

# The Effect of Humor Intervention Program on Positive and Negative Symptoms among Schizophrenic Patients

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## ABSTRACT

**Background:** Schizophrenia is a chronic disease characterized by distortions in thinking, perception, emotions, language, sense of self and behavior. Hence, humor in this frame of reference could be used as an alternative to conventional treatment with the goal of helping patients with schizophrenia cope with symptoms, enhance recovery through its emotional, cognitive, social and physiological effects.

**Methods:** Randomized control trial (RCT) was used. Purposive sample consisted of 40) schizophrenic patients, the study group (n= 20) and control group (n= 20). The patients were selected and allocated randomly into two groups, intervention group (received the humor interventions program) and control group (received traditional care). The study conducted in the Psychiatry and Addiction Prevention "El Kasr AlAini University Hospital and al Rakhawy (Dar El Mokattam) Hospital for Mental Health. Tools for data collection were as following; The Demographic and medical data sheet, - Positive and Negative Syndrome Scale (PANSS) and Multidimensional Sense of Humor Scale (MSHS).

**Result:** revealed that, showed that there is a statistical significant difference between total score of PANSS for both study and control groups at post intervention.

**Conclusions:** The present study emphasizes the importance of humor intervention program in reducing severity of symptoms of patients with schizophrenia.

**Recommendations:** Humor training program should be integrated as an intervention in conjunction with pharmacological therapy without contraindications and it can maximize the effect.

**Keywords:** schizophrenia, humor intervention program

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## INTRODUCTION

Schizophrenia is a mental disorder that influences how a person behaves, thinks, and perceives the reality. This is identified by symptoms such as delusions, hallucinations, disorganized speech, and reduced emotional expression that debilitates the person's level of functioning and quality of life (Ganguly, Soliman & Mustafa, 2018). Schizophrenia is a serious and impaired psychiatric condition that usually occurs during the transition from puberty to adulthood, with loss of cognitive, behavioral and social functions. Schizophrenia is not only a mental health complaint, since it can be also associated with adverse somatic health impacts, and the life expectancy of people with schizophrenia is around 20 years lower than that of the general population (Coyle, 2017).

According to the DSM-5, at least two of the following symptoms occurring especially over a span of one month, delusion, hallucination, disorganized speech, severely disorganized or catatonic behavior and negative symptoms characterizes schizophrenia (Townsend, 2018).The diagnostic criteria focused that delusions, hallucinations or disorganized speech must be at least one of the symptoms. Nevertheless, the most significant psychiatric symptoms are actually persecutory delusion and hallucinations .Schizophrenia manifests either as positive symptoms, negative symptoms or in the form of cognitive symptoms. Positive symptoms are known as psychotic behaviors and

usually demonstrate as loss of contact with reality (Owen, Sawa, & Mortensen, 2016).

Positive symptoms typically appear in the beginning of the disorder, displaying impaired cerebral functions, including hallucinations, delusions, disorganized speech and irregular psychomotor behavior, such as catatonia. As with the negative symptoms can be identified through disruptions to normal emotions and behaviors. They are characterized by the reduction of complete loss of normal behavioral functions, causing impairments such as a logy (lack of coherence of speech and organization of ideas), affective flattening (limited range of emotional expression, poor eye contact, and reduced body language), a volition (low goal-directed actions), anhedonia and social retraction (Silva, Kanazawa & Vecchia, 2019).

Cognitive symptom schizophrenia affects thinking and memory. Symptoms include poor executive functioning, difficulty focusing or paying attention, and problems with working memory. That cognitive dysfunctions and negative symptoms of schizophrenia had a larger effect on long-term impairment of functioning than positive symptoms (Kalin et al., 2015). The negative symptoms have adverse effects on social adaptation and social skills in schizophrenic patients. Often negative symptoms accompany a decreased quality of life and with an increased risk of relapse (Pazooki, 2018).

Humor is an essential human characteristic and can be evoked by verbal (jokes) or visual materials (cartoons or

movies), as well as in social situations. Humor is a complicated phenomenon, which includes cognitive, emotional, behavioral, psychophysiological and social aspects. On the cognitive axis, humor is related with a perception of incongruity or paradox in a playful context; emotionally, it is related with a pleasant emotional state which has been defined as "pleasure" in phrases of psychophysiology, it has been asserted that it is related with decreases in cortisol, growth hormones, and epinephrine and as a social phenomenon, humor performing an essential role in interpersonal communication and attraction (Fritz, Russek & Dillon, 2017).

