Effect of Social Skills Enhancement Training Program on Negative Symptoms among Patients with Schizophrenia

Sara Abdallah Abdelgelil [1] ,Ayat Saif Elyazal [2], Ahmed Abel-Rahman Mubarak [3] ,Zebeda Abdelgawad Elsherif [4]

[1]Assistant lecturer, Psychiatric and Mental Health Nursing, Faculty of Nursing, Tanta University, Egypt,
[2]Assistant Professor of Psychiatric/ Mental Health Nursing, Faculty of Nursing, Tanta University, Egyp
[3] Professor of Neuro- Psychiatry, Faculty of Medicine, Tanta University, Egypt [(3)]
[4]Assistant Professor of Psychiatric/ Mental Health Nursing, Faculty of Nursing, Tanta University, Egypt
Corresponding Author: z.alsherif@gmail.com

Abstract

Negative symptoms in schizophrenia are commonly associated with reductions and difficulties in patients' social skills. Fortunately, many psychosocial interventions recommended for their improvement. **The aim of the study** was to evaluate the effect of social skills enhancement training program on negative symptoms among patients with schizophrenia. **Subjects:** a convenience sample of 60 patients with schizophrenia who attended both inpatient department and the outpatient clinic, of department of neuropsychiatry Tanta University hospital. **Study design:** Quasi-experimental research design was utilized. **Settings:** department of neuropsychiatry Tanta University Hospital. **Study tools:** Two tools were used: **tool 1** is "Scale for the Assessment of Negative Symptoms (SANS)" and **Tool 2** is "Social skills assessment screening scale". **Results:** there were reductions in the mean scores of negative symptoms domains and a significant increase in the mean scores of social skills domains, immediately and at one month after the program in comparison with before. There was a highly statistical significant negative correlation between levels of social skills and levels of negative symptoms **Conclusions:** it can be concluded that, the social skills enhancement training program was effective for patients with schizophrenia and brought a significant decrease in the severity of negative symptoms, and an improvement in their social skills in comparison to before the program. **Recommendations:** the researcher recommended that social skills training program should be integrated in the psychiatric hospitals' protocol of care in conjunction with pharmacological therapy for going beyond the traditional treatment process of patients with schizophrenia.

Key words: Negative Symptoms , Patients with Schizophrenia, Social Skills training program.

Introduction

Schizophrenia is considered as one of the top ten common chronic devastating diseases worldwide [(1)]. It is one of the major psychotic illnesses in Egypt [(2)]. Schizophrenia is characterized by alterations in thinking, perception, affect, and social behavior [(3)]. It commonly arises in adolescence and young adulthood. It may be episodic or continuous; some patients may have inter-episode restoration of function, on the other hand some patients may show treatment resistance, with chronic negative symptoms and chronic life impairment [(4)].

Symptoms of schizophrenia can be conceptualized into positive, cognitive and negative symptoms. Initially, positive symptoms reflect excess or distortion of normal functions including delusions and hallucinations and this is the psychotic dimension of schizophrenia, whereas the cognitive symptoms include dysfunctions in working memory, attention, visual and verbal learning with deficits in reasoning, planning, abstract thinking and problem solving [(5,6)].

Negative symptoms of schizophrenia reflect a reduction or loss in normal healthy functions, such as affective flattening, anhedonia, alogia, avolition, and asociality; these symptoms tend to continue as residual symptoms after treatment, [(7,8)] and can reduce patient's motivation for enjoying social activities and interactions with others [(9)]. Patients also have difficulties recognizing people they have seen before, identifying the emotional expressions of others, problems in establishing, and maintaining relationships, and inability to resume or perform their social roles [(10,11)].

Although antipsychotic medications are actually basic in treating schizophrenia and greatly reduce the severity of positive symptoms, they have poor effect on negative symptoms and patient social skills. Hence, new intervention approaches were developed for improving patient condition, one of these interventions is social skill training [(4,12,13)].

Social skills are the behaviors that help in interacting and communicating successfully in social situations. They involve the verbal and non-verbal abilities that help in understanding others, expression and exchange of information, attitudes, opinions, and feelings [(10)]. They are essential for affiliative interactions and for building and maintaining meaningful relationships [(14)].

Social skills training will help patients to overcome deficits in social skills and provide them with the important skills to be able to deal proficiently with daily hassles, solve life challenges and stressors triggering

relapse and promote their social compensation. Moreover, these protective effects can help patients to stabilize their illness, improve medication adherence, and promote progress toward recovery [15].

Social skills training can help patients to learn many skills such as listening skills; requesting skills, refusal skills, skills of expressing positive as well as negative emotions, apologizing skills, and initiation, maintenance and termination skills of conversation [16].The basic premise behind teaching these skills is that, the complex behaviors are analyzed and broken down into a smaller set of elements that are trained using various behavioral techniques. These techniques include skill specification, instructions, modeling, feedback, verbal reinforcement, generalization training and homework [17].

Recent related studies that are concerned with evaluating the effect of social skills training on negative symptoms, showed that it can reduce negative symptoms of schizophrenia and is associated with a lot of outcomes including independent living skills and increased patients' participation in vocational and recreational activities [18-20], and significant improvement from base line levels on conversation and assertiveness skill to the general social performance [21].

The significance of this study comes from that negative symptoms of schizophrenia are commonly associated with reductions in the necessary skills required by patients for satisfaction of their daily living activities. They may have difficulty starting a conversation, speak in a low monotonous voice, or fail to establish eye contact so helping those patients can enhance their community adjustment so the role of the psychiatric nurses is to focus on enhancing patients' social skills as they are in an excellent position to assess and implement the appropriate interventions because they have a great contact with patients and have knowledge and concern about them.

Aim of the study

The aim of the study was to evaluate the effect of social skills enhancement training program on negative symptoms among patients with schizophrenia.

Research question

What was the effect of social skills enhancement training program on negative symptoms among patients with schizophrenia?

Research hypothesis

Negative symptoms of patients with schizophrenia are expected to be improved after implementation of social skills enhancement training program.

Subjects and Method

Research design

Quasi-experimental research design was used in the study.

Setting

The present study was conducted at the department of Neuropsychiatry Tanta University Hospital and its outpatient clinic. The capacity of the psychiatric department was 31 beds divided into two wards for men (17 beds) and two wards for women (14 beds).The outpatient clinic worked 4 days/week and served from 10-14 patients with schizophrenia/week and this clinic was run by consultant psychiatrists supported by psychiatric nurses.

Subjects

A convenient sample of 60 patients diagnosed with schizophrenia according to DSM-5 diagnosis. They were divided equally into two groups (30 patients in each group).The first group was the study group which was involved into the social skills enhancement training program and the second group was the control group which received the treatment as usual care. Both groups received their regular psychotropic medications. The subjects in both groups had the following **inclusion criteria**:-

- Aged from 18 years and above.
- Both sexes.
- Patients diagnosed with schizophrenia based on Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (with a duration of illness ≥ 2 years).Those patients will be included according to their negative symptoms which will be determined according to **Andreasen** scale for the assessment of negative symptoms.

Exclusion criteria:-

- Patients with any psychiatric morbidity particularly, intellectual disability and substance use disorder.

Tools of the study

The data was collected by using the following two tools:-

Tool I: Scale for the Assessment of Negative Symptoms (SANS):- it included two parts:-

Part one: Socio-demographic and clinical data sheet:-It was developed by the researcher to elicit socio-demographic characteristics of patients such as "age, sex, marital status, level of education, occupation, place of residence, co-habitation and income". In addition to, patient clinical data as "age at disease onset, duration of the illness, and number of previous psychiatric hospitalizations and type of hospital admission".

Part two: Scale for the Assessment of Negative Symptoms (SANS):- It was

originally developed by **Andreasen N (1984)** [22].This scale facilitated the evaluation of the five negative symptoms frequently found in schizophrenia based on observations and interviews with patients. It is composed of 25 items, each item on this scale is to be rated on a five point scale :(0) absent negative symptoms , (1) questionable negative symptoms , (2) mild negative symptoms, (3) moderate negative symptoms , (4) marked negative symptoms , & (5) severe negative symptoms, where higher scores mean severe negative symptoms.

The scale is divided into five subscales as follows:-

1. Affective flattening or blunting includes 8 items, such as unchanging facial expression.
2. Alogia includes 5 items, such as poverty of speech.
3. Avolition /Apathy include 4 items, such as grooming and hygiene.
4. Anhedonia/Asociality includes 5 items, such as recreational interests and activities.
5. Attention includes 3 items, such as social inattentiveness.

Scoring system

The total score of the overall items was summed to determine the severity of negative symptoms with the higher scores indicating severe negative symptoms. Total score ranged from 0-125 where the maximum point was 125 and the minimum was 0 and classified as following:-

- Mild negative symptoms (<50 %) (0-62)
- Moderate negative symptoms (50-75 %) (63-93)
- Severe negative symptoms (>70 %) (94-125)

Tool II:Social Skills Assessment Screening Scale:-This scale was developed by **Bhola P et al (2016)** [23] to screen for social skills deficits among patients based on observations and interviews with them. It is composed of 20 items, each item on this scale is rated on a 3 point scale where (0) inadequate social skills, (1) average social skills & (2) adequate social skills. This scale is divided into three subscales to facilitate social skills evaluation as follows: -

1. Non-verbal behavior and communication include 4 items, such as grooming and appearance.
2. Verbal communication include 6 items, such as the ability to great other people.
3. Social behavior includes 10 items, such as understanding social situations-formal and informal.

Scoring system

The total score of the scale was obtained by adding the scores for each item, with lower

scores indicated greater social skills deficits. Total score ranged from 0-40 where the maximum point was 40 and the minimum was 0 and classified as following:-

- Severe social skills deficit (<50 %) (0-19)
- Moderate social skills deficit (50-75 %) (20-30)
- Mild social skills deficit (>70 %) (31-40).

