

Research Article

Effect of a Positive Psychology Expressive Writing on Stigma, Hope, Coping Style, and Quality of Life in Hospitalized Female Patients with Schizophrenia: A Randomized, Controlled Trial

Ming-Wen Tang ¹, Yin Cheng ², Yan-Hong Zhang ^{2,3} and Shou-Juan Liu ¹

¹Department of Psychiatry, Affiliated Nanjing Brain Hospital, Nanjing Medical University, Nanjing 210029, China

²School of Nursing, Nanjing Medical University, Nanjing 211166, China

³Department of Nursing, Affiliated Nanjing Brain Hospital, Nanjing Medical University, Nanjing 210029, China

Correspondence should be addressed to Yan-Hong Zhang; zhangyanhong6312@126.com and Shou-Juan Liu; 1538240292@qq.com

Received 6 September 2022; Revised 24 December 2022; Accepted 5 January 2023; Published 8 February 2023

Academic Editor: Francisco Sampaio

Copyright © 2023 Ming-Wen Tang et al. This is an open access article distributed under the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

Purpose. Schizophrenia accounts for more than 50% of psychiatric inpatients, and its special manifestations and recurring illnesses not only bring great harm to patients and their families but also pose great challenges to social security and management. Schizophrenia is associated with the most severe stigma of all mental illnesses. This stigma seriously affects the psychological functioning and quality of life of people with schizophrenia. Female patients' experiences with stigma tend to be more severe than those of male patients and their self-denial and discrimination may be more serious. As expressive writing is a relatively simple, brief intervention that may serve as a useful and cost-effective alternative intervention or adjunct to other treatments, it is important to assess its effectiveness for female patients with schizophrenia. In this study, we explored the effect of a positive psychology expressive writing intervention on stigma, hope, coping style, and quality of life in hospitalized female patients with schizophrenia. **Methods.** This randomized controlled trial investigated the psychophysiological benefits of a positive psychology expressive writing (PPEW) in 54 schizophrenia patients recruited from the psychiatry department of a tertiary psychiatric hospital in Nanjing, China. Patients were randomized into the experimental group ($n = 27$) and control group ($n = 27$). The experimental group participated in the positive psychology expressive writing for 2 weeks, while the control group received routine psychiatric care. As outcome measures, all patients completed the Personal Information Form, Perceived Devaluation-Discrimination (PDD), Simplified Coping Style Questionnaire (SCSQ), Herth Hope Index Scale (HHIS), and Quality of Life Scale for Schizophrenia (SQLS). **Results.** There were significant differences in PDD, SCSQ, HHIS, and SQLS pretest to posttest scores between the experimental and control groups shown by the per protocol (PP) and intent-to-treat (ITT) analysis ($P < 0.05$). PPEW decreased the level of stigma and improved hope, coping style, and quality of life among patients with schizophrenia. **Conclusion.** These findings highlight the benefits of including positive psychology expressive writing (PPEW) in daily psychological treatment of patients with schizophrenia to promote their rehabilitation and improve their quality of life.

1. Introduction

Schizophrenia is a chronic, refractory, and severe psychiatric condition with high incidence, recurrence, and disability rates. In China, the prevalence of schizophrenia was reported to be 0.6% in 2019 [1]. Stigma is a prominent factor that affects the management of symptoms, disease

knowledge, adherence to treatment, and rehabilitation of patients with schizophrenia [2]. Of various psychiatric conditions, schizophrenia is associated with the most severe stigma [3]. The stigma associated with schizophrenia may persist after remission, resulting in extreme stress and distress [4] as well as poor social functioning and quality of life [5]. Therefore, decreasing stigma associated with

schizophrenia has become an important issue in the treatment of patients with schizophrenia.

Stigma of schizophrenia patients is associated with many factors. The severity of stigma is negatively associated with hope [6, 7] and a positive coping style [8]. Coping style refers to the cognitive and behavioral style adopted by individuals in the face of frustration and pressure, which is an important mediating factor in the process of psychological stress [9]. Hope is an indispensable factor that can promote physical and mental well-being among patients with schizophrenia and effectively reduce internalized stigma. It has been reported that coping ability and quality of life are better in schizophrenic patients with a high level of hope than those with a low level of hope [10]. A study conducted in China found that stigma toward schizophrenia patients could be reduced through interventions to address the various influencing factors [11]. Therefore, interventions to improve patients' hope and change their coping styles may also decrease stigma.

Positive psychology is a discipline proposed by Seligman et al. [12] that explores the optimal functions of human beings to promote healthy and harmonious development. It emphasizes the interpretation of human psychological phenomena through a positive attitude to develop positive qualities like hope and optimism and cultivate good adaptability [12]. The emergence of positive psychology is a correction of the unbalanced development of psychology, with positive psychology interventions (PPIs) guided by the theory of positive psychology. Psychological interventions for people in need are provided on the premise of clarifying the feasibility of intervention paths, with strengthening individual positive resources as the goal and changing positive variables as the method [13].

Expressive writing (EW) is a psychological intervention used to disclose and express emotions and cognition related to important personal experiences through memory, meditation, and writing behaviors and to promote emotional regulation via the language of emotions to promote individual physical and mental health [14]. There are many theories about the mechanisms through which written expression works. One plausible explanation is through emotional regulation, in which actions against trauma-related thoughts and feelings improve control and self-efficacy related to negative emotions experienced as a result of adversity [15]. Early expressive writing interventions were usually about trauma or stressful events. With the development of positive psychology, positive writing themes such as hope and optimism have also been applied.

Positive writing interventions break with tradition. Many studies have reported that they have good effects on well-being and psychological resilience, particularly among people who suffer from unfair treatment or have psychological problems due to stress [16–18]. However, there are few studies reporting the effects of positive writing interventions in schizophrenia patients with high levels of stigma in China or other countries. As expressive writing is a relatively simple, brief intervention that may serve as a useful and cost-effective alternative intervention or adjunct

to other treatments, it is important to assess its effectiveness for schizophrenia. Female patients with schizophrenia may be more sensitive, their experiences with stigma tend to be more severe than those of male patients, and their self-denial and discrimination may be more serious [19]. In this study, we combine positive psychology with expressive writing to develop a positive psychology expressive writing (PPEW) intervention with the aim of influencing factors related to stigma, such as hope and coping style, in female patients with schizophrenia. It is expected that this PPEW intervention will improve patients' level of hope and positive coping so as to combat stigma and improve quality of life.