Humor has been conceptualized in distinctive approaches as a cognitive skill (e.g., capability to create, understand, remember and reproduce jokes) ; as a cultured reaction (e.g., humor appreciation, pleasure of particular types of humorous material) ; as an habitual behavior pattern (e.g., tendency to laugh frequently, to tell jokes and amuse others, to laugh at others' jokes) ; as an emotion - associated temperament trait based on cheerfulness, seriousness and bad - mood or on motivational components and as a coping strategy or defense mechanism (e.g., tendency to maintain a humorous perspective in the face of adversity). Therefore, humor can be considered as an umbrella term for everything potentially funny or laughable (Ruch & Hofmann, 2017).

Humor interventions are simple, easy to deliver, interventions that could be an important add-on therapy for people with schizophrenia; particularly for the targeting of negative symptoms and cognitive disability humor approaches are desirable. They are relatively small in the cost (Cai, 2014). Furthermore, humor can reduce negative symptoms of anxiety and depression in patients with schizophrenia. Humor one of the psychological interventions can control symptoms and complications of mental disorders. Humor can be used as a new procedure to deal with various mental disorders and rehabilitate them (Atadokht, Ebrahimzadeh, Mikaeeli, 2019).

The therapeutic capacity inherent in humor, the noteworthy sense of humor demonstrated in many of the "super-therapists," such as Ellis, Perls, Erickson, Satir, Rogers or Whitaker, we have seen an increase in the use of humor in individual and group psychotherapy, in general hospitals and psychiatric institutions. Humor in this frame of reference could be used as an alternative to conventional treatment with the goal of helping patients with schizophrenia cope with symptoms, enhance recovery through its emotional, cognitive, social and physiological effects, reinforce, and promote therapy and empowerment of patients with schizophrenia (Cai, Yu, Rong, Zhong, 2014).

## SIGNIFICANCE OF THE STUDY

In the Arab World and especially in Egypt, humor has been a cornerstone element of society. The love Egyptians have for humor and joke telling is well known in their culture. In fact, there is a common phrase used by neighboring Arab populations to describe Egyptians, which literally translates to "son of the jokes". Egyptians are known for their passion for jokes and their ability to laugh even in hard

times. Their proverbial sense of humor tackles political issues and is exploited in cultural productions such as comedy films, theatre, and cartoons. Recent studies have employed humor as a critical lens to explore some social phenomena and literary trends in contemporary Egypt ( Mersal, 2011). Schizophrenia is a severe illness, which affects all life aspects of the patients including work, self-care and capacity to establish interpersonal relationships. It is one of the top 10 causes of long-term disability in the world, affecting about 1.0% of the population (Catts, Weickert, 2017).

In Egypt, schizophrenia is the most well known psychiatric disorder, and speaks to the significant majority of inpatients in Egyptian mental hospitals (WHO, 2014). Several studies have been published empirically assessed the effects of humor intervention in psychiatric settings and found positive changes in the patients. For instance, a 3-month humor intervention program was applied in psychiatric ward schizophrenic patients, and found that the use of humorous approach led to an improvement of their symptoms (Frankenberg, Buchkremer, Bartels, Wild, 2011).

The researcher did not find any published research in Egypt on the effect of humor intervention program among schizophrenic patients. Research is needed to study humor intervention as an effective treatment modality for schizophrenia. Humor interventions could be introduced to improve the symptoms of schizophrenia and increase the quality of life of those who suffer from it. The study is considered as a basis for mental health professionals' consideration in treatment of patients with schizophrenia and would emphasize the role mental health nurses in this aspect.

This study aims to evaluate the effect of humor intervention program on positive and negative symptoms among schizophrenic patients

## RESEARCH HYPOTHESIS

**H 1:** The negative symptoms scores of schizophrenic patients who receive the humor intervention program there is will be a statistical difference between those who receive their treatment as usual at post- intervention and pre-intervention.

