



The effect on mental well-being, life attitude and depression levels of positive psychology program applied to patients diagnosed with depression

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Abstract

Positive psychology (PP) interventions are treatment methods or intentional activities aiming to develop positive feelings, behaviors or cognitions. This study was conducted to determine the effect on mental well-being, life attitude and depression levels of PP program applied to patients diagnosed with depression. The pre, post and follow-up test were conducted as a quasi-experimental study. Patients who diagnosis of depression for at least 6 months constituted the population of the study, and a total of 53 patients, 26 were in the experimental and 27 in the control group. Data were collected using Personal Information Form, Beck Depression Inventory, Warwick-Edinburgh Mental Well-Being Scale and Life Attitude Profile Scale. After the analysis, it has been determined that the online PP program is effective in reducing the level of depression, increasing mental well-being and developing a positive life attitude. It is recommended that the PP program be used by psychiatric nurses in the treatment of depression and the execution of studies comparing online positive psychology practices with face-to-face positive psychology practices are recommended.

Keywords Life attitude · Major depression · Mental well-being · Nursing · Positive psychology

Introduction

Major depressive disorder (MDD) is the most common psychiatric disorder that significantly reduces the quality of life (Burns, 2015). It is thought that approximately 280 million people in the world may be depressed (WHO-Depression, 2021). MDD is a mental condition that starts at an early age and impairs the functionality of the individual (Lam, 2018). By 2030, MDD is thought to be the leading cause of the disease burden globally (Mental Health Action Plan, 2013-2020). On the other hand, depression can cause thoughts of death and suicide (Kleinman, 2013; Keck, 2010).

Additionally, failure to treat depression is costly. For such reasons, one of the main problems that WHO focuses on in terms of mental health is taking precautions regarding depression and suicide (WHO-Depression, 2021).

Positive psychology was developed by Seligman et al. (2006) (Seligman et al., 2006). There are three main points that positive psychology focuses on. These are satisfaction (enjoyment with positive emotions), participation (using your strengths effectively), and meaning (being part of something bigger than yourself) (Leimon, 2009). Seligman (2011) further expanded these three dimensions and proposed a fivefold structure for mental health and happiness. These five structures are; positive emotions, engagement, relationships, meaning, and accomplishment. He named this quintuple structure the PERMA model (Seligman, 2011).

Symptoms such as lack of pleasure, decreased appetite and weight loss, sleep problems, psychomotor agitation or retardation, decreased energy, fatigue, feeling of worthlessness, low self-esteem, thoughts of guilt, difficulty in concentration, and suicidal thoughts may occur in depression (Gilbert, 2009). As can be seen, there is a decrease in positive emotions and an increase in negative emotions in depression.

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Positive psychology interventions (PPIs), developed by Seligman et al. (2006), are based on the theory that depression can be effectively treated not only by focusing on negative symptoms, but also by experiencing more positive emotions, revealing and enhancing individuals' strengths, and adding meaning to their lives. (Seligman et al., 2006). According to Sin and Lyubomirsky (2009), PPIs are "therapeutic methods or intentional activities aimed at improving positive emotions, positive behaviors, or positive cognitions" (Sin & Lyubomirsky, 2009). Increasing these positive resources in depression makes it possible to effectively cope with negative symptoms and to take precautions against future recurrences (Seligman et al. 2006). Symptoms of depression often include a lack of positive emotion, a lack of participation, and a lack of meaning in life, but these are often seen as consequences of depression. Seligman et al. (2006) suggest that these may be the cause of depression, and therefore, developing positive emotion, participation, and meaning may alleviate depression (Seligman et al., 2006).

The most important feature of PPIs is to reveal positive emotions, thoughts, and behaviors among people. In this direction, some exercises (gratitude, enjoyment, etc.) have been developed to reveal these thoughts, feelings, and behaviors (Eryilmaz, 2017). The idea behind PPIs is to increase well-being and build up the individual's positive resources, often automatically weakening or eliminating many factors that can cause depression to persist, such as pessimism or low self-esteem (Akhtar, 2012).

Rapid changes and developments in information and communication technologies have led to serious changes in the needs of individuals in the fields of health, as in many other fields. This change has been effective in the creation of new service areas such as telehealth and telenursing, which are methods supported by technology (Işık & Güler, 2010; Pazar et al., 2015; Ogueji et al., 2022). It is thought that it would be advantageous to reduce depressive symptoms by interviewing patients at home or at any place or time convenient for them through online channels. Thus, it is thought that society can access practices of positive psychology in an economical, fast, effective, and widespread way and a positive contribution can be made directly to coping with depression. It is extremely critical to provide effective treatment because depression is prevalent (4.6% in Turkey, according to 2019 Global Health Data) (Turkey, GHD, 2022), reduces quality of life and causes suicide. In this respect, it is important to examine whether or how the positive psychology program can be used as an evidence-based practice in the treatment of depression. In addition, positive psychology approaches have been shown to play a vital role in maintaining mental health in challenging times, and there are studies that suggest it is important to include when examining

the psychological consequences of COVID-19 (Waters et al., 2021). In case of re-experiencing such pandemic processes, online meetings may be preferred. It is considered important to evaluate the effectiveness of these meetings. Although there are studies in the world showing that positive psychology interventions decrease depression and increase well-being (Sin & Lyubomirsky, 2009; Hanson, 2019), no experimental study has been found in this context in Turkey as far as has been reached. The study is the first in this regard at the national and international level in terms of applying online positive psychology interventions to depression patients. The aim of the study is to determine the effect of the positive psychology program applied to depression patients on mental well-being, life attitudes, and depression levels.

