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Original Article

The Effectiveness of Positive Psychology Based Intervention on Anhedonia, and Internalized Stigma among Schizophrenic Patients

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ABSTRACT

Schizophrenia is a complex mental disorder that complicates daily life for those affected. It includes anhedonia, which hinders social interactions and presents a major challenge to treatments. Furthermore, many experience internalized stigma, which heightens their psychological and social isolation. **Purpose**: To investigate the effectiveness of positive psychology-based intervention on anhedonia and internalized stigma among schizophrenic patients. **Methods:** A quasi-experimental design (pre- and post-tests) alongside a control group was employed. A purposive sample of 60 schizophrenic patients who had a score less than 3 on the Snaith-Hamilton Pleasure Scale were chosen and randomly assigned into two groups. This study has been carried out at the Meet-Khalaf Psychiatric and Addiction Treatment Hospital's psychiatric outpatient clinic. The data were collected using the structured interviewing questionnaire, the internalized stigma of mental illness inventory (ISMI), the mini-mental state examination scale (MMSE), and the Snaith Hamilton pleasure scale (SHAPS).**Results:** illustrate that there was a significant difference found between the case and control group regarding dimensions of anhedonia (SHAPS) and levels of internalized stigma of mental illness both immediately and 2 months following the intervention ($P<0.001$). Also, results revealed a highly statistically significant positive correlation was found between the internalized stigma of mental illness and anhedonia (SHAPS) scores. **Conclusion:** The findings concluded that the anhedonia and the internalized stigma of mental illness are all greatly improved by positive psychology-based interventions for individuals with schizophrenia. **Recommendation:** Apart from medication remedies, positive psychology-based interventions must be included in the regular treatment plan for people with schizophrenia.

Keywords: Anhedonia, Internalized Stigma, Positive Psychology, Schizophrenia

Introduction

Schizophrenia represents a major chronic illness affecting some 20 million individuals around the globe, and it has been linked to a sizeable disease burden/disability across all who live with this condition (Same, et al., 2024). Schizophrenia is prevalent among the Egyptian population, with a rate of 1.1% (Abdel Aziz, et al., 2016). It is considered one of the major psychotic illnesses with poor outcomes. Schizophrenia is a chronic, recurrent, and disabling disease that encompasses disruptions in cognition, sensory experiences, emotions, and interpersonal conduct (Manea, Zaki, & Morsi, 2020). Symptoms of schizophrenia are classified as positive symptoms, such as disorganized speaking, unusual or

disorganized movements, hallucinations, delusions, and negative symptoms. Negative symptoms have a substantial consequence on both the individuals and their family and friends, are mostly less responsive to medication, and contribute more to a bad quality of life than positive symptoms (Li, et al.,2023). It includes diminished expression (alogia and affective flattening) as well as reduced pleasure, e.g. avolition, and anhedonia (Correll, & Schooler, 2020).

In schizophrenia, anhedonia is described as an inability to feel pleasure or a diminished capacity for interest or enjoyment, signifying impairments in hedonic ability, and is intricately linked to the concepts of reward assessment, decision-making processes, anticipation, and motivation (Liang, et al., 2022). A greater prevalence of anhedonia is observed in the chronic phase of schizophrenia compared to the early phase of the disorder (Abel, etal.,2024). Anhedonia in individuals with schizophrenia may arise from difficulties in integrating and sustaining representations of hedonic values, leading to deficits in anticipatory pleasure and goal-directed activities (Liang, et al.,2022). Recent studies categorize anhedonia into distinct components, primarily focusing on anticipatory and consummatory anhedonia (Abel, etal.,2024). The inability to experience joy from anticipating positive outcomes is known as anticipatory anhedonia. This is not the same as consummatory anhedonia, which is the inability to appreciate good things as they occur (Guo, etal.,2023). On the other hand, there are two distinct types of anhedonia: social anhedonia, which is characterized by a heightened disinterest in various facets of interpersonal relationships, and physical anhedonia, which refers to the inability to experience tactile pleasures, including activities such as eating and touching (Yu, etal.,2021).

Stigma is the term for the negative stereotypes and biases that people with mental illnesses, such as schizophrenia, frequently encounter. Numerous studies demonstrate that people with schizophrenia have a high level of self-stigma (Chu, et al., 2023; Pinto, et al., 2023 & Abdel-Aziz, et al.,2023) When someone adopts unfavorable views about mental illness, they become stigmatized. They begin to accept these concepts and use them to describe themselves. Another name for this is internalized stigma (Hamidi, et al., 2023). Because they are afraid of being stigmatized, people with schizophrenia may avoid medical facilities. They frequently discontinue treatment because of this internalized stigma, losing out on opportunities for employment and independent living (Dikeç, Bilaç, &Uzunoğlu, 2020). According to research, internalized stigma has been linked to social alienation and avoidant coping, according to research. This suggests a connection to negative symptoms like anhedonia (Zhang, et al., 2019).

Even after remission of disease, the stigma can persist, causing stress and suffering (Ociskova, et al.,2023). As a result, addressing and reducing this stigma has become a crucial aspect of effectively treating individuals with schizophrenia (Tang, et

al.,2023). Positive psychology seeks to enhance the development of various facets of human functioning or well-being, positive cognitions, and emotions using practical knowledge and techniques that promise to make one's life better, easier, and worth living (Tang, et al.,2023). It involves interventions like gratitude exercise, kindness, positive thinking, strength-building measures, humor, optimism, mindfulness, savoring, and meditative interventions (Tönis, et al.,2023).

Savoring is a meta-cognitive process that involves generating, intensifying, and prolonging enjoyment by regulating positive emotions**.** It involves mental imagery to savor past and future positive events. This technique enhances and extends pleasure and reward duration, requires minimal training, and is innovative in its effectiveness (Limpächer, Kindt, & Hoyer, 2024)**.** In a similar vein, mindfulness practices could help treat anhedonia. A relationship between mindfulness and anhedonia was discovered in a more recent study (Abouzaid, & Abdelhamid, (2024).

Furthermore, an approach that focuses on cultivating gratitude and personal strengths can encourage individuals to engage in enjoyable activities even when they are unable to do so, help them find meaning in the face of insurmountable challenges, reduce the negative impacts of stigma, and improve their capacity for adjustment (Tang, et al.,2023). As a result, there is convincing evidence that engaging in positive psychology practices, including mindfulness, savoring, strength-building exercises, and thankfulness, improves hedonic well-being and reduces self-stigma.

Significance of the study

The most common psychological illness that causes great burdens on families and society is schizophrenia. Egyptian society has long aspired to establish a society in which no one is overlooked and where everyone receives enough care; schizophrenia patients are among those to whom society attempts to provide a sense of acceptance. Attempts have been made to use antipsychotic medications to improve their condition. Even if it provided some comfort, it has typically failed to restore complete functionality since, even after months of medication, most people with schizophrenia suffer a decreased interest in things that they once found enjoyable (anhedonia) Ogechi, Obi-Nwosu, & Okechukwu, 2024). According to Shenoy and Praharaj, (2023) over 18% of those suffering from schizophrenia attempt suicide. Which could be the result of an extreme anhedonia state. Schizophrenia patients often internalize stigma, leading to self-defeating stereotypes, prejudice, decreased shame, self-esteem, isolation, and reduced quality of life (Sori, Sema, & Tekle, 2022).

