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Investigating the Effectiveness of Positivism Group Psychotherapy in Life Expectancy and Psychological Well-Being of Cancer Patients

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Abstract

The aim of conducting this research was to investigate the effectiveness of positivism group psychotherapy in life expectancy and psychological well-being of cancer patients referring to Taleghani hospital in Tehran, Iran. This is a quasi-experimental study with pre- and post-tests. The research sample included 26 patients (13 patients in the experimental and control groups). The patients in the experimental group took part in six weeks of group sessions for one and a half months. The Adult Trait Hope Scale and Ryff's psychological well-being scale were utilized for data collection. The results showed that positivism group psychotherapy was effective in promoting life expectancy and psychological wellbeing of cancer patients. Therefore it is recommended that oncologists use the positivism group psychotherapy to increase life expectancy and promote psychological well-being of cancer patients.

Keywords: life expectancy; psychological well-being; cancer.

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1. Introduction

Cancer is caused by manifestations of abnormal gene expression [1]. Rapid growth of cancer cells in the primary site with the mechanism of destruction and invasion and occupation of the existing space causes symptoms, and by progress through blood and lymph nodes and the conflict of other organs (metastasis), it causes specific signs and symptoms within the involved member [2]. Cancer will be one of the major causes of disease in the world in the coming decades, and the number of new cases is expected to increase to 15 million in 2020 [3]. More than half of all cancers are happening in developing countries, such as countries in South America and Asia. Nearly three - quarters of those countries live on low and middle income. The survival rate for cancer, in developing countries, is often a third of those living in developed countries [4]. There are about 9 million new cases of cancer, which hit 4 million in developed countries and 5 million in developing countries worldwide [5]. More than 1.2 million Americans are infected with cancer every year, and more than 56 thousand people die from malignancy in the United States [6]. It is also predicted that cancer will be the first and most important cause of human death in 2030 [7].

According to the latest epidemiological investigations, cancers are the third cause of death after cardiovascular diseases and incidents [8.1]. And 98 people die of cancer every day. The incidence of cancer increases with age. With regard to the increasing age of the world's population, by the year 2030, approximately 70% of malignancies are expected to occur in the age group over 65 [9]. The incidence of cancer in our country, Iran, is 15 and 12 times less than in the United States and West European countries respectively. Therefore, attention to the issue of cancer incidence in the country is very important [10]. The highest rate of cancer is related to the United States by 1.5 per cent of total population over five years. 1 % of the population in Japan, 7 % of Eastern Europe residents and 4 % of Latin American residents have been infected and lived with cancer over the past five years or before. The figure for Iran is about 0.3 % of the population [11.5]. In Iran, according to the country report for the registration of cancer cases in 2008, 55.51% cases of cancer occurred in males and 44.49% occurred in females. Sex ratio of cancer incidence in 2008 was 128 to 100. In other words, for every 128 males with cancer; there are 100 cases of cancer infected females [10]. After cancer incidence, life expectancy in patients is significantly reduced. This causes them not to pay enough attention to their treatment and not to seek medical advice. They do not try to improve themselves, and in fact, they are doing so worse with this condition.

There are some differences between patients, who treat cancer, but thereafter there are no symptoms, and those who have consistently adapted to the recurrence of cancer and the following treatments Patients with relapse of cancer undergo changes that make them disappointed with recovery, and distrust the therapies. The sense of frustration or lack of control has severe negative effects on behavior, mood and physiology [12]. The optimistic person is capable of controlling his life, debilitating stress and emotions. Therefore, he wants to live because he knows the future well. Cancer and hopeful thinking are linked together in two ways. First, hopeful people concentrate more on the problem and are active in the process of solving it. They are more likely to perform screening for cancer. People who think hopefully will show less distress and more consistency by diagnosis and treatment of cancer. Therefore, during the treatment process, those with a higher level of hope show greater resistance to long-term and painful treatments [13].

