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The Effectiveness of Well-Being Therapy on Coping Strategies and Self-Efficacy of Patients with Chronic Neuropathic Pain

F. Dehestani (PhD)[1], B. Mirzaian (PhD)[*1], R. Hassanzadeh (PhD)[1], P. Saadat (MD)[2]

1.Department of Psychology, Faculty of Literature and Humanities, Sari Branch, Islamic Azad University, Sari, I.R.Iran.

2.Mobility Impairment Research Center, Health Research Institute, Babol University of Medical Sciences, Babol, I.R.Iran.

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ABSTRACT

Background and Objective: Neuropathic diseases are neurodegenerative conditions and a wide and difficult group of peripheral nerve diseases in humans. Since well-being therapy emphasizes the high levels of six domains of psychological well-being, this study was conducted to investigate the effectiveness of well-being therapy on pain coping strategies and self-efficacy of patients with chronic neuropathic pain.

Methods: This clinical trial was conducted on 30 chronic neuropathic patients referred to Ayatollah Rouhani hospital in Babol and a neurologist's private office in two groups of experimental and control (n=15). Well-being therapy was performed in 8 sessions of 120 minutes, once a week for the experimental group, while the control group received the routine treatment. After the follow-up period, the control group also underwent psychotherapy. Both groups completed questionnaires of pain coping strategies (Rosenstiel and Keefe, 1985) and pain self-efficacy (Nicholas, 1989) in the pre-test, post-test and follow-up (two months after the post-test) and were compared.

Findings: The results showed that there was a statistically significant difference between the two experimental and control groups in the score of the subscales of pain coping strategies in distraction from pain (23.13±3.88 versus 11.47±7.34) ($p<0.001$), reinterpretation of pain (17.33±5.56 versus 13.0±8.65) ($p=0.114$), catastrophizing (10.0±6.24 versus 16.33±5.4) ($p<0.001$), ignoring pain (24.4±6.67 versus 12.6±5.11) ($p<0.001$), hoping/praying (29.13±9.97 versus 22.4±5.7) ($p=0.031$), self-talk (25±4.03 versus 21.2±4.79) ($p=0.026$), behavioral activation (20.47±4.43 versus 11.20±4.94) ($p<0.001$) and pain self-efficacy (43.2±9.45 versus 33.33±13.34) ($p=0.027$). These results were maintained in the follow-up period.

Conclusion: The present study showed that wellness therapy can be an effective intervention in improving pain coping strategies and increasing pain self-efficacy in chronic neuropathic patients.

Keywords: *Coping Strategies, Self-Efficacy, Neuropathic, Chronic Pain.*

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***Corresponding Author: B. Mirzaian (PhD)**
Address: Department of Psychology, Faculty of Literature and Humanities, Sari Branch, Islamic Azad University, Sari, I.R.Iran.
Tel: +98 (11) 33032891. **E-mail:** bahrammirzaian@gmail.com

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Introduction

Although pain is usually a transient experience, for some people, pain has persisted from the past to the extent that it exceeds the adaptive response to an acute injury and leads to emotional disturbance and increased use of resources in health care systems (1). Studies reported that one fifth of the general population of Europe and America are affected by chronic pain (2). Among the Iranian population, pain is a common phenomenon and is a significant problem in this society (3). Pain is usually defined as a sensory and emotional experience associated with actual or potential tissue damage (1). Chronic pain is a type of pain that is present for at least 3 months every day or almost every day for 6 months. This pain may last from 3 months to 30 years (2).

New data show that long-term pain is related to functional and structural changes in the brain (4). Neuropathic pain is a neurological disorder that is caused by damage to the pain receiver and transmitter (1). Neuropathic pain is a condition of nerve analysis that is diagnosed with appropriate history and neurological examination (5) and is one of the most important types of chronic pain, which despite the increasing advances in medical science, its treatment is associated with many problems (6). In addition, when experiencing pain, people may use different coping strategies (7). The definition of coping according to the conceptual model of stress is as follows: constant changes and dynamic cognitive and behavioral efforts in order to control or manage internal or external requirements that are known to be a problem or to solve them beyond the available resources and facilities of a person (3).