So, addressing these issues is crucial for mental health recovery for schizophrenic patients. Moreover, the effectiveness of some psychological interventions in addressing this problem remains unknown due to conflicting research findings (Çapar Çiftçi, & Kavak Budak, 2022). This has led to an increased search for effective, and even cost-effective, psychotherapeutic approaches to treating

psychological deficits (anhedonia) and enhancing internalized stigma in people with schizophrenia. A modern way to enhance patients' positive aspects of life is positive psychology. Additionally, it seeks to lessen their adverse symptoms (Luo,2022). The purpose of this study was to assess how well a positive psychology-based intervention worked for reducing anhedonia and internalized stigma in patients with schizophrenia.

Subjects and Methods:

Purpose of the study

Investigate the effectiveness of positive psychology-based intervention on anhedonia and internalized stigma among schizophrenic patients.

Research hypothesis

H^1: Schizophrenic patients who will take part in a positive psychology-based nursing intervention (case group) are expected to show a lower anhedonia score after the intervention compared to those who will not take part in the intervention (control group) as determined through (SHAPS).

H^2: Schizophrenic patients who will take part in a positive psychology-based nursing intervention (case group) are anticipated to have a low internalized stigma score compared to those who will not take part in the intervention (control group) as evaluated by the Internalized Stigma of Mental Illness Inventory.

Research design:

For accomplishing the study's goal, a quasi-experimental design that involved pre- and post-tests as well as a control group was implemented.

Research setting:

The psychiatric outpatient clinic of the psychiatric and addiction treatment hospital situated in Meet-khalif, Shebin Elkom, Menoufia, Egypt, served as the site of this study. The psychiatric outpatient clinic is accessible four days a week from 9:00 AM to 12:00 PM and delivers free rehabilitation and treatment facilities to all individuals experiencing mental health disorders and drug dependence. It shut down on Thursdays and Sundays.

Study subjects and sample size:

Employing a purposive technique, the study population comprised a non-probability sample of 60 people with schizophrenia who were referred to the Meet-Khalaf Psychiatric and Addiction Treatment Hospital's psychiatric outpatient clinic throughout the data collection period. Compared to inpatients, outpatients were chosen because they were more exposed to stigmatizing opinions held by the public in their areas. The participants were picked based on the subsequent eligibility requirements:

- Schizophrenic patients who were diagnosed by psychiatrists.
- Patients with literacy skills
- Patients were aged between 18 and 40 years and were willing to engage in the research.
- Patients had a score of 2 or less than 3 on the overall Snaith-Hamilton Pleasure Scale and had a normal cognitive function according to the mini-mental state examination scale as a score range from (25 to 35).

Exclusion criteria:

- Patients with severe psychotic disturbance
- Patients have a past or current history of drug use
- Illiterate patients

Sample size

Utilizing the following formulas, the participant sample size was determined:

Unlimited population: $n' = \frac{z2 \times \hat{\rho}(1-\hat{\rho})}{\varepsilon 2}$

Finité population : $n' = \frac{n}{1+\frac{z2 \times \hat{\rho}(1-\hat{\rho})}{\varepsilon 2 N}}$

P for the population proportion is 0.5, ε for the margin of error is 0.023, and z for a 95% confidence level is 1.96. Over the past three months, there have been roughly 800 schizophrenic patients in the population.

$$n = \frac{1.962 x 0.5(1-0.5)}{0.0232} \quad \mathbf{n'} = 1815.5$$

$$\mathbf{n'} = \frac{1815.5}{1+\frac{1.962 x 0.5(0.5-1)}{0.0232 x\ 800}} = 145$$

The estimated sample size was calculated to be 145 patients. However, 45 patients didn't meet the research criteria, approximately 30 patients declined to participate in the data collection process, and 10 patients withdrew from the study after completing the pretest instruments, which resulted in their exclusion from the analysis. Consequently, the final sample size comprised 60 patients. Participants were assigned to two groups at random using a lottery method. In this method, the researcher assigned a unique number to each participant. These numbers were then inscribed on individual slips of paper that were uniform in size, shape, and color. The slips were folded and thoroughly mixed in a container, and the researcher blindly chose the desired numbers for intervention and control groups. The first 30 numbers drawn were designated for the intervention group (A) which engaged in a positive psychology-based intervention and received medications as prescribed by their physician, while the remaining numbers were allocated to the control group (B) which received only outpatient services.

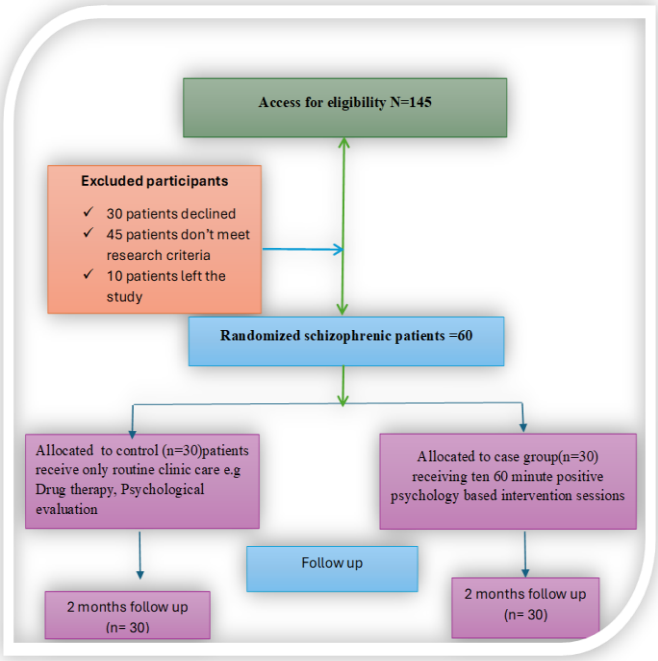

Figure 1: Sample size calculations (Flow diagram of the Consort study).

Instruments of Data Collection:

Four instruments were applied to reach the study's goals.

Instrument (1): A structured interviewing questionnaire

After examining the relevant literature, the study team created it in Arabic. It was split into two distinct parts:

Part (1): Socio-demographic details of the participants, such as their age, sex, education, region of residence, employment status, and marital status

Part (2): Clinical details of the participants, including length of sickness, length of hospital care, number of hospitalizations, and method of hospitalization.

