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The Effect of Psychoeducation on Insight and Treatment Adherence Among Patients with Psychotic Disorders in a High-Security Forensic Psychiatry Center

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ABSTRACT

Objective: This study aimed to determine the short-term effects of the Healthy Living Guide psychoeducation program on insight development and treatment adherence among 54 male patients diagnosed with psychotic disorders who were receiving treatment in a High-Security Forensic Psychiatry (HSFP) center.

Method: All participants took part in a psychoeducation program during their hospitalization. Assessments were conducted both before and after the program using the Scale for the Assessment of Negative Symptoms (SANS), the Scale for the Assessment of Positive Symptoms (SAPS), the Schedule for the Assessment of Insight (SAI), the Global Assessment Scale (GAS), and the Brief Psychiatric Rating Scale (BPRS), together with a Sociodemographic Data Form and the Violence Profile for Current Offense scale.

Results: Following the psychoeducation program, reductions were observed in both positive and negative symptoms, along with improvements in functionality, insight, and treatment adherence. The program was particularly more effective in patients with lower baseline insight. However, for patients who had been admitted during an acute psychotic episode, the impact of the intervention remained limited even after clinical remission. Additionally, after the program, insight was negatively correlated with both positive and negative symptom severity.

Conclusions: The findings suggest that the Healthy Living Guide psychoeducation program, when implemented in forensic psychiatric populations, may serve as a complementary approach to treatment by contributing to symptom reduction, enhanced functionality, improved insight, and better treatment adherence in patients with psychotic disorders.

Keywords: Forensic psychiatry, healthy living, insight, psychoeducation, psychosis, treatment adherence guide

INTRODUCTION

Studies examining the frequency of violent behavior among psychotic patients have reported rates ranging from 2.3% to 24.7% (Nederlof et al. 2013). Violence and violent offending behavior in patients with psychotic disorders have been observed to increase in presence of certain factors. Violent offenses tend to occur more frequently during acute phases of the illness, in association with a weakened connection to reality (Oueslati et al. 2018). In addition, a number of risk factors—such as comorbid substance use, a history of violent acts, and antisocial personality traits—have been associated with violent behavior (Fischer-Vieler et al. 2023). Among the risk factors identified for violent behavior are important, modifiable factors such as poor insight and non-adherence to treatment (Balcıoğlu 2022).

Studies have shown that poor treatment adherence not only increases the risk of illness exacerbation but is also associated with higher rates of reoffending in these patients (Rezansoff et al. 2017, Oueslati et al. 2018). Non-adherence to treatment

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can lead to exacerbation of psychotic symptoms, thereby increasing aggression and violent behavior. Moreover, because non-adherence frequently co-occurs with poor insight, social isolation, and substance use disorders, these factors may also indirectly fuel offending behavior (Novick et al. 2010). Meta-analyses have demonstrated that individuals receiving regular antipsychotic treatment have significantly lower rates of involvement in violent offenses (Fazel et al. 2014).

One of the most significant obstacles in the treatment of psychotic disorders is poor insight. A reduction in insight can be accompanied by difficulty in treatment adherence and an increase in illness severity (Lysaker et al. 1994). In patients with schizophrenia, poor insight stands out as a significant risk factor associated with a tendency to offend and violent behavior. In individuals who are unable to adequately recognize their illness and symptoms, delusions and paranoid thoughts can lead them to feel threatened and to engage in defensively aggressive behavior (Bjørkly 2006). Furthermore, lack of insight makes it more difficult for patients to link their offending behavior to their illness and causes them to develop resistance to treatment processes. Studies have shown that the likelihood of involvement in violent offenses is significantly higher among schizophrenia patients with poor insight (Buckley et al. 2004).

In the field of forensic psychiatry, psychoeducation programs implemented to increase treatment adherence and improve insight are of great importance for both individual rehabilitation and public safety. In schizophrenia patients who have exhibited offending behavior, lack of insight and treatment refusal increase the risk of reoffending, making structured educational programs that support the development of insight in these individuals increasingly important (Liau et al. 2004). Psychoeducation programs typically consist of modules covering the nature of the illness, the importance of treatment, medication adherence, social skills training, and coping strategies. Controlled studies have reported that forensic psychiatric patients who received psychoeducation showed significant increases in both insight level and treatment adherence, along with a reduction in reoffending rates (Walker et al. 2013).

The Healthy Living Guide Psychoeducation Program, currently implemented in Türkiye, is a structured psychoeducation program consisting of 8–12 sessions, developed through the collaboration of the Ministry of Health, universities, and specialists working in the field, with the aim of enhancing individuals' mental and social well-being (Şahin 2022). This program, which specifically targets individuals with severe mental illnesses such as psychosis, aims to help individuals recognize and accept their mental illness, achieve treatment adherence, learn ways of coping with stress, and support social skills and activities of daily living (Bellack 2004).