Studies have shown that active coping strategies have adaptive results and passive coping strategies are associated with more severe pain and depression (8). Chronic pain severely affects the quality of life by limiting daily life activities, disrupting family and social relationships, and creating economic pressures (9), and this ultimately causes a feeling of low self-efficacy in pain management (10). The concept of self-efficacy is a person's belief in his/her ability to perform activities. In the studies conducted on chronic pain patients, self-efficacy beliefs have been able to explain many specific behaviors and pain experiences among chronic pain sufferers, and according to Bandura's theory, the expectation of efficacy determines the level of people's resistance to obstacles and unpleasant experiences (3). Well-Being Therapy (WBT) is a short-term (eight sessions), organized, guided and problem-oriented treatment program based on the cognitive model of Ryff psychological well-being (11), in which introspection, regular journaling and the interactions between the client and the therapist are used to increase the psychological well-being of the client (12).

Ryff psychological well-being model has six dimensions. The goal of therapists in using well-being therapy is to help the patients to improve their functioning from low levels of psychological well-being (13), i.e., self-acceptance, positive relationships with others, independence, mastery over the environment, purposeful life, and personal growth to high levels (14). The studies that have been performed so far about well-being therapy have focused on depression, generalized anxiety and narcissism, but the treatment of chronic pain is an example of diseases that can potentially be done by the approach of well-being therapy in the field of medical or psychosomatic diseases (15).

Yang et al. showed in a study that well-being therapy reduces depression in patients (16). Weiss et al. stated in a review that well-being education has an effective role in increasing psychological well-being (17). Karimi Rahjerdi et al. concluded in a study that well-being therapy is effective in reducing depression and improving sexual satisfaction and quality of life in type 2 diabetic patients (18). In a study, Khazaei

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et al. reported the effect of well-being therapy on marital satisfaction and psychological well-being of housewives (19). In a study, Pirnia et al. stated that well-being therapy leads to a decrease in anxiety in drug users (20).

Based on what was discussed, the high prevalence of chronic pain and chronic neuropathic pain problems is alarming. Considering that pain is a biological-psycho-social phenomenon and the integration of drug treatments with psychological interventions is effective; and considering the satisfactory results of well-being therapy in clinical and non-clinical work and considering that no research has been done on the effectiveness of well-being therapy in patients with chronic neuropathic pain, therefore, this study was conducted to investigate the effectiveness of well-being therapy on coping strategies and self-efficacy of patients suffering from chronic neuropathic pain.

Methods

After obtaining permission from the ethics committee of Islamic Azad University, Sari branch with code IR.IAU.SARI.REC.1400.114 and clinical trial registration number with code IRCT20180607040001N2, this semi-experimental clinical trial was conducted on 30 chronic neuropathic patients referred to the neurology clinic of Ayatollah Rouhani Hospital in Babol and the private office of the neurologist (the project manager) in Babol, northern Iran in 2021. The number of these people was 112, and after the phone call, 78 people answered the phone; these people were invited to participate in the study. 61 people declared their readiness to participate in the meetings, and after their application, an initial interview was conducted, and after completing the questionnaires and obtaining the required score, 30 people were selected non-randomly and randomly (by lottery) into two groups of experimental and control (n=15) (Figure 1). The control group was placed on the waiting list (WL) so that after the follow-up period, the well-being therapy protocol would be implemented for them.

The sample size was considered 15 people using the sample size formula to compare mean values and according to previous studies (21, 22). People with chronic neuropathic pain diagnosed by a brain and nerve specialist based on clinical examination, nerve and muscle tape, spine MRI, who experienced this pain for at least 3 months and do not suffer from a severe psychiatric disease such as psychotic and the like, with the approval of a psychiatrist and incurable physical disease, age range of 25-50 years, no use of neuropsychiatric drugs during the last three months, education level of high school diploma or higher, no participation in other educational and therapeutic classes at the same time, having informed consent, were included in the study. Moreover, in case of suffering from mental disorders and severe physical diseases, use of neuropsychiatric drugs during the last 3 months and unwillingness to continue participating in the research, they were excluded from the study. Before the start of the main treatment sessions, a meeting was held for the experimental group and in this meeting all the necessary rules were explained. Well-being therapy was performed in 8 sessions of 120 minutes, once a week for the experimental group in a private practice by 2 people (one psychologist and one psychology doctoral student) (15) (Table 1). The experimental and control groups completed the pain coping strategies and pain self-efficacy questionnaires at the beginning (pre-test), after the end of the treatment sessions of the experimental group (post-test) and 2 months after the end of the treatment sessions (follow-up) (3).

