742	0.217
II- Savoring scale:						
1- Anticipating upcoming positive events	0	34.3±2.08	32±2.08	30.60±4.27	1.454	0.272
2- Savoring positive experiences	0	32±1.73	31.85±2.79	28±4.18	2.478	0.126
3- Reminiscing about past positive experiences.	0	34.33±2.51	32.71±3.68	30.80±4.26	.888	0.437
Total scores	0	100.66±3.21	96.57±6.39	89.40±11.86	1.956	0.184

Table (4): reveals that, there were no statistically significant relations between the patients' age groups 30-39, 40-49 and more 50 years and Negative symptoms scale and Savoring scale.

There were no statistically significant relations between the patients' age and the five domains of Negative symptoms scale: flattening /blunted affect, Alogia, Apathy/avolation, Anhedonia/asociality and attention. Also, there were no statistically significant relations between the patients' age and the three domains of savoring scale: Anticipating upcoming positive events, Savoring positive experiences and Reminiscing about past positive experiences.

Table (5) Differences among levels of educational in experimental group in relation to improvement of dependent variables and their domains (n=15)

Variables	Educational level					F	P
	Read & write	Primary	Preparatory	Secondary	University		
I- Negative symptoms scale:							
6- flattening /blunted affect	27.50±4.94	21.00	27±2.82	24.50±5.19	26.13±4.95	.435	0.78
7- Alogia	9±5.65	9.00	9.50±.70	13±2.44	8±1.41	2.595	0.10
8- Apathy/avolation	12.50±2.12	12.00	13±1.41	12.33±1.63	12.75±1.70	.101	0.98
9- Anhedonia/asociality	19.50±0.70	16.00	18±1.41	16.66±1.03	18.75±.95	4.807	0.02*
10- Attention	5.50±0.70	4.00	5±1.41	4.66±1.03	5±1.15	.401	0.80
Total scores	74±14.14	62.00	72.50±3.53	74±6.69	69±7.16	.706	0.60
II- Savoring scale:							
4- Anticipating upcoming positive events	30.50±2.12	33.00	32.50±.70	32.16±4.26	32±3.26	.121	0.97
5- Savoring positive experiences	29±7.07	32.00	30.50±2.12	30.66±4.32	31±2.44	.117	0.97
6- Reminiscing about past positive experiences.	31.50±3.53	26.00	35.50±2.12	33.16±4.35	31.75±2.06	1.345	0.32
Total scores	91±12.72	91.00	98.50±4.94	96±12.26	94.75±5.25	.193	0.93

Table (5): reveals that, there were no statistically significant relations among the patients' level of educational and Negative symptoms scale and Savoring scale.

There were no statistically significant relations between the patients' levels of education and the four domains of Negative symptoms scale: flattening /blunted affect, Alogia, Apathy/avolation, and attention. For Anhedonia/asociality domain differences of mean scores were (19.50±0.70, 16, 18±1.41, 16.66±1.03, 18.75±.95

respectively, f = 4.807 p=0.02.

Also, there were no statistically significant relations between the patients' levels of education and the three domains of savoring scale: Anticipating upcoming positive events, Savoring positive experiences and Reminiscing about past positive experiences.

Table (6) relationship between study group's duration of illness and dependent variables and its domains (n=15)

Variables	Duration of illness				F	P
	≤5	6-10	11-15	>15		
I- Negative symptoms scale:						
1- flattening /blunted affect	0	17	9.40±3.28	10.22±2.43	2.024	0.17
2- Alogia	0	13	12±1.58	12.77±1.48	3.229	0.07
3- Apathy/avolation	0	16	18±1	17.77±1.71	.474	0.63
4- Anhedonia/asociality	0	4	4.20±.44	5.33±1	.735	0.50
5- Attention	0	35	33.40±1.94	30.88±3.33	3.364	0.06
Total scores	0	83	71.40±5.41	70.55±7.91	1.360	0.29
II- Savoring scale:						
1- Anticipating upcoming positive events	0	35	33.40±1.94	30.88±3.33	1.724	0.22
2- Savoring positive experiences	0	31	32.80±2.77	29.33±3.60	1.727	0.21
3- Reminiscing about past positive experiences.	0	37	34.40±2.19	30.77±3.66	3.069	0.08
Total scores	0	103	100.60±5.41	91±8.78	2.977	0.08

Table (6): represents the effect of the duration of illness on the experimental group improvement in relation to the study variables. There were no significant relations between patients' duration of illness and negative symptoms scale and savoring scale.