1.1. Research Hypotheses. Our specific research hypotheses are as follows:

H1: A PPEW intervention will impact the level of hope in schizophrenia patients

H2: A PPEW intervention will impact coping style in schizophrenia patients

H3: A PPEW intervention will impact the level of stigma in schizophrenia patients

H4: A PPEW intervention will impact quality of life in schizophrenia patients

2. Methods

2.1. Study Design. This study was conducted as a prospective, randomized controlled trial. Patients with schizophrenia were recruited from departments of psychiatry in a tertiary psychiatric hospital in Nanjing, China, between June 2019 and May 2020. All patients provided informed consent prior to participation. Patients in the same wards were blinded to whether they were in the experimental or control group. Control group patients also underwent routine psychological care measures. Only those who administered the PPEW were aware of the experimental group and specific interventions. The staff who conducted preintervention and postintervention data collection were also blinded to what patients were in each group.

2.2. Participants. The inclusion criteria were as follows: female aged 18–65 years old, a diagnosis of schizophrenia according to ICD-10 criteria, primary school education or above with reading and writing ability, and consent to participate. In addition, participants had completed acute treatment, were in a maintenance medication period, and had the Brief Psychiatric Rating Scale (BPRS) score less than 40. Patients with any serious heart, lung, liver, kidney, or brain condition or other physical diseases were excluded from participating. The discontinuance criteria specified that participants who could not continue the intervention for various reasons had to withdraw from the study.

2.3. Outcome Measurements. The following demographic data were collected from the participants: age, gender, education level, income, marital status, number of

hospitalizations, and BPRS score. The level of stigma was taken as the primary outcome measure and other assessment tools were used as secondary outcome measures. We used the Perceived Devaluation-Discrimination (PPD) Scale to assess stigma and Simplified Coping Style Questionnaire (SCSQ), Herth Hope Index Scale (HHIS), and Quality of Life Scale for Schizophrenia (SQLS) to measure secondary outcome indicators. Assessment was performed at the time of enrollment and again two weeks later.

2.3.1. Perceived Devaluation-Discrimination (PPD) Scale. This self-rating scale was developed by Link [20] to measure perceived stigma. It is a part of the Link Stigma Scale that includes three subscales. Yin et al. translated the scale into Chinese [21]. The scale includes 12 items, of which 6 items are reverse scored. Responses are given using a 4-point Likert scale. The scores range from 12 to 60 points, with higher scores indicating a higher level of stigma. Cronbach's alpha coefficient was 0.87.

2.3.2. Herth Hope Index Scale (HHIS). The HHIS was developed by Herth [22] to determine an individual's level of hope and translated into Chinese by Zhao and Wang [23]. Items 1, 2, 6, and 11 measure positive attitudes toward the present and future (T); items 4, 7, 10, and 12 measure taking positive action (P); items 3, 5, 8, and 9 measure three aspects of maintaining close relationships with others. Each item is graded on a 4-level scale ranging from "low" (1) to "high" (4). The total scores range from 12 to 48, in which a higher score indicates a higher level of hope. A total score of 12–23 indicates a low level, 24–35 is medium level, and 36–48 is high level. Cronbach's alpha coefficient was 0.97.

2.3.3. Simplified Coping Style Questionnaire (SCSQ). The SCSQ was developed by Xie [24]. It consists of 20 items assessing coping style across two dimensions: positive coping style and negative coping style. Each item is scored from 0 to 3 (0 = never, 1 = almost never, 2 = sometimes, and 3 = almost always). The total scores range from 0 to 60. A higher score in the positive coping dimension indicates that subjects are prone to adopting a positive coping style, whereas a higher negative coping score indicates that subjects tend to adopt a negative coping style. The retest reliability coefficient of SCSQ was 0.89 and Cronbach's alpha coefficient was 0.90.

2.3.4. Quality of Life Scale for Schizophrenia (SQLS) Patients. The SQLS was developed by Wilkinson et al. [25] and translated into Chinese by Luo et al. [26]. The scale consists of three subscales: psychosocial symptoms, motivation/energy symptoms, and adverse reactions. Items are scored on a 5-point scale. The original score after conversion is divided into 0–100: the lower the score, the higher the patient's quality of life level. The retest reliability coefficient of the SQLS was 0.87, and Cronbach's alpha coefficient was 0.70–0.92.

2.4. Sample Size Calculation. We based the calculation on the primary outcome of our pre-experiments. The total stigma score in the experimental group was 28.50 before the intervention and 25.13 after the intervention. Using the means of these two independent samples, $\alpha = 0.05$, $\beta = 0.20$, and a ratio of 1:1 between the intervention and control groups in PASS 11.0 software yielded a sample size of $n_1 = n_2 = 24$. The lost-to-review rate was calculated to be 10%. Thus, 27 cases were required for each of the intervention and control groups, resulting in a total of 54 participants.

2.5. Group Randomization. The 54 subjects were randomly divided into an intervention group ($n = 27$) and control group ($n = 27$). SPSS 26.0 software was used to calculate 54 random numbers that were divided into two equal groups. The groups, random numbers, and serial numbers were recorded on cards and put into black sealed envelopes for third party custody. After the patients were enrolled in the group, the questionnaire investigator collected the data first. Next, the third party opened the corresponding envelope according to the serial number. The researcher included each patient in the corresponding group according to the information on the card.

2.6. Procedure. The intervention team consisted of eight members, including six nurses and two psychiatrists. They all have more than five years of experience in psychiatry. Among the six nurses, three had national grade III psychological counseling teacher quality and one had national grade II psychological counseling teacher quality. The team members were jointly responsible for the formulation and implementation of the intervention programs. A pre-experiment was conducted with 10 schizophrenia patients, and the final protocol was revised based on the participants' feedback. To ensure the quality of interventions, team members received uniform training. Eight members of the team received six training sessions. The training included familiarization with the evaluation questionnaire, learning communication skills and positive psychology knowledge, the connotation and specific implementation of expressive writing training, and passing an examination. The intervention team organized regular internal discussion and meetings to discuss problems and solutions to ensure experimental results.

For the control group, routine health education and routine nursing were carried out. The experimental group also received routine health education and routine nursing. In addition, they participated in the six sessions of PPEW training. The practice phase of this study was performed in three steps.

Step 1. Complete baseline assessment and establish a good nurse-patient relationship.