Materials and methods

The research is quasi-experimental research with a pre-test, post-test, follow-up-test, and control group.

Participants

The population of the study consisted of patients who were treated with a diagnosis of MDD according to DSM-5 in the psychiatry outpatient clinic of a research and practice hospital at the time of the study. This study was conducted during the COVID-19 pandemic. The criteria for inclusion in the study were having no obstacle in communication, being over the age of 18, being literate, being followed up with a diagnosis of MDD according to the DSM-5 criteria, having been receiving treatment for depression for at least 6 months, and having participated in no positive psychology program for the disease in the last 5 years. Exclusion criteria were being diagnosed with another comorbid mental disorder, having mental retardation or dementia, which makes it impossible to cooperate, having psychotic symptoms in addition to depression, being illiterate, and receiving inpatient treatment. In the present study, a prior power analysis was performed by using the G Power program in calculating the sample size. Previous studies were reviewed (Button et al. 2015) and the expected confidence intervals of the "Beck Depression Inventory" were determined, while the confidence interval was $\alpha = 0.05$, the power of the test ($1 - \beta$) was 0.95, and the effect size was $d = 1.0340835$, and a total of 52 patients were calculated, 26 participants for the experimental group, 26 participants for the control group. The patients were assigned to the experimental and control groups according to the order in which they came to the outpatient clinic. Without using a sampling method, 61 patients with depression who met the inclusion criteria, volunteered to

participate in the study, and applied to the clinic at the data collection date of the study constituted the sample of the study. Furthermore, 30 depressive patients were included in the experimental group and the other 31 patients were included in the control group. However, the unsuitability of the home environment for the online interview with a patient in the experimental group could not be maintained, psychotic features were added to the depression table of one patient, two patients did not want to continue the interview, and the study was completed with 53 patients due to reasons such as one patient in the control group did not want to continue with the study and three patients could not be reached through their contact information.

Measures

Personal Information Form (PIF)

The personal information form prepared by the researcher (gender, age, educational level, marital status, employment status, cohabitation, history of hospitalization, suicidal ideation or attempt, and drug use) consists of a total of 10 questions.

Beck Depression Inventory (BDI)

The BDI was developed by Beck et al. (1979) and intended to measure somatic, emotional, cognitive, and motivational symptoms seen in depression. There are four options in each item of the BDI, which consists of 21 items. Each item gets a score between 0 and 3. By summing these scores, the depression score is obtained. The highest score that can be obtained is 63, and a high total score indicates a high level of depression. The BDI was adapted to Turkish society by Hisli (1988, 1989a, b). In the validity and reliability study of the BDI, the Cronbach's α reliability coefficient was determined as 0.80. The Cronbach's α reliability coefficient of BDI was found to be 0.94 in the present study.

Warwick-Edinburgh Mental Well-being Scale (WEMWBS)

It was developed by Tennant et al. (2007) to measure the mental well-being of individuals. The adaptation of the scale to Turkish society was made by Keldal in 2015. The WEMWBS consists of 14 items and deals with positive mental health levels of individuals, including psychological well-being and subjective well-being.

The scale is in the form of 5-point Likert type and a minimum of 14 and a maximum of 70 points can be obtained from the scale. All items on the scale are positive. An increase in the score obtained from the scale indicates that the level of mental well-being increases. The Cronbach's Alpha reliability coefficient of the scale was found 0.89 (Keldal, 2015). The Chronbach's Alpha reliability coefficient of WEMWBS in the present study was found to be 0.97.

Life Attitude Profile-Revised Scale (LAP-R scale)

The LAP-R is a multidimensional life meaning scale developed to explore life motivation, the purpose and meaning of life. The scale was developed by Reker (1992). The scale was adapted to Turkish society by Erci (2008). The scale has 4 sub-dimensions: "Purpose, Coherence, Choice/Responsibleness, and Goal Seeking". The scale is in the form of 7-point Likert type. The maximum total score on this scale is 210 and the minimum score is 30. As the score increases, the meaning in life and positive attitude towards life also increase (Erci, 2008). In the current study, the Chronbach's alpha reliability coefficient was determined as 0.96.

Research process

Pre-tests (PIF, BDI, WEMWBS, and LAP-R Scale) were applied to the patients in the experimental and control groups included in the study before the program. In the first interview with the patients in the experimental group, information about the program was given and the days and hours of the program sessions were determined. The program was applied to the patients in the experimental group once a week for eight weeks. The program was implemented by the researcher (RK) who received training in positive psychology (received a certificate in positive psychology), with each session of 40–45 min. Sessions were held in the form of individual interviews. After the first face-to-face interview with the patients in the experimental group in which the program was applied, the interviews were continued in the form of online interviews (zoom, WhatsApp video call, etc.) using free software. Before the session, patients were called by phone and reminded of the time of the program. Post-tests of the experimental group (BDI, WEMWBS, and LAP-R Scale) were administered immediately after the program sessions were completed. In addition, follow-up tests (BDI, WEMWBS, and LAP-R Scale) were administered one month after the program was completed. In the control group, no intervention was made after the pre-test was applied; two months later,

the post-tests and one month after the post-tests, follow-up tests were applied. The tests were applied in the form of Google Forms. The positive psychology program was applied in addition to the routine clinical treatment of the patients in the experimental group, and the patients in the control group continued to receive routine clinical treatment. At the end of the study, the training guide prepared according to the positive psychology program was shared with the patients in the control group in the digital environment.