Method

1) An official letter was addressed from the dean of the faculty of nursing to the head of the psychiatric department of Tanta University Hospital to have their permission and cooperation for data collection.
2) **Ethical considerations**

- Approval from Ethical Committee in the faculty of nursing was obtained.
- Informed written consent was obtained from the participants after explanation of the study purpose.
- The participants were reassured about confidentiality of their information and it would be used for the research purpose only.
- Respecting the right of the participants to withdraw at any time during the data collection period.
- The nature of the study inflicted no harm on the patients.

3) The study tools were translated into Arabic language by the researcher and were tested for internal validity by a jury composed of 5 experts in both psychiatric nursing and psychiatric medical fields. The required corrections and modifications were carried out accordingly.
4) The study tools were tested for reliability by using Cronbach's alpha test and found to be 0,912, and 0,873 respectively for tool I (part 2) and tool II which represented highly reliable tools.
5) A pilot study was carried out on ten percent of the study subjects (6 patients), who were fulfilling the inclusion criteria, to ascertain the clarity and applicability of the study tools, and to identify any obstacles that might be encountered during the data collection period. Those subjects were excluded later from the main study sample. According to the results of the pilot study, the tools were clear and applicable and no modifications were done.
6) The actual study was divided into four phases;

Phase one: Assessment phase

1) The researcher reviewed all inpatients' records in order to choose those who met the inclusion criteria. The total number of the study sample was 60 patients, and they were

divided equally into control and study groups (30 patients for each group).

2) The selected patients who met the inclusion criteria were asked to participate in the study after establishing rapport and trusting relationship with them and explaining the aim of the study.
3) The selected patients undergone the pre-test by applying the two tools and interviewed individually. Each interview with patients ranged from 40-60 minutes according to the patients' ability to understand and talk.
4) The data was collected through various techniques such as interviews, observation of patients' behavior in the ward.
5) Study tools were kept anonymously by using code numbers.

Phase two: Planning phase

1) The content of the social skills training program was developed by the researchers based on reviewing the recent related literatures [11, 24-31].It was translated into a simplified Arabic language by the researchers to ascertain its appropriateness and applicability.
2) The study group was divided into (10) subgroups. Each subgroup was homogenous in terms of sex and contained 3 patients.
3) The training was divided into (8) sessions, which necessitated patients' attendance at all the sessions, each session lasting from (1:30-2) hours, with each session containing (3) patients; 2 sessions per month over a period of 7 months.
4) The researcher prepared the needed materials for conducting the program such as the equipment which could be used in personal hygiene such as soaps, and hair brushes, tooth brushes and tooth paste. Also, materials used in writing, drawing, and coloring e.g. pens, papers, sketchbooks, and coloring pencils, and the materials for sharing activities in the group, such as cards, snake and ladder games and newspapers, were also prepared.

Phase three: Implementation phase

- Social skills enhancement training program was implemented by covering the following eight sessions in an orderly way: with each session had a general objective. The training sessions which contained complex skills and addressed the conversational skills, active listening and skills of assertiveness, were divided into two sessions.
- Patients' individual differences, levels of understanding, willingness and response were also taken into consideration during the sessions for better skills acquisition.
- Before each training session, patients were well informed about the rules of the group, e.g. confidentiality and honesty and what to

expect from them regarding their own roles, e.g. listening attentively to each other, there were no right or wrong answers, and everyone had an equal chance to participate. Also, the subgroups were arranged in a circular shape.

- The information of the program was presented in the form of a lecture prepared by the researcher in a simplified Arabic language interwoven with group discussion. The training included videos, real life scenarios, demonstrated situations by the researcher and then patients were asked to re-demonstrate under the researcher observation.
- In the sessions, the researcher was the initiator, provider of the information, and the encourager for the patients. He also acted as the group leader who operated as a facilitator, teacher and trainer.
- The training sessions were proceeded in the following way, the researcher clarified the session topic and its planned activities for the first 10 minutes. Later 60 minutes were utilized for completing the session work; divided by having a break for 20 minutes and the later remaining 20 minutes were for summarization, soliciting feedback, thanking patients, and reminding them about the time of the next session.
- Each training session was started with summary about the previous session.
- In the sessions, role-play rehearsals by group members were always observed, immediately followed by positive feedback about what specifically the patient did well. The given corrective feedback focused on patients' demonstrated behaviors, in the form of suggestions for how to do the skill more effectively in the next time. As well, patients were reinforced by gaining recognition and compliments, and receiving tangible reinforces in the form of toffee, biscuits, juices, bananas and marshmallows.
- Sequence of each session was as follows:-

Session(1)Introductory session

- The researcher and the patients would get to know each other and the researcher would explain the purpose, content and processes of the program to the patients and nursing staff to gain their support and co-operation.
- As well, the researcher presented an introduction to the concept of social skills, and their importance in life.

Session (2)

- **General objective of the session:**-the studied patients would acknowledge and apply the verbal and non-verbal components needed for conversations for mixing and forming friendships with others in an appropriate way.

-Exercise 1:-The patients were asked individually to act some real life situations in front of the other patients to strengthen their conversational abilities such as how to start and end a conversation with a new patient who recently entered the ward and how to converse with other patients during the meal time.

-Exercise 2:-The patients were shown some pictures of some positions encountered during conversations and patients were asked to determine whether these positions were correct or wrong.

-Exercise 3:- The researcher presented a sentence to the patients which were "Thank you for your kindness and your welcomes", and then patients were encouraged to try saying this sentence in different tones: anger, happiness, and boredom.

-Exercise 4:-This exercise consisted of asking patients to demonstrate how to use the appropriate body language for showing the emotions of happiness and sadness.

Session (3)

- **General objective of the session:** the studied patients would be able to acknowledge the importance of active listening and how to apply its basic components (verbal & non-verbal) in order to comprehend and analyze others' speech to understand and empathize with their feelings.

-Exercise1:- A group member was asked to speak in any topic for two minutes, while the other group members remained silent and actively listened to him/her and so on till the other group members performed the same as the speaker.

-Exercise 2:- The group was shown videos that contained a group of people who were happy due to their success. After then, patients were asked to identify the feelings after actively listening to these videos.

-Exercise 3:-Recognizing facial expressions by showing patients pictures of people experiencing different emotions; then they were asked to recognize and describe these emotions. Through group discussion, patients were encouraged to explain why those people experienced these emotions.

Session(4)

- **General objective of the session:** the studied patients would be able to recognize and apply skills of assertiveness.

-Exercise 1:-The researcher presented patients with some situations and encouraged them to act. For example, how to express their feelings if their keys were lost and searched for too much but did not find them and how to express their feelings as "if someone surprised them with a cadeau". The task of these situations was to teach patients

to express freely their emotions immediately in the situation.

-Exercise 2:-The researcher encouraged the use of a paper and a pen and allowed patients to express their feelings through writing, e.g., I feel sad when……, I feel happy when……..etc. or expressing feelings through drawing.

-Exercise 3:-If the patient could not write or draw, the researcher considered the alternative of helping him/her to choose the facial expression which represented his/her feelings and congruent with the inner felt emotions.

-Exercise 4:-The researcher presented some life situations to the patients and allowed them to practice submitting assertive requests to others. For example, how to ask the person talking with you to raise his/her voice a little so that you could hear it clearly?, and what would you do if you bought a television or a refrigerator and found it defective?.

Session (5)

- **General objective of the session**: the studied patients would be able to apply the skills of making apologies.

-Exercise 1: This exercise consisted of asking patients the question of "Was there anyone you would like to apologize to now?". The researcher presented this question to each patient in the group for a few minutes, and then they were asked to write the situation and how to apologize in it.

-Exercise 2: This exercise intended to train the studied patients on how to apologize to others through presenting the group members with two real life situations. The duration of each is 5 minutes. Through group discussion, the researcher tried to teach patients on how to present an effective apology. For example, how to apologize to your friend for being late for the deadline? and how to apologize for shedding water involuntarily on someone sitting next to you?

Session (6)

- **General objective of the session:** the studied patients would be able to choose and participate in activities with others from a list of recreational activities and share freely day to day experiences along these activities.

-Exercise 1: in this exercise, the researcher allowed patients to think critically about a wide range of group activities they could share with each other and also gave them the autonomy in choosing what suited them from a list of activities, such as painting and coloring, playing cards, snake and ladder game and reading newspapers.

-Exercise 2: The group was shown a table

of the daily routine. After then, patients were asked to talk about their day to day experiences in front of the group members with giving the opportunity to the other patients to speak as well, for example (when did he/she sleep, when did he/she wake up, when did he/she take the breakfast, when did he/she sit alone, when did he/she go out, when did he/she go to work, what did he/she do in their leisure time, when did he/she watch TV ..... etc.) until the day ended.This gave patients the chance in sharing day to day experiences freely with others.

Session (7)

- **General objective of the session:** the studied patients would be able to identify how to initiate and maintain personal hygiene for better grooming and appearance.
- Exercise 1: This exercise consisted of videos on personal hygiene and the studied patients' task was to recognize, how to perform hygiene, and finally applying this video step by step within the group.
- Exercise 2: This exercise consisted of pictures on personal hygiene. These pictures were presented to each patient in the group for few minutes, then they were asked to perform what they saw in these pictures after giving them the needed equipment from the soap, hair brushes, tooth brush and toothpaste.

Session (8)

-This session included a revision and a summary over all the training sessions.

-The researcher took verbal feedback from the patients about their experience in the program and clarified any vagueness concerning the previous sessions.

-Before termination of the sessions, the researcher emphasized the significance of follow-up for all patients (control and study) one month after the training program.

Phase four: Evaluation phase

- Evaluation of the training was done by reapplying the study tools (tool I & tool II) that was applied before on patients involved in control group and also on patients who were involved in the study group to ensure that the program had an effect on enhancing the negative symptoms and social skills in schizophrenia;

1) First evaluation was done immediately after eventual application of the training program (post-test 1).
2) After the post-test by one month later, the second evaluation was performed by using the same tools in order to assess the effect of the training on negative symptoms and social skills (post-test 2).