Psychoeducation interventions aimed at increasing treatment adherence and developing insight in forensic populations fundamentally aim to reduce the risk of reoffending among individuals with mental illness who have committed offenses and to facilitate their reintegration into society. Under Article 57 of the Turkish Penal Code, individuals who lack criminal responsibility or whose criminal responsibility is diminished due to the act they committed are subjected to compulsory treatment as a security measure for the purposes of protection and treatment, and these individuals are treated and monitored in high-security forensic psychiatry centers (Balcıoğlu 2022). The treatment process carried out in these centers includes psychiatric assessment, pharmacological interventions, psychoeducation, and psychosocial rehabilitation practices, with the aim of improving patients' insight into their illness, increasing their treatment adherence, and reducing the risk of reoffending. This study aimed to determine the short-term effects of the Healthy Living Guide psychoeducation program, implemented in a forensic psychiatric population, on insight development and treatment adherence among patients with psychotic disorders hospitalized under a compulsory treatment order in a High-Security Forensic Psychiatry center.

METHOD

Study Sample

The study sample consisted of 54 male patients over the age of 18, hospitalized and treated at the Bursa City Hospital High-Security Forensic Psychiatry center—where individuals with psychiatric illness who lack criminal responsibility are admitted for protection and treatment under a compulsory hospitalization order issued by court decision—who met DSM-5 criteria for a psychotic disorder diagnosis, were not in an acute psychotic episode, were continuing maintenance treatment, and had completed at least primary school education. Because the center where the study was conducted treats only male patients, only male participants were included in the study. Patients who were in an acute psychotic episode, had an organic brain disease, had intellectual disability, or were considered unable to adapt to the program due to insufficient education were excluded from the sample. Written informed consent was obtained from all participants; the study protocol was approved by the Bursa City Hospital Human Research Ethics Committee on 28/09/2022, under decision number 2022-11/5.

Data Collection Procedure

Patients included in the study were divided into smaller groups of 4 to 6 people. A revised version of the psychoeducation program called the Healthy Living Guide, adapted for inpatient forensic psychiatry patients,

was administered by clinical psychologists working in the forensic psychiatry unit. The program consists of nine modules delivered in three sessions per week. Participants were assessed with various scales before and after the intervention. All participants received the same Healthy Living Guide, administered within a standardized protocol by trained clinical psychologists, thereby minimizing bias in the delivery of the intervention. Assessment tools with proven validity and reliability were used, and all pre- and post-intervention assessments were carried out by independent clinicians who did not administer the intervention. This contributed to reducing observer bias.

Data Collection Instruments

Sociodemographic Data Form: A form prepared by the researcher, taking into account the aims of the study, containing sociodemographic data such as age, gender, educational level, marital status, and employment status, was used.

Violence Profile for Current Offense (VPCO): This scale rates the severity of the offense committed on a scale of 0–4, with higher scores associated with more serious offense severity (Taylor 1985). The Turkish validity and reliability study of the scale was conducted by Balcıoğlu and colleagues (Balcıoğlu and Öncü 2021).

Scale for the Assessment of Negative Symptoms (SANS): This scale assesses the severity of negative symptoms across 5 separate dimensions (Andreasen 1989); its Turkish validity and reliability study was conducted by Erkoç and colleagues in 1991 (Erkoç et al. 1991a).

Scale for the Assessment of Positive Symptoms (SAPS): This scale, which assesses the severity of positive symptoms, consists of a total of 34 items evaluating 4 separate dimensions (Peralta and Cuesta 1999). Its Turkish validity and reliability study was conducted by Erkoç and colleagues in 1991 (Erkoç et al. 1991b).

Brief Psychiatric Rating Scale (BPRS): Developed to assess the severity of the clinical presentation in psychotic disorders (Overall and Gorham 1988), its Turkish adaptation was carried out by Soykan (Soykan 1990).

Schedule for the Assessment of Insight (SAI): This scale assesses three components of insight —treatment adherence, awareness of illness, and correct relabeling of psychotic experiences— and is a semi-structured, clinician-administered scale consisting of eight items. The maximum total score for the first 7 items is 14. The eighth item is presented hypothetically, and it is left to the interviewer's discretion whether to ask it; when this item is included, the maximum total score is 18 (David et al. 1992). In our study, the eighth item was included in the assessment and incorporated into the total insight score. A higher score indicates a higher level of insight. The Turkish validity and reliability study was conducted by Arslan and colleagues (Aslan et al. 2001).

Global Assessment Scale (GAS): A rating scale scored from 0 to 100 that encompasses all aspects of change in psychopathology (psychological, social, and occupational functioning) (Kaplan and Sadock 1989). Higher scores indicate higher functioning.