Structure of the positive psychology program

The program emphasized the importance of using positive emotions, personal strengths, and meaningful relationships to promote relief from depression, distress, and life problems (Carr, 2016). From the beginning, patients were asked to introduce themselves by telling the real-life story that best presented them, and real and positive relationships were established. Individuals were asked to identify their strengths, and they were trained to find practical ways to use these strengths more frequently in the fields of work, love, play, friendship, and parenting, and various applications were made (Seligman et al., 2006). The program started with an orientation on how the absence of positive resources leads to depression. Positive psychology concepts are discussed (such as satisfaction, participation, and meaning). Participants were informed about the development of personal strengths and positive emotions and their impact on well-being. The effects of accumulating anger and pain on individuals' depression and well-being were mentioned. The importance of forgiveness, appreciation, and gratitude in developing positive emotions was discussed. Participants were encouraged to gratification rather than the hedonic cycle. The place of hope and optimism in depression was mentioned. The importance of recognizing the strengths of family members was discussed. Ways to serve a greater purpose than oneself and to find meaning in life were discussed. Various assignments were used in the sessions, and feedback was received from these assignments and evaluated (Seligman et al., 2006) (Table 1).

Data analysis

The data of the study was analyzed in SPSS (Statistical Package for Social Sciences) 26 package program. In the analysis of the data, percentage distribution, mean and standard deviation, chi-square, t-test in dependent and independent groups, and variance analysis in repeated measurements, post hoc: Bonferroni method were used and the level of $p < 0.05$ was accepted as significant.

Results

The study included 53 participants, 26 of which were allocated to the experimental group, and 27 of them were allocated to the control group. The sociodemographic characteristics of the participants are presented in Table 2. No statistically significant difference was observed between the experimental and control groups, except for the time of diagnosis. It was seen that both groups were homogeneous in terms of these characteristics (Table 2).

When the BDI, WEMWBS, and LAP-R Scale pre-test, post-test, and follow-up test total mean scores of the experimental and control groups were examined between the groups, in the pre-test, the total mean score of the subscale of the purpose of those in the experimental group was lower than the total mean score of the participants in the control group ($p = 0.036$; $p < 0.05$). No statistically significant differences were observed between the other pre-test scores of the experimental and control groups ($p > 0.05$). In the post-test results, it was observed that the BDI ($p < 0.001$) total mean score of the participants in the experimental group was lower than the control group ($p < 0.05$). The experimental group's total mean scores from the WEMWBS ($p < 0.001$), the LAP-R's subscales of purpose ($p < 0.001$), coherence ($p = 0.001$), choice/responsibleness ($p < 0.001$), goal seeking ($p < 0.001$), and total LAP-R Scale ($p < 0.001$) were found to be significantly higher than the control group ($p < 0.05$). Considering the follow-up test results, it was determined that the BDI ($p < 0.001$) total mean scores of the participants in the experimental group were lower than the BDI total mean scores of the participants in the control group ($p < 0.05$). It was determined that the participants in the experimental group had higher total mean scores in the WEMWBS ($p < 0.001$), the LAP-R's subscales of purpose ($p < 0.001$), coherence ($p = 0.002$), choice/responsibleness ($p < 0.001$), and the total LAP-R Scale ($p = 0.003$) than the participants in the control group ($p < 0.05$). No significant difference was observed between the experimental and control groups' total mean scores on the subscale of goal-seeking ($p = 0.292$; $p > 0.05$) (Table 3).

The experimental group's within-group comparisons of the total mean scores from the pre-test, post-test, and follow-up test BDI, WEMWBS, and LAP-R Scale are given in Table 4. The difference between the pre-test, post-test, and follow-up tests' total mean scores from the BDI, WEMWBS, and LAP-R Scale of the patients in the experimental group was found to be statistically significant ($p < 0.05$). In the Bonferroni correction made to determine which group caused this difference, a significant difference was found between the BDI, WEMWBS, LAP-R Scale's pre-test, post-test, and follow-up test total mean scores ($p < 0.001$).

Table 1 Content of the positive psychology program

Sessions	Practices	PERMA perspective
1st Session: Depresyon nedir, pozitif kaynaklardan yoksunluğun depresyon üzerine etkisi Recognizing depression Understanding the effect of deprivation of positive resources on depression Introducing the importance of positive psychology practices in depression	Positive Beginning: Discussion of the practice skills within and after the program	Positive emotions
2nd Session: Identifying personal strengths Identifying individual strengths Supporting and developing individual strengths	Strengths of the character: Traits of the strong character were determined, and it is planned to use traits of the strong character.	Engagement Accomplishment
3rd Session: Developing positive emotions in depression Supporting and developing positive emotions Discuss the role of good and bad memories in the persistence of the symptoms of depression	Positive emotions: Before going to sleep, three good things that happened during the day were written down. How these happened was remembered and visualized in the mind. Participants wrote down how it felt to remember these events. The table of positive and negative propositions about the person was filled. The effects were discussed.	Positive emotions
4th Session: forgiveness, gratitude Understanding the effect of forgiveness on depression Maintaining the feelings of gratitude and appreciation	Forgiveness: The letter of forgiveness was written. The Letter of Gratitude: it was written to someone whom the participant had not been able to thank appropriately before. The Diary of Gratitude: Participants wrote down three good things to be thankful for each night.	Positive relationships Positive emotions
5th Session: Satisfaction, optimism, and hope rather than maximization Discovering ways of contentment rather than trying to reach the maximum Understanding the impact of adopting an optimistic or hopeful perspective on depression	When one door shuts another open: The individual revealed three doors that closed in his face and opened to him at the same time. Questions about hope were asked, and the best-case scenario was considered.	Positive emotions
6th Session: Love and commitment, family tree of strengths Ensuring that love and commitment are experienced in an effective and constructive way Identifying family members' strengths	Active constructive response: The participant discovered the strengths of other people important to him, and at the same time applied active constructive responses.	Positive relationships
7th Session: Pleasure, meaning in life Discovering ways to enjoy life by avoiding hedonic adaptation Increasing meaning in life	Examination of the past sources of enjoyment and enjoyment diary: The participant made suggestions for performing previously pleasurable activities and kept an enjoyment diary. Slow down and enjoy: The participant chose one slowing down, savoring technique that fitted his personality and living conditions. The gift of time: The participant planned to give the gift of time by doing something that used his masterpiece strengths.	Meaning Positive emotions Engagement
8th Session: Living life to the fullest Understanding that the lack of positive emotions, the lack of the use of strengths, and the lack of meaningful relationships with the environment cause an empty life and distress Ending the program, evaluating sessions, and getting feedback	Creating an action plan for a full life: The individual created an action plan. It was planned to continue activities such as forgiveness and gratitude. Program terminated, and feedback received.	Meaning Accomplishment