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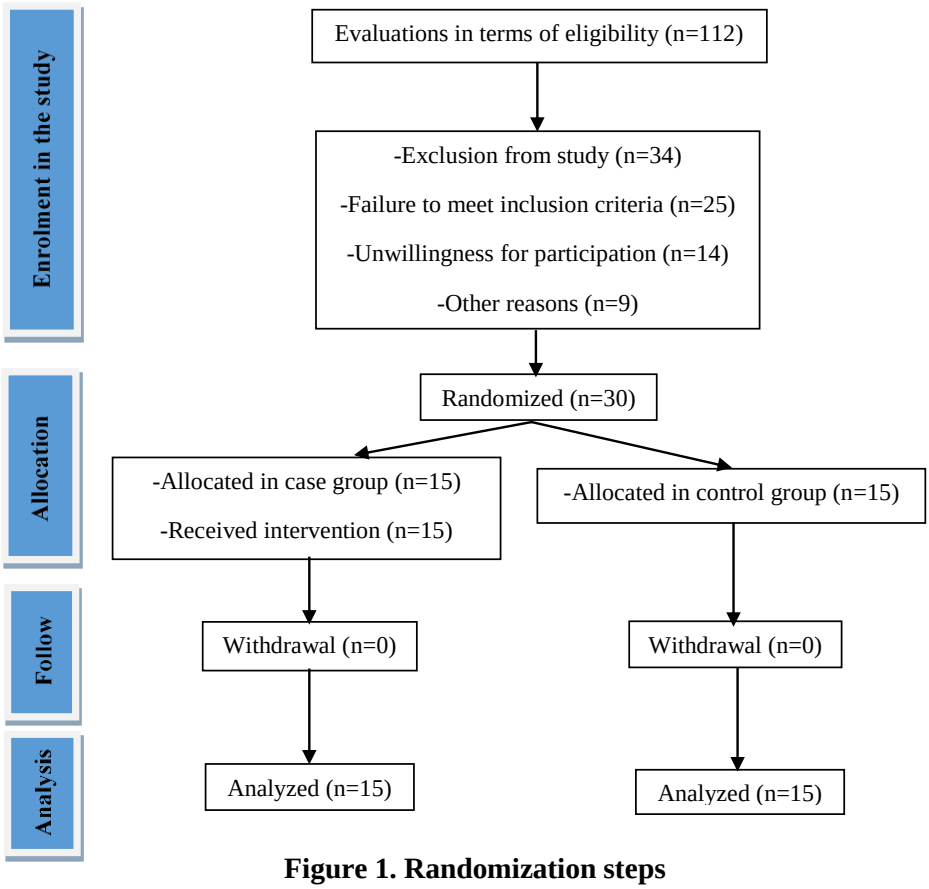

Figure 1. Randomization steps

Table 1. Wellbeing therapy protocol (Fava, 2016)

Row	Objectives of the session
First session	Familiarizing the members with each other, explaining the rules of the group, receiving information about current and previous feelings and distress as well as the patient's treatment history, providing information about the structure and content of well-being therapy, establishing the foundations of the therapeutic alliance, introducing the concept of self-treatment, presenting the first assignments (well-being journal)
Second session	Review of last week, review of well-being journal and problems related to its completion, introducing the concept of optimal experiences, introducing monitoring of thoughts and behaviors that disrupt well-being. Presentation of assignments for the upcoming session (well-being journal)
Third session	Reviewing last week's well-being journal and problems regarding its completion, begin to understand which thoughts or behaviors lead to untimely disruption of well-being. Introducing the column related to the well-being journal table, and continuing with home assignments (well-being journal, encouraging and planning activities)
Fourth session	Examining the interval between sessions, reviewing the well-being journal and the problems related to completing it, starting the work of cognitive reconstruction of thoughts or behaviors that have led to untimely disruption of well-being, including writing in the observer column, introducing one or two psychological dimensions of well-being