A good nurse-patient relationship is conducive to smooth completion of intervention. Therefore, we should pay attention to the following:

- (1) Active communication: First, the team members aimed to strengthen communication with patients by using reasonable communication skills, taking the initiative to approach patients with a soft tone and friend-like attitude, care for and respect the patients, and make the patients feel loved and valued.
- (2) Meet the requirements: Through the patients' words, behavior, and mood, subtle changes can be achieved in patients' psychological activities, including psychological guidance, disease prevention, healthcare knowledge like extensive health education, and early detection. It is also possible to satisfy the demands of patient care and create a sense of security that encourages the patient to actively cooperate with treatment and nursing.
- (3) Develop trust: Due to the emotional instability caused by schizophrenia, the team members should use empathy to understand the patient, understand their psychological state and needs, put themselves in the patient's shoes, and establish a good nurse-patient relationship.
- (4) The flowchat of this study is as follows:
 - (i) Hello, I am your nurse. Can we talk for a moment, please?
 - (ii) Do you know anything about schizophrenia?
 - (iii) Have you ever been discriminated against by others in your life because of schizophrenia? How do you respond to discrimination?
 - (iv) How has your normal life been affected by schizophrenia?
 - (v) Schizophrenia is the same as other common illnesses, I hope I can help you understand it and face it properly. Can we overcome it together with a positive attitude?
 - (vi) There are many ways we can help you. Are you willing to try?
 - (vii) What do you think about hope and happiness?
 - (viii)

Step 2. PPEW training was performed 6 times in 2 weeks.

The PPEW training involved six themes: face the trauma, focus on the advantages, explore the positive, learn to be grateful, appreciate happiness, and renew hope. The intervention group listened to six audio lectures providing positive psychology knowledge about these six themes. We also developed a writing manual that included writing instructions (functions, methods, and precautions about writing expression) and writing space (6 blank A4 sheets). Before writing, patients should be informed of the theme, the relevant audio should be played, and the writing manuals should be issued to the patients to guide them to write relevant content. The two-week intervention plan for patients with schizophrenia is shown in Table 1.

Patients do not need to think about grammar, punctuation, or length, but should stick to the theme and try not to stop at random. When writing, patients should choose a quiet environment. Accompanied by members of the

research team, patients should write alone to facilitate thinking and feeling by heart. The writing time is chosen by the patient and should last about 20–30 min each time. To ensure that patients adhered to the intervention program, the team members confirmed the patient's writing progress every day and supervised them to ensure that the writing sessions were completed. To support ongoing participation and enthusiasm, patients who persisted with the writing intervention were given certain material rewards, according to positive reinforcement behavioral therapy.

Step 3. The psychological scales were used to evaluate the effect of intervention after six sessions. The patients reviewed the experience of participating in the intervention, the benefits obtained from it, any personal changes, and their opinions on the intervention. The researchers encouraged patients to continue expressive writing training after completion.

2.7. Data Analysis. Statistical analyses were based on the per-protocol (PP) and intent-to-treat (ITT) data. SPSS 26.0 software was used for statistical analysis. Before analysis, all quantitative data were tested for normality. Quantitative data conforming to a normal distribution were expressed as the mean \pm standard deviation. If the data met the normal distribution, the two independent samples *t*-test was used for group comparisons; otherwise, the two independent samples nonparametric test was used. For within-group comparisons, the paired *t*-test was used for data that satisfied a normal distribution and the paired nonparametric test was used for data that did not. The sample size for the PP analysis was calculated according to the actual number of completed cases, while the sample size of the ITT analysis was calculated according to each group of 27 cases randomly grouped. The ITT analysis used the previous numerical value to calculate the value of missing data.

2.8. Ethical Principles of the Research. Ethical approval was obtained from the Ethics Committee of Nanjing Brain Hospital, Jiangsu Province, China (approval number 2019-KY080-01). Informed written consent was obtained for all patients and their confidentiality was maintained.

3. Results

Figure 1 shows the flow of participants from recruitment to end of the intervention.

Participant characteristics are shown in Table 2. Of the total 54 patients, 2 patients in the experimental group and 3 patients in the control group were lost to follow-up. Thus, 25 patients in the experimental group and 24 patients in the control group were included in the PP analysis. However, all 27 patients in the experimental group and 27 patients in the control group were included in the ITT analysis. There were no statistically significant differences between the experimental and control groups in terms of marriage, income, hospitalization time, age, or other characteristics (all $P > 0.05$).

TABLE 1: The two-week intervention plan for patients with schizophrenia.

Order	Theme	Positive psychological knowledge inculcation (audio)	Writing content guidance (site instruction)
Session 1	Face the trauma	(i) Explaining stress and how to deal with it (ii) Explaining the meaning of facing trauma correctly and teaching patients to recognize trauma and negative events from positive aspects	(i) Guiding patients to review stressful or traumatic events (ii) Write down beneficial aspects or lessons learned from them that could be helpful in their future lives
Session 2	Focus on the advantages	(i) Explaining 24 kinds of character advantage (ii) Character advantage is the internal strength to overcome disease and resist all kinds of pressure	(i) Guiding patients to make brief assessments of their own personality strengths, among other things (ii) Guiding patients to dig their own advantages and specialties (iii) Write personal character advantages and achievements
Session 3	Explore the positive	(i) Explaining the harm of negative thinking to disease (ii) Teaching patients to avoid negative emotions and pay more attention to the positive events in life	(i) Guiding patients to review positive experiences, such as helping others (ii) Write down what happened and how you felt at the time
Session 4	Learn to be grateful	(i) Explaining the significance of gratitude and the importance recovery from disease (ii) Teaching patients to express gratitude can avoid the invasion of negative emotions and alleviate symptoms	(i) Guiding patients to review the help and support you have received in your life (ii) Write a thank-you letter to somebody
Session 5	Appreciate happiness	(i) Explaining happiness, emphasizing mental illness is same with other general illnesses (ii) Encourage patients to face up to mental illness no matter how others look at (iii) Teaching patients to not care about social prejudice discrimination, learn to self-esteem	(i) Guiding patients to review past good and happy experiences in their lives (ii) Write down their experiences and feelings at the time or write a letter to a loved one
Session 6	Renewed hope	(i) Explaining the significance of hope and its importance in recovery of disease (ii) Using cases of good recovery to guide patients comfort and encourage (iii) Teaching patients to look at themselves with a new attitude and increase the confidence and courage to overcome the disease	(i) Guiding patients to explore the sources of hope in their lives and imagine the future (ii) Write down what they want to do or the wishes they want to fulfill and plan the future life