Statistical Analysis

The data obtained in the study were subjected to statistical analysis using the IBM Statistical Package for Social Sciences (SPSS) program. Whether patients' pre-test and post-test scale scores met the assumption of normal distribution was examined. When skewness and kurtosis values were examined, it was determined that the skewness and kurtosis values of a large number of variables fell outside the recommended range. Accordingly, the Bootstrap method, which enables resampling to generate larger data sets from the existing data set, was used (Sacchi 1998). Frequency distribution, percentage, mean, and standard deviation calculations were performed for the descriptive statistics of the study. The nonparametric Kruskal-Wallis and Mann-Whitney U tests were used to compare patients' scale scores according to demographic variables, and Pearson correlation analysis was used to examine the relationships between demographic variables and scale scores. A Bootstrap (N=1000) Paired Samples T-Test was conducted to compare patients' mean pre-test and post-test scale scores. In addition, a mixed-design repeated-measures analysis of variance was applied to evaluate the combined effects of time (pre-test-post-test) and group variables (such as marital status, regular treatment status, substance use disorder, alcohol use disorder, psychotic exacerbation status, and offense history). Within this analysis, the main effect of time, the main effect of group, and time × group interactions were examined. Appropriate post-hoc analyses were performed where significant interactions were detected.

Sample size was calculated using G*Power 3.1.9.2 software. Based on the hypothesis that patients' insight and treatment adherence levels would show a significant increase following the Healthy Living Guide psychoeducation program, assuming a power of 0.80, a significance level (α) of 0.05, and an effect size (d) of 0.50, it was determined that the study needed to include at least 44 participants.

RESULTS

The study included 54 male patients aged 21–65 years, of whom 40.7% had a diagnosis of schizophrenia, 29.6% atypical psychosis, 24.1% substance-induced psychotic disorder, 3.7% schizoaffective disorder, and 1.9% delusional

disorder. Patients' clinical, forensic, and sociodemographic data are presented in Table 1.

The Healthy Living Guide psychoeducation program was effective in the short term in reducing negative and positive symptoms and in increasing functionality, insight, and treatment adherence; the related results are summarized in Table 2.

A statistically significant relationship was found between patients' marital status and their pre-test total insight scores, as well as the treatment adherence and awareness of illness subscale scores ($\chi^2(2)=7.351$, p=0.025; $\chi^2(2)=6.923$, p=0.031; $\chi^2(2)=9.624$, p=0.008, respectively). In pairwise analyses, pre-test total insight scores and the treatment adherence and awareness of illness subscale scores were significantly higher in married patients compared to those who had never been married (Z=-2.788, p=0.005; Z=-2.689, p=0.007; Z=-3.102, p=0.002, respectively); however, no significant difference was found between marital status and insight level or its subscales in the post-test results.

In the mixed-design repeated-measures analysis evaluating time (pre-test–post-test) and marital status together, the time × group interaction was significant for the treatment adherence and awareness of illness subscales, but not for the total insight score or the correct relabeling of psychotic experiences subscale (F (1,52)=3.25, p=0.047, $\eta p^2=0.113$; F (1,52)=3.86, p=0.027, $\eta p^2=0.132$; F (1,52)=1.90, p=0.159, $\eta p^2=0.069$; F (1,52)=0.81, p=0.45, $\eta p^2=0.031$, respectively). Post-hoc analyses showed that the post-psychoeducation increase in the treatment adherence and awareness of illness subscales was greater in married patients than in single patients (MD ± SD=0.84±0.33, p=0.043; MD ± SD=1.02±0.36, p=0.031, respectively). No significant relationship was found between other sociodemographic characteristics and insight levels (p>0.05).

When the pre-test and post-test results of patients receiving regular treatment and those not receiving regular treatment were compared, regular treatment was observed to have a positive effect on insight, particularly on awareness of illness. According to the pre-test results, patients receiving regular treatment had significantly higher total insight scores and treatment adherence, awareness of illness, and correct relabeling of psychotic experiences subscale scores compared to those not receiving regular treatment (Z=-4.746, p<0.001; Z=-4.068, p<0.001; Z=-4.501, p<0.001; Z=-3.413, p<0.001, respectively). In the post-test results, total insight scores and the awareness of illness subscale remained significantly higher among those receiving regular treatment (Z=-2.596, p=0.009; Z=-2.187, p=0.029, respectively), while no statistically significant difference was found in the treatment adherence and correct relabeling of psychotic experiences subscales (Z=-1.964, p=0.051; Z=-1.959, p=0.051, respectively).