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Row	Objectives of the session
Fifth session	Examining the interval between sessions, reviewing the well-being journal and the problems related to completing it, continuing the cognitive reconstruction of thoughts or behaviors that have led to untimely disturbance of well-being, introducing other psychological dimensions of well-being and discussing how to adjust these dimensions, continuing the task with home assignments (well-being journal, encouraging and planning activities, graded assignments)
Sixth session	Examining the general condition of the patient, reviewing the well-being journal, reviewing cognitive restructuring and dealing with spontaneous thoughts in real life, introducing or discussing more about dysfunctional aspects of psychological well-being, continuing with home assignments (well-being journal, encouraging and planning activities, graded assignments)
Seventh session	Examining the general condition of the patient and his or her feelings towards the end of the treatment, reviewing the well-being journal, reviewing cognitive reconstruction and dealing with spontaneous thoughts in real life, strengthening the strategies used to improve psychological well-being, continuing with home assignments (well-being journal, exposure, planning activities), strengthening the client's willingness to continue (self-treatment) after completing the treatment
Eighth session	Examining the patient's feeling towards the end of the treatment, reviewing the well-being journal, paying attention to the improvements that have occurred in various areas of well-being and the level of distress. Discuss problems that interfere with self-treatment with WBT. Emphasizing the importance of continuing treatment after the end of the sessions (self-treatment), emphasizing the availability of "reinforcement" sessions in the future, determining the follow-up time, placing the therapeutic well-being experience in the patient's treatment history, pointing to the potential perspective of other treatments.

Coping Strategies Questionnaire (1985, Keefe and Rosenstiel): This questionnaire has 42 items and 7 subscales, and six cognitive coping strategies (distraction, reinterpretation of pain, self-talk, ignoring pain, catastrophizing, hoping/praying) and a behavioral coping strategy (behavioral activation). Each of the subscales (strategies) consists of 6 items. The minimum and maximum score that can be obtained in each of these strategies is from zero to 36. A higher score in each of these sub-scales of pain coping strategies indicates its greater use (3).

Rosenstiel et al. standardized the coping strategies questionnaire and the internal consistency coefficient of its 7 subscales was reported between 0.71 and 0.85 (23). Asghari Moghaddam et al. have investigated the psychometric properties of this questionnaire in the Iranian population and reported the internal consistency coefficients of its seven subscales between 0.74 and 0.38. The coefficients of internal consistency for the coping strategies of distraction, catastrophizing, ignoring pain, hoping/praying, self-talk, reinterpretation of pain and behavioral activation are 0.82, 0.80, 0.83, 0.74, 0.82, 0.77 and 0.75, respectively (24). In the present study, total reliability was found to be 0.81 using Cronbach's alpha.

Pain Self-Efficacy Questionnaire (1989, Nicholas): The 10 items of this questionnaire measure the strength and scope of the patient's belief in his/her ability to perform several tasks, despite the presence of pain. The minimum and maximum score that can be obtained in the pain self-efficacy questionnaire is

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between 0 and 60. The scores that the participants circled in each of the 10 items of the questionnaire are summed to obtain a self-efficacy score. A higher score means higher self-efficacy (3).

In a research, Nicholas confirmed the content validity and reported the internal consistency coefficient of the scale with Cronbach's alpha method as 0.86 (25). Asghari et al. investigated the factorial structure of the Persian version of the pain self-efficacy questionnaire using confirmatory factor analysis, the internal consistency coefficient of the statements of this questionnaire was 0.92 (26). Asghari et al. confirmed its construct validity and the reliability using Cronbach's alpha method, split-half method and retest method was obtained as 0.81, 0.78 and 0.77, respectively, which indicates a favorable and satisfactory end of the test (27). In the present study, total reliability was obtained by Cronbach's alpha method as 0.84.

Research data were analyzed using chi-square statistical tests, independent t-test, repeated measures ANOVA, and Tukey's post hoc test, and $p<0.05$ was considered significant.

Results

In this research, 15 people (100%) in the experimental group and 14 people (93.3%) in the control group were women. 10 people (66.7%) in the experimental group and 9 people (60%) in the control group had high school diploma. 6 people (40%) in the experimental group and 7 people (56.7%) in the control group were employed. In addition, the mean age in the experimental group was 41±1.38 years and in the control group it was 41±7.95 years. The mean duration of disease was calculated as 8.4±5.42 years in the experimental group and 8.4±4.17 years in the control group. There were no significant differences in gender, education, occupation, age and disease duration in the two studied groups (Table 2).