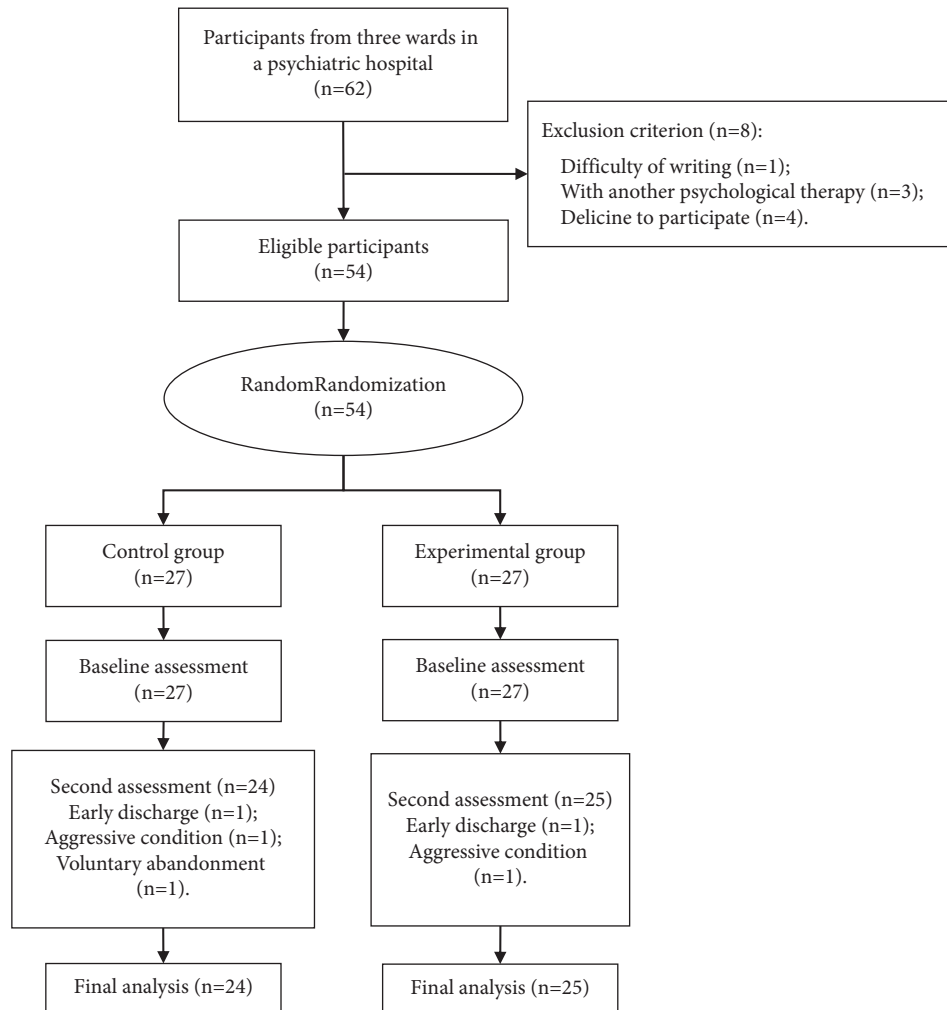


FIGURE 1: Participant flow.

TABLE 2: Distribution of characteristics of patients with schizophrenia ($n = 54$).

	Experimental ($n = 27$) $n, \%$	Control ($n = 27$) $n, \%$	χ^2/t	P
Age, mean (SD) (years)	33.00 \pm 11.00	33.67 \pm 10.28	-0.23 ^b	0.819
Marital status			2.80 ^a	0.25
Single	14 (51.85)	15 (55.56)		
Married	8 (29.63)	4 (14.81)		
Divorced or widowed	5 (18.52)	8 (29.63)		
Income status (RMB)			3.57 ^a	0.312
<1000	2 (7.41)	4 (14.81)		
1000~4000	16 (59.26)	12 (44.44)		
4000~8000	2 (7.41)	6 (22.22)		
>8000	7 (25.93)	5 (18.52)		
Number of hospitalizations (time)			2.06 ^a	0.357
Once	9 (33.33)	13 (48.15)		
Twice	8 (29.63)	4 (14.81)		
\geq Three	10 (37.04)	10 (37.04)		
BPRS score, mean (SD)	34.07 \pm 3.95	34.33 \pm 3.43	-0.26 ^b	0.798

Note. BPRS, Brief Psychiatric Rating Scale; ^a χ^2 test; ^bindependent sample t -test.

Before the intervention, there was no statistically significant difference in the total PPD score between the two groups ($P > 0.05$). However, after the intervention, there was

a statistically significant group difference ($P < 0.05$); the results of the ITT analysis were consistent with those of the PP analysis (Table 3, Supplementary Table 1). Within the

TABLE 3: Comparison of PDD, HHIS, SCSQ, and SQLS scores of the two groups.

Scales			Experimental (<i>n</i> = 25)	Control (<i>n</i> = 24)	<i>t</i>	<i>P</i>	ES Cohen's <i>d</i>
PDD	Total	Pretest	30.08 ± 2.87	30.00 ± 2.86	0.10	0.923	—
		Posttest	25.12 ± 3.11	28.13 ± 4.19	-2.86	0.006	0.82
HHIS	Positive attitude towards present and future	Pretest	10.72 ± 1.06	11.17 ± 1.55	-1.181	0.244	—
		Posttest	12.16 ± 1.21	11.29 ± 1.40	2.32	0.024	0.66
	Positive action	Pretest	11.16 ± 1.57	11.08 ± 2.28	0.14	0.891	—
		Posttest	12.44 ± 1.66	11.17 ± 2.24	2.27	0.028	0.64
	Close relationships with others	Pretest	10.84 ± 1.84	10.79 ± 1.56	0.10	0.922	—
		Posttest	12.00 ± 1.41	10.88 ± 1.54	2.51	0.015	0.76
	Total	Pretest	33.00 ± 2.87	33.54 ± 3.20	-0.62	0.536	—
		Posttest	36.60 ± 3.71	34.17 ± 3.02	2.66	0.011	0.72
SCSQ	Positive coping style	Pretest	17.92 ± 5.51	19.71 ± 6.85	-1.01	0.318	—
		Posttest	25.44 ± 4.73	21.58 ± 6.21	2.45	0.018	0.70
	Negative coping style	Pretest	9.96 ± 4.44	11.63 ± 4.56	-1.30	0.201	—
		Posttest	6.72 ± 3.30	11.13 ± 3.37	-4.63	0.000	1.32
SQLS	Psychosocial symptoms	Pretest	35.60 ± 2.89	34.50 ± 5.03	0.94	0.350	—
		Posttest	16.16 ± 7.37	30.29 ± 2.39	-8.95	0.000	2.58
	Energy/motivation	Pretest	20.36 ± 2.18	19.17 ± 2.97	1.61	0.115	—
		Posttest	11.04 ± 5.70	16.17 ± 2.26	-4.11	0.000	1.18
	Symptoms/side effects	Pretest	16.52 ± 3.24	18.00 ± 4.27	-1.37	0.177	—
		Posttest	5.32 ± 2.95	15.58 ± 3.24	-11.59	0.000	3.31
	Total	Pretest	72.48 ± 4.53	71.67 ± 7.23	0.47	0.638	—
		Posttest	32.52 ± 11.57	62.04 ± 4.33	-11.73	0.000	3.38