Instrument (2): Internalized Stigma of Mental Illness Inventory (ISMI):

The inventory consisted of 29 questions, was created to evaluate the overall degree of self-stigma associated with mental illness among individuals who suffer from various forms of psychiatric illness. It was prepared by Ritsher & Jennifer, (2003) and translated into Arabic and validated by Al-Hawamdeh, & Khalil, (2016). The inventory questions were divided into five different subscales: alienation, stereotype endorsement, discrimination experience, social withdrawal, and stigma resistance. **The initial subscale**, alienation (six items): It was designed to evaluate the personal perception of feeling like an incomplete member of society (1, 5, 8, 16, 17, 21). **The subsequent subscale**, stereotype endorsement (seven items), was used to assess the extent to which participants agree with common stereotypes regarding individuals with mental health conditions (2, 6, 10, 18, 19, 23, 29). **The third component of the subscale**, discrimination experience (five items) aimed to capture patients' perceptions about how they are now treated by others (3, 15, 22, 25, and 28). **The fourth subscale**, social withdrawal, was made up of six items (4, 9, 11, 12, 13, and 20). **Finally, the stigma resistance subscale** assesses the extent to which a person believes they can avoid internalizing the stigma associated with mental illness, which includes five items (7, 14, 24, 26, and 27).With the one exception of the stigma resistance subscale, which was inverted, all items are assessed using a 4-point Likert scale, with 1 denoting strongly disagree and 4 denoting strongly agree. The validity and reliability of the scale were estimated by Al-Hawamdeh, & Khalil, (2016) utilizing the Cronbach alpha coefficient which was .91. The values of Cronbach α coefficients of alienation, stereotype endorsement, discrimination experience, social withdrawal, and stigma resistance subscale were 0.81, 0 .77, 0.78, 0 .81, 0 .62, respectively.

Scoring system:

The sum of the scale's item scores was used to determine the overall score, which was then divided by the total number of items. It was between 1 and 4. The absence of internalized stigma was confirmed by a score between 1 and 2. Mild internalized stigma is indicated by a score between 2.01 and 2.50. A moderate level of internalized stigma was indicated by a score between 2.51 and 3.00. Severe internalized stigma was confirmed by a score between 3.01 and 4.00.

Instrument (3): Mini-Mental State Examination Scale (MMSE)

In 1975 MMSE was established by Folstein, Folstein, & McHugh, (1975). The Arabic version was developed and tested for content validity by Al-Hawamdeh, & Khalil, (2016). This instrument initially serves to conduct a comprehensive and systematic evaluation of mental status. In the current study, it was used to choose participants who were able to communicate clearly and had a normal cognitive function to understand the intervention. It comprised 11 questions focusing on the following five elements of cognitive function: language, orientation, registration, attention and calculation, and recall. This tool relies on verbal responses, as well as reading and writing skills. The MMSE has a high degree of internal consistency, according to earlier research, with a Cronbach's alpha coefficient of 0.82(Ong, et al., 2016). The total score was 30 points; a score of 24 or higher reflected a normal cognitive function. Scores below this threshold may reflect varying degrees of cognitive impairment: severe impairment is indicated by a score of 9 or lower, moderate impairment by a score ranging from 10 to 18, and mild impairment by a score between 19 and 23.

Instruments (4): Snaith-Hamilton Pleasure Scale (SHAPS).

This scale was created in 1995 by Snaith et al., (1995) and translated into the Arabic language by three bilingual translators who are fluent in the two languages and familiar with the content of the scale. It was utilized to check for anhedonia, or the inability of schizophrenic patients to experience pleasure. This scale had 14 statements and included four domains: 1) Social interaction domain (4 items: 2,7,13,14). 2) Food and drink domain (2 items: 4,10). 3). Sensory experience domain (3 items: 5,6,8). 4) Interest/pastimes domain (5 items:1,3,9,11,12). There are four types of replies for each item: strongly disagree, agree, disagree, and highly agree. Replies that strongly disagreed received a score of zero, and those that strongly agreed received a score of three. The final scores were measured on a scale from 0 to 14. The participant's scores were calculated by summing up the items' scores for the scale and then dividing by the total number of items. A score of 2 or lower than 3 indicates the inability of an individual to experience pleasure or joy from life's experiences or experience a higher level of anhedonia. In contrast, a score of 3 or higher was regarded as "normal pleasure". With an intraclass correlation coefficient (ICC) of 0.70, the SHAPS has adequate construct validity and satisfactory test-retest reliability (Franken, Rassin, & Muris, 2007). Additionally, a high level of internal consistency was also observed by Franken Rassin, & Muris, (2007) (a Cronbach's alpha of 0.94).

Content validity of the instruments:

Five specialists from the field of psychiatric medicine and mental health nursing reviewed the fourth instrument for content validity prior to data collection. The purpose of this assessment was to make sure the claims were understandable and

relevant. As a result, the required modifications were made.

Reliability

The internal consistency of instruments II and IIII in the current study was conducted utilizing Cronbach's alpha, which demonstrated high test-retest reliability. The reliability coefficients were notably strong, with instrument II achieving a value of 0.881, and instrument IIII reflecting a value of 0.924.

Ethical Considerations

Both the Menoufia University faculty of nursing's ethical committee (Approval NO: ERCNMA 1000/4/9/24) and the general secretariat of mental health hospitals' research ethics committee gave their approval. Regarding their involvement, the schizophrenic patients were assured of confidentiality and anonymity. Prior to beginning data collection, the researchers obtained written consent from the patients who met the study's inclusion requirements and were designated as participants. The patients were briefed on the purpose and nature of the study. Additionally, participants were free to leave the study at any moment without incurring any legal penalties.

The procedure for data collection:

Prior to collecting data, back translation techniques were used to convert the (SHAPS) from English into Arabic. It was then approved by the ethical committee of the Menoufia University faculty of nursing. Additionally, permission to contact patients and their records to complete study instruments was obtained by the General Secretariat of Mental Health Hospitals' research ethics committee. Approvals and objectives of the study were communicated to the manager, physician, and clinic nurse at the internal psychiatric clinic within the Psychiatric and Addiction Treatment Hospital Mit-Khalf, Menoufia, Egypt, to secure their collaboration.

A pilot study

To evaluate the instruments' precision, accuracy, usefulness, and clarity as well as the time needed to complete them, a pilot inquiry was done. Six patients, or 10% of the total participants, were involved. Participants in the pilot study were chosen by the researcher according to inclusion criteria, and they were subsequently expelled from the original study. From early September 2024 to the end of December 2024, the study took place. As explained below, there were three primary stages to the data collection process.

1st phase: Assessment and Preparatory phase:

The researcher asked the physician and nurse of the psychiatric clinic to transfer the patients who had been diagnosed with schizophrenia and met the required criteria. Each participant was given an explanation of the purpose and nature of the study by the researcher using a structured interviewing technique. Additionally, after obtaining thorough information verbally and responding to all pertinent questions, patients who consented to participate in the study signed written informed permission. Then the researchers interviewed the patients individually in the waiting room, which was facilitated by the nurse. After that, the researcher applied (SHAPS), and (MMSE) to

select patients with a score of 2 or lower than 3 on the overall Snaith-Hamilton Pleasure Scale and ensured they had normal cognitive functions. Eligible patients completed pretest instruments, including a structured questionnaire and ISMI. Data collection took place in the mornings (9 a.m. to 12 a.m.) on Mondays, Tuesdays, and Thursdays from September to early October 2024.**2nd phase: Positive psychology-based intervention planning phase:**

To formulate the intervention, the researcher conducted a thorough review of positive psychology literature (Abouzaid, & Abdelhamid, (2024). Al-Menshawi, & Dahri, (2021), Mustafa, (2021). To help patients learn the required information and skills, an intervention booklet, video, storytelling, confrontational discussion and PowerPoint presentations were prepared. The intervention included role-playing, modeling, real-life examples, brainstorming, and demonstrations as teaching methods. Prior to implementation, the validity of the program was reviewed and approved by a panel of psychotherapy professors to verify the sessions' appropriateness, objectives, strategies, clarity, and relevance to the study sample. Using the lottery approach, the researcher split the participants into a pair of groups, one of which underwent a positive psychology intervention and the other served as a control group. The physician and clinic nurse of the internal psychiatric clinic were requested to select two days for the intervention group that differed from the follow-up days of the control group to avoid any potential contamination. Patients in a positive psychology intervention group were divided into 4 groups, each group ranging from 7 to 8 patients. The researchers planned one constructive session for each subgroup / week for 60 minutes for 10 weeks during October and December 2024. The patients in the control group continued to receive their outpatient' services, with no specific intervention provided to prevent any potential overlap or contamination with the intervention.