Promoting hope, which is one of the most meaningful factors, helps people to adapt to cancer, reduce their mental suffering and increase their quality of life and health [14]. Life expectancy has been defined as an inner force that can be a source of life richness, and will enable people to look beyond their current state of affairs. The lack of life expectancy and lack of purposeful life leads to a decline in quality of life and a sense of frustration. Future orientation, positive expectations, purposefulness, realism, goal setting, internal communication are important life-expectancy features. On the contrary, frustration is defined as tolerance of a non-overcoming situation in which there is no achievement for any purpose and is associated with depression, the desire for death and suicide.

Life expectancy involves attention to the future, and with the assumption that positive results are likely to occur, leads to a patient's effort. Hope has been defined as a complex multidimensional and potential factor in improvement and effective adaptation to cancer [14]. In his study, Snyder concluded that there is a positive correlation between high levels of hopes and positive emotions and low levels of hope and negative emotions in a way that low levels of hope increase the symptoms of depression [15]. Elliot, Whitney, and Hickman, found that patients with high levels of hope, could cope better with their illness and showed fewer symptoms of depressions [16]. One of the disorders which severely affect health and consequently the quality of life and psychological well - being of individuals, is chronic disease.

A chronic condition is a human health condition or disease that is persistent for more than three months disrupting everyday life during this period or has the patient been hospitalized for more than a month in the year. Cancer can be called a chronic disease. Chronic disease affects all life stages. Although some diseases have little impact on the quality of life and psychological well-being of individuals, most of them have a significant impact on these factors due to disabilities they leave behind [17]. Evidence suggests that cancer affects and disrupts psychological well-being, leading to other problems such as dissatisfaction with life. Psychological well-being includes positive growth and development over time, which includes satisfaction from life, energy, and positive emotions.

Psychological well-being in its entire dimensions can help the patients promote specific adaptive behaviors and makes them face their own problems in all respects [18]. One of the aspects of delivering care to cancer patients is paying attention to the improvement and promotion of psychological states [19]. A review of articles in this area suggests that psychological interventions affect the lives of these patients [20]. Having perceived social support, benefiting from community counseling programs and, in particular, psychotherapy training, improve physical, emotional and social performance, reduce fatigue and the negative effects of the disease [21]. These factors play a crucial role in how the patient is coping and adapting to cancer as well as the individual's different capabilities as it causes many psychological and medical effects [22]. In recent years, positive psychology with its slogan "Attention to human talents and abilities" has been considered by researchers from different fields of psychology. Positive psychology emphasizes the establishment and development of positive emotions to create a barrier to mental disorders and increase the well-being and happiness of individuals [23]. This approach increases the meaning of life in patients in order to relieve psychopathology and enhance happiness [24].

Theoretical basis for positive psychotherapy is rooted in Seligman’s research (2002), who believes happiness

includes having an enjoyable, committed, and meaningful life. The experience of the positive emotions that positive psychotherapy emphasizes can often provide a better ability in utilizing capabilities and adapting to life problems [25]. In order to cope with cancer, there is a need for positive changes in people infected with this disease. From among the multiple psychotherapies, these positive changes can be made through the strategies available in positive psychotherapy [26]. One of the constructs that is of great importance in the concept of happiness and positive psychology is mental well-being [27].

Positive psychology is one of the new approaches to psychology, which focuses on positive individual traits, and has been raised by Seligman in recent years. Positive psychology is the scientific study of the human optimal functions with the objective of understanding and applying these functions to the success and prosperity of individuals and communities [28]. A review of positive psychology literature represents potential applications of this approach to a broad range of individuals [29]. For instance, studies have shown positive psychology applications in education, business, organizational counseling, marriage and interpersonal relationships, parental training and sport [28].

Sin and Lyubomirsky [30] in a meta-analysis, investigated the effect of positive psychology on enhancing well-being and alleviating symptoms of depression, which included depression-related meta-analysis of 25 studies involving 1812 subjects (an average of 32subjects for each research). The effect sizes ranged from -0.88 to -0.81, of which 80% supported the effectiveness of psychotherapy based on positive psychology. In another meta-analysis on the effectiveness of positive psychology on enhancing well-being and reducing the symptoms of depression by Sin and Lyubomirsky 49 studies were investigated (4235 subjects, an average of 64 subjects in each research). The effect sizes varying from 0.31 to 0.84, of which 96% of the effect sizes were in the positive direction.