**H 2:** The positive symptoms scores of schizophrenic patients who receive the humor intervention program there is will be a statistical difference between those who receive their treatment as usual at post- intervention and pre-intervention.

**H3:** The sense of humor scores of schizophrenic patients who receive the humor intervention Program will be a statistical difference between those who receive their treatment as usual at post- intervention and pre-intervention.

**Sample:** A purposive sample of (40) schizophrenic patients, the study group (n= 20) and control group (n= 20). Inclusion criteria: both sexes, aged between (20-50) years, can read and write, schizophrenic patients experience positive and negative symptoms according (DSM-5), duration of illness not less than 3 years and in-patients ward.

**Setting:** The study was conducted at two settings; in the "In-patient departments of Psychiatry and Addiction Prevention

"El Kasr Al-Aini University Hospital and al Rakhawy (Dar El Mokattam) Hospital for Mental Health. The Psychiatry and Addiction Prevention "El Kasr AlAini University Hospital it presents inpatient and outpatient services, and consists of five floors; the underground floor for the administrative offices and a room for group psychotherapy. The ground floor is for the outpatient clinics, which include adolescence clinic, addiction clinic, gerontology clinic, and psychiatric clinics, and E.C.T & E.E.G. rooms. The 1st floor is 2 sides one for lectures rooms and the other side is inpatient male section, paid service. The 2nd floor; 6 one side for inpatient male section and the other side are inpatient female section, providing free paid service. The 3rd floor is for addict patients.

The Rakhawy (Dar El Mokattam) Hospital for Mental Health and Addiction Treatment in Egypt. The Rakhawy Hospital has been founded in 1973, and is known as the first milieu therapy hospital in the Arab world. It provides psychiatric services including inpatient, outpatient services, treatment programs; group and individual therapy for adolescent, adults and elderly. In addition to, day care center, addiction treatment, therapeutic workshops. The Rakhawy (Dar El Mokattam) Hospital for Mental Health and Addiction Treatment providing extensive assessment and treatment to stabilize adolescents, adults, and elderly people with mental disorders. While in hospital, patients work with a multidisciplinary treatment team supervised by a psychiatrist who designs an individualized treatment plan for each of them.

**Tools of Data Collection:** A-The Demographic and medical data sheet. This sheet was developed by the researcher and includes personal data such as age, sex, educational level, marital status, occupation, duration of illness, place of residence and previous admissions.

B - Positive and Negative Syndrome Scale (PANSS) (Kay, Fiszbein, Opler ,1987) The PANSS is a standardized scale measuring the prevalence of positive and negative symptoms and general psychopathology in schizophrenia. PANSS is consisting of 30- distinct items, 7-point rating (1 = absent; 7 = extreme), arranged in three independent subscales with scoring ranging from 30-210 points Higher scores represent higher seriousness in each subscale. The negative symptoms subscale assesses for blunted affect, emotional withdrawal, poor rapport, passive/apathetic social withdrawal, difficulty in abstract thinking, lack of spontaneity and flow of conversation, and stereotyped thinking. The positive symptoms subscale assesses delusions, conceptual disorganization, hallucinatory behavior, excitement, grandiosity, suspiciousness, and hostility.

The general psychopathology subscale assesses somatic concern, anxiety, feelings of guilt, tension, mannerisms and posturing, depression, motor retardation, uncooperativeness, unusual thought content, disorientation, poor attention, lack of judgment and insight, disturbance of volition, poor impulse control, preoccupation, and active social avoidance. The 30 items included in the PANSS, 7 constitute a positive scale, 7 a negative scale, and the remaining 16 a general psychopathology scale. The scores for these scales are arrived at by summation of ratings across component items. 8 Therefore, the potential ranges are 7 to 49 for the positive and negative scales, and

16 to 112 for the general psychopathology scale. In addition to these measures, a composite scale is scored by subtracting the negative score from the positive score. The internal consistency (reliability) of the measure is adequate (Cronbach's  $\alpha = .94$ ).