3rd phase: Positive psychology-based intervention implementation phase:

Positive psychology-based intervention is a planned and organized strategy including a set of sessions, knowledge, and activities based on the techniques of positive psychology. The sessions' content was represented as the following (Table 1):

Session	Topic	Objectives
Session 1	**Introduction, dating and building trust**	Building a therapeutic relationship. An introduction exercise distributed a booklet, and patients were asked to write down their negative and positive thoughts.
Session 2,3	**Cognitive reconstruction (awareness of misconception about stigma, cognitive Restructuring of distorted ideas related to stigma**	Identify common misconceptions related to stigma, motivating participants to think critically about their beliefs, Analyzing and deconstructing negative thoughts related to the stigma of mental illness, through role-playing, storytelling, and confrontational discussion.
Session 4	**Positive thinking**	Reframe patients' negative thoughts. Trained patients in different strategies (be neutral, say "stop!" positive thinking exercise, positive self-talk), and self-compassion.
Session 5	**Savoring enjoyable times**	Enhance patients' emotional pleasure. It included reminiscence (remembering funny moments using pictures), and savoring the moment (savoring meals and activities e.g Hopscotch game, making a paper ship, a game without words, and a verbal speed game).
Session 6	**Savoring the present moment (Mindfulness)**	Develop patients' physical, cognitive, and emotional pleasure. It involved the practice of mindful eating, mindful breathing and mindful model exercise.
Session 7	**Mindful competition, and body scanning**	Develop patients' physical and social pleasure. It included relaxation exercises, guided imagery, mindfulness competition and body scanning.
Session 8	**Gratitude**	Trains participants on gratitude enhancement stratégies. (gratitude journaling exercise, gratitude mapping, using a gratitude jar, and the Naikan method of gratitude).
Session 9,10	**Exercise for Personal Strengths**	Training patients to identify personal strengths, reframe weaknesses, and enhance self-awareness through the "You Are Your Best" exercise, analyzing responses to challenging situations, and practicing an innovative method to apply character strength in daily living

4th Termination & follow up phase: End the intervention and evaluate its effectiveness

The researcher reviewed the most important points of the previous sessions in the form of a lecture. Subsequently, the ISMI, SHPS scales were completed again by both groups immediately after the intervention and two months following the final session. After that, the control group received the content of intervention.

Statistical Analysis:

An IBM personal computer running the Statistical Package of Social Science (SPSS) version 25 (SPSS, Inc., Chicago, Illinois, USA) was used to gather, tabulate, and statistically analyze the data. The following statistics were used: In descriptive statistics, qualitative data was represented by numbers and percentages, whereas quantitative data was displayed using the mean (X) and standard deviation (SD). To ascertain whether there is a relationship between the research parameters and the desired variables, analytical statistics are utilized. The Chi-squared test ($\chi 2$) is a meaningful test for comparing two groups with qualitative characteristics. When comparing two groups using quantitative data, the t-test is a test of significance. The Pearson correlation is a metric used to quantify the relationship between two quantitative variables. The level of significance was set at the following: a P value of >0.05 was deemed statistically non-significant, a P value of ≤0.05 was deemed statistically significant, and a P value of ≤0.001 was deemed extremely statistically significant.

Results:

Table (2): shows that none of the items in the two groups differed significantly from one another. The results exhibited that over half of the case group (56.7%) and the majority of the control group (80%) were between the ages of 40 and 52, with mean ages of 42.83±5.81 and 43.50±6.82, respectively. In terms of gender, over two-fifths (60.0%) of a case group and nearly three-quarters (73.3%) of a control group were male. Regarding education, almost two-fifths (63.3%) of the case group and half (50.0%) of the control group completed secondary school. Regarding marital status, over one-third (40.0%) of the case group and over half (53.3%) of the control group were single. Three-quarters (76.7%) of the case group and two-thirds (66.7%) of the control group lived in rural areas, and the majority of both groups (90.0% and 83.3%, respectively) were unemployed.

Table (3): reveals that there was no statistically significant difference between the two groups concerning clinical data with p>0.05. About two-thirds (63.3%) of the control group and a significant majority of the case group (80.0%) had been ill for over three years, according to the duration of illness. In terms of treatment duration, over one-third (43.3% in the control group, 40.0% in the case group) had undergone treatment for a period exceeding three years. As regards admission, one-third of the control group (36.7%) had received treatment on three occasions, whereas more than one-third of the case group (43.3%) had been treated more than three times. Concerning admission, the percentage of involuntary admissions was significant in both groups (86.7% for the case group and 76.7% for the control group).

Table (4): shows that there was a significant difference between the two groups in the internalized stigma of the mental illness subscale both immediately and 2months following intervention. Immediately following the

intervention, the total mean scores for alienation, stereotype endorsement, discrimination experience and social withdrawal respectively, were reduced from (16.80 ±1.54, 19.50 ±1.92, 14.90 ±2.91, 17.00 ±1.94) to become (11.30 ±1.95, 13.76 ±1.79, 9.80 ±1.51, 12.26 ±1.98) compared with the mean of that control group. Meanwhile, the total mean score for the stigma resistance was increased from (14.43±1.83) to (18.73±1.38) for the case group immediately following the intervention compared with the mean of that control group. Two months following intervention, this difference remained significant between the groups (P<0.001) (Table 4)

Table (5): illustrates that there was a significant difference found between both groups regarding dimensions of anhedonia (SHAPS) both immediately and 2months following the intervention compared with the prior intervention as compared with a control group. The case group showed significant improvements in total mean score for social interaction, food and drink immediately following intervention from (4.96±1.44, 1.86±0.77) to (8.16±1.39, 4.03±0.61) and remained the same at two months following intervention compared to the control group. Similarly, the case group also exhibited significant improvement in the mean score for sensory experience and interest/hobbies, as the score for these items increased from (3.03±1.21, 4.90±1.29) to (6.16±0.98, 10.80±1.54) immediately after and (6.16±0.98, to 9.80±1.80) at two months following the intervention. Additionally, the total mean score for the anhedonia dimension (SHAPS) was significantly increased from (14.76±2.66) to (23.26±2.28, 28.16±3.41) for the case group immediately following the intervention and two months following the intervention respectively, compared with the control group.