Table 2 Comparison of patients in the experimental and control groups by descriptive characteristics

	Experimental (<i>n</i> =26)	Control (<i>n</i> =27)	Total (<i>n</i> =53)	χ^2	<i>p</i>
	<i>n</i> (%)	<i>n</i> (%)	<i>n</i> (%)		
Gender					
Female	20 (76.9)	21 (77.8)	41 (77.4)	0.006	0.941
Male	6 (23.1)	6 (22.2)	12 (22.6)		
Age					
18–25	11 (42.3)	6 (22.2)	17 (32.1)	4.789	0.310
26–35	7 (26.9)	9 (33.3)	16 (30.2)		
36–45	6 (23.1)	8 (29.6)	14 (26.4)		
46–55	1 (3.8)	4 (14.8)	5 (9.4)		
55↑	1 (3.8)	-	1 (1.9)		
Education Status					
Primary School	5 (19.2)	5 (18.5)	10 (18.9)	0.603	0.896
Middle School	3 (11.5)	2 (7.4)	5 (9.4)		
High School	5 (19.2)	4 (14.8)	9 (17.0)		
University and Above	13 (50.0)	16 (59.3)	29 (54.7)		
Marital Status					
Married	13 (50)	12 (44.4)	25 (47.2)	0.688	0.709
Divorced	2 (7.7)	4 (14.8)	6 (11.3)		
Single	11 (42.3)	11 (40.7)	22 (41.5)		
Working Status					
Employee	8 (30.8)	11 (40.7)	19 (35.8)	1.113	0.892
Housewife	12 (46.2)	10 (37.0)	22 (41.5)		
Unemployed	2 (7.7)	1 (3.7)	3 (5.7)		
Retired	1 (3.8)	1 (3.7)	2 (3.8)		
Student	3 (11.5)	4 (14.8)	7 (13.2)		
Who do you live with?					
Spouse and children	13 (50)	13 (48.1)	26 (49.1)	3.077	0.215
Mother father sibling	12 (46.2)	9 (33.3)	21 (39.6)		
Other	1 (3.8)	5 (18.5)	6 (11.3)		
Time to diagnose					
6 months – 1 year	6 (23.1)	11 (40.7)	17 (32.1)	3.293	0.349
13 months – 5 year	13 (50)	12 (44.4)	25 (47.2)		
61 months – 10 year	4 (15.4)	1 (3.7)	5 (9.4)		
10 ↑	3 (11.5)	3 (11.1)	6 (11.3)		
Hospitalization due to current illness					
No hospitalization	22 (84.6)	26 (96.3)	48 (90.6)	2.315	0.314
Once	3 (11.5)	1 (3.7)	4 (7.5)		
Twice	1 (3.8)	-	1 (1.9)		
Suicide history					
No	13 (50)	18 (66.7)	31 (58.5)	3.152	0.207
Suicide attempt	8 (30.8)	3 (11.1)	11 (20.8)		
Suicidal ideation	5 (19.2)	6 (22.2)	11 (20.8)		
Evaluation of drug use (last 6 months)					
Completely incompatible with treatment	1 (3.8)	4 (14.8)	5 (9.4)	2.145	0.543
There are significant disruptions in adherence to treatment	4 (15.4)	3 (11.1)	7 (13.2)		
There are some delays in drug compliance	6 (23.1)	7 (25.9)	13 (24.5)		
Drug use and compliance with treatment	15 (57.7)	13 (48.1)	28 (52.8)		

Table 2 (continued)

	Experimental (<i>n</i> =26)	Control (<i>n</i> =27)	Total (<i>n</i> =53)	Z	p
	X ± SD	X ± SD	X ± SD		
Age	31.0 ± 10.0	33.6 ± 10.1	32.3 ± 10.0	-1.034	0.301
Time to diagnosis	4.8 ± 4.9	3.4 ± 4.6	4.1 ± 4.8	-1.965	0.049*

* $p < 0.05$, ** $p < 0.001$, χ^2 : Ki-kare ve Fisher exact test, z: Mann Whitney U test

As a result of the examination, the differences between the pre-test and post-test scores of the participants in the experimental group in the p^1 column were examined. The experimental group's post-test BDI total mean score was lower than the pre-test BDI total mean scores ($p < 0.001$); however, the experimental group's post-test WEMWBS ($p < 0.001$), the LAP-R's subscales of Purpose ($p < 0.001$), Coherence ($p < 0.001$), Choice/Responsibility ($p < 0.001$), Goal Seeking ($p < 0.001$), and the total LAP-R Scale ($p < 0.001$) total mean scores were found to be significantly higher ($p < 0.05$).