C- Multidimensional Sense of Humor Scale (MSHS; Thorson & Powell, 1993) The MSHS is self-report scale measure the multidimensional aspects of sense of humor, composed of 24 items. It has four dimensions of personal sense of humor (1) humor creation (overt use of humor in social situations), (2) use of humor as a coping mechanism (trying to see the funny side of things), (3) humor appreciation (liking humor), and (4) attitude toward humor and humorous persons (approving of humor). The scale is scored based on 5-points Likert scale, ranging from 4 (strongly agree) to 0 (strongly disagree). Eighteen items were phrased positively and six items were phrased negatively. Negative scores were coded reversely and total scores range from 0 to 96. The lowest possible total score is zero and the highest is 96. The scores were summed with higher scores indicating a better sense of humor. The scale has been translated into Arabic language and validated) Qasim, Shahin, Abdel Fattah, 2013).The internal consistency (reliability) of the measure is adequate) Cronbach alpha coefficient  $\alpha = .90$ ).

**Ethical consideration:** A written ethical approval approved by the "Ethics of Scientific Research Committee" at the Faculty of Nursing - Cairo University. In addition, an official permission to conduct the proposed study was obtained from the head of "Mental Health and Addiction Prevention Hospital at "El Manial University Hospital and The Rakhawy (Dar El Mokattam) Hospital. The patients filled the informed consent after complete description of the purpose and nature of the study. All subjects were informed that participation in the current study is voluntary, anonymity, confidentiality of each subject was protected by the allocation of a code number for each participant who responded to the questionnaire, and that participation was without risk and can withdraw from the research at any time without any explanations with no risks or punishment for them.

**Procedure:** Assessment phase :Data were collected from schizophrenic patients admitted to an inpatients ward at the Psychiatry and Addiction Prevention "El Kasr Al-Aini University Hospital and al Rakhawy (Dar El Mokattam) Hospital for Mental Health who fit the inclusion criteria were assessed to fill the the three tools ( Demographic and medical data sheet, PANSS and Multidimensional Sense of Humor Scale). Data were statically analyzed to detect the severity of PANSS among the schizophrenic patients (pretest phase). After that, it will be divided into two groups control and study group each group consists of 10 participants. Will be selected and randomly allocated with concealment of randomization until allocation occurs for two groups.

The groups will randomly allocate through one person from outside the research team, given a list of patients code numbers. The researcher will select odd number to intervention group and even numbers will assigned to control group. Implementation Phase: the participants were informed about content of the program, activities for training, and number of sessions. The program was

implemented on 12 sessions classified as 3 session per week for 90 minutes. Evaluation Phase: After application of the program on the study group who attend the program completed Multidimensional Sense of Humor Scale and PANSS as posttest to evaluate the effect of the program on positive and negative symptoms.

**Humor Intervention Program Aim:** This program aims to evaluate the effects of humor intervention program on positive and negative symptoms among schizophrenic patient. **Overview:** It is a program that uses humor to help people have more desire to do social activities, enhance their social interaction and strength it over time. Humor can also serve as a distracting technique, preventing patients from thinking about their problems. It may provide an effective way to deal or cope with problems. Through humor intervention, the process of perception and 10 judgment of the current condition of the patients can improve. The implementation of humor intervention program in a mental health service may improve rehabilitative outcomes.

Moreover, it can have positive impact on emotional, cognitive, social and physiological states; Humor can be used as a new procedure to deal with various mental disorders. It can also be integrate in a diversity of rehabilitation program. The Program that was used in this study was administered within 11 sessions through the framework of humor skills sessions. Each session will take around one hour and half weekly.

The program session will include: Program sessions was include: Session (1): Introduction and overview of the program and humor in our lives (past, present or future). Session (2): Humor in special events: Wedding Sessions (3): Seriousness versus playfulness. Session (4): Humors in old Egyptian heritage Sessions (5): Humor in songs and poems. Sessions (6): Humor as a coping mechanism in stressful situation. Sessions (7): Verbal and non-verbal humor. Sessions (8): Humor as a facilitator of interpersonal communication. Sessions (9): Laughter. Sessions (10): Humor in everyday life (present daily activities/routine). Sessions (11): Humor in the movies, series and comedy programs; Closing. Specific objectives: 1- Assessment of the patients' attitude toward the use of creative arts 2- Highlighting the existence of humor in the participants' lives 3- Emphasizing the role of humor in enhancing the interpersonal interactions 4- Recognize the role of humor in stressful situation 5- Understand the value of seriousness, being as important as humor.