Figure (2): Reveals that a statistically significant difference was found between both groups (case group and control group) regarding levels of internalized stigma of mental illness immediately following intervention and two months following intervention compared to prior intervention. Prior intervention, the case group showed decreased levels of internalized stigma of mental illness from moderate (93.3%) to mild level (96.7%, 96.5%) respectively, immediately following intervention and after two months following intervention (follow- up), while the control group had only (93%, 90% and 86.7%) of the same level.

Figure (3): Reveals that there was a statistically significant difference between both groups (case and control groups) regarding levels of anhedonia (SHAPS) immediately following intervention and 2 months following intervention compared to prior intervention; the case group showed decreased levels of anhedonia from 100 % to normal

pleasure (73.3% and 71.6 % 2 respectively) immediately following intervention and 2 months following intervention (follow-up), while the control group had only 100%, 100%, and 93,3%) of the same level.

Table (6): reflects that there was no statistically significant relation found between the socio-demographic characteristics of the studied participants and anhedonia (SHAPS) immediately following the intervention at p value >0.05.

Table (7): indicates that there was no statistically significant relation found between the socio-demographic characteristics of the studied participants and the total level of internalized stigma immediately following the intervention at a p value >0.05.

Table (8): Illustrates that there was a highly statistically significant positive correlation found between the internalized stigma of mental illness and anhedonia (SHAPS) scores immediately and two months following the intervention at $P \leq 0.05$ among the case and control groups. This means that when the internalized stigma of mental illness increases, anhedonia (SHAPS) scores will be increased.

Table 2: Comparison Between Studied Participants Based on Sociodemographic Characteristics (n=60).

Socio demographic Characteristics	Case n=30		Control n=30		χ^2	P –value
	No.	%	No.	%		
Age (Years)						
29-40	11	36.7%	2	6.7%	8.093	>0.05ns
>40-52	17	56.7%	24	80%		
>52-64	2	6.6%	4	13.3%		
Mean ± SD	42.83±5.81		43.50±6.82		0.407	>0.05ns
Gender						
Male	18	60.0%	22	73.3%	1.200	>0.05ns
Female	12	40.0%	8	26.7%		
Educational level						
Basic education	8	26.7%	13	43.3%	1.861	>0.05ns
Secondary education	19	63.3%	15	50.0%		
University education	3	10.0%	2	6.7%		
Marital status						
Married	7	23.4%	5	16.7%	1.127	>0.05ns
Divorced	10	33.3%	8	26.7%		
Widowed	1	3.3%	1	3.3%		
Single	12	40.0%	16	53.3%		
Occupation						
Work	3	10.0%	5	16.7%	0.577	>0.05ns
Not work	27	90.0%	25	83.3%		
Residence						
Rural	23	76.7%	20	66.7%	0.739	>0.05ns
Urban	7	23.3%	10	33.3%		

N.B. ns means non statistically significant. $\chi 2$ Chi-Square

Table 3: Comparison Between Studied Participants Based on Clinical Data (n=60)

Variables	Case		Control		Chi-square χ^2	P – value
	No.	%	No.	%		
Duration of illness						
From one year to 3 years	6	20.0%	11	36.7%	2.052	>0.05ns
More than 3 years	24	80.0%	19	63.3%		
Duration of treatment						
Less than 1 year	8	26.7%	7	23.3%	0.107	>0.05ns
From month to 2months	12	40.0%	13	43.3%		
From 3 months	10	33.3%	10	33.4%		
Times of admission						
Never	2	6.7%	3	10.0%	1.142	>0.05ns
One time	7	23.3%	6	20.0%		
Three times	8	26.7%	11	36.7%		
More than 3 times	13	43.3%	10	33.3%		
Way of admission						
Voluntary	4	13.3%	7	23.3%	1.002	>0.05ns
Involuntary	26	86.7%	23	76.7%		

N.B. ns means non statistically significant. $\chi 2$ Chi-Square

Table 4: Comparison of the Mean Score and Standard Deviation of Internalized Stigma of Mental Illness Subscale among Studied Participants (Case and Control groups) (N=60)

Internalized Stigma of Mental Illness subscale		Studied participants (n=60)			
		Case (n=30)	Control (n=30)	T- test	P value
		Mean± SD	Mean± SD		
Alienation	Prior intervention	16.80±1.54	16.66±1.47	0.343	>0.05ns
	Immediately following intervention	11.30±1.95	16.23±1.88	9.955	≤0.001**
	2months following intervention	11.16±1.94	15.80±1.74	9.689	≤0.001**
Stereotype endorsement	Prior intervention	19.50±1.92	19.76±2.11	0.511	>0.05ns
	Immediately following intervention	13.76±1.79	19.50±2.16	11.178	≤0.001**
	2months following intervention	13.46±1.71	18.93±1.65	12.540	≤0.001**
Discrimination experience	Prior intervention	14.90±2.91	14.80±2.73	0.137	>0.05ns
	Immediately following intervention	9.80±1.51	14.46±2.95	7.691	≤0.001**
	2months following intervention	9.40±1.35	13.73±2.31	8.840	≤0.001**
Social withdrawal	Prior intervention	17.00±1.94	16.96±1.80	0.069	>0.05ns
	Immediately following intervention	12.26±1.98	16.63±2.22	8.037	≤0.001**
	2months following intervention	12.20±1.95	16.23±2.01	7.876	≤0.001**
The stigma resistance	Prior intervention	14.43±1.83	14.36±1.67	0.147	>0.05ns
	Immediately following intervention	18.73±1.38	14.56±1.73	10.269	≤0.001**

	2months following intervention	18.93±1.08	13.56±1.25	17.783	≤0.001**

t= independent t-test **highly significant at P ‹ 0.01

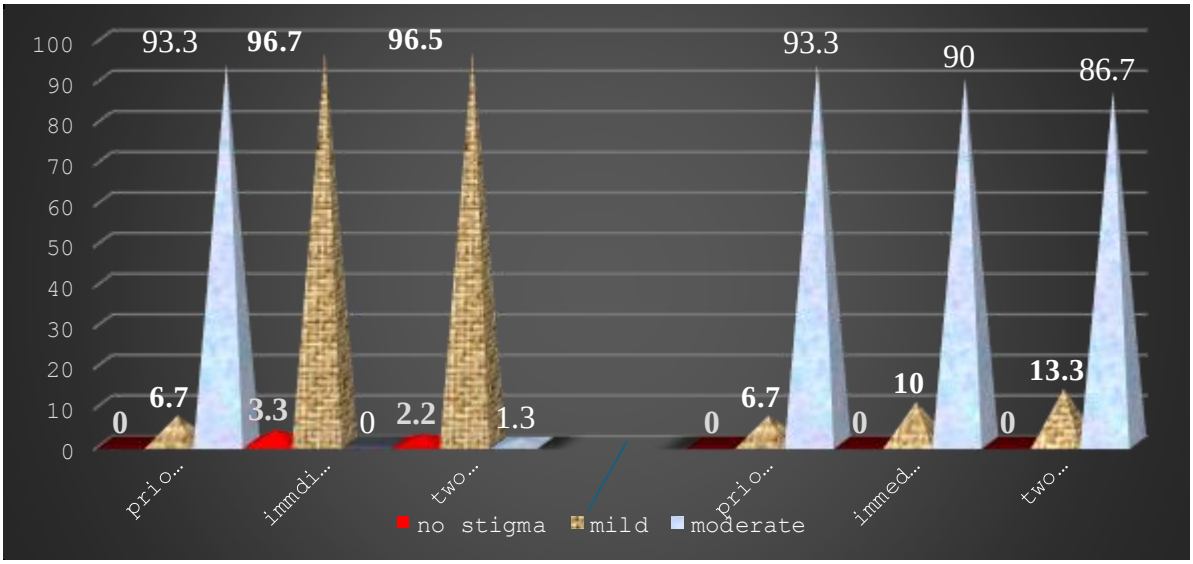

Figure 2: Comparison of Total levels of Internalized Stigma of Mental Illness among Case and Control Groups (N=60)