Pietrowsky, & Mikutta, (2012) in their study entitled ‘the effects of positive psychology interventions in depressive patients—A randomized control study’ found that even a short intervention using positive psychology alone alleviates depressive symptoms and increases well-being. Other studies have shown that well-being increases as a result of positive psychological exercises, such as altruism exercises [32], gratitude exercise [33] and writing strengths [34].

Models such as Ryff’s psychological well-being scale, jahoda's model of mental health and Ed Diener’s tripartite model of subjective well-being focus on defining and explaining one’s abilities and capabilities rather than focusing on the illness and weaknesses [35]. Ryff regards psychological well-being as the consequence of a full psychological actualization from which people develop their whole potential. In this perspective, well-being is defined as an attempt to transcend and promote that manifests itself in the realization of individuals’ talents and abilities [36]. Ryff and his colleagues sought to determine and classify the criteria for a well-lived or so-called good life according to philosophical concepts (those like Aristotle and Russell). Accordingly, six factors of self-acceptance (the ability to see and accept their strengths and weaknesses), purpose in life (i.e. having goals that make sense to the individual's life), personal growth (feeling that talents and potential abilities of the individuals will be actualized over time during the lifetime), positive relationship with others (i.e. having a close and meaningful relationships with important people in life), environmental mastery (the ability to adjust

and manage life affairs, especially the issues of everyday life), and autonomy (the ability and power to pursue demands and actions based on personal principles, even if they are contrary to customs and social demands) were identified as the components of psychological well-being [37].

The present study was carried out due to the increasing incidence of cancer and the role of psychological factors in the treatment process, with the aim of determining the impact of positive psychology on life expectancy and psychological well-being in cancer patients.

2. Materials and methods

2.1. Design

This is a quasi-experimental study with pre- and post-tests. The statistical population of were all cancer patients who referred to Taleghani Hospital in Iran in 2017. The available sampling method was utilized to select the sample. 47 patients completed the consent form. Based on entry and exit criteria, 30 eligible candidates were selected and randomly assigned to experimental control group, each containing 15 participants. The selection criteria in this study included, having at least a diploma, not suffering from severe psychiatric disorders, being under the treatment of the desired medical center, be within the age range of 25 to 75, drug consumption and drug abuse over the past year, and literacy and fluency in Persian. Participants were assured of the principles of privacy and confidentiality of identity and information. The experimental group, which consisted of 15 subjects, received 6 sessions of positive group psychotherapy, during this time the control group received no therapies in this area, but they got on the waiting list. By the end of the treatment, one patient from the intervention group died and another one was unable to attend meetings due to the exacerbation of the disease. Therefore, two participants were removed from the control group. At first, the pre-test was taken from both groups and after 6 weeks the post test was taken. Each treatment session included a review of the previous week, a review of exercises and a discussion of the next session assignment. Each weekly session lasted 90 minutes. In the first week welcoming, introductions and greeting were made. The content of the treatment sessions is as follows:

Session 1: register your own abilities

Session 2: three good events

Session 3: personal heritage or meaning

Session 4: use gratitude letter

Session 5: active responsiveness

Session 6: Taking pleasure, finishing therapy and preserving therapeutic effects

2.2. Research Tools

2.2.1. Collection of demoFigureic information including age, sex, marital status and education

2.2.2. Ryff's Scale of Psychological Well-Being (an 18- question short form questionnaire)

The short form of the Ryff's Psychological Well-being Questionnaire which included 18 questions was designed in 1989 and revised in 2002 by Ryff. This version includes 6 subscales. The total scores of these 6 subscales are calculated as psychological well-being scores. This scale is a kind of self-acceptance tool in which respondents rate statements on a scale of 1 to 6, with 1 indicating strong disagreement and 6 indicating strong agreement.. Higher scores on each scale indicate greater well-being on that dimension. The correlation between Ryff's short version of the psychological well-being scale and his original scale ranged from 70 to 89 percent The internal consistency of this scale using the Cronbach's alpha in 6 factors of self-acceptance, environmental mastery, positive relationship with others, having a goal in life, personal growth and autonomy were 51%, 76%, 52%, 73%, 72%, respectively and for the whole scale the internal consistency was 71%. In sum, the results indicate that the 18-item version of Ryff's psychological well-being scale for measuring psychological well-being in Iranian sample boys and girls is a useful and practical instrument [39].Various research evidence has shown that, despite the development of different scales for measuring psychological well-being, the 18-item version of Ryff's psychological well-being scale has been the most frequent scale in research. The internal consistency of the scale is relatively high with respect to the Cronbach's alpha coefficient both in the girls and boys groups and in the total score scales. By summing up the results of various studies, it can be shown that the 18-item version of Ryff's psychological well-being scale has a high internal consistency. The negative correlation of this scale with the short-form version of the Depression Anxiety Stress Scales (DASS-21) indicates the validity of this scale [40]. The test-retest reliability coefficient which was obtained from a sample of 117 people with intervals of 6 weeks ranged from 81% to 86%. The correlation between subscales was reported between 32% and 76%, with the highest correlation between self-acceptance and environmental dominance (76%) and the lowest correlation between self-determination and positive relationships with others (32%) [38]. In general, it can be concluded that the Ryff's psychological well-being scale has a high degree of reliability and validity among student populations. After the first translation of the Ryff's Psychological Well-being Scale, it was presented to several psychologists and English literature professors, and the accuracy of the translation was verified by retranslating the English-Persian text in order to observe cultural considerations.

2.2.3. Snyder's Hope Scale

The Adult Trait Hope Scale (Snyder, Harris and his colleagues 1991) is a twelve-item scale designed to measure two components of Snyder's conception of hope. The Participants are asked to respond to the items using a five - point Likert scale ranging from 1 (completely disagree) to 8 (completely agree). This questionnaire is designed for This questionnaire is designed for adults aged 15 years old and over. The test–retest reliability of the scale over three weeks was 85%. According to Lopez and Snyder the internal consistency reliability estimates have been found in acceptable ranges for the scale as a whole (α = .74-.84). Test-retest reliability coefficient was obtained 80%. In his research that was performed on 660 female students in Tehran, Golzari examined the reliability of Snyder's hope scale by internal consistency, and Cronbach's alpha coefficient was obtained 89% [42]. In a research study of 342 students between the ages of 21 and 18, the validity coefficient for thinking factor and strategies were 76% and 75% respectively [43]. For the student population of Iran, the calculated reliability by Cronbach's alpha for the whole scale was 82%.The coordination of hope scale questions with

Snyder's hope theory demonstrates its good content validity. There was significant positive correlation between Snyder's hope scale and positive emotion, optimism, life satisfaction, and self-esteem a significant negative correlation between anxiety and pessimism. Snyder's hope scale has acceptable validity and reliability for Iranian population and can be used in Iranian psychological assessments as a valid and appropriate tool in clinical and educational settings to assess individuals' psychological state and provide medical and preventative programs.

3. Results

3.1. DemoFigureic factors

Table 1: Frequency and percentage distribution by gender

Gender	Experimental group		Control group	
	Frequency	Percentage	Frequency	Percentage
Male	7	53.85	6	46.15
Female	6	46.15	7	53.85
Total	13	100	13	100
Likelihood =0.154	**P≥ 0.500**		$X^2 = 0.154$	$\boldsymbol{P \geq 0.500}$

In both groups, the number of male and female in the sample group is approximately equal. Furthermore, the results of the Chi square test (X^2) indicated that the difference between two groups was not statistically significant in terms of gender.