**Statistical design:** A Statistical Package for Social Science (SPSS) version 20 is used for statistical analysis of data, as it contains the test of significance given in standards statistical books. Collected data are summarized and tabulated using descriptive statistics and analysis of variance and correlation analysis. Parametric inferential statistics (ANOVA) will be used to examine the differences and similarities between study variable as well as analysis of variance to examine difference. Probability (p-value) less than 0.05 was considered significant and less than 0.001 considered as highly significant.

## RESULTS

**Part 1: Sociodemographic and medical data sheet of study and control group:** Regarding age table (1)

revealed that 40%, 45 % aged between 30 years to 39 years with  $M \pm SD = 33.600 \pm 7.98288$  in study and control group respectively with no statistical difference was found between the two groups in relation to age where  $\chi^2 = 1.345$  at  $p = 0.511$ . Regarding gender, 95% & 80% of study and control group were males respectively. While 5% & 20% of study and control group were females respectively with no statistical difference was found between the two groups in relation to gender where  $\chi^2 = 2.057$  at  $p = 0.342$ . As regards the duration of illness, half of the sample in study and control group experienced illness from 3 years to 6 years and from 9 years to 15 years respectively. While 20% & 15% in study and control group experienced illness from 9 years to 15 years and from 6 years to 9 years respectively with no statistical difference was found between the two groups in relation to the duration of illness where  $\chi^2 = 4.101$  at  $p = 0.129$ .

According to the educational levels figure (1) illustrated that, half of the sample of study group were highly educated and 45% of control group were intermediate education. While 15% & 20% of study and control group were can read and write respectively with no statistical difference was found between the two groups in relation to the educational levels where  $\chi^2 = .922$  at  $p = 0.631$ .

Regarding to the marital status figure (2) demonstrated that, 80% & 55% of study and control group were single respectively. While 5% of study group were divorced and 10% in control group were widowed with no statistical difference was found between the two groups in relation to the marital status where  $\chi^2 = 4.069$  at  $p = 0.254$ .

Regarding job table (2) revealed that 55% of the study and control group were working with no statistical difference was found between the two groups in relation to job where  $\chi^2 = .000$  at  $p = 0.624$ . Regarding to the residence 55% of the study group were rural while 55% in control group were urban. As regards the previous admission, 60% of study group were admitted to the hospital from twice to fourth times. While 70% of control group were admitted from fifth to ninth times with no statistical difference was found between the two groups in relation to the previous admission where  $\chi^2 = 11.300$  at  $p = 0.256$ .

As shown in the above table there is a statistical significant difference between total score of PANSS for the study group before and after the program where  $t = 15.118$  at  $p = 0.000$  with  $M \pm SD$  pre-program where  $57.9412 \pm 7.42858$  and  $M \pm SD$  post the program where  $35.6471 \pm 4.60897$ . Otherwise, there is no statistical significant difference between total scores of MSHS before and after the program where  $t = -.362$  at  $p = .722$  but it found increasing and improvement in the Mean  $\pm SD$  pre-program where pre the program where  $73.9412 \pm 11.31631$  and post the program where  $75.2353 \pm 9.37770$ .

Table (4) shows that statistical significant differences were found between post intervention total scores of PANSS between both study and control groups where  $t = -6.269$  at  $p = 0.000$  with  $M \pm SD$  in control group where  $48.17 \pm 6.830$  while  $M \pm SD$  in study group where  $35.64 \pm 4.608$ . In addition to there is a statistical significant difference were found between post intervention total scores of MSHS between both study and control groups to total score of

MSSH where  $t = 5.268$  at  $p = 0.000$  with  $M \pm SD$  in control group where  $= 53.58 \pm 14.11$  while  $M \pm SD$  in study group where  $75.23 \pm 9.377$ . Moreover a statistically significant differences were found between preprogram scores of both

groups regarding total scores of MSSH where  $t = 3.835$  at  $p = 0.000$  with  $M \pm SD$  in control group where  $= 56.30 \pm 14.91$  while  $M \pm SD$  in study group where  $= 72. \pm 400$ .

Table 1: Frequency distribution of demographic characteristics of the study and control group (n=20).