Table 5: Comparison of the Mean Score and Standard Deviation of Anhedonia Dimension (SHAPS) Among Studied Participants (Case and Control Groups) (N=60)

Dimension of Anhedonia (SHAPS)		Studied participants (n=60)			
		Case (n=30)	Control (n=30)	T- test	P value
		Mean± SD	Mean± SD		
Social interaction	Prior intervention	4.96±1.44	4.36±1.65	1.496	>0.05ns
	Immediately following intervention	8.16±1.39	4.70±1.95	7.925	≤0.001**
	Two months Following intervention	8.16±1.39	4.40±1.90	8.746	≤0.001**
Food and drink	Prior intervention	1.86±0.77	1.73±0.98	0.584	>0.05ns
	Immediately following intervention	4.03±0.61	1.86±0.97	10.309	≤0.001**
	Two months Following intervention	4.03±0.61	1.76±0.93	11.092	≤0.001**
Sensory experience	Prior intervention	3.03±1.21	2.76±1.22	0.847	>0.05ns
	Immediately following intervention	6.16±0.98	3.00±1.28	10.702	≤0.001**
	Two months Following intervention	6.16±0.98	2.66±1.39	11.208	≤0.001**
Interest/pastimes	Prior intervention	4.90±1.29	4.66±1.58	0.625	>0.05ns
	Immediately following intervention	10.80±1.54	5.00±1.54	20.625	≤0.001**
	Two months Following intervention	9.80±1.80	5.06±1.77	10.219	≤0.001**
Total	Prior intervention	14.76±2.66	13.53±3.29	1.594	>0.05ns
	Immediately following intervention	23.26±2.28	14.23±3.72	11.328	≤0.001**
	Two months Following intervention	28.16±3.41	13.90±4.15	14.529	≤0.001**

t= independent t-test **highly significant at P ‹ 0.01

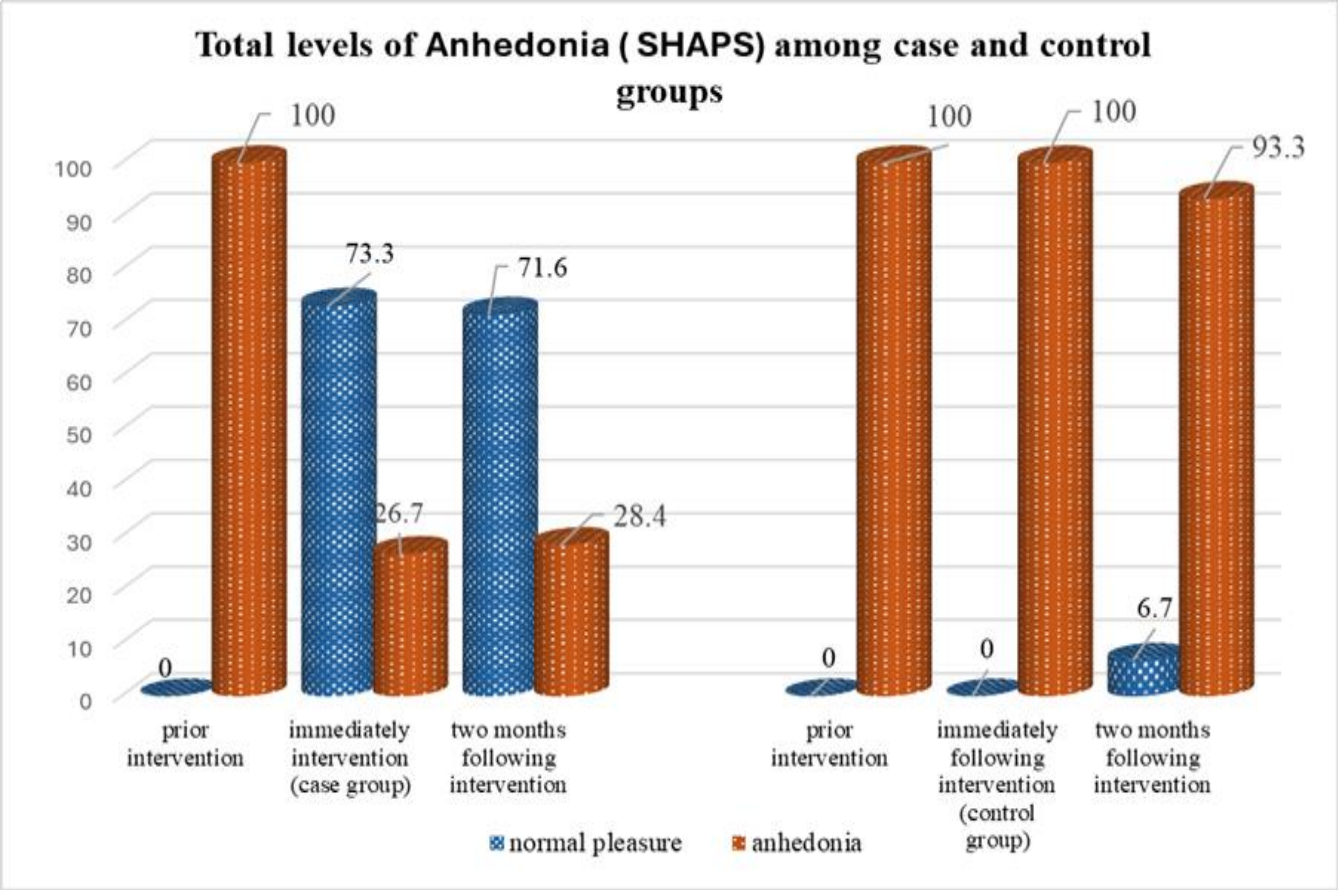

Figure 3: Comparison of Total levels of Anhedonia (SHAPS) Among Studied Participants (Case and Control Groups).