In the p^2 column, the differences between the pre-test and follow-up test scores of the participants in the experimental group were examined. The experimental group's follow-up test BDI total mean score was significantly lower compared to the pre-test ($p < 0.001$); however, the follow-up test WEMWBS ($p < 0.001$), the LAP-R's subscales of purpose ($p < 0.001$), coherence ($p < 0.001$), choice/responsibility ($p < 0.001$), and the total LAP-R Scale ($p < 0.001$) total mean scores were significantly higher compared to the pre-test ($p < 0.05$). In the total mean score of the LAP-R's subscale of Goal Seeking, the pre-test and post-test results were found to be homogeneous ($p = NA$).

In the p^3 column, the differences between the post-test and follow-up test results of the participants in the experimental group were examined. As a result of the examination, it was determined that the post-test total mean scores of the experimental group from the total LAP-R Scale ($p = 0.002$) and its subscale of goal seeking ($p < 0.001$) were significantly higher compared to the follow-up test ($p < 0.05$). No significant difference was observed between the post-test and the follow-up test results of the other scales ($p > 0.05$) (Table 4).

The within-group comparisons of the pre-test, post-test, and follow-up test BDI, WEMWBS, and LAP-R Scale total mean scores of the control group are presented in Table 5. The difference between the pre-test, post-test, and follow-up test total mean scores from the BDI, WEMWBS, and LAP-R Scale of the patients in the control group was not statistically significant ($p > 0.05$). In the Bonferroni correction made to determine which group caused this difference, no significant difference was found between the pre-test, post-test, and follow-up test BDI, WEMWBS, and LAP-R Scale total mean scores ($p > 0.05$) (Table 5).

Discussion

The most important contribution of positive psychology to practice is 'Positive Psychology Interventions'. (Sin & Lyubomirsky, 2009). Bolier et al. (2013a, b) suggested that interventions should be developed in accordance with the theoretical tradition of positive psychology (Bolier et al., 2013a). Parks and Biswas-Diener (2013) added that in order for an intervention to be considered as a PPI, there must be empirical evidence for the effectiveness of that intervention (Hendriks et al., 2020). As a result of their research, Lopez-Gomez et al. (2017a, b) stated that more research is needed on the applicability of PPI in clinical settings in order to offer a wider variety of acceptable and appropriate treatments for depression patients (Lopez-Gomez et al., 2017a). It has been determined that there is a deficiency in the national literature on this subject. In the international literature, it has been seen that the effects of PPI on depression and/or well-being have been examined by applying it to different sample groups (such as employees and students) as programs with internet-based modules (not as online live interviews) (Yuan et al., 2014; Chilver & Gatt, 2022; Zhang et al., 2020). However, studies examining the effectiveness of a positive psychology program on depression, well-being, and life attitude in individuals diagnosed with depression in the form of online live interviews could not be found. Therefore, the results of the study were discussed in this direction.

In this study, before the application of the positive psychology program, the BDI total mean score of the patients in the experimental group was 30.5 ± 12.2 , and 23.3 ± 14.2 in the control group. In line with the analysis, it can be said that the depression scores of the patients in this study were quite high before the positive psychology program. When the pre-test, post-test, and follow-up test BDI total mean scores of the experimental group that received the positive psychology program and the control group that did not receive the positive psychology program were compared between the groups, it was determined that there was no significant difference in depression levels between the experimental and control groups before the positive psychology program. After the program, when the post-test BDI total mean scores of the experimental and control groups were compared between the groups, a significant decrease was

Table 3 Comparison of BDI, WEMWBS and LAP-R the pre-test, post-test, follow-up test mean scores of the experimental and control group ($n = 53$)

	Experimental ($n = 26$)	Control ($n = 27$)	Test value and significance ***
	$X \pm SD$	$X \pm SD$	
Pre Test			
BDI	30.5 ± 12.2	23.3 ± 14.2	$t = 1.967$ $p = 0.055$
WEMWBS	30.0 ± 13.1	37.1 ± 15.9	$t = -1.756$ $p = 0.085$
Purpose	24.2 ± 12.7	31.7 ± 12.5	$t = -2.159$ $p = 0.036^*$
Coherence	27.4 ± 8.9	30.7 ± 8.9	$t = -1.335$ $p = 0.188$
Choice/Responsibleness	33.7 ± 11.5	38.3 ± 11.3	$t = -1.467$ $p = 0.148$
Goal Seeking	26.9 ± 10.6	30.5 ± 13.2	$t = -1.065$ $p = 0.292$
LAP-R	112.2 ± 38.5	131.1 ± 43.2	$t = -1.677$ $p = 0.100$
Post Test			
BDI	9.6 ± 5.4	25.3 ± 13.2	$t = -5.642$ $p < 0.001^{**}$
WEMWBS	48.9 ± 8.4	37.6 ± 9.7	$t = 4.542$ $p < 0.001^{**}$
Purpose	40.3 ± 7.9	29.1 ± 8.4	$t = 4.979$ $p < 0.001^{**}$
Coherence	35.6 ± 5.7	28.6 ± 8.2	$t = 3.603$ $p = 0.001^{**}$
Choice/Responsibleness	44.5 ± 4.9	35.7 ± 8.6	$t = 4.565$ $p < 0.001^{**}$
Goal Seeking	38.9 ± 5.2	29.7 ± 11.6	$t = 3.731$ $p < 0.001^{**}$
LAP-R	159.3 ± 21.5	123.1 ± 31.9	$t = 4.829$ $p < 0.001^{**}$
Follow Up Test			
BDI	11.0 ± 8.4	24.1 ± 1.9	$t = -4.596$ $p < 0.001^{**}$
WEMWBS	48.9 ± 9.5	35.1 ± 10.4	$t = 5.022$ $p < 0.001^{**}$
Purpose	40.7 ± 7.2	28.9 ± 9.2	$t = 5.198$ $p < 0.001^{**}$
Coherence	36.4 ± 6.2	29.9 ± 8.3	$t = 3.181$ $p = 0.002^{**}$
Choice/Responsibleness	44.5 ± 6.8	36.1 ± 7.7	$t = 4.206$ $p < 0.001^{**}$
Goal Seeking	26.9 ± 10.6	30.4 ± 13.2	$t = -1.065$ $p = 0.292$
LAP-R	148.5 ± 24.9	125.3 ± 29.1	$t = 3.116$ $p = 0.003^{**}$