Demographic data	Study group		Control group		$\chi^2$	P value	
Age	No	%	No	%			
20 -29 years	6	30	3	15.0	1.345	0.511	
30 -39 years	8	40	9	45.0			
40-50 years	6	30	8	40.0			
Men $\pm$ SD	33.600 $\pm$ 7.98288						
<b>Gender</b>					2.057	0.342	
Male	19	95	16	80.0			
Female	1	5	4	20.0			
<b>Duration</b>					4.101	0.129	
3-6 years	10	50	7	35.0			
6-9 years	6	30	3	15.0			

Figure 1. Frequency distribution of educational levels of the study and control group (n=20).

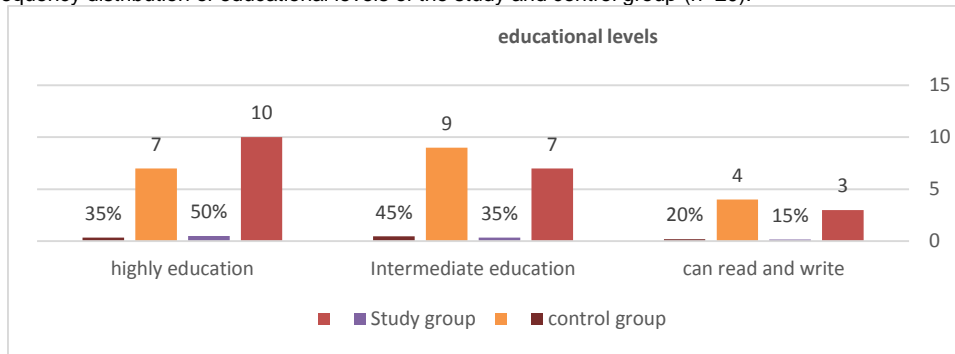


Figure 2. Frequency distribution of marital status of the study and control group (n=20).

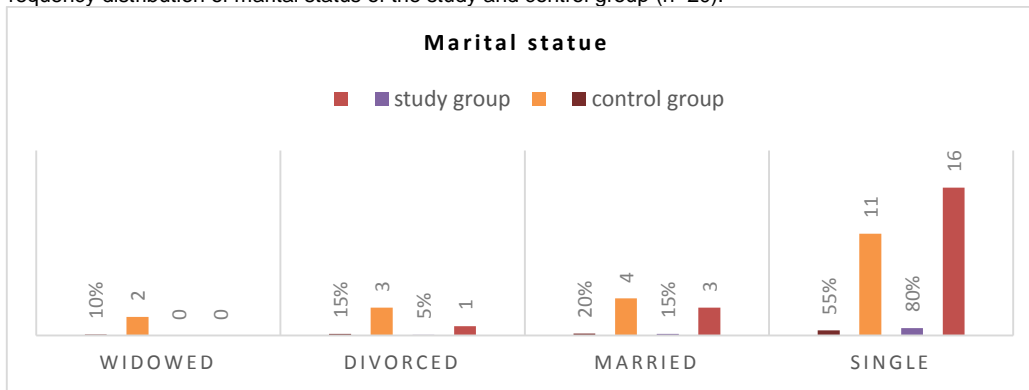


Table 2: Frequency distribution of demographic characteristics and medical data of the study and control group (n=20).

Demographic and medical data	Study group		Control group		$\chi^2$	P value
Occupation	No	%	No	%		
working	11	55.0	11	55.0	.000	0.624
not working	9	45.0	9	45.0		
<b>Residence</b>					.400	0.376
Urban	9	45.0	11	55.0		
Rural	11	55.0	9	45.0		
<b>Pervious admission</b>					11.300	0.256
2 - > 5	12	60.0	6	30.0		
5- > 10	8	40.0	14	70.0		
Total	20	100	20	100		

Table 3: The difference between the total scores of PANSS and MSHS in before and after the program for the study group.