- Data of the study was collected in the period between December 2019 to August 2020.

Statistical Analysis:-

The collected data were organized, tabulated and statistically analyzed using SPSS software statistical computer package version 26. For quantitative data, the range, mean and standard deviation were calculated. For qualitative data, comparison was done using Chi-square test (χ^2). For comparison between means of two variables in a group, paired samples t-test was used. For comparison between means for variables during three periods of intervention in a group, or for more than two variables, the F-value of analysis of variance (ANOVA) was calculated.

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

Results

Table (1) represents the socio–demographic characteristics of the studied patients. The table shows that, as regard to age, it is observed that nearly one quarter (26.7%) of patients in the control group, were aged between 20 to less than 30 years and also the same percentage (26.7%) of patients were aged fifty years or more with a mean age 37.03±13.793 compared to 40.0% of patients in the study group were aged between 20 to less than 30 years with a mean age 37.20±12.981. As for gender, percentage of males are equal (73.3%) in both groups.

Concerning the marital status, the majority (63.3%) of the patients in both groups were single and (30.0%) in both groups were married. As for the educational level, the majority (63.3%) of patients in both groups had secondary education. In relation to work, (63.3% and 70.0%) of control and study groups respectively were not working. Regarding residence, the highest percentage of patients was from rural areas either in control and study group (76.7 % and 70.0 % respectively). Regarding income, the most (93.3%) of patients in both groups did not have enough income.

Table (2) illustrates the clinical characteristics of the studied patients. It showed that 43.3 % of patients in the control group and 60.0 % of patients in the study group, aged at the onset of the disease between 18 years and less than 30 years, with a mean age of disease onset for control group 33.27±10.375 and 32.13±10.644 for the study group. Regarding the number of previous admissions for treatment, it was clear that (50.0%) of patients in the control group admitted 4-6 times, compared to

(56.7%) admitted 1-3 times in the study group. In relation to duration of disease, (50.0% and 60.0% respectively) of patients in the control and study group had duration of illness of less than five years. Also, as regard to the type of admission, all patients (100.0 %) either in both control and study groups were admitted involuntarily to the hospital.

Table (3) clarifies the mean score of the Scale for the Assessment of Negative Symptoms (SANS) among the studied groups. It can be noticed that the total mean score of the Scale for the Assessment of Negative Symptoms in the control group pre-program (91.17±18.76) was higher than the experimental group (78.30±18.096) and this total score in the study group decreased to (41.20±16.560) immediately after the program, which raised slightly to (45.53±21.066) at one month after the program, with a statistically significant difference P=0.000.This means that there was a statistical improvement in negative symptoms immediately after implementation of the program and this improvement declined at follow up but still significant than pre-program.

Also, statistical significant differences were found among both study and control group regarding total score of the Scale for the Assessment of Negative Symptoms since P= 0.009 at pre-program, P= 0.000 immediately after the program and P= 0.000 at one month after the program.

Comparing scores of the patients at the end point of the program by their scores at the starting point of the program: There were significant differences in the study group as regard their affective flattening or blunting (P=0.000), a logia (P=0.004), avolition /apathy (P=0.000), anhedonia/asociality (P=0.000), and attention (P=0.000). The same is true among the control group in regard to their alogia (P=0.001), avolition /apathy (P=0.000), except that of affective flattening, anhedonia/asociality and attention.

Figure (1) presents a Comparison **of patients' total level of negative symptoms between control and study group throughout the phases of the study**. The figure showed that before program, 60.0 % of the patients in the control group had severe negative symptoms and 53.3 % of patients in the study group had moderate negative symptoms at pre-program. But immediately after the program, 90.0% of patients in the study group had mild levels of negative symptoms at immediately after the program, while it decreased to 86.7% at one month after the implemented program.

Figure (2) illustrates a comparison **of patients' total level of social skills domains between control and study group throughout phases of study.** It was clear that in relation to non-verbal behavior and communication domain, the mean scores of the control and study group were (2.63) & (3.37) respectively pre-program. The mean score of the study group was increased to (6.23) immediately after the program and (5.97) at one month after the program.

In relation to verbal communication domain, the mean scores of the control and study group were (3.07) & (6.03) respectively at pre-program. The mean score of the study group was increased to (10.53) immediately after the program and (9.53) at one month after the program.

In regard to social behavior domain, the mean scores of the control and study group were (4.53) & (7.60) respectively at the before the program. Immediately after the program, the mean score of the study group was increased to (18.63) and (15.83) at one month after the program.

Additionally, the figure displayed that at pre-program, the total mean score of social skills among the control group was (10.23), in comparison to (17.00) in the study group. Immediately after the program, the total mean score of social skills as measured by the social skills screening scale in the study group was (35.40) and this score decreased slightly to (31.33) at one month after the program.

Table (4) describes the correlation between levels of social skills and levels of negative symptoms among the study and control group pre, immediately and at one month after the program.

Before the program, 60.0 % of the patients in the control group had severe levels of negative symptoms and severe deficits in social skills, compared to 40.0 % of the patients in the study group had moderate negative symptoms and severe deficits in social skills. In the same way, the table shows that there was a highly statistical significant negative correlation between levels of social skills and levels of negative symptoms in the control group at r=-0.860, P=0.000 pre-program and there was a statistical significant negative correlation between levels of social skills and levels of negative symptoms in the study group at r=-0.682, P=0.000 pre-program.

While, **immediately after the program**, 36.7% of the patients in the control group had moderate levels of negative symptoms and severe deficits in social skills, compared to 90.0% of the patients in the study group had mild negative symptoms and mild

deficits in social skills immediately post the program. Also, there was a highly statistical significant negative correlation between levels of social skills and levels of negative symptoms in control group at r=-0.880, P=0.000 and there was a statistical significant negative correlation between levels of social skills and levels of negative symptoms in the study group at r=-0.786, P=0.000.

Whereas, **at one month post the program**, 23.3% of the patients in the control group had moderate levels of negative symptoms and severe deficits in social skills, compared to 73.3% of the patients in the study group had mild negative symptoms and mild deficits in the social skills. Also, there was a highly statistical significant negative correlation between levels of social skills and levels of negative symptoms in control group at r=-0.815, P=0.000 and there was a statistical significant negative correlation between levels of social skills and levels of negative symptoms in the study group at r=-0.860, P=0.000.

Table (5) represents the correlation of socio-demographic and clinical characteristics between study and control group in relation to the total negative symptoms score. The table revealed that according to the age of patients, patients aged twenty to less than thirty years, demonstrated high mean score of negative symptoms than the other age groups (102.13±13.871) at pre-program in the control group, compared to (87.13±13.943) in the study group, which decreased to (44.67±22.884) immediately after the program and increased to (51.00±13.191) at one month post the program. Also, there was a statistical significant negative correlation between total negative symptoms and age of patients only in the study group at one month post the program where r=-0.377, P=, 0.040. According to the educational level, illiterate patients showed high mean score of negative symptoms in the control group (93.25±14.385) , compared to (93.00±10.708) in the study group at pre-program, which significantly decreased to (49.25±32.715) immediately after the program and slightly raised to (51.00±29.246) at one month after the program.

Additionally, in regard to the age at the onset of the disease, it is clear that patients aged from 18 years to less than 30 years at the onset of the disease, exhibited high mean score of negative symptoms in the control group before the program (102.78±11.476), compared to (83.40±22.007) in the study

group at pre-program, which significantly decreased to (45.20±12.872) immediately after the program and slightly raised to (50.44±24.385) at one month after the program. Also, a statistical significant negative correlation exists between total negative symptoms and age at the onset of the disease in the study group only at one month post the program where r=-0.407, P=0.026.

In relation to duration of disease, those who had longer disease duration from ten years and more displayed high mean score of negative symptoms in the control group (94.93±14.577), compared to (87.60±13.409) in the study group at pre-program, which significantly decreased to (44.40±12.857) immediately after the program and slightly raised to (49.44±23.964) at one month after the program.

Table (6) represents the correlation of socio-demographic and clinical characteristics between study and control group in relation to total social skills score. The table revealed that according to the age of patients, that patients aged fifty years and more, demonstrated high mean score of social skills than the other age groups (16.83±12.481) before the program in the control group, compared to (20.80±10.354) in the study group, which increased to (37.40±1.342) immediately after the program and slightly decreased to (36.00±2.915) at one month post the program. Also, there was a statistical significant positive correlation between total social skills and age of patients in the control group at before the program where r=0.398, P=0.029.

In the educational level, university patients are presented with high mean score of social skills in the control group (14.50±16.263), compared to (21.00±8.185) in the study group at pre-program, which significantly raised to (37.33±2.082) immediately after the program and (36.33±2.309) at one month after the program.

Regarding the patients' age at the onset of the disease, patients aged 50 years or more at disease onset evidenced high mean score of social skills in the control group (26.67±2.517), compared to (22.67±10.970) in the study group pre-program, which significantly raised to (37.25±0.957) immediately after the program and slightly decreased to (35.67±4.041) at one month after the program. Also, a statistical significant positive correlation exists between total social skills and age at the

onset of the disease in the control group at before the program where r=0.367, P=0.046. In relation to duration of disease, those who had a disease duration less than 5 years and more demonstrated high mean score of social skills in the control group (21.50±12.369), compared to (23.00±8.347) in the study group at preprogram implementation, which significantly increased to (37.40±0.548) immediately after the program and slightly decreased to (35.20±2.490) at one month after the program. A statistical significant negative correlation exists between total social skills and duration of disease in the control group at before the program where r=-0.489, P=0.006 and in the study group at before the program where r=-0.408, P=0.025.

Table (1): Socio–demographic characteristics of the studied patients.