Note. Per-protocol analysis; PDD, Perceived Devaluation-Discrimination; HHIS, Herth Hope Index Scale; SCSQ; Simplified Coping Style Questionnaire; SQLS, Quality of Life Scale for Schizophrenia.

experimental group, PP analysis showed a statistically significant change ($P < 0.001$) in the total PPD scores before and after the intervention; the ITT analysis results were consistent ($P < 0.001$). PP analysis also showed a statistically significant change ($P < 0.05$) in PPD score in the control group before and after the intervention, and the results of ITT analysis were consistent (Table 4, Supplementary Table 2).

Before the intervention, there were no statistically significant group differences in the HHIS dimensional scores and total scores ($P > 0.05$). After the intervention, PP analysis showed a statistically significant difference ($P < 0.05$) in HHIS dimensional scores and total scores between the two groups; the ITT analysis results were consistent with the PP results (Table 3, Supplementary Table 1). Within the experimental group, PP analysis showed a statistically significant difference ($P < 0.001$) in HHIS dimensional scores and total scores before and after the intervention; the results of ITT analysis were consistent. However, within the control group, PP analysis showed no statistically significant difference in HHIS dimensional and total scores before and after the intervention ($P > 0.05$); the ITT analysis results were consistent (Table 4, Supplementary Table 2).

Before the intervention, there were no statistically significant group differences in positive coping style and negative coping style scores ($P > 0.05$). After the intervention, PP analysis showed a statistically significant difference between positive coping style and negative coping style scores between patients in the experimental and control groups ($P < 0.05$); the ITT analysis results

were similar (Table 3, Supplementary Table 1); PP analysis showed a statistically significant difference in positive coping style and negative coping style scores among patients in the experimental group before and after the intervention ($P < 0.001$), and the ITT analysis results were consistent. However, PP analysis showed no statistically significant differences in positive coping style and negative coping style scores before and after the intervention in the control group ($P > 0.05$); the ITT analysis results were consistent with those of the PP analysis (Table 4, Supplementary Table 2).

Before the intervention, there were no statistically significant group differences in SQLS dimension and total scores ($P > 0.05$). However, after the intervention, PP analysis showed statistically significant differences ($P < 0.001$) in SQLS dimension and total scores between patients in the experimental and control groups; the ITT analysis results were consistent with the PP analysis (Table 3, Supplementary Table 1). Within the experimental group, PP analysis showed statistically significant differences ($P < 0.001$) in the comparison of the SQLS dimensional and total scores before and after the intervention; the ITT analysis results were consistent. In addition, PP analysis showed statistically significant differences in psychosocial symptoms and energy/motivation scores and total SQLS scores within the control group before and after the intervention ($P < 0.05$); however, there were no statistically significant differences in the symptoms/side effects scores before and after

TABLE 4: Change in PDD, HHIS, SCSQ, and SQLS scores for the two groups.

Scales	Group	Pretest	Posttest	Difference value	t	P	95% CI	ES Cohen's d
PDD	Experimental (n = 25)	30.08 ± 2.87	25.12 ± 3.11	-4.96 ± 2.17	11.43	0.000	4.06~5.86	2.29
	Control (n = 24)	30.00 ± 2.86	28.13 ± 4.19	-1.88 ± 3.10	2.97	0.007	0.49~2.84	0.61
HHIS	Experimental (n = 25)	10.72 ± 1.06	12.16 ± 1.21	-1.44 ± 1.33	-5.43	0.000	-1.99~-0.89	1.08
	Control (n = 24)	11.17 ± 1.55	11.29 ± 1.4	-0.13 ± 1.3	-0.47	0.641	-0.67~-0.42	—
	Experimental (n = 25)	11.16 ± 1.57	12.44 ± 1.66	-1.28 ± 0.68	-9.44	0.000	-1.56~-1.00	1.88
	Control (n = 24)	11.08 ± 2.28	11.17 ± 2.24	-0.08 ± 1.06	-0.39	0.704	-0.53~-0.36	—
SCSQ	Experimental (n = 25)	10.84 ± 1.84	12.00 ± 1.41	-1.16 ± 1.31	-4.42	0.000	-1.70~-0.62	0.89
	Control (n = 24)	10.79 ± 1.56	10.88 ± 1.54	-0.08 ± 0.97	-0.42	0.679	-0.49~-0.33	—
	Experimental (n = 25)	33.00 ± 2.87	36.6 ± 3.71	-3.6 ± 1.83	-9.86	0.000	-4.35~-2.85	1.97
	Control (n = 24)	33.54 ± 3.20	34.17 ± 3.02	-0.63 ± 2.53	-1.21	0.239	-1.69~-0.44	—
SQLS	Experimental (n = 25)	17.92 ± 5.51	25.44 ± 4.73	-7.52 ± 3.24	-11.60	0.000	-8.86~-6.18	2.32
	Control (n = 24)	19.71 ± 6.85	21.58 ± 6.21	-1.88 ± 5.01	-1.83	0.080	-3.99~-0.24	—
	Experimental (n = 25)	9.96 ± 4.44	6.72 ± 3.3	3.24 ± 3.78	4.29	0.000	1.68~4.80	0.86
	Control (n = 24)	11.63 ± 4.56	11.13 ± 3.37	0.50 ± 4.60	0.53	0.599	-1.44~2.44	—
Total	Experimental (n = 25)	35.60 ± 2.89	16.16 ± 7.37	19.44 ± 7.68	12.65	0.000	16.27~22.61	2.53
	Control (n = 24)	34.50 ± 5.03	30.29 ± 2.39	4.21 ± 5.24	3.93	0.001	1.99~6.42	0.80
	Experimental (n = 25)	20.36 ± 2.18	11.04 ± 5.70	9.32 ± 5.38	8.66	0.000	7.1~11.54	1.73
	Control (n = 24)	19.17 ± 2.97	16.17 ± 2.26	3.00 ± 3.95	3.73	0.001	1.33~4.67	0.76
Total	Experimental (n = 25)	16.52 ± 3.24	5.32 ± 2.95	11.20 ± 3.66	15.29	0.000	9.69~12.71	3.06
	Control (n = 24)	18.00 ± 4.27	15.58 ± 3.24	2.42 ± 5.90	2.01	0.057	-0.07~4.91	—
	Experimental (n = 25)	72.48 ± 4.53	32.52 ± 11.57	39.96 ± 11.16	17.90	0.000	35.35~44.57	3.58
	Control (n = 24)	71.67 ± 7.23	62.04 ± 4.33	9.63 ± 7.87	5.99	0.000	6.3~12.95	1.22