* $p < 0.05$, ** $p < 0.001$, ***Independent sample t-test; BDI: Beck Depression Inventory, WEMWBS: Warwick-Edinburgh Mental Well-being Scale, LAP-R: Life Attitude Profile-Revised Scale

observed in the depression level of the experimental group compared to the control group. It was determined that this significant decrease continued in the comparison of the follow-up test BDI total mean scores of the experimental and control groups one month after the end of the program.

In this study, when the within-group comparisons of the experimental group were examined, it was observed that there was a decrease in the post-test and follow-up test BDI total mean scores compared to the pre-test. When the within-group comparisons of the control group were examined, no

Table 4 Intra-group comparison of the experimental group’s the pre-test, post-test, follow-up BDI, WEMWBS and LAP-R scores ($n = 26$)

	Pre test X ± SD	Post test X ± SD	Follow up test X ± SD	p^1	p^2	p^3	Test value and significance ***
BDI	30.5 ± 12.2	9.6 ± 5.4	11.0 ± 8.4	< 0.001**	< 0.001**	0.255	$p < 0.001^{**}$ F = 62.58
WEMWBS	30.0 ± 13.1	48.9 ± 8.4	48.9 ± 9.5	< 0.001**	< 0.001**	0.975	$p < 0.001^{**}$ F = 47.07
Purpose	24.2 ± 12.7	40.3 ± 7.9	40.7 ± 7.2	< 0.001**	< 0.001**	0.706	$p < 0.001^{**}$ F = 52.87
Coherence	27.4 ± 8.9	35.6 ± 5.7	36.4 ± 6.2	< 0.001**	< 0.001**	0.371	$p < 0.001^{**}$ F = 41.81
Choice/Responsibleness	33.7 ± 11.5	44.5 ± 4.9	44.5 ± 6.8	< 0.001**	< 0.001**	0.969	$p < 0.001^{**}$ F = 25.44
Goal Seeking	26.9 ± 10.6	38.9 ± 5.2	26.9 ± 10.6	< 0.001**	NA	< 0.001**	$p < 0.001^{**}$ F = 50.10
LAP-R	112.2 ± 38.5	159.3 ± 21.5	148.5 ± 24.9	< 0.001**	< 0.001**	0.002**	$p < 0.001^{**}$ F = 52.60

* $p < 0,05$, ** $p < 0,001$, p^1 : Pre test- post test, p^2 : Pre test-follow-up test, p^3 : post test-follow-up test, NA: p- value account could not be calculated. *** Analysis of variance in repeated measurements (post hoc: Bonferroni Method)

Table 5 Intra-group comparison of the control group’s the pre-test, post-test, follow-up BDI, WEMWBS and LAP-R scores ($n = 27$)

	Pre test X ± SD	Post test X ± SD	Follow up test X ± SD	p^1	p^2	p^3	Test value and significance ***
BDI	23.3 ± 14.2	25.3 ± 13.2	24.1 ± 11.9	0.317	0.679	0.334	$p = 0.480$ F = 0.68
WEMWBS	37.1 ± 15.9	37.6 ± 9.7	35.2 ± 10.4	0.859	0.564	0.183	$p = 0.570$ F = 0.45
Purpose	31.7 ± 12.5	29.1 ± 8.4	28.9 ± 9.2	0.232	0.257	0.866	$p = 0.316$ F = 1.15
Coherence	30.7 ± 8.9	28.6 ± 8.2	29.9 ± 8.3	0.189	0.679	0.185	$p = 0.348$ F = 1.02
Choice/Responsibleness	38.3 ± 11.3	35.7 ± 8.6	36.1 ± 7.7	0.191	0.189	0.805	$p = 0.264$ F = 1.36
Goal Seeking	30.4 ± 13.2	29.7 ± 11.6	30.4 ± 13.2	0.734	NA	0.734	$p = 0.734$ F = 0.11
LAP-R	131.1 ± 43.2	123.1 ± 31.9	125.3 ± 29.1	0.245	0.275	0.573	$p = 0.307$ F = 1.17

* $p < 0,05$, ** $p < 0,001$, p^1 : Pre test- post test, p^2 : Pre test-follow-up test, p^3 : post test-follow-up test, NA: p- value account could not be calculated. *** Analysis of variance in repeated measurements (post hoc: Bonferroni Method)

decrease was found in the total mean scores of the post-test and follow-up test BDI compared to the pre-test. The significant decrease in the experimental group’s BDI total mean scores in the post-test and follow-up test indicates that the positive psychology program applied to patients with depression was successful.