Table 1. Sociodemographic, clinical, and forensic characteristics of the patients

Variable	Category	n	%
Marital Status	Never married	37	68.5
	Married	10	18.5
	Divorced/separated, widowed	7	13
Employment Status	Never worked	9	16.7
	Working irregularly	37	68.5
	Working regularly	8	14.8
Place of Residence	Rural	5	9.3
	Urban	49	90.7
Living Arrangement	Alone	10	18.5
	With caregiver	44	81.5
Regular Treatment	No	29	53.7
	Yes	25	46.3
Alcohol Use Disorder	No	50	92.6
	Yes	4	7.4
Substance Use Disorder	No	31	57.4
	Yes	23	42.6
Offense History	Single offense	20	37
	Multiple offenses	34	63
Psychotic Exacerbation at Admission	No	20	37
	Yes	34	63
Diagnosis	Substance-Induced Psychotic Disorder	13	24.1
	Schizophrenia	22	40.7
	Delusional Disorder	1	1.9
	Schizoaffective Disorder	2	3.7
	Atypical Psychosis	16	29.6
Current Violence Profile	Completely nonviolent	5	9.3
	Minimal violence	5	9.3
	Moderate violence	38	70.4
	Moderately serious violence	5	9.3
	Serious violence	1	1.9
Total (for each variable)		54	100.0
	Range	**Mean**	**SD**
Age	21–65	37.17	10.561
Years of Education	8–16	10.74	2.889
Duration of Illness (years)	1–30	10.35	8.554
Number of Hospitalizations	0–9	2.59	2.507
Time Since Offense (years)	0–11	2.74	2.316

n=54; SD: standard deviation; Mean: mean

In the mixed-design repeated-measures analysis evaluating time and regular treatment status together, the time × group interaction was significant for total insight score and the treatment adherence and awareness of illness subscales, but not for the correct relabeling of psychotic experiences subscale (F (1,52)=8.41, p<0.001, $\eta p^2=0.139$; F (1,52)=9.49,

Table 2. Pre-test and post-test scale scores

Scale	Pre-test Mean	Pre-test SD	Post-test Mean	Post-test SD	t	95% CI	p
SANS-Affective Flattening/Blunting	6.81	5.808	3.87	3.962	5.050*	2.000; 3.981	<0.001
SANS-Alogia	3.65	4.643	1.96	1.932	2.885*	0.796; 2.722	0.006
SANS-Avolition/Apathy	4.19	3.331	2.46	2.125	3.810*	0.878; 2.733	<0.001
SANS-Anhedonia/Asociality	5.70	4.733	2.94	3.062	4.143*	1.388; 4.150	<0.001
SANS-Attention	1.93	1.852	0.52	0.885	5.496*	0.934; 1.936	<0.001
SAPS-Hallucinations	3.04	5.600	0.20	1.053	3.886*	1.537; 4.328	<0.001
SAPS-Delusions	4.65	6.143	0.56	1.254	5.123*	2.702; 5.742	<0.001
SAPS-Bizarre Behavior	2.76	3.425	1.02	1.796	4.278*	0.944; 2.691	<0.001
SAPS-Positive Formal Thought Disorder	5.11	4.636	2.24	1.971	4.674*	1.704; 4.111	<0.001
SAI-Total	7.41	4.218	13.54	3.446	-11.166*	-7.111; -5.056	<0.001
SAI-Treatment Adherence	1.81	1.375	3.20	0.959	-7.717*	-1.741; -1.074	<0.001
SAI-Awareness of Illness	2.56	1.525	4.78	1.208	-10.683*	-2.582; -1.852	<0.001
SAI-Correct Relabeling of Psychotic Experiences	1.54	1.111	2.98	1.037	-8.752*	-1.778; -1.093	<0.001
GAS	57.19	10.015	67.72	9.464	-5.431*	-14.074; -6.914	<0.001
BPRS	10.31	6.879	7.22	4.632	4.022*	1.784; 4.630	<0.001

*p<0.01
SD: standard deviation; SANS: scale for the assessment of negative symptoms; SAPS: scale for the assessment of positive symptoms; SAI: schedule for the assessment of insight; GAS: global assessment scale; BPRS: brief psychiatric rating scale.