Note. Per-protocol analysis; PDD, Perceived Devaluation-Discrimination; HHIS, Herth Hope Index Scale; SCSQ, Simplified Coping Style Questionnaire; SQLS, Quality of Life Scale for Schizophrenia.

the intervention ($P > 0.05$). The results of ITT analysis were consistent with those of PP analysis (Table 4, Supplementary Table 2).

4. Discussion

This study revealed that PPEW intervention can effectively reduce stigma in patients with schizophrenia. Many studies have shown that mindfulness, self-affirmation training, hope intervention, and other psychological interventions based on positive psychology [27–29] can decrease stigma in patients with schizophrenia, which is consistent with our findings. However, the existing PPIs are mostly input-based and administered without focusing on the patient's output, and some are complicated in structure, inconvenient to implement, and costly. As a new form of psychological intervention, expressive writing of positive emotions has been widely used due to its simple operation, assurance of privacy, low cost, and flexible structure. At present, expressive writing is mainly used with patients with physical diseases such as cancer and AIDS [30, 31] and has achieved good effects. In contrast, it has been rarely applied in patients with psychiatric conditions. Suhr et al. found that a positive emotion expressive writing intervention could maintain emotional stability of psychiatric patients after discharge from the hospital [32]. However, it has not been previously used to address stigma in patients with schizophrenia through a literature review. The findings of this study thus contribute to filling this gap in the literature.

Our findings indicated that PPEW intervention can help patients with schizophrenia release their true thoughts and emotions in Chinese culture, supporting a beneficial coping style. After the intervention, the level of positive coping style in the experimental group increased, while the level of negative coping style decreased. These are conducive to reducing the stigma of patients. The reasons for this change may be as follows: ① Due to differences between Eastern and Western cultures, Chinese people are more reserved and introverted about expressing their emotions. Coupled with a sense of shame, patients with schizophrenia are more reluctant to actively communicate with others and show their emotions and often adopt negative coping style such as avoidance and withdrawal. Psychiatric wards in China mostly administer closed-circuit treatment, and patients have few opportunities to communicate and express their thoughts with the outside world except during family visits. Through the writing intervention, patients can freely express their inner thoughts and release repressed emotions. Female patients may be more sensitive and thus benefit from writing content according to the instructions for the expressive writing intervention. ② Positive psychology focuses on the whole person, not just the disease. It also highlights the potential of individuals and aims to mobilize patients' subjective initiative. When patients were asked to write content with the theme of facing trauma, through self-cognition of the event, their thoughts and feelings are reorganized or reconstructed and they take the initiative to find positive meaning under the guidance of the researcher and independent exploration of psychological dynamics. They learn to take the

initiative to self-regulate, gradually change negative thoughts, and establish positive coping styles. Together, these skills help patients cope with their disease, deal with shame, and improve their confidence to overcome stigma [33].

Positive psychological interventions include the development of skills and strategies such as attention, harmonious relationship, verbal skills, trust, and hope infusion. The PPEW intervention used positive psychology as its instruction, by instilling positive psychology knowledge, establishing active writing themes such as happiness, hope and gratitude, guide patients to focus on positive events, make the individual develop positive thinking, form a positive psychological quality, and improve patients' level of hope. The results showed significantly greater improvements in hope, "positive attitude towards present and future," "positive action," and "close relationships with others" in the experimental group compared to the control group after the intervention. These findings indicate that the PPEW intervention also plays an important role in helping patients maintain close relationships with others. The reason may be that patients expand their scope of attention, focus of interest, way of thinking, and behavioral patterns through the expressive writing exercises [34] and find new meaning in writing that influences their social communication styles and improves social avoidance. By shaping positive psychological qualities such as hope, the intervention supports patients in changing their negative attitudes about life and dealing with problems with a positive attitude, which is beneficial for facing the disease and supporting positive thinking [35]. Together, these skills reduce the stigma of mental illness and help patients better integrate into society.

Stigma in patients with schizophrenia is associated with poor quality of life and can cause great suffering [36]. Quality of life refers to an individual's feeling and understanding of their status in life and related goals, expectations, standards, and concerns in a specific culture and value system. In recent years, quality of life has become an important criterion in research and treatment for schizophrenia and other serious psychiatric conditions. Schizophrenia patients generally have a lower quality of life, which seriously affects their rehabilitation and return to society [37]. Prior studies have highlighted the need for stigma-oriented cognitive and behavioral interventions to improve the quality of life of patients with schizophrenia [38]. After the PPEW intervention, the quality of life of patients in the experimental group was significantly improved, indicating that the PPEW intervention can help improve the quality of life in patients with schizophrenia. Çapar and Kavak confirmed that improving stigma among schizophrenia patients can promote their functional rehabilitation, which has positive effects on their return to society, normal life and work, and quality of life [19]. In the PPEW intervention, we guide individuals to actively discover the positive significance of daily life events, shape their positive characteristics, gradually rebuild their thinking and psychological structure, improve negative self-views, actively promote psychological adjustment, improve coping styles, eliminate stigma, and improve their quality of life.

However, there are some difficulties in administering psychological interventions to hospitalized schizophrenia patients. Attention, executive ability, and memory decline are common in patients with schizophrenia, and some patients have cognitive deficits during the stable and convalescent stages of the disease [39]. Another challenge lies in the fact that inpatient schizophrenics in China usually stay at the hospital for a very short time. The average length of hospitalization is also very short in the United States (4–11 days) and European countries (13–52 days). This short duration means less time to intervene in the convalescence of hospitalized schizophrenics [40]. However, studies have shown that early psychological intervention is beneficial for recovery and that schizophrenia inpatients hope to receive more extensive treatment and care, including psychological intervention [41]. To ensure effective implementation of any intervention program, it is necessary to establish a good nurse-patient relationship, improve patient involvement, constantly adjust the program during the intervention, and promote active participation of patients.