Table 6: Relation Between Socio-demographic Characteristics and Anhedonia (SHAPS) Immediately following Positive Psychology Based Intervention among Studied Participants (Case and Control groups) (n=60)

Sociodemographic Characteristics	Anhedonia (SHAPS) Case group (n=30) Immediately after intervention						Anhedonia (SHAPS) Control group (n=30) Immediately after intervention			
	normal (n=30)		Anhedonia		X2	P value	Anhedonia (n=30)		X2	P value
	No	%	No	%			No	%		
Age						>0.05			a	a
29-40	8	26.7%	3	10.0%		ns	2	6.7%		
>40-52	13	43.4%	4	13.3%	0.644		24	80.0%		
>52-64	1	3.3%	1	3.3%			4	13.3%		
Gender						>0.05			a	a
Male	14	46.7%	4	13.3%	0.455	ns	22	73.3%		
Female	8	26.7%	4	13.3%			8	26.7%		
Educational level						>0.05			a	a
Basic education						ns				
Secondary	4	13.3%	4	13.3%			13	43.3%		
education	15	50.1%	4	13.3%	3.624		15	50.0%		
University	3	10.0%	0	0.0%			2	6.7%		
education										

Sociodemographic Characteristics	Anhedonia (SHAPS) Case group (n=30) Immediately after intervention						Anhedonia (SHAPS) Control group (n=30) Immediately after intervention			
	normal (n=30)		Anhedonia		X2	P value	Anhedonia (n=30)		X2	P value
Marital status						>0.05			a	a
Married	7	23.3%	0	0.0%		ns	5	16.7%		
Divorced	7	23.3%	3	10.0%	4.347		8	26.7%		
Widowed	1	3.3%	0	0.0%			1	3.3%		
Single	7	23.3%	5	16.8%			16	53.3%		
Occupation						>0.05			a	a
Work	2	6.7%	1	3.3%	0.076	ns	5	16.7%		
Not work	20	66.7%	7	23.3%			25	83.3%		
Residence	17	56.5%	6	20.0%		>0.05	20	66.7%	a	a
Rural	5	16.8%	2	6.7%	0.017	ns	10	33.3%		
Urban										

N.B. ns means non statistically significant, a= No statistics are computed because Total Snaith Hamilton pleasure level post is a constant. . $\chi 2$ Chi-Square.

Table 7: Relation between the Socio- demographic Characteristics and Internalized Stigma of Mental Illness Immediately following Positive Psychology-Based Intervention among Studied Participants (Case and Control groups) (n=60)

Sociodemographic Characteristics	Total internalized Stigma Case group (n=30) Immediately following intervention						Total internalized Stigma Control group (n=30) Immediately following intervention					
	No stigma (n=30)		Mild stigma		X2	P value	Mild stigma (n=30)		Moderate stigma (n=30)		X2	P value
	No	%	No	%			No	%	No	%		
Age							1	3.3%	1	3.3%		
29-40	0	0.0%3	11	36.7%			2	6.8%	22	73.3%	4.074	>0.05ns
>40-52	1	.3%	16	53.3%	.791	>0.05 ns	0	0.0%	4	13.3%		
>52-64	0	0.0%	2	6.7%								
Gender	1	3.3%0	17	56.7%			3	10.0%	19	63.3%	1.212	>0.05 ns
Male	0	.0%	12	40.0%	.690	>0.05 ns	0	0.0%	8	26.7%		
Female												
Educational level												
Basic education	0	0.0%	8	26.7%			0	0.0%	13	43.3%		
Secondary education	0	0.0%3	19	63.3%	9.310	>0.05 ns	2	6.8%	13	43.3%	5.185	>0.05 ns
University education	1	.3%	2	6.7%			1	3.3%	1	3.3%		
Marital status												
Married	1	3.3%0	6	20.0%			2	6.7%	3	10.0%		
Divorced	0	.0%	10	33.4%			0	0.0%	8	26.7%	6.250	>0.05 ns
Widowed	0	0.0%	1	3.3%	3.399	>0.05 ns	0	0.0%	1	3.3%		
Single	0	0.0%	12	40.0%			1	3.3%	15	50.0%		
Occupation												
Work	1	3.3%0	2	6.7%	9.310	>0.05 ns	1	3.3%	4	13.3%	0.667	>0.05 ns
Not work	0	.0%	27	90.0%			2	6.7%	23	76.7%		
Residence	0	0.0%3	236	76.7%	3.399	>0.05 ns	2	6.7%	18	60.0%	0.000	>0.05 ns
Rural	1	.3%		20.0%			1	3.3%	9	30.0%		
Urban												

N.B. ns means non statistically significant, $\chi 2$ =Chi-Square.

Table 8: Correlation Between Internalized Stigma of Mental Illness and Anhedonia (SHAPS) Among Studied Participants (Case and Control groups) n=60

Total internalized Stigma of Mental Illness	Anhedonia (SHAPS)			
	Study group (n=30)		Control group (n=30)	
	R	P value	r	P value
Prior intervention	0.256	>0.05ns	0.148	>0.05ns
Immediately following intervention	0.404	≤0.05*	0.422	≤0.05*
2 months following intervention	0.488	≤0.05*	0.584	≤0.001**

Note. r= coefficient correlation test. No significant at p > 0.05. * Significant at p ‹ 0.05. **highly significant at p ‹ 0.01.

Discussion:

Out of all the mental diseases, schizophrenia is the most stigmatized. Schizophrenia patients' psychological functioning is significantly impacted by this stigma. Self-stigma can have detrimental consequences (Ociskova, et al., 2023). Moreover, anhedonia is associated with worse clinical outcomes, worse treatment responsiveness, and more severe clinical symptoms (Liang, et al., 2022). The idea that mental health recovery goes beyond symptom alleviation to include feeling happy, fulfilled, and purposeful, hence fostering well-being, is in line with positive psychology interventions (PPIs), which incorporate ideas based on individual strengths (Pina,et al., 2021). The current study's objective was to assess the impact of a positive psychology-based intervention on internalized stigma and anhedonia in patients with schizophrenia.

The current finding reflects that over half of the case group and the majority of the control group with schizophrenia were between the ages of 40 and 52. Schizophrenia typically begins in late adolescence or most commonly, between 16 and 30 years (National Institute of Mental Health, 2023). The interpretation of the above result returned to about two-thirds of the control group, and a significant majority of the case group had been ill for over three years. This finding was corroborated by Lee & Ha, (2018) who state that more than two-thirds (72.8%) of study participants in their investigation were between the ages of 40 and 50. In contrast, Abd ElRahman et al. (2023) illustrated that most of the sample's age studied was between the ages of 20 and 40 years.

According to the results of present research, over one-third of the case group and over half of the control group were single. This could be related to most schizophrenic patients experiencing psychological and social symptoms that affect their ability to interact with and form relationships, such as anhedonia. Also, societal stigma and lack of job stability reduce the chances of marriage and commitment. The results achieved corresponded with those of Kushnir et al. (2024). They discovered that 75% of the samples they examined were single, and Setiawati, (2020) reflected that 56.9 % of schizophrenia patients were unmarried

because of their unstable personality condition, which prevents them from getting married.

In terms of gender, over two-fifths of a case group and nearly three- quarters of a control group were male. There could be a few reasons for this, as it is well known in Arab culture and religion that men are more likely than women to seek assistance and visit mental and psychiatric clinics more frequently to guard against illness-related decline and job loss. Similarly, Abd ElRahman, Mohamed, & Sayed, (2023) reported that three-quarters of the studied participants were male. In a similar vein, Elghamry et al. (2022) observed that 94% of people with schizophrenia were men. Regarding education, almost two-fifths of the case group and half of the control group completed secondary school. One explanation for this could be schizophrenia impairs cognitive abilities, which in turn decreases academic performance. In addition, the intensity of the symptoms and the earlier start of schizophrenia are regarded as obstacles to further education. This data was identical to El-Monshed & Amr, (2020) who discovered that almost two-thirds (73.9%) of patients with schizophrenia were enrolled in secondary school.