Table (7) Correlation Matrix between total mean of the experimental group regarding improvement in negative symptoms scale and its domains and savoring scale and its domains (n=15)

		Anticipating upcoming positive events	Savoring positive experiences	Reminiscing about past positive experiences.	Total savoring scores
Flattening /blunted affect	r	0.179	-0.116-	0.080	0.085
	p	0.523	0.681	0.776	0.764
Alogia	r	0.236	-0.214-	0.221	0.137
	p	0.396	0.443	0.428	0.627
Apathy/avolation	r	-0.020-	0.241	0.418	0.255
	p	0.943	0.387	0.122	0.359
Anhedonia/asociality	r	0.142	-0.051-	0.281	0.173
	p	0.614	0.855	0.311	0.537
Attention	r	0.275	-0.117-	0.073	0.132
	p	0.322	0.679	0.796	0.640
Total negative symptoms	r	0.224	-0105-	0.256	0.186
	p	0.423	0.709	0.357	0.507

Correlation is significant at the 0.05 level (2-tailed).
Correlation is significant at the 0.01 level (2-tailed).

Table (7): shows the correlation matrix of negative symptoms scale and its domains and savoring scale and its domains. The table demonstrates no significant correlations between negative symptoms and savoring scale.

Table (8) Correlation Matrix between total mean of the experimental group regarding improvement in negative symptoms scale and its domains (n=15)

		Alogia	Apathy	Anhedonia	attention
Flattening /blunted affect	r	0.533*	0.312	0.547*	0.547*
	p	0.041	0.257	0.035	0.035
Alogia	r	1	.487	.343	0.571*
	p		.066	.211	.026
Apathy/avolation	r		1	.292	.411
	p			.290	.128
Anhedonia/asociality	r			1	.030
	p				.916

Correlation is significant at the 0.05 level (2-tailed).
Correlation is significant at the 0.01 level (2-tailed).

Table (8): shows the correlation matrix among scores of negative symptoms domains. The table demonstrates statistically significant correlations among Flattening /blunted affect was statistically significant correlations with alogia, Anhedonia and attention (r=0.533, 0.547 & 0.547 respectively). Alogia domain was statistically significant correlations with attention (r=0.571).

Table (9) Correlation Matrix between total mean of the experimental group regarding improvement in savoring scale and its domains (n=15)

		Savoring positive experiences	Reminiscing about past positive experiences.	Total savoring scores
Anticipating upcoming positive events	r	0.322	0.567*	0.886**
	p	0.241	0.027	0.000
Savoring positive experiences	r	1	0.083	0.581*
	p		0.768	0.023
Reminiscing about past positive experiences.	r		1	0.750**
	p			0.001

Correlation is significant at the 0.05 level (2-tailed).
Correlation is significant at the 0.01 level (2-tailed).

Table (9): shows the correlation matrix among scores of savoring scale domains. The table demonstrates statistically significant correlations among anticipating upcoming positive events and reminiscing about past positive experiences and total savoring scores as (r= 0.567 & 0.886 respectively). Savoring positive experiences domain was statistically significant correlations with Total savoring scores (r=0.581). Reminiscing about past positive experiences domain was statistically significant correlations with Total savoring scores (r=0.750).

Discussion

Drug and psychological treatments for the negative manifestations of schizophrenia have indicated poor clinical adequacy. Besides, they require extensive remedial intercessions including exceptionally gifted experts. The Positive Emotions Program for Schizophrenia (PEPS) is a new psychological treatment that has been developed to tackle the symptoms of apathy and anhedonia in people with schizophrenia. PEPS aims to teach participants various skills to help patients overcome feelings of hopelessness, challenge defeatist thoughts and to increase the anticipation and maintenance of positive emotions. In this way, the aim of this study was to investigate the effectiveness of positive emotional treatment program on anhedonia and apathy among schizophrenic patients.

The distribution of experimental and control groups according to age, level of education, duration of illness and diagnosis are discussed in this section (table: 1). concerning patients' age, about half of the experimental group and one third of the control group, their age ranged from 40-49 years.