The limitations of this study are as follows: First, the sample size is limited. A larger sample size is needed to confirm the effect. Second, the intervention time was short. As this was a hospital intervention, we did our best to complete the study without prolonged hospitalization; however, the long-term effect could not be determined to see if the change related to stigma was maintained after discharge. To test long-term feasibility and effectiveness, long-term interventions and follow-up are needed after patients are discharged from the hospital. Third, we have trained the researchers uniformly; we have blinded the enrolled patients and also blinded the investigators who performed the intervention. Of course, it is still inevitable that there was contamination. Despite consistent training, the different attitudes and communication skills of team members towards the patients may have affected the results, leading to potential bias. Fourth, our sample only included female patients. Lastly, this intervention should be implemented in male patients to observe the effect.

5. Conclusions

PPEW showed obvious benefits compared to conventional treatment and nursing, and it is economical, simple, and feasible to apply. Our findings suggest that this intervention can improve the level of hope, improve coping style, reduce stigma, and improve the quality of life of patients with schizophrenia. This study extends evidence of the benefits of this model of psychological intervention to schizophrenia, supporting its use in combination with standard care and treatment.

6. Implications for Nursing Practice

Since schizophrenia is difficult to cure, patients need long-term medication or even hospitalization. For patients with impaired occupational function, the economic burden to the family is heavy. PPEW is a convenient and low-cost intervention that does not require a specially qualified

therapist and will not increase the financial burden of inpatients. Thus, it is suitable for clinical promotion. However, it is worth exploring how to localize PPEW and develop more standardized, effective, and appropriate intervention programs. Our findings suggest that PPEW should be included in the daily psychological treatment of patients with schizophrenia to enrich localized research on PPEW, improve patients' quality of life, and promote rehabilitation.

Data Availability

The data used to support the findings of this study are available from the corresponding authors upon request.

Disclosure

Ming-Wen Tang and Yin Cheng are the co-first authors.

Conflicts of Interest

The authors declare that there are no conflicts of interest.

Authors' Contributions

Prof. Zhang critically revised the manuscript and guided the whole procedure. Mingwen Tang was responsible for literature screening, data extraction, quality assessment, manuscript writing. Yin Cheng participated in literature screening, data extraction and quality assessment. Shou-juan Liu was responsible for literature review and quality assessment. All authors contributed to the article and approved of the submitted version. Ming-Wen Tang and Yin Cheng contributed equally to this study.

Acknowledgments

This work was supported by the special fund for Health Science and Technology Development of Nanjing Health Commission (number ZKX20030).

Supplementary Materials

Supplementary Table 1: Intention-to-treat population analysis; Comparison of PDD, HHIS, SCSQ, and SQLS scores of the two groups. Supplementary Table 2: Intention-to-treat population analysis; Change in PDD, HHIS, SCSQ, and SQLS scores for the two groups. (*Supplementary Materials*)

References

- [1] Y. Q. Huang, Y. Wang, H. Wang et al., "Prevalence of mental disorders in China: a cross-sectional epidemiological study," *The Lancet Psychiatry*, vol. 6, no. 3, pp. 211–224, 2019.
- [2] O. Díaz-Mandado and J. A. Periañez, "An effective psychological intervention in reducing internalized stigma and improving recovery outcomes in people with severe mental illness," *Psychiatry Research*, vol. 295, Article ID 113635, 2021.
- [3] E. Nikolaou and E. Petkari, "Stigma towards schizophrenia in Cyprus: does studying a mental health related programme