Characteristics	The studied patients (n=60)				χ^2 P
	Control group (n=30)		Study group (n=30)		
	N	%	N	%	
Age (in years)					
▪ ≥ 18	3	10.0	0	0.0	3.891 0.421
▪ (20-< 30)	8	26.7	12	40.0	
▪ (30-< 40)	6	20.0	8	26.7	
▪ (40-< 50)	5	16.7	5	16.7	
▪ ≥ 50	8	26.7	5	16.7	
Range	**(18-66)**		**(21-75)**		t=0.048
Mean ± SD	**37.03±13.793**		**37.20±12.981**		P=0.962
Gender					
▪ Male	22	73.3	22	73.3	0.632
▪ Female	8	26.7	8	26.7	1.00
Marital status					
▪ Single	19	63.3	19	63.3	4.00 0.406
▪ Married	9	30.0	9	30.0	
▪ Divorced	0	0.0	2	6.7	
▪ Widow	1	3.3	0	0.0	
▪ Separated	1	3.3	0	0.0	
Educational level					
▪ Illiterate	4	13.3	4	13.3	1.167 0.761
▪ Read & write	2	6.7	4	13.3	
▪ Secondary education	19	63.3	19	63.3	
▪ University and more	5	16.7	3	10.0	
Occupation					
▪ **Working**	**11**	**36.7**	**9**	**30.0**	**0.336**
▪ **Not working**	**19**	**63.3**	**21**	**70.0**	**0.785**
Place of residence					
▪ Rural	23	76.7	21	70.0	0.632
▪ Urban	7	23.3	9	30.0	0.771
Income					
▪ Enough	2	6.7	2	6.7	0.306 1.00
▪ Not enough	28	93.3	28	93.3	

Table (2): Clinical characteristics of the studied patients.

Characteristics	The studied patients (n=60)				χ^2 P
	Control group (n=30)		Study group (n=30)		
	N	%	N	%	
Age at the onset of the disease					
▪ (18 < 30)	13	43.3	18	60.0	
▪ (30-< 40)	9	30.0	5	16.7	2.060
▪ (40-< 50)	5	16.7	4	13.3	0.560
▪ ≥ 50	3	10.0	3	10.0	
Range	**(18-58)**		**(18-60)**		t=0.418
Mean ± SD	**33.27±10.375**		**32.13±10.644**		P=0.678
Number of previous admissions					
▪ (1-3)	12	40.0	17	56.7	
▪ (4-6)	15	50.0	12	40.0	2.195
▪ ≥ 7	3	10.0	1	3.3	0.334
Duration of disease (in years)					
▪ < 5	15	50.0	18	60.0	3.341
▪ (5-9)	11	36.7	5	16.7	0.188
▪ ≥ 10	4	13.3	7	23.3	
Type of admission					
▪ Involuntary	30	100.0	30	100.0	-

Table (3): Mean score of the Scale for the Assessment of Negative Symptoms (SANS) among the studied groups.

The Scale for the Assessment of Negative Symptoms	The studied patients (n=60) Range Mean ± SD							
	Control group (n=30)			F P	Study group (n=30)			F P
	Pre	Immediately	Post 1 month		Pre	Immediately	Post 1 month	
1. Affective flattening or blunting	(17-40) 31.43±6.917	(19-40) 28.23±6.755	(15-40) 25.83±6.613	5.178 0.008	(16-39) 27.40±7.015	(10-35) 17.47±6.548	(8-39) 18.53±6.907	**19.145 0.000***
2. A logia	(0-25) 12.43±5.969	(0-25) 9.83±6.685	(0-25) 5.93±6.695	**7.697 0.001***	(0-25) 7.50±6.056	(0-12) 2.93±4.042	(0-25) 4.30±5.639	**5.829 0.004***
3. Avolition /Apathy	(10-20) 17.10±3.428	(6-20) 14.10±4.08	(0-20) 12.13±4.96	**10.624 0.000***	(10-20) 15.80±3.517	(0-20) 5.53±3.954	(0-20) 6.43±4.199	**63.740 0.000***
4. Anhedonia/Asociality	(12-25) 18.93±3.895	(11-25) 18.30±4.036	(10-25) 15.87±3.655	5.264 0.007	(11-25) 17.57±3.360	(6-19) 10.90±2.952	(1-21) 11.00±4.235	**34.630 0.000***
5. Attention	(1-15) 11.27±4.299	(0-15) 9.57±4.599	(0-15) 8.37±4.76	3.068 0.052	(4-15) 10.03±3.253	(0-12) 4.37±3.586	(0-15) 5.27±3.60	**22.925 0.000***
Total score of the Scale for the Assessment of Negative Symptoms	**(51-116) 91.17±18.76**	**(40-125) 80.03±22.575**	**(33-116) 68.13±22.714**	**8.669 0.000***	**(46-120) 78.30±18.096**	**(16-97) 41.20±16.560**	**(16-120) 45.53±21.066**	**35.422 0.000***
Group 1 Vs. Group 2 t , P	**2.704 , 0.009***	**7.597 , 0.000***	**3.996 , 0.000***					

* Significant at level P<0.05.

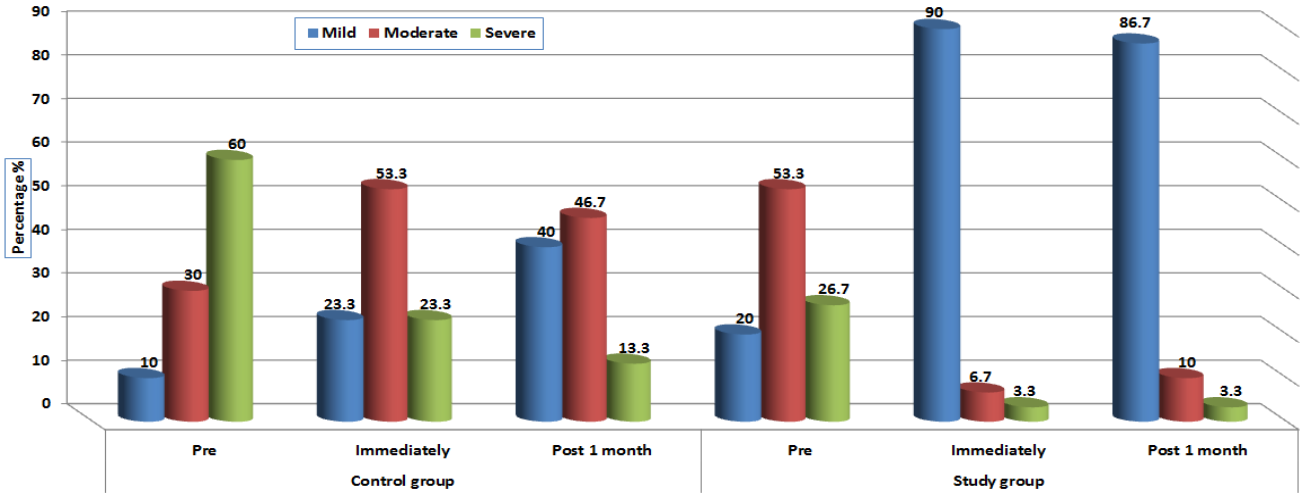

Figure (1): Comparison of patients' total level of negative symptoms between control and study group throughout the phases of the study

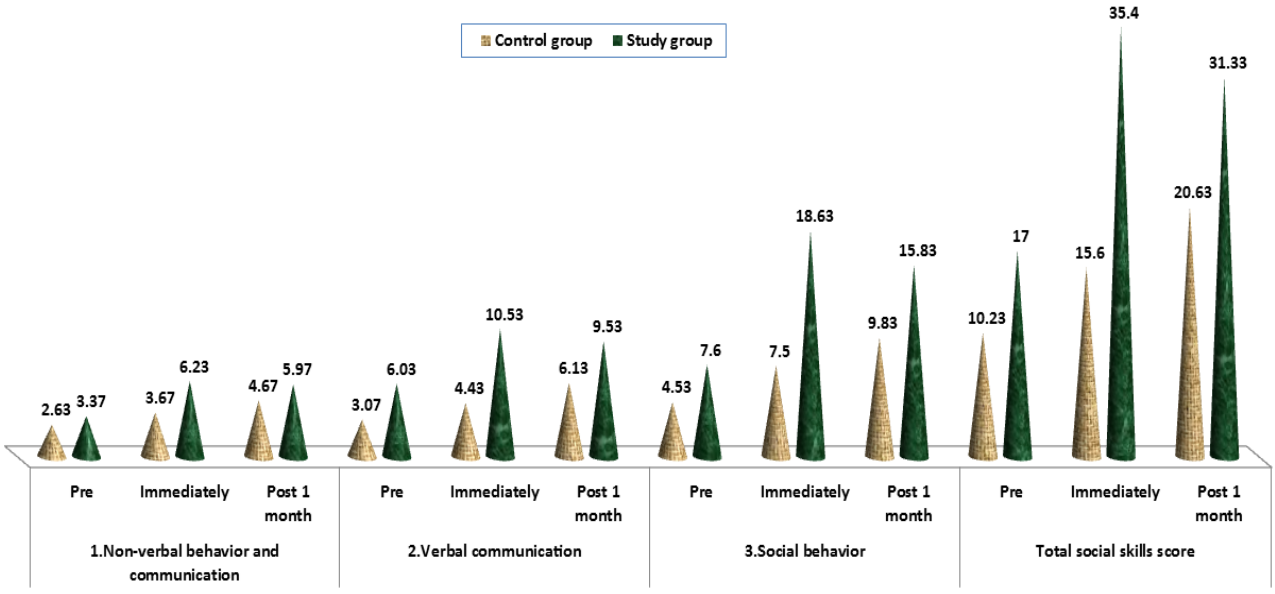

Figure (2): Comparison of patients' total level of social skills domains between control and study group throughout phases of study.

Table (4): Correlation between levels of social skills and levels of negative symptoms among the study and control group pre, immediately and at one month after the program.