In this study, results revealed that, there were no statistically significant differences between age and improvement in negative symptoms scale and savoring beliefs scale (table: 4). These results may be due to negative symptoms can can fundamentally add to a reduction in social and expert working, and they are connected to a lower personal satisfaction of schizophrenic patients. Lack of care anhedonia has a tendency to be related with poorer guess than positive manifestations with various age bunches. Another interpretation for this finding may be due to the small size of the studied sample which decreased the significance of the differences among age groups.

These results were in agreement with Fakhry, et al. (2016) who proved that, there were no statistically significant differences in age (*P*=0.999661). This finding was contradictory with Okasha, et al. (2016) found that, the duration of untreated psychosis (DUP) was the most brief in the individuals who had a time of onset before 18 years, trailed by the individuals who had period of onset in the vicinity of 40 and 50years, with a huge

measurable distinction between the diverse age bunches.

The distribution of level of education, the current study showed one fifth of both experimental and control group had secondary school. As regarding level of educational, the present study results revealed that, it had significant relation with patients' Anhedonia/asociality domain (table: 5). These finding could be explained as, chronicity of illness was affected different areas of patients' life as level of education and impaired degree of coping day to day activities. Likewise, people with schizophrenia are less dynamic or less required in charming and constructive activities. Psychological impedances are available amid scene of psychosis and stay stable over the span of the confusion. These finding was in concurrence with Favord, et al, (2015) who found that, the educational level which they had accomplished: six had not completed their required tutoring, 17 members had completed their obligatory tutoring, three had an auxiliary school confirmation, eight had finished an expert apprenticeship and three had either an expert school or college.

Regarding duration of illness, the current study revealed that, about two third of the experimental group were more than twenty years. there were no statistically significant differences between duration of illness and negative symptom and savouring scale (table: 6). this finding explained that the schizophrenia itself is disable disorder, patient may be unable to handle negative symptoms associated with a diminished capacity to experience (anhedonia, asociality, and avolition) from those which are associated with a limited capacity for expression (emotional blunting, alogia). In accordance, Favord, et al, (2015) found that, the mean duration of illness was (19.05 years) among their sample of schizophrenic patients.

Also, this result was consistent with suttejit, et al., (2015) who did not find a significant association between duration of illness, number of previous psychiatric hospitalizations, number of psychiatric hospitalization in the past 6 months and the PSP scores.

In post-tests, the experimental group had highly statistically significant improved (reduced) in patients mean scores after program for the negative symptoms scale and flattening /blunted affect, alogia /Avolition Apathy and Anhedonia-Asociality domains of the scale, while there was no decline in patients' mean scores of the control group in the post program related to negative symptoms scale and savoring scale (table: 2).

In post-tests, the experimental group had high significant improvement (high) in patients mean scores after program for the savoring beliefs and its domains: Anticipating upcoming positive events, savoring positive experiences and Reminiscing about past positive experiences (table: 2).

The possible explanation of these findings is that, the positive emotional program applied in this study included techniques to challenge defeatist thoughts and teaching new skills to anticipate and maintain positive emotions.

Johnson et al. (2011) revealed that, large improvements in participants' frequency and intensity of positive emotions at both post-test and three-month follow-up, supporting the first hypothesis. Participants also showed a large decrease in total negative symptoms and anhedonia as well as asociality at post-treatment and three-month follow-up, supporting the second hypothesis. Further analyses of anhedonia components (anticipatory and consummatory pleasure) revealed mixed findings. Analyses of the SBI future subscale revealed large positive effect sizes through three-month follow-up. However, analyses of the TEPS anticipatory pleasure subscale revealed almost no change at post-treatment and a small negative effect size at three-month follow-up. Analyses of consummatory pleasure yielded a large positive effect size at post-treatment.

The result of the current study indicated that, there were no significant correlations between negative symptoms scale and savoring scale (table: 7). These outcomes could be clarified as, negative symptoms of schizophrenia might be debilitated in their capacity to appreciate lovely occasions and that schizophrenic patients trust that ordinary errands are unnecessarily hard to finish with the goal that they endeavor these assignments less every now and again. It is conceivable that these convictions and practices support negative indications, for example, anhedonia, avolition, lack of concern and associality.