Table 2: Frequency and percentage distribution by marital status

Marital status	Experimental group		Control group	
	Frequency	Percentage	Frequency	percentage
Married	10	76.92	11	84.62
Single	3	23.08	2	15.38
Total	13	100	13	100
Likelihood =0.249	P≥ 0.500		$X^2 = 0.248$	$\boldsymbol{P \geq 0.500}$

Most of the participants are married in both experimental and control groups. Moreover, the results of the Chi square test (X^2) showed that the difference between two groups is not significant in terms of marital status.

Table 3: Frequency and percentage distribution by educational levels

Educational levels	Experimental group		Control group	
	Frequency	Percentage	Frequency	Percentage
Under Diploma	2	15.38	3	23.08
Diploma	7	53.85	6	46.15
B.A.	3	23.08	3	23.08
M.A	1	7.69	1	7.69
Total	13	100	13	100
Likelihood =0.278	**P≥ .0964**		$X^2 = 0.277$	$\boldsymbol{P \geq 0.964}$

Both in experimental and control groups, nearly half of the sample had diploma and the lowest frequency is related to graduate students (M.A). The results of the Chi square test (X^2) showed that the difference between the experimental and control groups is not significant in terms of educational levels.

Table 4: Frequency and percentage distribution by cancer types

Cancer type	Experimental group		Control group	
	Frequency	Percentage	Frequency	Percentage
Breast	4	30.77	3	23.08
Prostate	3	23.08	4	30.77
Gastrointestinal	5	38.46	4	30.77
Lung	1	7.69	2	15.38
Total	13	100	13	100
Likelihood =0.278	**P≥ .0964**		$X^2 = 0.277$	$\boldsymbol{P \geq 0.964}$

In both groups, the highest frequency is related to gastrointestinal cancer and the lowest frequency related to lung cancer. Furthermore, the results of the Chi square test (X^2) indicated that the difference between two

groups is not significant in terms of cancer type.

Table 5: Frequency and percentage distribution by age

Age	Experimental group		Control group	
	Frequency	Percentage	Frequency	Percentage
20-30	4	30.77	5	38.46
30-40	6	46.15	5	38.46
40-50	3	23.08	3	23.08
Total	13	100	13	100
Likelihood =0.202	**P≥ .0904**		$X^2 = 0.202$	$\boldsymbol{P \geq 0.904}$

Both in the experimental and control group the most number of participants were in the age group of 30-40 years and the least number were in age group of 40-50 years. The results of the Chi square test (X^2) showed that the difference between the experimental and control groups is not significant in terms of age.

Table 6: Independent T-test results comparing the mean scores of psychological well-being and life expectancy scales in control and experimental groups

Scale	T- Value	Degree of freedom	Level of significance
Psychological well-being	0.27	24	0.784
Life expectancy	1.09	24	0.283

With the obtained 'T' values, it can be argued that there is no significant differences between patients' scores in psychological well-being and life expectancy in the experimental and control groups ($P<0.05$). it can be stated with 95% confidence that there was no significant difference between the pre-test scores of patients in the experimental and control groups.

Table 7: Descriptive statistics of pre-test and post-test scores for life expectancy scale in experimental and control groups

Groups		Descriptive statistics		Measures of central tendency		Measures of variability	
		Minimum	maximum	Median	Mean	Range	SD
Pre-test	experimental	18	34	29	28.23	16	4.30
	control	20	37	32	30.23	17	4.95
Post-test	experimental	18	38	33	31.76	20	5.30
	control	20	37	29	28.46	17	4.54

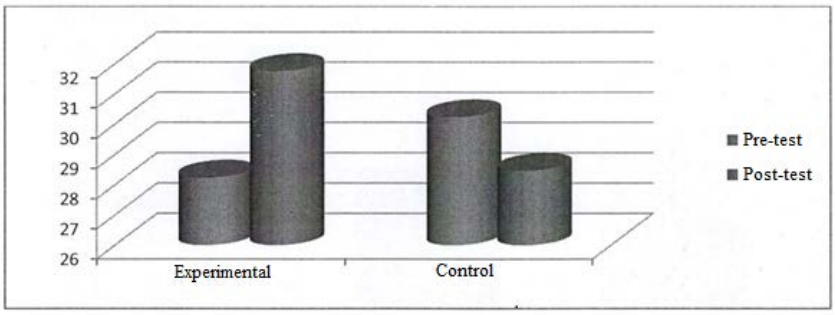

Figure 1: Comparison of the mean scores of pre-test and post-test for the life expectancy scale in experimental and control groups