In meta-analysis studies conducted to evaluate the effectiveness of positive psychology interventions, it was determined that interventions reduced depressive symptoms (Sin & Lyubomirsky, 2009; Bolier et al., 2013a; Pan et al., 2022). In addition, the results of studies in the literature presented

that it would be good if the researchers offered positive psychology interventions as individual (versus group) therapy and for relatively longer durations (Sin & Lyubomirsky, 2009; Bolier et al., 2013a; Pan et al., 2022). In the present study, sessions of the positive psychology program were applied online individually. It was thought that online individual interviews provide an opportunity for patients to express themselves more easily.

In the literature, studies that included individuals with symptoms of depression or patients diagnosed with major depression and dysthymia were reported to reduce

depression levels with positive psychology interventions (Seligman et al., 2006; Carr et al. 2017; Hanson 2019; Lopez-Gomez et al., 2017a, b, Furchtlehner et al., 2020).

Shapira and Mongrain (2010) applied a program that included positive psychology practices such as self-compassion and optimism to individuals in their study, which included individuals with depressive characteristics. As a result of the study, a decrease in depressive symptoms was observed (Shapira & Mongrain, 2010). Again, Cheavens et al. (2006) measured the effectiveness of hope therapy on 32 participants with various mental disorders (such as Major Depression, Dysthymia, Remission MD, and Single-episode MD) and determined that individuals in the intervention group had a decrease in depressive symptoms compared to individuals in the control group (Cheavens et al., 2006). It is known that individuals have a negative view of the future when they are depressed. In our study, patients were asked to write about how they see themselves in the best possible place in the future, with applications on optimism and hope (thinking about the best scenario, asking questions about hope). Immediately after the exercise, patients reported that although the activity was easy to do, it provided them with serious benefits. It was observed that they continued this activity in the follow-up phase.

In studies on the effectiveness of positive psychology interventions in different populations with mild and moderate depressive symptoms, it was reported that interventions significantly reduced depression (Bolier et al., 2013b; Hernandez et al., 2018; Taghvaenia & Zonobitar, 2020; Gao et al., 2021).

Freedman and Enright (1996) investigated the effectiveness of forgiveness therapy in their study. As a result of the research, they found a significant decrease in the symptoms of depression in the individuals (Freedman & Enright, 1996). Our research sessions also focused on the subject of ‘forgiveness’. In our exercise on forgiveness (forgiveness letter), we received feedback from some patients that they had some difficulty in starting and completing the exercise. Furthermore, they reported that it was difficult to express their thoughts on both the issues they could not forgive themselves and the issues related to those around them. However, they stated that they experienced serious ‘relaxation’ after the practice. Feelings of guilt can arise in depression. In line with the feedback received from the patients participating in the study, it is thought that the exercise of forgiveness contributes to revealing and managing “the feelings of guilt”.

When the effects of nine strength-based positive psychology interventions on well-being and depression by Gander et al. (2013) were examined within the framework of an internet-based randomized placebo-controlled study, it was stated that in a population of 622 adult individuals, all of the interventions reduced the level of depression (Gander et al., 2013). In our study, it is thought that the practices performed

to determine the strengths of family members contribute to the regulation of partner relations in particular. Again, it has been seen that the identification of personal strengths and the exercise of using these characteristics are beneficial in the management of feelings of worthlessness that occur in depression.

According to the results obtained as a result of the research, it has been seen that the positive psychology program can be used as an effective method in the treatment of depression. The ideas behind positive psychology interventions can be listed as increasing well-being, building positive resources for the individual, and weakening or eliminating many factors that can cause depression to persist, such as pessimism or low self-esteem (Akhtar, 2012). These interventions are based on Seligman’s conceptualizations of happiness and well-being (Wood & Johnson, 2021).

In this study, before the positive psychology program, the WEMWBS total mean score of the patients in the experimental group was 30.0 ± 13.1 and 37.1 ± 15.9 in the control group. Before the program, in the pre-test, when the experimental and control groups were compared between the groups, no significant difference was found in terms of mental well-being. After the program, when the experimental and control groups were compared between the groups, the mental well-being level of the experimental group was found to be significantly higher than the control group. It was determined that this difference persisted in the follow-up test performed one month later. In the within-group comparisons of the patients in the experimental group, significant differences were found in the pre-test, post-test, and follow-up tests. No significant differences were found in the pre-test, post-test, and follow-up tests when the patients in the control group were compared within the group.

In the study of Shapira and Mongrain (2010), in which they applied positive psychology interventions (self-compassion, optimism) and included individuals with depressive symptoms, an increase in well-being was observed as well as a decrease in depressive symptoms (Shapira & Mongrain, 2010). In the systematic review and meta-analysis studies conducted by Carr et al. (2021) on the effectiveness of positive psychology interventions, positive psychology interventions were reported to have small to moderate significant effects on well-being ($g = 0.39$), strengths ($g = 0.46$), quality of life ($g = 0.48$), depression ($g = -0.39$) and anxiety ($g = -0.62$) (Carr et al., 2021). Additionally, according to the meta-analysis results of Bolier et al. (2013a, b), positive psychology interventions were effective in increasing subjective and psychological well-being (Bolier et al., 2013a). In the same meta-analysis studies of Sin and Lyubomirsky (2009), it was stated that positive psychology interventions significantly increased well-being (Sin & Lyubomirsky, 2009). In the literature, it is possible to come across studies indicating that PPI increases the well-being of patients in studies

including patients with depression symptoms or diagnosed with major depression and dysthymia (Asgharipoor et al., 2012; Lopez-Gomez et al., 2017b).