Items	Study group				T-test	P-value
	n = (20)		n = (17)			
	Pre program		Post program			
	Mean	SD	Mean	SD		
PANSS	57.9412	7.42858	35.6471	4.60897	15.118	.000**
MSHS	73.9412	11.31631	75.2353	9.37770	-.362	.722

\*P < 0.05 is significant

\*\*P < 0.01 is highly significant

Table 4: Comparison between the total scores of PANSS and MSHS for both groups at pre and post humor intervention program

Variable	Time	Mean±SD		t-test	p-value
		Study	Control		
PANSS	Pre	56.60 ±7.631	57.15±7.220	-.213	.833
	Post	35.64±4.608	48.17±6.830	-6.269	.000*
MSHS	Pre	72. ± 400	56.30 ±14.91	3.835	.000*
	Post	75.23± 9.377	53.58± 14.11	5.268	.000*

Significant at p-value<0.01

## DISCUSSION

The current study showed that there is a statistical significant difference between total score of PANSS for both study and control groups at post intervention. This result may be due to schizophrenic patients may have social problems such as difficulty in making and keeping friends. In extreme cases, the patients may avoid all social interactions so its important engaging patients in humor group activities are important leisure and creative techniques that generate group acceptance and bond with others that facilitate increase social interaction and developing social relationships. The use of humor promotes both communication and interpersonal interaction; it promotes well-being; helps cope with difficult and adverse situations, reduces tension, discomfort and stress. Humor is an important tool of communication for patients, as it is enhancing nursing care, creates a bond and opens communication channels.

Moreover, humor has the potential to change a patient's experience during hospitalization. In addition to above reasons this could be due to the pleasurable and motivational effect of group activities, which helped the patients to experience a shared joy and thereby reactivate their sense of pleasure, enjoyment, their motivational ability increased and placing them on a playful and pleasurable mood when participated in art materials, dance music, games or jokes as a results of decrease severity of their symptoms. This result is consistent with Kohmura et al., (2019) who consider that humor could activate dopamine neuron in the mesocortical and mesolimbic reward circuit, thus affecting negative symptoms. The findings are congruent with Bains (2015) who indicated that, humor-based interventions that could be an effective add-on treatment for people with schizophrenia, especially for targeting negative symptoms and cognitive impairment.

In line with this current result, Ruchand & Hofmann (2017) it is found that using humor therapy has been beneficial to the adaptive coping with stress, enhancing social interactions, life satisfaction and well-being, increasing creativity, as well as the absence of depression, anxiety, and negative emotions. Humor therapy does not only induce positive emotions and builds personal resources, but it may also help to reduce negative emotions and stress. Humor therapy increases, positive emotions/mood/affect, playfulness, subjective well-being,

optimism and perceived sense of self-efficacy. Moreover, it decrease seriousness, negative mood, anxiety, perceived stress and depression

Current study results also consistent with Lally, et al., (2019) who found that humor therapy lowered the total negative symptoms scores among his studied patients comparing with control group. The focus of the therapy is to engage the patients in creative manner that help the patient think in a positive manner and express their positive and negative feelings in a positive way. In addition to the therapy help schizophrenic patient begin to reactivate a dormant desire to be social. By attachment with others who are also attempting to overcome their disease effects especially negative symptoms, the patient is reminded he or she is not alone. That facilitate personal experiences and increase social responses and self-esteem.

In this context Pirbalouti, Shariat, Ghazanfari, Naghani& Kamaliyeh (2017) supported the current study result, reported that, humor therapy play important role in reducing negative symptoms, enhancing the daily functioning, and psychological distress, and improve the quality of life in patients with schizophrenia. The finding of the study is in agreement with Tagalidou, Distlberger, Loderer & Laireiter (2019) showed that, the humor training was effective in many outcome variables, such as the negative and positive symptoms of schizophrenia, depression, anxiety, and humor-related constructs such as coping humor or appreciating humor. The findings is consistent with Tavakolizadeh & Ghochani (2018) who concluded that humor training is effective in reduce hopelessness , depression, isolation, loneliness and improve social interactions .

The findings is congruent with Malhotra, Gupta & Arora (2020) who revealed that humorous movies was shown to have greater effect on reduction in psychopathology, verbal hostility, aggression and anxiety symptoms loneliness and increase in social competence as compared to neutral movies in patient with schizophrenia. Furthermore, who found that laughter is an important component of humor process and can have physiological and psychological effects that had a direct effect on their mood state and well-being. Moreover, Schneider, Voracek & Tran (2018) found significant correlations between the uses of humor and anxiety, depression and optimism. Positive uses were positively

correlated with optimism, and negatively correlated with depression and anxiety. In addition to, Menéndez-Aller, et al., (2020) they found the uses of humor had important effect on distorted thinking, and depressive symptoms.