Table 3. Insight levels of patients by psychotic exacerbation status at admission and by regular treatment status

By Psychotic Exacerbation Status at Admission				
SAI Scale	**Exacerbation: No (n=20) MD ± SD**	**p**	**Exacerbation: Yes (n=34) MD ± SD**	**p**
SAI-Total	7.02±0.66	0.000*	4.20±0.86	0.000*
SAI-Treatment Adherence	1.79±0.20	0.000*	0.70±0.27	0.012*
SAI-Awareness of Illness	1.05±0.23	0.000*	0.05±0.30	0.872
SAI-Correct Relabeling of Psychotic Experiences	1.64±0.20	0.000*	1.10±0.26	0.000*
By Regular Treatment Status				
SAI Scale	**Regular Treatment: No (n=29) MD ± SD**	**p**	**Regular Treatment: Yes (n=25) MD ± SD**	**p**
SAI-Total	7.37±0.69	0.000*	4.36±0.86	0.000*
SAI-Treatment Adherence	1.86±0.23	0.000*	0.84±0.29	0.000*
SAI-Awareness of Illness	2.75±0.21	0.000*	1.60±0.45	0.000*
SAI-Correct Relabeling of Psychotic Experiences	1.69±0.19	0.000*	1.16±0.26	0.000*

*p<0.05
MD: mean difference (post-test-pre-test); SD: standard deviation; SAI: schedule for the assessment of insight.

$p<0.001$, $\eta p^2=0.154$; $F(1,52)=8.24$, $p=0.005$, $\eta p^2=0.144$; $F(1,52)=2.66$, $p=0.109$, $\eta p^2=0.049$, respectively). This finding indicates that the change in insight scores after psychoeducation differed between groups. Accordingly, within-group comparisons showed a significant post-psychoeducation increase in total insight score and in the treatment adherence, awareness of illness, and correct relabeling of psychotic experiences subscale scores in both patients receiving and not receiving regular treatment. Detailed results are presented in Table 3.

No significant difference was found in insight and subscale scores according to alcohol use disorder diagnosis status, either at pre-test or post-test ($p>0.05$). The time × group interaction was also not statistically significant in the mixed-design repeated-measures analysis evaluating time (pre-test–post-test) and alcohol use status together ($p>0.05$).

In patients with a substance use disorder diagnosis, total insight scores and treatment adherence subscale scores were significantly lower compared to patients without a substance use disorder ($Z=-2.068$, $p=0.044$; $Z=-2.469$, $p=0.014$, respectively). At post-test, no significant difference was found between the two groups in total insight score or its subscales ($p>0.05$). The time × group interaction was not statistically significant in the mixed-design repeated-measures analysis evaluating time (pre-test-post-test) and substance use status together ($p>0.05$).

When the pre-test and post-test insight levels of patients with a single offense in their forensic history were compared with those with multiple offenses, no significant relationship was found between offense history and insight levels, either at pre-test or post-test ($p>0.05$). The time × group interaction was also not statistically significant in the mixed-design repeated-measures analysis evaluating time (pre-test–post-test) and offense history together ($p>0.05$).

Based on clinician assessment, patients were divided into two groups according to whether they were in an acute psychotic episode at the time of hospital admission. In both the pre-test and post-test measurements, patients who were in an acute psychotic episode at admission had lower total insight scores and lower scores on the treatment adherence, awareness of illness, and correct relabeling of psychotic experiences subscales compared to patients admitted in remission ($Z=-5.054$, $p<0.001$; $Z=-4.352$, $p<0.001$; $Z=-4.004$, $p<0.001$; $Z=-4.446$, $p<0.001$, respectively).

In the mixed-design repeated-measures analysis evaluating time and psychotic exacerbation status together, the time × group interaction was significant for total insight score and the treatment adherence and awareness of illness subscales, but not for the correct relabeling of psychotic experiences subscale ($F(1,52)=6.84$, $p=0.012$, $\eta p^2=0.115$; $F(1,52)=10.34$, $p=0.002$, $\eta p^2=0.166$; $F(1,52)=8.14$, $p=0.006$, $\eta p^2=0.135$; $F(1,52)=2.66$, $p=0.10$, $\eta p^2=0.049$, respectively). This finding indicates that the change in insight scores after psychoeducation differed between groups. Accordingly, within-group comparisons showed a significant post-psychoeducation increase in total insight score and in the treatment adherence, awareness of illness, and correct relabeling of psychotic experiences subscale scores, in both patients who were in an acute psychotic episode at admission and those admitted in remission. Detailed results are presented in Table 3.

The relationship between patients' age, years of education, duration of illness, number of hospitalizations, current violence profile level, and time elapsed since the offense and their pre-test and post-test insight levels was examined using Pearson correlation analysis, and the findings are summarized in Table 4. Accordingly, at pre-test, duration of illness, number of hospitalizations, and time elapsed since the offense showed significant positive correlations with total insight score and some of its subscales, but these significant relationships disappeared at post-test. No significant relationship was found between age or years of education and pre-test or post-test insight scores. Current violence profile showed no relationship with insight at pre-test, but at post-test it showed a significant negative correlation with total insight score and the treatment adherence subscale.