Table 2. Demographic and background characteristics of the samples separately in the two experimental and control groups

Group Variable	Experiment Number(%) or Mean±SD	Control Number(%) or Mean±SD	p-value
Gender			
Woman	15(100)	14(93.3)	0.99*
Man	0(0)	1(6.7)	
Education			
High school diploma	10(66.7)	9(60)	
Associate degree	1(6.7)	0(0)	0.99*
Bachelor's degree	4(26.7)	5(33.3)	
Master's degree	0(0)	1(6.7)	
Job			
Employed	6(40)	7(56.7)	0.713*
Housewife	9(60)	8(53.3)	
Age (years)	41±1.38	41±7.95	0.99**
Duration of disease (years)	8.4±5.42	8.4±4.17	0.99**

*Chi-square test, **Independent t-test

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In the study of variables, the effect of intervention type (p<0.001, F=88.95) with an effect size of 76.7% in "distraction" variable, the effect of intervention type (p<0.001, F=72.64) with an effect size of 72.9% in "reinterpretation of pain", the effect of intervention type (p<0.001, F=17.11) with an effect size of 81.8% in "ignoring pain", the effect of intervention type (p<0.001, F=44.57) with an effect size of 62.3% in "hoping/praying", the effect of intervention type (p<0.001, F=45.01) with an effect size of 62.5% in "self-talk", and the effect of intervention type (p<0.001, F=20.82) with an effect size of 70.9% in "behavioral activation" variable were associated with a significant difference and showed that in the experimental group, this amount was higher than the control group. Moreover, in "catastrophizing" variable, the effect of intervention type (p<0.001, F=38.83) with an effect size of 0.59% was associated with a significant difference, and it showed that in the experimental group, this amount was lower than the control group (Table 3).

Table 3. Comparison the mean values of pain coping strategies and their subscales over time in the studied groups

Variable and group	Coping strategies for pain			p-value**	Effect size (Eta Squared)
	Before intervention Mean±SD	First follow-up Mean±SD	Second follow-up Mean±SD		
Distraction					
Experiment	16.2±3.44[a]	23.13±3.88[b]	25±4.2[b]	<0.001	0.767
Control	16.53±8.83[a]	11.47±7.34[b]	11.2±5.93[b]	<0.001	
p-value*	0.893	<0.001	<0.001		
Reinterpretation of pain					
Experiment	11.8±6.22[a]	17.33±5.56[b]	19.6±6.34[b]	<0.001	0.729
Control	19.47±6.05[a]	13.0±8.65[b]	12.8±7.24[b]	<0.001	
p-value*	0.002	0.114	0.011		
Catastrophizing					
Experiment	14.8±7.51[a]	10.0±6.24[b]	8.33±5.57[b]	<0.001	0.59
Control	12.73±7.0[a]	16.33±5.4[b]	16.53±4.5[b]	<0.001	
p-value*	0.442	<0.001	<0.001		
Ignoring pain					
Experiment	17.53±7.53[a]	24.4±6.67[b]	26.4±6.12[b]	<0.001	0.818
Control	16.8±7.08[a]	12.6±5.11[b]	12.33±4.18[b]	<0.001	
p-value*	0.786	<0.001	<0.001		
Hoping/Praying					
Experiment	22.8±9.22[a]	29.13±9.97[b]	30±9.55[b]	<0.001	0.623
Control	25.07±6.39[a]	22.4±5.7[b]	22.13±5.99[b]	<0.001	
p-value*	0.441	0.031	0.012		
Self-talk					
Experiment	21.67±4.04[a]	25±4.03[b]	26.93±3.8[b]	<0.001	0.625
Control	25±4.05[a]	21.2±4.79[b]	20.93±3.69[b]	<0.001	
p-value*	0.032	0.026	<0.001		
Behavioral activation					
Experiment	15.27±4.75[a]	20.47±4.43[b]	22.4±4.89[b]	<0.001	0.709
Control	14.13±4.67[a]	11.20±4.94[b]	10.87±4.77[b]	<0.001	
p-value*	0.516	<0.001	<0.001		

Similar letters indicate non-significance at 0.05 level.

***Independent t-test, ****Repeated measures ANOVA**

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In examining the pain self-efficacy variable in the two study groups using repeated measures ANOVA, it was determined that for this variable, the effect of intervention type ($p<0.001$, $F=41.44$) with an effect size of 60.6% was associated with significance difference and showed that this rate increased in the experimental group over time and decreased in the control group (Table 4).

Table 4. Comparison of mean pain self-efficacy over time in the studied groups

Group / Time	Pain self-efficacy		p-value**	Effect size (Eta Squared)
	Experiment Mean±SD	Control Mean±SD		
Before intervention	31.87±13.55[a]	40.33±9.53[a]	0.058	0.606
First follow-up	43.2±9.45[b]	33.33±13.34[b]	0.027	
Second follow-up	45.53±8.02[b]	32.87±12.67[b]	0.003	
p-value*	<0.001	<0.001	-	-

Similar letters indicate non-significance at 0.05 level.