Total Levels of negative symptoms	The studied patients (n=60) Total levels of social skills													
	Control group (n=30)						χ^2 P	Study group (n=30)						χ^2 P
	Severe		Moderate		Mild			Severe		Moderate		Mild		
	N	%	N	%	N	%		N	%	N	%	N	%	
Pre														
1. Mild	0	0.0	3	10.0	0	0.0	**17.578**	0	0.0	6	20.0	0	0.0	**11.251**
2. Moderate	5	16.7	4	13.3	0	0.0	**0.000***	12	40.0	4	13.3	0	0.0	**0.004***
3. Severe	18	60.0	0	0.0	0	0.0		6	20.0	2	6.7	0	0.0	
r , P	**-0.860 , 0.000****							**-0.682 , 0.000****						
Immediately														
4. Mild	0	0.0	5	16.7	2	6.7	**18.244**	0	0.0	0	0.0	27	90.0	**44.464**
5. Moderate	11	36.7	5	16.7	0	0.0	**0.001***	0	0.0	1	3.3	1	3.3	**0.000***
6. Severe	7	23.3	0	0.0	0	0.0		1	3.3	0	0.0	0	0.0	
r , P	**-0.880 , 0.000****							**-0.786 , 0.000****						
Post 1 month														
7. Mild	1	3.3	5	16.7	6	20.0	**14.816**	0	0.0	4	13.3	22	73.3	**25.128**
8. Moderate	7	23.3	6	20.0	1	3.3	**0.005***	1	3.3	2	6.7	0	0.0	**0.000***
9. Severe	4	13.3	0	0.0	0	0.0		1	3.3	0	0.0	0	0.0	
r , P	**-0.815 , 0.000****							**-0.860 , 0.000****						

r: Pearson correlation coefficient * Significance at level P<0.05 .**Highly significance at level P<0.01.

Table (5) Correlation of socio-demographic and clinical characteristics between study and control group in relation to the total negative symptoms score.

Characteristics	Total SANS score Mean ± SD					
	Control group (n=30)			Study group (n=30)		
	Pre	Immediately	Post 1 month	Pre	Immediately	Post 1 month
Age (in years)						
▪ ≥ 18	95.00±21.932	78.33±28.729	70.33±37.899	-	-	-
▪ (20-< 30)	102.13±13.871	86.60±34.435	73.25±19.396	87.13±13.943	44.67±22.884	51.00±13.191
▪ (30-< 40)	87.50±18.252	75.50±14.948	59.25±21.933	76.50±19.162	44.13±11.532	50.08±28.50
▪ (40-< 50)	87.80±24.386	81.25±16.825	73.00±27.785	76.80±20.167	37.00±8.485	43.00±10.464
▪ ≥ 50	82.33±17.603	79.83±29.795	68.00±20.130	70.00±19.053	32.40±8.444	28.40±8.532
r , P	-0.250 , 0.183	-0.007 , 0.972	0.050 , 0.792	-0.199 , 0.292	-0.263 , 0.160	**-0.377 , 0.040***
Educational level						
▪ Illiterate	93.25±14.385	90.50±17.678	90.50±17.678	93.00±10.708	49.25±32.715	51.00±29.246
▪ Read & write	91.00±16.971	68.75±9.215	70.75±6.185	65.50±14.526	48.00±14.652	49.00±15.811
▪ Intermediate education	91.47±20.345	82.00±26.168	66.95±22.599	79.16±16.777	38.42±13.061	45.11±22.218
▪ University	88.40±21.149	77.40±16.196	61.60±31.911	70.33±29.400	39.00±14.526	36.33±11.015
r , P	-0.063 , 0.739	0.098 , 0.606	-0.171 , 0.367	0.045 , 0.814	-0.244 , 0.193	-0.167 , 0.379
Age at the onset of the disease						
▪ (18< 30)	102.78±11.476	88.22±21.810	74.33±17.621	83.40±22.007	45.20±12.872	50.44±24.385
▪ (30-< 40)	89.85±18.823	78.00±18.793	66.46±27.766	78.50±17.714	42.78±19.480	44.60±11.589
▪ (40-< 50)	87.20±20.837	83.00±32.381	66.00±23.227	78.75±11.899	34.50±7.371	34.75±14.997
▪ ≥ 50	68.67±12.858	59.33±16.653	60.33±15.503	68.00±25.981	34.00±10.392	32.00±6.928
r , P	-0.249 , 0.184	-0.125 , 0.511	-0.053 , 0.779	-0.215 , 0.253	-0.244 , 0.195	**-0.407 , 0.026***
Duration of disease (in years)						
▪ < 5	92.82±20.341	77.82±20.971	65.00±25.222	79.94±17.107	43.33±19.472	42.40±15.758
▪ (5-9)	72.50±22.038	65.50±25.567	63.00±26.870	67.43±20.387	33.43±6.949	37.71±15.063
▪ ≥ 10	94.93±14.577	85.53±22.469	74.27±17.950	87.60±13.409	44.40±12.857	49.44±23.964
r , P	0.336 , 0.070	0.299 , 0.108	0.056 , 0.769	0.237 , 0.208	0.227 , 0.227	0.241 , 0.200

r: Pearson/Spearman' correlation coefficient

* Significance at level P<0.05. ** Highly significance at level P<0.01.

Table (6) Correlation of socio-demographic and clinical characteristics between study and control group in relation to total social skills score.

Characteristics	Total social skills score Mean ± SD					
	Control group (n=30)			Study group (n=30)		
	Pre	Immediately	Post 1 month	Pre	Immediately	Post 1 month
Age (in years)						
▪ ≥ 18	6.00±6.083	14.00±11.136	18.33±14.154	-	-	-
▪ (20-< 30)	9.75±7.815	18.75±8.362	24.13±10.371	15.42±7.994	33.33±8.305	28.75±12.643
▪ (30-< 40)	6.88±7.259	13.50±8.767	16.63±12.153	15.38±5.290	36.13±1.458	32.38±5.290
▪ (40-< 50)	11.00±13.342	11.40±11.908	19.20±11.032	19.60±8.050	37.20±1.304	31.20±9.338
▪ ≥ 50	16.83±12.481	18.50±13.896	23.67±11.130	20.80±10.354	37.40±1.342	36.00±2.915
r , P	**0.398 , 0.029***	0.074 , 0.698	0.071 , 0.711	0.277 , 0.139	0.300 , 0.108	0.252 , 0.178
Educational level						
▪ Illiterate	10.00±8.981	17.00±9.899	22.00±9.626	20.00±10.893	30.50±13.699	25.75±15.756
▪ Read & write	12.80±9.834	14.50±16.263	14.50±16.263	18.25±9.708	33.75±6.551	31.50±6.351
▪ Intermediate education	9.16±9.963	14.47±10.997	19.79±10.549	15.47±6.818	36.47±1.467	31.68±8.994
▪ University and more	14.50±16. 263	19.20±7.662	25.20±14.618	21.00±8.185	37.33±2.082	36.33±2.309
r , P	0.025 , 0.896	0.035 , 0.856	0.086 , 0.653	-0.090 , 0.635	0.386 , 0.035	0.260 , 0.165
Age at the onset of the disease						
▪ (18-< 30)	9.62±7.859	17.69±9.411	21.23±11.938	15.89±7.202	34.22±6.830	29.33±11.019
▪ (30-< 40)	5.78±8.288	10.67±9.042	17.00±11.467	15.20±7.981	37.20±1.924	34.80±3.768
▪ (40-< 50)	10.00±10.886	11.20±10.085	20.80±10.733	20.00±8.083	37.00±1.732	32.75±7.848
▪ ≥ 50	26.67±2.517	28.67±5.508	28.67±5.508	22.67±10.970	37.25±0.957	35.67±4.041
r , P	**0.367 , 0.046***	0.096 , 0.612	0.126 , 0.508	0.287 , 0.125	0.209 , 0.267	0.327 , 0.078
Duration of disease (in years)						
▪ < 5	21.50±12.369	23.25±13.817	25.75±15.521	23.00±8.347	37.40±0.548	35.20±2.490
▪ (5-9)	6.60±5.369	13.93±9.392	17.45±10.1622	15.00±6.894	34.17±6.845	29.44±10.961
▪ ≥ 10	11.09±10.931	15.09±9.914	1.60±10.742	15.80±6.834	37.14±1.464	33.43±7.044
r , P	**-0.489 , 0.006****	-0.259 , 0.166	-0.026 , 0.893	**-0.408 , 0.025***	-0.253 , 0.177	-0.211 , 0.263

r: Pearson/Spearman' correlation coefficient

* Significance at level P<0.05. ** Highly significance at level P<0.01.

Discussion

Schizophrenia spectrum disorders are the most impairing psychological disorders and are a major cause of social exclusion among the affected patients (**Barranha et al, 2020**)[(32)]. It is the most severe and disabling psychiatric disorder (**Behrouian et al, 2020**) [(33)], affecting approximately 0.5–1% of the population globally **(Vita et al, 2019)** [(34)]. It encompasses symptoms divided into three dimensions: positive, negative, and cognitive. Negative symptoms are a common occurrence in patients with psychosis spectrum disorders **(Ristić I et al, 2020)** [(35)]. Negative symptoms, in particular, have a major impact on the quality of life of the affected patients, and differing from positive symptoms, by being associated with a limited response to pharmacotherapy **(Cerveri et al, 2019)** [(36)].

Negative symptoms of schizophrenia were associated with impairments in social and cognitive functioning leading to substantial long-term disability **(Gopal et al (2020)** [(37)].More specifically, early presence of negative symptoms is associated with a worse course, and maximal impairments in adaptive life skills, (**Corcoran et al, 2011**) [(38)] and treatment of these negative symptoms of schizophrenia represents a major issue in determining the functional and social prognosis of the disease (**Maurel et al, 2015**) [(39)]

Advances in the management of negative symptoms and social impairment in schizophrenia forced understanding that treatment by currently on the market antipsychotics alone will not restore the patient to proper social functioning and manage these relatively resistant and challenging symptoms (**Lodovighi et al, 2016**) [(40)]. In this regard, the poor efficacy of drug treatments on the primary negative symptoms of schizophrenia has led to the emergence of new effective treatment strategies for more satisfactory treatment of these symptoms and the resultant social impairments (**Correll 2020**[(41)]**, Favrod et al, 2019** [(42)]**, & Almerie et al 2015)** [(27)].