Concerning occupation, the findings of current research revealed that the majority of both groups were unemployed. This could be the nature of the disease, as employment among schizophrenics may be impeded by psychological symptoms, side effects of psychotropic drugs, and negative societal outlook. In addition, most of the participants studied in the current research did not complete their education. This result was in accord with Lin et al.(2022). They indicated that 71.4% of the samples investigated were unemployed. In the same vein, Sayed et al. (2024) indicated that more than two-thirds of those studied weren't working. As regards admission, one-third of the control group had received treatment on three occasions, whereas more than one-third of the case group had been treated more than three times. This result on the same line with kang et al. (2018) explained that the majority of samples (study and control groups) were ≥ 5 years in duration of illness, and both groups had been treated more than three times. Both groups had a high percentage of involuntary admissions for a case and a control group. This was congruent with El-Bilsha, (2019) who reports that roughly two-thirds of the patients were brought into the psychiatric hospital against their will.

Regarding the effect of positive psychology-based intervention on internalized stigma of mental illness (see table 4, figure 2). The result of the current study revealed that there was a significant difference between the two groups in the internalized stigma of the mental illness subscale both immediately and 2months following the intervention in the total score and all internalized stigma dimensions. Additionally, the results showed that the majority of studied groups exhibit mild levels of internalized stigma following the intervention and subsequent follow-up sessions, unlike the control group. The study intervention helped patients express feelings, understand their condition, modify misconceptions, learn coping

techniques, and adopt positive thinking. Social support and peer validation reduced feelings of alienation, a key aspect of self-stigma, by promoting open discussion and understanding.

This finding was consistent with Díaz-Mandado & Periáñez (2020). They show improvements in the intervention group's emotional functioning, recovery expectations, perceived legitimacy of discrimination, and internalized stigma as compared to the control group. In the same context, this result was supported by Drapalski, et al., (2021). They stated that the intervention group used an alternative method to handle self-stigma (response to stigma, cognitive-behavioral techniques, and enhancing positive parts of the self) and had lower self-stigma scores post-intervention. Also, this result follows Mostafa,(2021) who tried to reduce self-stigma in a sample of schizophrenic patients through using cognitive reconstruction, psychological education, showing, and managing feelings and emotions through group activity (role-play). He demonstrated how, following the program's implementation, the experimental group's mean score for stigma resistance climbed while the mean score for all aspects of self-stigma decreased dramatically.

Moreover, this outcome was substantiated by Tang et al. (2023) who asserted that the positive psychology intervention empowers individuals to actively discern the positive significance of daily life events, cultivate their strengths, progressively reconstruct their cognitive and psychological frameworks, enhance negative self-perceptions, facilitate psychological adjustment, refine coping strategies, and eradicate stigma. They reported that within the experimental group prior to and during the intervention, the total self-stigma scores showed a statistically significant change ($P<0.001$). Furthermore, this result was in the same vein with Frączek-Cendrowska, Świtaj & Stefaniak , (2024) who revealed that, the level of self-stigma significantly decreased in both the intervention and control groups, but no statistically significant difference was observed between the groups. The explanation is that the reason for this result is returned to some patients in experimental groups did not completing the intervention due to a lack of motivation to continue the intervention and a lack of confidence in its effectiveness.

Regarding the effect of positive psychology-based intervention on anhedonia (see table 5, figure 3). The current study's findings showed that the two groups' scores on the anhedonia subscale differed significantly in all dimensions both immediately and two months after the intervention. Moreover, the findings showed that about two-thirds of the case group exhibited normal pleasure following the intervention and subsequent follow-up sessions, in contrast to the control group. This may be related to the study intervention enhancing patients' emotional pleasure through reminiscence and savoring the moment. Also, the intervention helps participants develop their physical and social pleasure through relaxation exercises, guided imagery, mindfulness competition, and body scanning. Additionally, train participants on gratitude enhancement strategies and to identify

personal strengths, reframe weaknesses, and enhance self-awareness.

The aforementioned perspective is corroborated by the model articulated by Abouzaid and Abdelhamid, (2024) They posit that mindfulness serves as a mechanism that enhances life happiness, therefore impacting psychological diseases. In the same context, the ability to relish happy feelings in the here and now is absolutely associated with mindfulness, and the interplay between mindfulness and the perceived ability to appreciate the present predicts daily positive emotions Kiken et al.(2017) This is in line with earlier research showing that visualizing actions in the mind serves as a "motivational amplifier" to perform them (Ji, et al,2021; Renner, et al.,2019). According to the current study's findings, which are congruent with those of Limpächer, Kindt, and Hoyer, (2024), people who experienced more severe anhedonic symptoms benefited more from the short 5-day intervention that combined savoring exercises and mental imagery. These results corroborate the findings reported by Blackwell, (2025) who found that 53 mildly anhedonic people who participated in five-sessions program that involved creating happy images improved more on all anhedonia measures from before to after training.

Finally, the present study illustrated that there was a highly statistically significant positive correlation found between the internalized stigma of mental illness and anhedonia (SHAPS) scores immediately and two months following the intervention at $P \leq 0.05$ among the case and control groups. This means that when the internalized stigma of mental illness increases, anhedonia (SHAPS) scores will be increased. This could be due to the patient's adoption of negative concepts associated with schizophrenia leading to low self-esteem, feelings of sadness, anxiety, and isolation, which impair their ability to experience pleasure or engage in pleasurable activities. In other words, due to stigma, the patient withdraws from social interaction, reducing the opportunity to experience positive experiences that stimulate pleasure, leading to increased anhedonia. The findings of Almuqrin et al. (2023) and Horsselenberg et al. (2016) who found that severe negative symptoms of schizophrenia, such as anhedonia, have been linked to higher levels of self-stigma, were consistent with this finding. These studies emphasize the importance of targeting self-stigma in the therapeutic intervention, as reducing it may help alleviate negative symptoms (anhedonia) and improve patients' outcomes.

Limitation of the study:

The study's findings may not be generalizable due to the small sample of patients diagnosed with schizophrenia. The absence of long-term follow-up is another significant limitation.

Conclusion:

Positive psychology-based intervention is significantly effective for improving anhedonia, increasing positive feelings and lessening the internalized stigma of mental illness of people with schizophrenia. Furthermore, both immediately following the intervention and two months later,

there was a strong positive correlation between anhedonia and internalized stigma of mental illness.

Recommendations:

Plan training workshops for psychiatric nurses on positive psychology intervention and evaluate their efficacy in the treatment of other mental illnesses. Apart from medication remedies, positive psychology-based interventions must be included in the regular treatment plan for people with schizophrenia. Future studies are needed to explore the effectiveness of positive psychology techniques on other psychological disorders in clinical settings, considering larger, more diverse samples and longer follow-up periods.

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