***Repeated measures ANOVA, ****Independent t-test**

Discussion

The results of this research showed that well-being therapy has a significant effect on pain coping strategies and pain self-efficacy in chronic neuropathic patients. As there was no research background regarding the effectiveness of well-being therapy on coping strategies and pain self-efficacy of patients with chronic neuropathic pain; therefore, comparisons were made with other fields. The results of this study are consistent with the research of Rotterman et al., who stated in a study that well-being therapy has an effect on reducing the severity of depression and chronic pain, despite the fact that in our study, coping strategies and pain self-efficacy of patients with chronic neuropathic pain were examined (28). In a research, Xu et al. reported that five weeks of well-being therapy improves adaptation and psychological well-being and reduces symptoms of anxiety and depression in new medical students, while in our study, anxiety and depression were not investigated and 8 treatment sessions were implemented (29). Fooladi et al. showed in a study that well-being therapy reduced fasting blood sugar and depression and increased happiness and optimism in diabetic patients after infection with the corona virus. In this research, they worked on blood sugar, depression, happiness and optimism, but they did not work on coping strategies and pain self-efficacy (30). Bani Hashemi et al. stated in a study that treatment based on acceptance and commitment is effective on coping strategies, quality of life and general health of caregivers of chronic patients (31). In this study, similar to our research, the variable of coping strategies was examined, with the difference that this variable was examined in caregivers of chronic patients, and instead of well-being therapy, treatment based on acceptance and commitment was implemented. Kiani et al concluded in a study that acceptance and commitment therapy is effective on pain self-efficacy of people with chronic pain (32). In this study, as in our study, pain self-efficacy was investigated in patients with chronic pain, but unlike our study, treatment based on acceptance and commitment was implemented.

In explaining that well-being therapy is effective on strategies to deal with pain, it should be mentioned that in well-being therapy, the patient is asked to fill in the well-being journal, that is, to note down the situations in which he/she feels well and give it a score from zero to 100. The patient has to write down the

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thoughts or behaviors that cause untimely disruption of well-being (interfering thoughts or behaviors) and in the observer column, he/she must note what an outside observer, i.e., someone distant from the situation, would probably think about these conditions. The therapist examines the well-being journal with the patient, and in this way the patient learns to reconstruct interfering thoughts or behaviors that cause disruption of well-being. Since pain coping strategies are closely related to the patient's beliefs and documents about pain, thus active coping strategies increase and passive coping strategies decrease. When the psychological dimensions of well-being are introduced in well-being therapy, the impaired level, balanced level and extreme level are examined in the dimension of self-acceptance, and the goal is for the patient to reach a balanced level of self-acceptance, that is, a level where a person accepts his/her good and bad characteristics and he/she has a positive feeling about his/her past, so the patient tries to face the pain by relying on his/her own resources and facilities and put aside the feeling of hopelessness, helplessness and relying on others to face and control the pain; this means increasing the use of active coping strategies and reducing the use of passive coping strategies. In well-being therapy, the strategies used to improve psychological well-being are clearly strengthened, which means strengthening active coping strategies. Therefore, active coping strategies increase and passive coping strategies decrease.

In explaining the significant effect of well-being therapy on pain self-efficacy, it should be mentioned that in well-being therapy, when the component of mastering the environment is introduced, its impaired level, balanced level and extreme level are examined and the goal is to reach the patient's balanced level, that is, a level that a person feels competent in managing his/her environment, uses the opportunities of the environment well, and is able to choose what suits his/her personal needs. In the introduction of the component of personal growth, its impaired level, balanced level and extreme level are examined, and the goal is for the patient to reach a balanced level of personal growth, that is, a level where a person has a sense of continuous growth, sees himself or herself growing and progressing, and is open to new experiences. In introducing the component of autonomy (independence), its impaired level, balanced level and extreme level are examined, and the patient's goal is to reach a balanced level of autonomy, that is, a level where a person is independent, is able to resist social pressure, and conducts himself or herself according to personal standards. Therefore, it is plausible that well-being leads to increased pain self-efficacy.

In general, the results of the present study showed that well-being therapy in patients with chronic neuropathic pain can increase active coping strategies, decrease passive coping strategies, and increase the self-efficacy of pain, and it is suggested that in addition to drug treatment of patients with chronic neuropathic pain, health professionals should pay special attention to non-drug treatment methods, including well-being therapy. This research, like any other study, had limitations, including limitations in external validity, so it is suggested that similar studies be carried out in other societies.

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