Thus, in order to mitigate these symptoms and their associated impairments, comprehensive treatment programs that involve combining both psychological and social interventions are recommended as a crucial element of care **(Blackman et al, 2020)** [(43)]. Hence, one of these programs is the social skills enhancement training program. Therefore, in this study, the researcher applied social skills enhancement training program on patients with schizophrenia to verify its effects on

patients' negative symptoms and social skills.

The results of the present study revealed that that there is a significant improvement in patients' negative symptoms and social skills immediately after implementation of the social skills enhancement training program. There were reductions in the negative symptoms and a significant increase in the mean scores of the social skills immediately and at one month after the program in comparison with the scores before it. This result affirmed that, patients with schizophrenia were capable of learning a wide range of social skills. Supporting this, first, it is likely that this improvement might be due to the social skills enhancement training program used lectures, instructions, role play, attractive pictures, videos and group discussions as methods of training.

In the same line, the study of **Abd El Aziz et al (2017)**, revealed that there was a highly statistical significant reduction in the mean score of negative symptoms after the social skills training program and this program was effective in reducing the severity of symptoms [(44)]. Also, the findings of **Abdel Hadyghaith et al (2019)**, lighted that after implementing social skills training program, there was a statistically significant difference between both groups regarding the total mean score of negative symptoms scale [(45)]. Additionally, **Barzegar et al (2016)**, concluded that the mean score of negative symptoms in the experimental group after the program in the post-test was less than pretest [(18)].

The resultant improvement in negative symptoms in the present study is in accordance with **Ventura et al (2019)** study, which indicated that any non-pharmacological interventions that could bring unexpected benefits for schizophrenia and can improve its negative symptoms, even at moderate levels, would go a long way toward improving the patient outcomes [(46)]. Furthermore, the study of **Blackman & MacCabe (2020)** indicated that psychological and social interventions were a crucial element of care in schizophrenia, particularly in alleviating the negative and psychotic symptoms [(43)].

Furthermore, various research studies had confirmed our study results, where findings of **Ellis et al (2013)** showed that negative symptoms of schizophrenia could be reduced through employing the appropriate plans and practices [(47)] and with the findings of **Turkington (2012)** which their study displayed that social-psychological exercises could favorably affect negative symptoms though they were considered resistant

against change after treatment [48]. Also, **Bharathi et al (2011)**, ascertained that social skills training supported in improving the negative symptoms when combined with medications [49].

In contrary with our findings, the studies of **Savill et al (2014)** [50] and the study of **Fusar-Poli et al (2015)** [51] deduced that the implementation of both pharmacological and psychosocial interventions had only a limited effect on reducing negative symptoms of schizophrenia. The results of **Granholm et al (2018)** presented that the implementing psychosocial interventions in schizophrenia had significant but modest impact on negative symptoms [19]. In addition to this, the studies of **Luther et al, 2015** [52] **& Tandon et al, 2010** [53] pointed that negative symptoms often persist despite their treatment by and antipsychotics and psychosocial interventions.

In relation to the total level of negative symptoms among the studied patients before the program the results revealed that about majority of the patients in the control group had severe negative symptoms and above half of patients in the study group had moderate negative symptoms at pre-program. This can be explained from the psychosocial perspective that negative symptoms can be viewed as emerging result of poor medications' adherence and as a manifestation of impoverished environment with lack of coherent stimulations and elimination of pleasurable and reinforcing stimuli. These findings are in agreement with **Mwansisya T et al (2013**), which showed that patients with chronic schizophrenia had more negative symptoms than others [54].

Immediately after the program, the most of patients in the study group had mild levels of negative symptoms. This could be cited that the social skills enhancement training program in schizophrenia is of multidimensional approaches that targeted the five negative symptoms characteristic of schizophrenia. Last but not least, conducting sessions in the clients' environment reduces the demand for generalizability and has been found to be extremely effective in improving the adaptive behaviors, which in turn were reflected in improved negative symptoms.

The improvement and progress of negative symptoms among study group patients in this study occurred gradually during implementation of program sessions. From researcher's point of view, the improvement began after beginning of the first three sessions of the program when application of the self-care activities began. Some of the patients began to interact with the researcher

and other patients, they asked questions, and they seemed more attentive during activity demonstration. Moreover, they asked the researcher to keep their self-care equipment to use them daily.

The role of group physical activity sessions was obvious as the patients appeared happier, motivated and interactive than before. This revealed that there was a potential role of exercise in the reduction of negative symptoms of schizophrenia. This result was supported by (**Areshtanab, H et al., 2016**) who found that exercise compared to standard care significantly improve negative symptoms of schizophrenia, especially affective flattening, anhedonia and social withdrawal [(55)].

In accordance with the significant improvement in the mean scores of the social skills immediately after the training program, that may be due to their levels of social skills were improved and increased after the training program. our study results are in the same line with the results of **Abd EL Aziz et al (2017)**, which concluded that, there were a highly statistical significant relations between mean scores of pre and posttest in social skills[(3)]. In light of this apparent improvement, **Kapse P et al (2015)** declared that after the social skills training programme, there was a significant improvement in the patients' social skills [(56)]. Furthermore, **Koujalgi et al (2014)** mentioned that, social skills in the experimental group after the program were luxurious than before training [(11)].

The present study showed that there was a highly statistical significant negative correlation between total levels of social skills and the total levels of negative symptoms.in the studied groups' pre, immediately and at one month after the program. This means that with reductions of patients' negative symptoms, their levels of social skills would increase. Thus, the observed correlation might be attributed to that the impact of schizophrenia is understandable considering the many dimensions the disease may influence. When patients are going through the negative symptoms, they get totally withdrawn within themselves and have no interest in their surroundings or even in their own body, creating emptiness in their life, remaining like a log in a corner.

This resultant correlation is in harmony with **Molnar M et al (2020)** study, which found that patients with predominant negative symptoms lose their motivation, cannot function at school or work, and their interpersonal relationships severely decay [(57)]. Also, **Vangkilde A et al (2016)** study

showed strong correlation between levels of social impairments and subclinical negative symptoms [58]. In addition to, **Velligan D et al (2014)** pointed that negative symptoms, such as restricted affect, reduced emotional range, poverty of speech, diminished motivation and interests, decreased sense of purpose, and lessened social drive, contribute virtually to social deficits for many people with schizophrenia [59].

Furthermore, this is consistent with **Carrion R et al (2016)** who suggested that longer duration of negative symptoms, show to be related to long term social impairments, even prior to the onset of psychosis. [60].These findings were supported by **Tandon R et al (2010)**, where negative symptoms were major contributors to deterioration in most patients with schizophrenia, because poorly motivated patients cannot function at school or work, cannot initiate or maintain relationships with family and friends [61]. In a similar study, a previous study done by **Lavelle M et al (2014)**, showed that patients with schizophrenia displayed fewer nonverbal behaviors inviting interaction, with negative symptoms exacerbating this pattern with negative symptoms as the primary predictor of impairments in social skills [62].

In the same approach, the study of **Del Prette et al (2013)** who presented that the social skills showed to correlate inversely with the positive and negative syndrome meaning that, in patients with schizophrenia, the higher the severity of their symptoms, the lower would be their skills abilities [63]. Similarly, **Samuel R et al (2018)** who explained that negative symptoms along with cognitive dysfunctions in schizophrenia were seen as may be the leading causes to deterioration in the basic life skills [64]. These findings were in agreement with **Brüne M et al (2011)** in their study that poor social skills seem to be related to the presence of negative symptoms [65].

It was evident that the patients aged 20 to less than 30 years, demonstrated high mean score of negative symptoms than the other age groups and that there was a statistical significant negative correlation between total negative symptoms and age of patients only in the study group at one month post the program. This can be returned to that those patients had “Residual schizophrenia", which is a chronic stage in the development of the illness in which there had been a clear progression from an early stage to a later stage characterized by long-term, though not necessarily irreversible, ‘negative’ symptoms,. In the same line, this result was

consistent with the results of **Patel R et al (2015)** who declared that negative symptoms are documented in the electronic health records of patients with schizophrenia, particularly in those who were relatively young [(66)].

The study showed that there is a statistical significant negative correlation exists between total negative symptoms and age at the onset of the disease in the study group only at one month post the program. This implicates that schizophrenia can be further subdivided in to two categories according to the age of onset. The early-onset which is before age 40 years old and the late-onset which starts at 40–60 years old. Individuals with early-onset present with more premorbid impairment than do those with late-onset. This repeats the results of **Xu H et al (2021)**, who concluded that earlier age of schizophrenia onset resulted in severe negative symptoms and younger age at onset is generally thought to be a predictor of poor outcome in early onset schizophrenia [(67)]. Another confirmatory study is the study of **Skokou M et al (2012)**, which confirmed that late and older age of onset schizophrenia is associated with less severe negative symptoms and the prodromal phase of early onset schizophrenia is characterized by more negative symptoms compared to late onset schizophrenia [(68)].

It is revealed that patients aged fifty years or more had a high mean score of social skills than other age groups, compared to the study group, which increased immediately after the program and slightly decreased at one month post the program and there was a statistical significant positive correlation between total social skills score and age of patients in the control group at before the program. This finding can be explained by that age strengthen social skills. As people age, they experience less difficulty and less discomfort in social situations and in their ability to express themselves verbally because they learn more and more words throughout their lives.