Although there was no significant relationship between these variables at pre-test, a significant negative correlation was found at the post-test administered after psychoeducation between total insight score, the treatment adherence and awareness of illness subscales, and all SANS subscales. The significant pre-test relationships between SAPS-hallucinations subscale scores and total insight and all subscale scores, between the SAPS-bizarre behavior subscale and the treatment adherence and correct relabeling of psychotic experiences subscales of insight, and between BPRS scores and total insight score and the awareness of illness subscale, all disappeared at the post-test following psychoeducation. Table 5 shows the Pearson correlation analysis between the scores obtained from the scales administered before and after the Healthy Living Guide psychoeducation program.

Table 4. Pearson correlation analysis of age, years of education, duration of illness, number of hospitalizations, current violence profile level, and time since offense with pre-test and post-test insight levels

	Age	Years of Education	Duration of Illness/Year	Number of Hospitalizations	Current Violence Profile	Time Since Offense/Year
PRE-TEST						
SAI-Total (r)	0.134 (p=0.334)	0.072 (p=0.605)	0.401** (p=0.003)	0.422** (p=0.001)	-0.123 (p=0.376)	0.445** (p<0.001)
SAI-Treatment Adherence (r)	0.117 (p=0.399)	0.177 (p=0.200)	0.354** (p=0.009)	0.323* (p=0.017)	-0.023 (p=0.869)	0.357** (p=0.008)
SAI-Awareness of Illness (r)	0.116 (p=0.404)	0.144 (p=0.299)	0.372** (p=0.006)	0.403** (p=0.003)	-0.158 (p=0.254)	0.416** (p=0.002)
SAI-Correct Relabeling (r)	0.005 (p=0.971)	0.047 (p=0.736)	0.273* (p=0.046)	0.302* (p=0.026)	-0.177 (p=0.200)	0.391** (p=0.003)
POST-TEST						
SAI-Total (r)	0.091 (p=0.513)	0.073 (p=0.600)	0.157 (p=0.257)	0.237 (p=0.084)	-0.269* (p=0.049)	0.204 (p=0.139)
SAI-Treatment Adherence (r)	0.110 (p=0.428)	0.071 (p=0.610)	0.095 (p=0.494)	0.088 (p=0.527)	-0.318* (p=0.019)	0.113 (p=0.416)
SAI-Awareness of Illness (r)	0.206 (p=0.135)	0.068 (p=0.625)	0.231 (p=0.093)	0.240 (p=0.080)	-0.228 (p=0.097)	0.136 (p=0.327)
SAI-Correct Relabeling (r)	-0.029 (p=0.835)	0.184 (p=0.183)	-0.014 (p=0.920)	0.188 (p=0.173)	-0.080 (p=0.565)	0.129 (p=0.353)

*p<0.05; **p<0.01
r: correlation coefficient; SAI: schedule for the assessment of insight.

Table 5. Pearson correlation analysis between pre-test and post-test scale scores