- make a difference?" *International Journal of Social Psychiatry*, vol. 68, 2021.
- [4] F. Rezayat, E. Mohammadi, M. Fallahi-Khoshknab, and V. Sharifi, "Experience and the meaning of stigma in patients with schizophrenia spectrum disorders and their families: a qualitative study," *Japan Journal of Nursing Science*, vol. 16, no. 1, pp. 62–70, 2019.
 - [5] B. Manago, B. A. Pescosolido, and S. Olafsdottir, "Icelandic inclusion, German hesitation and American fear: a cross-cultural comparison of mental-health stigma and the media," *Scand J Public Health*, vol. 47, no. 2, pp. 90–98, 2019.
 - [6] M. W. Tang, Y. H. Zhang, and S. J. Liu, "Stigma of inpatients with schizophrenia at remission phase and its influence factors: a 425-case study," *Journal of Nursing*, vol. 26, no. 14, pp. 43–47, 2019.
 - [7] K. Vrbova, "Positive and negative symptoms in schizophrenia and their relation to depression, anxiety, hope, self-stigma and personality traits - a cross-sectional study," *Neuroendocrinology Letters*, vol. 39, no. 1, pp. 9–18, 2018.
 - [8] H. Y. Wang, S. W. Weng, X. Li, and J. W. Zhang, "Self-illness disorder and sickness resistance in patients with schizophrenia and analysis of influencing factors," *Journal of International Psychiatry*, vol. 45, no. 6, pp. 1001–1004, 2018.
 - [9] H. Chen, J. Xu, Y. Mao, L. Sun, Y. Sun, and Y. Zhou, "Positive coping and resilience as Mediators between negative symptoms and disability among patients with schizophrenia," *Front Psychiatry*, vol. 10, p. 641, 2019.
 - [10] F. Kavak and E. Yilmaz, "The effect of hope on the treatment adherence of schizophrenia patients," *Annals of Medical Research*, vol. 25, p. 1, 2018.
 - [11] X. P. Gu and L. Li, "Research progress on influencing factors and intervention measures of stigma in patients with schizophrenia," *Chinese Nursing Research*, vol. 33, no. 24, pp. 4285–4289, 2019.
 - [12] M. E. Seligman, T. A. Steen, N. Park, and C. Peterson, "Positive psychology progress: empirical validation of interventions," *American Psychologist*, vol. 60, no. 5, pp. 410–421, 2005.
 - [13] W. J. Duan and H. Pu, "Positive psychology interventions: are they selling old wine in a new bottle?" *Advances in Psychological Science*, vol. 26, no. 10, pp. 1831–1843, 2018.
 - [14] J. W. Pennebaker and J. M. Smyth, *Opening up by Writing it Down: How Expressive Writing Improves Health and Eases Emotional Pain*, Guilford Press, New York, NY, USA, Third Edition, 2016.
 - [15] N. Kupeli, G. Chatzitheodorou, N. A. Troop, D. McInnerney, P. Stone, and B. Candy, "Expressive writing as a therapeutic intervention for people with advanced disease: a systematic review," *BMC Palliative Care*, vol. 18, no. 1, p. 65, 2019.
 - [16] M. F. Saldanha and L. J. Barclay, "Finding meaning in unfair experiences: using expressive writing to foster resilience and positive outcomes," *Appl Psychol Health Well Being*, vol. 13, no. 4, pp. 887–905, 2021.
 - [17] R. Soheila, V. Naemeh, and K. H. Reza, "The effect of expressive writing on Postpartum depression and stress of Mothers with a Preterm infant in NICU," *Journal of Clinical Psychology in Medical Settings*, vol. 27, no. 4, 2020.
 - [18] Y. J. Wong, J. Owen, N. T. Gabana et al., "Does gratitude writing improve the mental health of psychotherapy clients? Evidence from a randomized controlled trial," *Psychotherapy Research*, vol. 28, no. 2, pp. 192–202, 2018.
 - [19] M. Çapar and F. Kavak, "Effect of internalized stigma on functional recovery in patients with schizophrenia," *Perspectives in Psychiatric Care*, vol. 55, no. 1, pp. 103–111, 2019.
 - [20] B. Link, L. Yang, J. Phelan, and P. Collins, "Measuring mental illness stigma," *Schizophrenia Bulletin*, vol. 30, pp. 511–541, 2004.
 - [21] H. F. Yin, G. M. Xu, G. F. Yang, and H. J. Tian, "Reliability and validity of the Chinese-version of the perceived Devaluation-discrimination scale in community population," *Chinese Mental Health Journal*, vol. 28, no. 1, pp. 63–69, 2014.
 - [22] K. Herth, "Abbreviated instrument to measure hope: development and psychometric evaluation," *Journal of Advanced Nursing*, vol. 17, no. 10, pp. 1251–1259, 1992.
 - [23] H. P. Zhao and J. Wang, "Social support and hope in patients with hemodialysis," *Chinese Journal of Nursing*, vol. 35, no. 5, pp. 306–308, 2000.
 - [24] Y. N. Xie, "A preliminary study on the reliability and validity of Simplified Coping Style Questionnaire," *Chinese Journal of Clinical Psychology*, no. 2, pp. 114–115, 1998.
 - [25] G. Wilkinson, B. Hesdon, D. Wild et al., "Self-report quality of life measure for people with schizophrenia: the SQLS," *British Journal of Psychiatry*, vol. 177, pp. 42–46, 2000.
 - [26] H. Luo, N. Luo, and Y. Q. Wang, "Reliability and validity of the schizophrenia quality of life scale," *Chinese Mental Health Journal*, vol. 17, no. 03, pp. 172–174, 2003.
 - [27] Z. Öztürk and N. A. Ö. Şahi, "The effect of nursing interventions to instill hope on the internalized stigma, hope, and quality of life levels in patients with schizophrenia," *Perspectives in Psychiatric Care*, vol. 58, no. 1, pp. 364–373, 2022.
 - [28] X. L. Tan, L. Wen, B. X. Yang, X. Q. Wang, Z. W. Wu, and Y. Fang, "Effects of a group self-assertiveness training intervention on stigma of patients with schizophrenia," *Chinese Journal of Nursing*, vol. 53, no. 10, pp. 1168–1173, 2018.
 - [29] E. Yilmaz and F. Kavak, "Effects of mindfulness-based Psychoeducation on the internalized Stigmatization level of patients with schizophrenia," *Clinical Nursing Research*, vol. 29, no. 7, pp. 496–503, 2020.
 - [30] J. Y. Shi and J. X. Kang, "Research status quo of expressive writing in patients with HIV/AIDS," *Chinese General Practice Nursing*, vol. 18, no. 34, pp. 4732–4735, 2020.
 - [31] X. J. Yuan, L. X. Xi, A. J. Chen, and X. B. Meng, "The effect of positive emotions writing on psychological status and quality of life of hospitalized patients with primary liver cancer," *Journal of International Psychiatry*, vol. 45, no. 5, pp. 931–933, 2018.
 - [32] M. Suhr, A. K. Risch, and G. Wilz, "Maintaining mental health through positive writing: effects of a resource diary on depression and emotion regulation," *Journal of Clinical Psychology*, vol. 73, no. 12, pp. 1586–1598, 2017.
 - [33] H. Yang and H. Li, "Training positive Rumination in expressive writing to Enhance psychological adjustment and working memory Updating for Maladaptive Ruminators," *Frontiers in Psychology*, vol. 11, p. 789, 2020.
 - [34] S. Y. Zhang and W. J. Chen, "Application of positive psychology in nursing of stroke patients," *Chinese Nursing Research*, vol. 32, no. 13, pp. 2023–2026, 2018.
 - [35] M. Hernandez, C. Barrio, L. Gaona, P. Helu-Brown, A. Hai, and C. Lim, "Hope and schizophrenia in the Latino family context," *Community Mental Health Journal*, vol. 55, no. 1, pp. 42–50, 2019.
 - [36] C. I. Morgades-Bamba, M. J. Fuster-Ruizdeapodaca, and F. Molero, "Internalized stigma and its impact on schizophrenia quality of life. Psychology," *Health and Medicine*, vol. 24, no. 8, pp. 992–1004, 2019.

- [37] L. Lu, L. N. Zeng, Q. Q. Zong et al., "Quality of life in Chinese patients with schizophrenia: a meta-analysis," *Psychiatry Research*, vol. 268, pp. 392–399, 2018.
- [38] A. Caqueo-Urizar, A. Urzúa, J. Habib et al., "Relationships between social stigma, stigma experience and self-stigma and impaired quality of life in schizophrenia across three Latin-American countries," *European Archives of Psychiatry and Clinical Neuroscience*, vol. 270, no. 5, pp. 513–520, 2020.
- [39] J. Jiang, Z. W. Li, R. Y. Kang, H. F. Yan, and Y. Q. Wu, "Intervention effects of improved social skills training for community reentry on symptoms, cognition and social functioning of community schizophrenia patients," *Chinese General Practice*, vol. 21, no. 4, pp. 475–479, 2021.
- [40] K. A. Sayles, M. Ayoub, and G. I. van Schalkwyk, "Individual therapy on inpatient Units: Flexibility in the face of resistance," *Journal of the American Academy of Child and Adolescent Psychiatry*, vol. 58, no. 9, pp. 837–840, 2019.
- [41] K. Barnicot, C. Michael, and E. Trione, "Psychological interventions for acute psychiatric inpatients with schizophrenia-spectrum disorders: a systematic review and meta-analysis," *Clinical Psychology Review*, vol. 82, Article ID 101929, 2020.