Also, at a higher age, when personality has matured and attained a more stable structure of the self and the cognitive functions have fully developed. As a consequence, there will be less mental disorganization and social impairments. In the opposite way, **Muser K et al (2010)** reported that older age was associated with worse social skills in schizophrenia .Older people with schizophrenia had worse fluency, interest, and overall social skills on the role-play test. Poor social skills in old age, were a fundamental feature of schizophrenia that

persists from the onset of the illness into older age [69].

It was observed that later age of disease onset at fifty or more was associated with high mean score of social skills compared to the study group pre-program, which significantly raised immediately after the program and slightly decreased at one month after the program. And a statistical significant positive correlation exists between total social skills score and age at the onset of the disease in the control group at before the program. This can be explained by that, the psychotic disorder typically starts between adolescence and the beginning of adult life, but if the onset begins in later life as in fifty years or more, the social skills of the patient did not worsen since they are correctly structured at an early age before disease onset. This is consistent with the findings of **Díaz-Caneja et al, 2020**, who declared that early-onset psychosis (before age 18 years), is a severely debilitating condition associated with long-term psycho-social impairment [70].

The results demonstrated that those with a duration of illness lesser than five years have a high mean score of social skills than those with longer period and in the study group at pre-program implementation, which significantly increased immediately after the program and slightly decreased at one month after the program and a statistical significant negative correlation exists between total social skills score and duration of disease in the control group at before the program. This may be attributed to that schizophrenia is a chronic severe mental disorder, not only because of its symptom characteristics, but also because of the fragility of patients to circumstances in their environment. So, increased duration of illness impair patients' ability to participate in social activities like parties and different therapeutic groups. In the same line, **Swain S et al (2017)** mentioned that patients with longer duration of schizophrenia had increased level of psychosocial dysfunctions as a frank effect of the disease duration [71].

Limitation of the study:-

- This study was carried out at only one hospital in El-Gharbia Governorate, so the findings are not representative all of it and may not be generalized to the all population of patients with schizophrenia in Egypt, hence the results might be limited to this setting.

Conclusions:-

Based on the results of the present study, it can be concluded that, the social skills enhancement training program was effective for patients with schizophrenia and brought

a significant decrease in the severity of negative symptoms, and an improvement in their social skills in comparison to before the program. The total mean score of negative symptoms in the control group pre-program was higher than the experimental group and this total score in the study group decreased immediately after the program.

The total mean score of social skills among the control group was decreased than the study group before program. But immediately after the program, the total mean score of social skills in the study group was increased and decreased slightly at one month after the program.

Additionally, there was a highly statistical significant negative correlation between levels of social skills and levels of negative symptoms. Accordingly, when patients' level of negative symptoms decreased, their level of social skills would increase.

Recommendations

In the light of the study findings, the following recommendations were suggested:-

Recommendations for the organization:-

Social skills enhancement training program should be integrated in the psychiatric hospitals' protocol of care in conjunction with pharmacological therapy for going beyond the traditional treatment process of patients with schizophrenia.

Recommendations for the mental health nurses:-

- Develop social rehabilitation program to patients with schizophrenia.
- Necessity for continuous follow-up for patients with schizophrenia participating in social skills enhancement training program to boost their learning skills.
- Priority should be given to training psychiatrists by focusing more on careful and up-to-date assessment of negative symptoms, including the assessment of internal experience and promotion of self-report of negative symptoms.

-Integrating social skills enhancement training in psychiatric nursing curriculum at both undergraduate and graduate levels to train psychiatric nurses in to the aspects of social skills training, may be a fruitful future direction.

Recommendations for future research:-

- Further research is needed to better understand the complex role of social skills and negative symptoms in deducing the prognosis of schizophrenia.
- Further research is needed to assess the generalizability of social skill training in real life situations and also factors affecting the

generalization process from therapeutic settings to real life situations.

References

1. Abo elella E, Hashim N, Elhabiby M, Khalil S, Shorab I, Mounir M.Negative symptoms and functioning in institutionalized versus outpatient schizophrenic patients. Middle East Current Psychiatry.2015; 22:65–9.
2. Abd-elhay E, El-bilsha M,El-atroni M. The Effect of Auditory Hallucinations Management Program on Quality of Life for Schizophrenic Inpatients, Egypt. IOSR Journal of Nursing and Health Science.2017;6(1):1-11.
3. Abd EL aziz E, Rady H,EL–din M. Effectiveness of Social Skills Training Program on Social Functioning and Severity of Symptoms Among Patients with Schizophrenia. American Journal of Nursing Science .2017; 6(6): 454-66.
4. Kaneko K.Negative Symptoms and Cognitive Impairments in Schizophrenia:Two Key Symptoms Negatively Influencing Social Functioning. Yonago Acta Medica. 2018; 61(2): 91–102.
5. American Psychiatric Association.Diagnostic and Statistical Manual of MentalDisorders.5th ed.WashingtonD.C: American Psychiatric Association. 2013;87-8.
6. Hunter R, Barry S.Negative symptoms and psychosocial functioning in schizophrenia: neglected but important targets for treatment. European Psychiatry.2012;27:432–6.
7. Elis O, Caponigro J, Kring A.Psychosocial treatments for negative symptoms in schizophrenia: Current practices and future directions. Clinical Psychology Review. 2013; 33(8): 914–28.
8. Sarkar S,Hillner K, Velligan D.Conceptualization and treatment of negative symptoms in schizophrenia. World Journal of Psychiatry. 2015; 5(4): 352–61.
9. Orellana G,Slachevsky A.Executive Functioning in schizophrenia..Frontiers Psychiatry. 2013; 4: 35.
10. Hooley J. Social Factors in Schizophrenia. Psychological Science.2010; 19(4) 238-42.
11. Koujalgi S, Patil S, Nayak R, Chate S, Patil N. Efficacy of social skill training in patient with chronic schizophrenia: An interventional study. Journal of the scientific society. 2014; 41(3): 156-161.
12. Kingwell K.Schizophrenia drug gets negative results for negative symptoms.

Nature Reviews Drug Discovery.2014;13:244-45.

13. Reynolds G.The Pharmacogenetics of Symptom Response to Antipsychotic Drugs.Psychiatry Investigation.2012;9(1): 1–7.
14. Blanchard J, Park S, Catalano L,Bennett M. Social Affiliation and Negative Symptoms in Schizophrenia: Examining the Role of Behavioral Skills and Subjective Responding. Schizophrenia Res. 2015; 168(0): 491–97.
15. Kumar B, Singh A. Efficacy of Social Skills Training for the Persons with Chronic Schizophrenia. The Qualitative Report.2015; 20(5):660-96.
16. Inchausti F, García-poveda N, Prado-abril J, Ortuño-sierra J, Gaínza-tejedor Y. Metacognition-oriented social skills training (MOSST): theoretical framework, working methodology and treatment description for patients with schizophrenia. Psychologist Papers.2017;38(3):204-15.
17. Velentza O.Social Skills Training in Chronically Mentally Ill Patients under Psychosocial Rehabilitation.University of Athens. 2016;2(1):71-9.
18. Barzegar S,Ahadi M, Barzegar Z, Ghahari S. The Effectiveness of Social Skills Training on Reducing Negative Symptoms of Chronic Schizophrenia. International Journal of Medical Research &Health Sciences. 2016, 5; 7S:323-27.
19. Granholm E, Harvey P.Social Skills Training for Negative Symptoms of Schizophrenia.Schizophrenia Bulletin.2018; 44(3):472–74.
20. Almerie M, Okba M, Jawoosh M, Alsabbagh M, Matar H, Maayan N. Social skills programmes for schizophrenia(Review).Cochrane Database of Systematic Reviews. John Wiley & Sons, Ltd.2015;1:94.
21. Khalil A.A Community Based Treatment: Impact of Social Skills Training Program on Improving Social Skills among Schizophrenic Patients. World Applied Sciences Journal.2012; 18 (3): 370-78.
22. Andreasen N. The Scale for the Assessment of Negative Symptoms. (SANS). Iowa City, University of Iowa,1984.
23. Bhola P, Basavarajappa C, Guruprasad D, Hegde G, Khanam F, Thirthalli J , Chaturvedi S. Development of a social skills assessment screening scale for psychiatric rehabilitation settings:A pilot study.2016;38(5):395-403.

24. Bellack A, Mueser K, Gingrich S,& Agresta J. Social skills training for schizophrenia: A step-by-step guide. United States of America: The Guilford Press.2004.46-63.
25. Mueser K, Bond G, & Drake R. Community based treatment of schizophrenia and other severe mental disorders: Treatment outcomes. Medscape Psychiatry & Mental Health e Journal.2002;3(1): 1-11.
26. Kopelowicz A, Liberman R , Zarate R. Recent advances in social skills training for schizophrenia.Schizophrenia Bulletin. 2006;32 Suppl 1:S12-23.
27. Almerie M, Okba M, Jawoosh M, Alsabbagh M, Matar H,& Maayan N. Social skills programmes for schizophrenia (Review).Cochrane Database of Systematic Reviews. John Wiley & Sons, Ltd.2015;1:94.
28. Barzegar S,Ahadi M,Barzegar Z, Ghahari S.The Effectiveness of Social Skills Training on Reducing Negative Symptoms of Chronic Schizophrenia. International Journal of Medical Research &Health Sciences. 2016, 5; 7S:323-27.
29. Kumar B, Singh A. Efficacy of Social Skills Training for the Persons with Chronic Schizophrenia. The Qualitative Report. 2015; 20(5): 660-96.
30. Velentza O. Social Skills Training in Chronically Mentally Ill Patients under Psychosocial Rehabilitation. University of Athens. 2016; 2(1):71-9.
31. Inchausti F, García-Poveda N, Prado-Abril J, Ortuño-Sierra J ,& Gaínza-Tejedor Y. Metacognition-oriented social skills training (mosst): theoretical framework, working methodology and treatment description for patients with schizophrenia. Psychologist Papers. 2017;38(3):204-15.
32. Rui Barranha, Tânia Teixeira 1, João Quarenta, Orlando von Doellinger. Living conditions of patients with schizophrenia spectrum disorders in the region of 'Tâmega e Sousa' (Portugal). Int J Soc Psychiatry. 2020.
33. Behrouian M, Ramezani T, Dehghan M, Sabahi A, Ebrahimnejad Zarandi B. The Effect of Emotion Regulation Training on Stress, Anxiety, and Depression in Family Caregivers of Patients with Schizophrenia: A Randomized Controlled Trial. Community Ment Health J. 2020;56(6):1095-1102.
34. Antonio Vita, Alessandra M, Stefano B,Giacomo D, Edoardo G, Paolo V, Cesare T, Massimo G. Treatment-

Resistant Schizophrenia: Genetic and Neuroimaging Correlates. Front Pharmacol. 2019; 10: 402.