Favrod et al., (2009) reported a significant negative correlation between anticipatory pleasure and the avolition/apathy of the SANS. This connection was lower than the one with the anhedonia/asociality size of the SANS, demonstrating a weaker connection between these two factors. Lack of concern and avolition are likely connected with expectant delight. Nonetheless, a few different factors may influence movement and eagerness, for example, arranging aptitudes, engine abilities, fortifications gave by nature, and so forth. The outcomes demonstrated that the preparation did not appear to enhance consummatory delight as a result of an expansion in expectant joy. In addtition, Cassar, Applegate, and bentall, (2013) Patients appraised ordinary undertakings as more hard to ace. Inpatients contrasted with outpatients appraised assignments more troublesome yet less essential despite the fact that they didn't vary on the appreciating measure.

Regarding the correlation between negative symptoms domains, the results showed statistically significant correlation between flattening /blunted affect domain, alogia, anhedonia and attention domains (table: 8). these finding could be interpreted as negative symptoms are devastating for patients and families. They contribute to the high levels of disability observed in schizophrenia.

This finding was compatible with Messinger, et al. (2011) who announced that, anhedonia/asociality"

was exceptionally connected to "avolition/lack of concern", while alogia added to the "expressive deficiency" calculate. Authors reported correlations between's negative manifestations and hindrances in word related working, family unit coordination, connections, and recreational exercises. Comparable affiliations have been found for the persisting essential indications that portray the shortage disorder, with these people reliably exhibiting poorer useful results.

People with schizophrenia with and without unmistakable full of feeling smoothing, showing a noteworthy connection between emotional straightening and working at starting appraisal and 1-year development. Notwithstanding, those subjects in the full of feeling leveling bunch additionally displayed altogether more serious negative manifestations generally speaking, making decisions about the part of emotional smoothing troublesome.

Regarding the correlation between savoring beliefs domains, the current study results represented a significant correlation between total score of scale and three domains (Anticipating upcoming positive events, Savoring positive experiences and Reminiscing about past positive experiences. in addition to significant correlation between Anticipating upcoming positive events domain and Reminiscing about past positive experiences domain (table:9). This finding can be explained as, a daily savoring exercise performed with schizophrenic patients where participants were asked to "reflect each day for at least 2-3 minutes on 2 pleasurable experiences and to make the pleasure last as long as possible lead to increased happiness and decreased depression symptoms. In particular, "positive mental time travel," a savoring strategy that involves imagining oneself enjoying a positive event that has either already happened (reminiscing) or could happen in the future (anticipating), has been shown to increase positive emotions.

This result was supported by Routledge, et al., (2011); and Wildschut, Sedikides, and Cordaro, (2011) who found a correlational and experimental findings in younger adult samples suggests that imagining positive past events can increase a sense of meaning in life, even when compared to imagining potential positive future events as well as increasing feelings of social connectedness and social support.

Conclusion

The findings of the present study indicated that the positive emotional treatment program had a positive effect on apathy and anhedonia of the schizophrenic patients after receiving positive emotional program. There was no statistically significant correlation between the total negative symptom and savoring beliefs of the studied sample. While there was a highly statistically significant correlations among Flattening /blunted affect with alogia, Anhedonia and attention of the studied sample pre/ post program implementation. Also, Savoring positive experiences domain was statistically significant correlations with Total savoring scores. There were statistically significant correlations among Anticipating upcoming positive events and Reminiscing about past positive experiences and total savoring scores of the studied sample pre/ post program implementation.

Recommendation

- The positive emotional program should be incorporated into treatment regimen of schizophrenic patients in mental hospitals .
- Nurses can be trained to apply techniques that are proven to be correlated positively with emotional regulation enhancement such as mindfulness practice, using medication that have less effect on patient 'emotions.
- Expression of feelings should be encouraged to reduce disjunction between patient experience and expression of this experience.
- Schizophrenic patients need more organized sessions providing them with some ways to relief their emotional suffering and to reduce the possibility of further emotional impairment.
- Reducing period of isolation induced by the patient and enhancing social networks and social interaction.
- A randomized controlled study with blind raters is needed to validate the efficacy of PEPS.

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