The finding of the study is consistent with Almeida (2020) who indicated that humor and laughter have direct effect on perceptions, attitudes, judgments and emotions, which potentially benefit the patient's physical and psychological state. The result is agreement with Cheng et al., (2020) who concluded that, humor intervention provides a non-invasive and non-pharmacological method to treat mood symptoms, and it regulates stress level and provides social support. Humor can be considered an alternative and complementary treatment for rehabilitation of people with schizophrenia. The finding is supported with Compto & Newcome (2018) who revealed that there was a significant improvement in their negative symptom scores after implementation of the group activity therapy program (SANS total score, affective flattening or blunting, avolition – apathy, anhedonia – a sociality, and attention) than before activity therapy program implementation.

The result is agreement with Cheng et al., (2020) who concluded that, humor intervention provides a non-invasive and non-pharmacological method to treat mood symptoms, and it regulates stress level and provides social support. Humor can be considered an alternative and complementary treatment for rehabilitation of people with schizophrenia. The result is congruent with Abdel Rahman (2017) who showed that, humor intervention was the most frequently used behavioral coping strategy to deal with auditory hallucination among Jordan schizophrenic patients.

The result is disagreement with Tu, et al., (2019) found that patients with schizophrenia are characterized by lower synchronized brain activity in the frontal and parietal association cortex, lack an association between the degrees of synchronized brain activity and subjective amusement rating, and lack habituation in the repeated viewing of movie clips. The reduced synchronization in parts of the frontal parietal network was also correlated with symptom severity. The findings suggest neural substrates related to the deficit in the cognitive component of humor processing in patients with schizophrenia. In contradiction with the current result, Daren, Adamczyk, Bładziński & Cechnicki (2020) showed a reverse finding that positive symptoms was found to associate with deficits in humor comprehension and experienced funniness were associated with diminished recognition of humor. Who found that perception of humor is a complex cognitive-emotional phenomenon that has been found to be disturbed in people with schizophrenia.

The finding disagreement with Lucarini, et al., (2020) who revealed that, the capacity to comprehend humor and irony these abilities are significantly impaired in patients with schizophrenia. This result incongruent with Tschacher, Genner, Bryjová, Schaller & Samson (2015) who studied humor and schizophrenia has reported that reduced appreciation of humor in patients with schizophrenia; this may be due to several reasons. The dysfunctional perception of incongruity, our present concern, is to our knowledge a novel and specific explanation in the field of schizophrenia research. Possible other explanations were

given such as altered affect and emotionality: Patients often suffer from symptoms such as anhedonia and depression and may therefore enjoy humorous stimuli less; alternatively, as patients commonly have reduced quality of life, they may have less positive state affect. Patients' neurocognitive impairment and problems with attention may entail reduced humor appreciation.

## CONCLUSION

Schizophrenia is a chronic psychiatric disorders that affects all life aspects of the patients including work, self-care and capacity to establish interpersonal relationships. Hence, humor is psychological interventions can control symptoms and complications of mental disorders. Humor interventions can reduce negative and positive symptoms in patients with schizophrenia. A statistical significant difference were founded between total score of PANSS and MSHS for both study and control groups at post intervention. The present study emphasizes the importance of humor intervention program in reducing severity of symptoms of patients with schizophrenia.

## RECOMMENDATIONS

1. This research can be a guide for further studies based on humor. In addition, in the light of these results, the placement and implementation humor program in the routine treatments of the psychiatric hospital and Community Mental Health Centers may contribute to the improvement schizophrenic patients.
2. Humor training program should be integrated as an intervention in conjunction with pharmacological therapy without contraindications and it can maximize the effect.
3. Humor training program should be applied with newly admitted schizophrenics patients to differentiate between the impact of program and psychopharmacology for schizophrenic patients.
4. Nurses and health providers training to equip them with the Humor intervention program to enable them to improve symptoms and provide a quality care for schizophrenic patients.
5. Further studies are needed using a larger probability sample for generalization of the results.
6. Giving more interest in the Humor intervention program in the rehabilitation programs for mental patients at the specialized hospitals and centers.

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