35. Ivan Ristić, Stefan Jerotić, Mirjana Zebić, Bojana Savić, Vuk Vuković, Manuela Russo, Tatjana Voskresenski, Nikolina , Nađa P. Marić. Factorial Structure of the Serbian Version of the Clinical Assessment Interview for Negative Symptoms – Evidence for Three Factors of Negative Symptoms. Front Psychol. 2020; 11: 570356.
36. Cerveri G, Gesi C, Mencacci C. Pharmacological treatment of negative symptoms in schizophrenia: update and proposal of a clinical algorithm. Neuropsychiatr Dis Treat. 2019;15:1525-1535.
37. Srihari G, Jagadish G, Katalin P, Edward K, Arun S, Maju M. Improvement of Negative Symptoms in Schizophrenia with Paliperidone Palmitate 1-Month and 3-Month Long-Acting Injectables: Results from a Phase 3 Non-Inferiority Study. Neuropsychiatr Dis Treat. 2020; 16: 681–690.
38. Corcoran CM, First MB, Cornblatt B. The psychosis risk syndrome and its proposed inclusion in the DSM-V: a risk-benefit analysis. Schizophr Res. 2010 Jul;120(1-3):16-22.
39. Maurel M, Belzeaux R, Adida M, Azorin JM. Symptômes négatifs: quels antipsychotiques? [Negative symptoms: which antipsychotics?]. Encephale. 2015 Dec;41(6 Suppl 1):6S32-5.
40. Lodovighi M, Palomba A, Belzeaux R, Adida M, Azorin JM, et al. Negative symptoms in schizophrenia : new pharmacological approaches. L'Encéphale .2016; 41: 6S41-49
41. Christoph U Correll, Nina R Schooler . Negative Symptoms in Schizophrenia: A Review and Clinical Guide for Recognition, Assessment, and Treatment. Neuropsychiatric Disease and Treatment.2020 ;16: 519–534.
42. Jérôme F , Alexandra , Anne-Marie Tronche , Olivier B , Julien D , Chereau-B , Delphine C , Pierre M . Impact of Positive Emotion Regulation Training on Negative Symptoms and Social Functioning in Schizophrenia: A Field Test. Front Psychiatry. 2019; 26(10):532.
43. Blackman G, MacCabe J. Schizophrenia Medicine .2020; 48(11):704-708.
44. Abd EL Aziz E, Rady H, & EL Din M. Effectiveness of Social Skills Training Program on Social Functioning and Severity of Symptoms among Patients

with Schizophrenia. American Journal of Nursing Science. 2017;6(6):454-66.

45. Abdel Hady Ghaith R & Mohammed S. Efficacy of Social Skills Training On Symptoms Intensity, Insight and Social Functioning In Patients with Schizophrenia. IOSR Journal of Nursing and Health Science.2019; 8(6): 12-25.
46. Joseph V, Kenneth L,Subotnik L,Casaus, M, Gerhard H, Hellemann, K .Cognitive Remediation Can Improve Negative Symptoms and Social Functioning in First-Episode Schizophrenia: A Randomized Controlled Trial. Schizophr Res. 2019; 203: 24–31.
47. Elis O, Caponigro J, Kring A. Psychosocial treatments for negative symptoms in schizophrenia: Current practices and future directions. Clinical Psychology Review. 2013; 33(8): 914–28.
48. Turkington D. Cognitive Therapy for Negative Symptoms of Schizophrenia.Arch Gen Psychiatry. 2012;69(2):119-120.
49. Bharathi G, Huang N, Lu Z. Psychosocial interventions for patients with schizophrenia. Shanghai Arch. Psychiatry.2011; 23 (6): 368–375.
50. Savill M, Banks C, Khanom H, S Priebe S. Do negative symptoms of schizophrenia change over time? A meta-analysis of longitudinal data. Psychol Med. 2015 Jun;45(8):1613-27.
51. Fusar P, Rocchetti M, Sardella A. Disorder, not just a state of risk: meta-analysis of functioning and quality of life in subjects at high clinical risk for psychosis. Br J Psychiatry 2015;207:198-206.
52. Luther L, Coffin GM, Firmin RL, Bonfils KA, Minor KS, Salyers MP. A test of the cognitive model of negative symptoms: Associations between defeatist performance beliefs, self-efficacy beliefs, and negative symptoms in a non-clinical sample. Psychiatry Res. 2015;269:278-285.
53. Rajiv T, Michael J. Negative symptoms of schizophrenia: How to treat them most effectively. Current Psychiatry. 2002 September;1(9):36-42.
54. Mwansisya T, Wang Z, Yang B, Li, L. Wang, P. Comparison of Psychosocial Determinants in Inpatients with First-Episode and Chronic Schizophrenia in China. Archives of Psychiatric Nursing. 2013; 27(1): 32-41.
55. Areshtanab H., Ebrahimi, H., Farnam, A., Mohammadpoorasl, A. , Jamali, B., , Piri, S.The effect of regular aerobic exercise on both positive and negative

symptoms of male patients with chronic schizophrenia: A double blinded study. International journal of medical research & health sciences.2016; 5 (11), 529-535.

56. Kapse P, & Nirmala B.Efficacy of Social Skills Training among Persons with Schizophrenia.International Journal of Psychosocial Rehabilitation.2015; 20 (1):45-50.
57. Molnar M, Jimoh I, Zeke H, Palásti Á,& Fedo M. Early-Onset Schizophrenia With Predominantly Negative Symptoms: A Case Study of a Drug-Naive Female Patient Treated With Cariprazine. Front Pharmacol. 2020;11:477.
58. Vangkilde A, Jepsen J, Schmock H, Ol esen C, Arnarsdóttir S, Baaré , Plessen K, Didriksen M, Siebner H, Werge T, & Olsen L. Associations between social cognition, skills, and function and subclinical negative and positive symptoms in 22q11.2 deletion syndrome. J Neurodev Disord. 2016 ;16;8:42.
59. Velligan D, Alphs L. Negative Symptoms in Schizophrenia: An Update on Identification and Treatment. Psychiatric Times.2014; 31 (11).
60. Carrión R , Demmin D, Auther A, McLaughlin D, Olsen R, Lencz T, Correll C, & Cornblatta B. Duration of attenuated positive and negative symptoms in individuals at clinical high risk: Associations with risk of conversion to psychosis and functional outcome. J Psychiatr Res. 2016; 81: 95–101.
61. Tandon R., Nasrallah H.A., Keshavan M.S. Schizophrenia, “just the facts” 5. Treatment and prevention. past, present, and future. Schizophr. Res. 2010;122(1–3):1–23.
62. Lavelle M, Healey P, & McCabe R. Nonverbal Behavior During Face-to-face Social Interaction in Schizophrenia A Review. The Journal of nervous and mental disease .2014; 202(1):47-54.
63. Del Prette ZAP, Del Prette A. Social Skills Inventory: Characteristics and Studies in Brazil. In: Osorio FL, editor. Social Anxiety Disorder: From Research to Practice. Psychology Research Progress. Ribeirão Preto, São Paulo, Brazil: Nova Science Publishers, Inc.; 2013. p. 47-60.
64. Samuel R, Thomas E, & Jacob K. Instrumental Activities of Daily Living Dysfunction among People with Schizophrenia. Indian J Psychol Med. Mar-Apr 2018;40(2):134-138.
65. Brüne M, Schaub D, Juckel G,& Langdon R. Social skills and

behavioral problems in schizophrenia: the role of mental state attribution, neuro-cognition and clinical symptomatology. Psychiatry Res. 2011;190(1):9-17.

66. Patel R, Jayatilleke N, Broadbent M, Chang CK, Foskett N, Gorrell G, Hayes RD, Jackson R, Johnston C, Shetty H, Roberts A, McGuire P, Stewart R. Negative symptoms in schizophrenia: a study in a large clinical sample of patients using a novel automated method. BMJ Open. 2015 7;5(9):e007619.
67. Hang X, Jiesi W, Yongjie Z, Dachun C, Meihong X, Li W, Xiangyang Z. BDNF affects the mediating effect of negative symptoms on the relationship between age of onset and cognition in patients with chronic schizophrenia. Psychoneuro endocrinology. 2021;125:105121.
68. Maria S, Aggeliki K, Ioannis A, Philippos G. Active and prodromal phase symptomatology of young-onset and late-onset paranoid schizophrenia]. Rev Psiquiatr Salud Ment. 2012;5(3):150-9.
69. Mueser K, Pratt S, Bartels S, Forester B, Wolfe R, Cather C. Neurocognition and social skill in older persons with schizophrenia and major mood disorders: An analysis of gender and diagnosis effects. J. Neurolinguistics. 2010;23(3):297–317.
70. Díaz-Caneja CM, Pina-Camacho L, Rodríguez-Quiroga A, Fraguas D, Parellada M, Arango C. Predictors of outcome in early-onset psychosis: a systematic review. NPJ Schizophr. 2015; 1:14005.
71. Sarada S, Sushree S,Behura M, Kumar D, Anil K, Saswati S. The Influence of Psychosocial Dysfunctions in Chronic Schizophrenia Patients in Remission: A Hospital-Based Study. Indian J Psychol Med. 2017; 39(2): 157–163.