PRE-TEST	SAI Total	SAI-Treatment Adherence	SAI-Awareness of Illness	SAI-Correct Relabeling	GAS
SANS-Affective Flattening/Blunting	-0.045 (p=0.747)	-0.097 (p=0.485)	-0.035 (p=0.802)	0.022 (p=0.875)	-0.178 (p=0.198)
SANS-Alogia	0.038 (p=0.785)	-0.034 (p=0.807)	0.036 (p=0.796)	0.056 (p=0.688)	0.105 (p=0.450)
SANS-Avolition/Apathy	-0.089 (p=0.522)	-0.137 (p=0.323)	-0.154 (p=0.266)	-0.007 (p=0.960)	-0.321* (p=0.018)
SANS-Anhedonia/Asociality	-0.102 (p=0.463)	-0.107 (p=0.441)	-0.134 (p=0.334)	-0.037 (p=0.791)	-0.314* (p=0.021)
SANS-Attention	-0.218 (p=0.113)	-0.137 (p=0.323)	-0.206 (p=0.135)	-0.100 (p=0.472)	-0.323* (p=0.017)
SAPS-Hallucinations	-0.569** (p<0.001)	-0.499** (p<0.001)	-0.519** (p<0.001)	-0.419** (p=0.002)	-0.674** (p<0.001)
SAPS-Delusions	-0.683** (p<0.001)	-0.595** (p<0.001)	-0.635** (p<0.001)	-0.536** (p<0.001)	-0.630** (p<0.001)
SAPS-Bizarre Behavior	-0.461** (p<0.001)	-0.438** (p<0.001)	-0.458** (p<0.001)	-0.322* (p=0.018)	-0.507** (p<0.001)
SAPS-Positive Formal Thought Disorder	-0.623** (p<0.001)	-0.601** (p<0.001)	-0.641** (p<0.001)	-0.429** (p=0.001)	-0.447** (p<0.001)
BPRS	-0.380** (p=0.005)	-0.363** (p=0.007)	-0.351** (p=0.009)	-0.267 (p=0.051)	-0.336* (p=0.013)
POST-TEST	**SAI Total**	**SAI-Treatment Adherence**	**SAI-Awareness of Illness**	**SAI-Correct Relabeling**	**GAS**
SANS-Affective Flattening/Blunting	-0.384** (p=0.004)	-0.321* (p=0.018)	-0.420** (p=0.002)	-0.262 (p=0.056)	-0.323* (p=0.017)
SANS-Alogia	-0.405** (p=0.002)	-0.342* (p=0.011)	-0.521** (p<0.001)	-0.217 (p=0.115)	-0.441** (p<0.001)
SANS-Avolition/Apathy	-0.359** (p=0.008)	-0.353** (p=0.009)	-0.349** (p=0.010)	-0.253 (p=0.065)	-0.615** (p<0.001)
SANS-Anhedonia/Asociality	-0.353** (p=0.009)	-0.343* (p=0.011)	-0.315* (p=0.020)	-0.309* (p=0.023)	-0.505** (p<0.001)
SANS-Attention	-0.291* (p=0.033)	-0.327* (p=0.016)	-0.279* (p=0.041)	-0.216 (p=0.117)	-0.375** (p=0.005)
SAPS-Hallucinations	-0.046 (p=0.741)	0.164 (p=0.236)	0.110 (p=0.428)	-0.256 (p=0.062)	0.076 (p=0.585)
SAPS-Delusions	-0.433** (p=0.001)	-0.300* (p=0.028)	-0.390** (p=0.004)	-0.384** (p=0.004)	-0.209 (p=0.129)
SAPS-Bizarre Behavior	-0.276* (p=0.043)	-0.210 (p=0.127)	-0.276* (p=0.043)	-0.223 (p=0.105)	-0.340* (p=0.012)
SAPS-Positive Formal Thought Disorder	-0.397** (p=0.003)	-0.336* (p=0.013)	-0.413** (p=0.002)	-0.321* (p=0.018)	-0.452** (p<0.001)
BPRS	-0.206 (p=0.135)	-0.291* (p=0.033)	-0.220 (p=0.110)	-0.172 (p=0.214)	-0.037 (p=0.791)

*p<0.05; **p<0.01
SANS: scale for the assessment of negative symptoms; SAPS: scale for the assessment of positive symptoms; SAI: schedule for the assessment of insight; GAS: global assessment scale; BPRS: brief psychiatric rating scale.

DISCUSSION

By examining the pre- and post-psychoeducation status of 54 male patients aged 21–65 years with a diagnosis of psychotic disorder, treated at the Bursa City Hospital HSFP center, who had an offense history but lacked criminal responsibility, this study shows that the Healthy Living Guide psychoeducation program, administered in addition to pharmacological treatment, reduced negative and positive symptoms in the short term in this population and significantly improved insight, treatment adherence, and functionality levels. The study indicates that, in the forensic psychiatric population, psychoeducation practices —alongside pharmacotherapy— may constitute a component of holistic treatment in terms of their effects on both clinical symptoms and illness awareness and treatment processes.

There is literature evidence suggesting that psychoeducation in psychotic disorders is beneficial in reducing illness severity and preventing relapse by increasing insight and treatment adherence (McCormack et al. 2014). The improvements observed in all scales assessing symptom severity and functioning after psychoeducation in our study, together with the increase in insight and treatment adherence, indicate that the psychoeducation applied is also effective in the forensic population. Previous studies have reported that the Healthy Living Guide program has positive effects on quality of life, illness symptoms, and subjective recovery in psychotic disorders (Şahin 2022). The fact that the present study demonstrated a similar benefit in a forensic setting and under high-security conditions supports the transferability of the program to different clinical contexts.

Lack of insight in individuals with psychotic disorders is associated with treatment non-adherence, recurrent hospitalization, and violent behavior (Akram et al. 2020, Horgoş et al. 2024). In a study of schizophrenia patients exhibiting violent behavior, 71% of participants were reported to have moderate insight impairment and 12.5% severe insight impairment (Buckley et al. 2004). Similarly, there is literature evidence indicating that treatment non-adherence increases the likelihood of violent behavior and reoffending. Considering the improvement achieved in all dimensions of insight following the Healthy Living Guide

psychoeducation program together with the literature findings indicating that poor insight and treatment non-adherence in psychotic disorders are associated with violent behavior and reoffending, we believe that insight-enhancing interventions such as the Healthy Living Guide should be a fundamental part of forensic psychiatric practice.

In our study, factors that could affect insight level were examined by taking into account participants' sociodemographic characteristics (age, marital status, employment status, place of residence, cohabitant), clinical characteristics (regular treatment status, alcohol and substance use disorder, psychotic exacerbation, treatment adherence), and forensic characteristics (offense history, violent behavior).