In the same study, Freedman and Enright (1996) stated that there was an increase in the well-being of individuals as a result of the application of forgiveness therapy (Freedman & Enright, 1996).

In the literature, there are studies showing that when depressive symptoms increase, well-being decreases (Ahmed et al., 2020). Our study has presented that positive psychology program has increased mental well-being. Well-being includes many factors such as contentment, life satisfaction, and positive emotions. Factors related to well-being were discussed in our positive psychology program sessions (e.g. the subject of gratitude). People who are more grateful for life appreciate both their self and positive values in the world, as well as the future. Considering Beck et al's model of depression, which includes the "negative triad" of negative views about the self, the world, and the future, this suggests that gratitude plays a key role in determining mental health. Gratitude can form a "positive triad" of positive views on self, the world, and (depending on the variance it shares with optimism) the future (Wood & Johnson, 2021). In this context, it is thought that adding positive psychology practices that address these issues to the treatment of depression may contribute to the management of depression by increasing well-being.

Positive psychology practices do not suggest treatment by focusing only on negative symptoms; it also recommends treatment by promoting positive emotions, psychological strengths, and meaningful living (Bolier et al., 2013a; Chaves et al., 2017). Positive psychology strategies, such as increasing positive emotions, develop personal strengths. Patients' seeking direction, meaning, and participation in their daily lives appear to be potential tools for the prophylaxis and treatment of depression as well as the prevention of recurrences by reducing symptoms (Santos et al., 2013).

There are studies indicating that interventions based on enjoyment, participation, and meaning are effective in increasing well-being and relieving depressive symptoms for longer periods of time (Gander et al., 2016), and there are sessions for these components in the positive psychology program we implemented.

In this study, in the comparison of the pre-test LAP-R Scale total mean score of the experimental group to which the positive psychology program was applied and the control group's patients who were not applied to the positive psychology program, no significant difference was found in the total mean scores, except for the subscale of 'Purpose'. After the program, in the comparison of the experimental and control groups, the LAP-R Scale total mean score of the experimental group was found to be significantly higher than the control group. It has been seen that this

significant difference continues in the total mean scores of the subscales, except for the subscale of 'Goal Seeking' in repeat measurements made at the one-month follow-up. In the within-group comparisons of the patients in the experimental group, significant differences were found in the pre-test, post-test, and follow-up test. In the within-group comparison of the control group, no significant differences were found between the LAP-R Scale total mean scores in the pre-test, post-test, and follow-up test.

Cheavens et al. (2006), in their study in which they measured the effectiveness of hope therapy, which is a positive psychology intervention, determined that there was a greater increase in the meaning of life in the individuals of the intervention group compared to the individuals of the control group (Cheavens et al., 2006).

Seligman (2002) later proposed three pathways to well-being, including positive relationship and achievement, namely pleasure-seeking, meaning-seeking, and participation-seeking (Gander et al., 2016). Connecting individuals with something bigger than themselves in their lives (such as helping someone in distress, or doing community service) and creating a source where they can find meaning can prevent them from being aimless. It is thought that individuals can manage depressive symptoms appropriately by developing positive life attitudes in this way. These topics were also included in the sessions of the positive psychology program that we applied in our study. As a result of our study, it is thought that positive psychology practices may create an option in the treatment of depression by contributing to the development of positive life attitudes of the patients. With the addition of these interventions to the treatment of depression, it is predicted that the range of existing interventions used in the treatment will expand.

Conclusion

As a result, it was determined that the online positive psychology program was effective in reducing the depression levels of depressed patients, increasing their well-being and positive life attitude. In this direction, it can be recommended that nurses benefit from PPI and evidence-based guidelines while providing holistic care. It can be suggested that psychiatric nurses increase their knowledge and skills by participating in certificate programs related to positive psychology practices. As a result of preferring more accessible and cost-effective methods together with the advantages of developing technology, the widespread use of online positive psychology programs in the treatment of depression, application of positive psychology practices in the form of online interviews to larger sample groups in order to be an

intervention that can be applied in case of re-experiencing of pandemic processes such as COVID-19, and the execution of studies comparing online positive psychology practices with face-to-face positive psychology practices are recommended.

Data availability The datasets generated during and/or analysed during the current study are available from the corresponding authors on reasonable request.

Declarations

Strengths and limitations Strengths of the study; the use of an up-to-date approach (online positive psychology program) in the treatment of depression. The follow-up period is limited to 1 month since the research was conducted between certain dates and the fact that the sample was obtained from a single center and its limited number is one of the limitations of the study.

Ethical approval Before starting the research, written and verbal permission was obtained from the center where the research would be conducted. Approval was obtained from Gaziantep University's Clinical Research Ethics Committee (Ethics Committee Decision Number: 169) to conduct the study. During the collection of the research data, the individuals were made to sign the "Informed Consent Form" about the research. The principle of "Respect for Autonomy" has been fulfilled by stating that they are free to participate in the research and to leave whenever they want after the participation of the individuals, and the principle of "Confidentiality and Protection of Confidentiality" has been fulfilled by stating that the information of the patients participating in the research will be kept confidential. All procedures performed in this study involving human participants were in accordance with the ethical standards of the research team's organizational Ethics Board and with the 1975 Helsinki Declaration.

Conflict of interest No potential conflict of interest was reported by the authors.

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