One of the most notable findings of the study is the significant time × group interactions obtained in the analyses evaluating time and group variables together. In terms of marital status, the post-psychoeducation increase in insight was found to be more pronounced in married patients. This can be explained by the positive effect of social support systems on insight and treatment adherence. Social support is an important factor that facilitates an individual's making sense of their illness and their participation in the treatment process (Gündoğmuş et al. 2023).

In the study, insight levels of patients receiving regular treatment were observed to be higher than those not receiving regular treatment, both before and after psychoeducation. Although the study design does not allow a definitive answer to the question of whether patients have better treatment adherence because their insight level is higher, or higher insight because their treatment adherence is better, it can be considered that insight and treatment adherence mutually influence one another (Byrne and Deane 2011). Nevertheless, the fact that the low-treatment-adherence group benefited more from psychoeducation compared to the high-treatment-adherence group, and that the difference between the two groups disappeared in some insight subscales at post-test, shows that the psychoeducation program brought the insight level of the low-adherence group closer to that of the adherent group. This can be explained by the hypothesis that "patients with initially low treatment adherence, being more disadvantaged in terms of insight and illness knowledge, benefit more from psychoeducation." In the forensic psychiatric population, treatment non-adherence is an important risk factor for reoffending and violent behavior (Alia-Klein et al. 2007). Therefore, demonstrating that psychoeducation is particularly more effective in patients with low treatment adherence suggests that this intervention may hold an important place among risk-reduction strategies.

The findings obtained at pre-test and post-test for patients who did and did not experience a psychotic exacerbation at the time of hospital admission suggest that exacerbation status is one of the main variables underlying the significant difference in insight levels. This difference persisted even after psychoeducation was administered, although it diminished. Moreover, the significant time × group interaction shows that the effect of psychoeducation varies according to the clinical stage of the illness. The more pronounced change in insight in the exacerbation group can be explained by this group's initially lower insight level, which allowed for a wider margin for improvement. Nevertheless, the fact that post-intervention levels still remained below those of the remission group suggests that the initial clinical disadvantage could not be fully eliminated. This suggests that longer-term and repeated psychoeducation interventions may be needed, particularly for patients hospitalized during an exacerbation period (Lincoln et al. 2007).

The negative effects of substance use on insight and treatment adherence are well known (Raftery et al. 2020). The disappearance at post-test of the lower insight levels seen at pre-test in patients with substance use disorder is one of the notable findings of the study. This suggests that a targeted psychoeducation program consisting of structured content and repeated sessions may be important in reducing the negative impact of substance use on insight and treatment adherence, even in patients with comorbid substance use disorder.

A positive relationship was found at pre-test between duration of illness, number of hospitalizations, and time elapsed since the offense, and insight level. Longer illness duration and more hospitalizations may mean greater exposure to both psychoeducation and clinical follow-up and pharmacotherapy. Similarly, patients who received their illness diagnosis more recently may have more frequently resorted to insight-reducing defenses such as denial in order to reduce the emotional burden of having received a new illness diagnosis. The positive relationship observed with increasing time since the offense also suggests that insight may have increased as psychotic severity subsided. The disappearance of these significant relationships after psychoeducation may be related to psychoeducation making a greater difference in patients with lower insight.

While there was no significant relationship between negative symptoms and insight scales at pre-test, a significant relationship emerged at post-test. It is not surprising that insight increases along with cognitive improvement as negative symptoms decrease (Joseph et al. 2015). At the same time, the correlation between the two conditions may have increased because the psychoeducation program both improved insight and reduced negative symptoms.

The absence of a control group, the single-center design, the relatively small sample size, and the fact that the entire sample consisted of men are among the limitations of the study.

Another limitation is that the psychotic exacerbation status at admission was based on clinician assessment rather than objective scales. Examining only the short-term effects of psychoeducation does not demonstrate the long-term effect of the intervention. The inability to control for the effects of concurrent pharmacotherapy and other psychosocial interventions, such as occupational therapy, is another limitation.

CONCLUSION

The fact that the Healthy Living Guide psychoeducation program, implemented in a forensic psychiatric population, resulted in a reduction in illness symptoms, an increase in functionality, an increase in insight, and improvement in treatment adherence demonstrates that this program can be used as a complementary approach in the treatment of psychotic patients. Noteworthy points include that the program was particularly more effective in patients with low insight, but that its effect remained limited in patients hospitalized during a psychotic exacerbation, even after they entered remission. Future prospective studies with larger samples, in which confounding factors are controlled and the long-term effects of psychoeducation programs on both illness severity and offending behavior are examined, will make an important contribution to this field.

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