As the results indicate the mean score for the life expectancy scale in the experimental and control groups were 28.23 and 30.23 in the pre-test and 31.76 and 28.46 in the post-test respectively. Based on the results, it can be concluded that in the post-test, the mean scores for life expectancy of cancer patients under chemotherapy increased in the experimental group but decreased in the control group.

Table 8: Descriptive statistics of pre-test and post-test scores for the psychological well-being scale in experimental and control groups

Groups		Descriptive statistics		Measures of central tendency		Measures of variability	
		Minimum	maximum	Median	Mean	Range	SD
Pre-test	experimental	25	71	44	46.07	46	13.40
	control	28	73	47	47.53	45	13.54
Post-test	experimental	28	75	45	48.38	47	13.97
	control	29	70	45	47.38	41	12.75

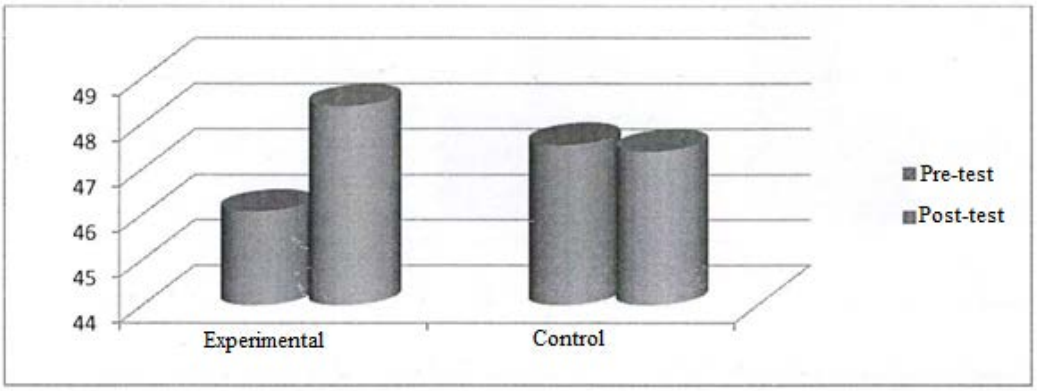

Figure 2: Comparison of the mean scores of pre-test and post-test for the psychological well-being scale in experimental and control groups

As the results indicate the mean score for the psychological well-being scale in the experimental and control groups were 46.07 and 47.53 in the pre-test and 48.38 and 47.38 in the post-test respectively. Based on the results, it can be concluded that in the post-test, the mean being scores for psychological well-of cancer patients under chemotherapy increased in the experimental group but remained relatively constant in the control group.

Table 9: Levene's test results to assess the equality of variances

Variables	Degree of freedom 1	Degree of freedom 2	Frequency	Significance
Psychological well-being	1	24	0.009	0.9926
Life expectancy	1	24	1.416	0.246

Based on the results presented in the table, the homogeneity of the variances of experimental and control groups' scores in terms of "psychological well-being, and life expectancy" is not significant at 95% level (α = 0.05). A non-significant Levene's test means the confirmation of the null hypothesis; therefore, it can be concluded with 95% confidence that the variances of the scores in the experimental and control groups are equal. This assumption is confirmed by Analysis of covariance (ANCOVA).

Table 10: The result of Kolmogorov-Smirnov test to assess the normal distribution of psychological well-being, and life expectancy scores in cancer patients under chemotherapy

Variable	Groups	K-S statistic	Significance level
Psychological well-being	experimental control	0.394 0.394	80.99 0.997
Life expectancy	experimental control	0.539 0.904	0.933 0.388

Based on the results presented in the above table, the distribution of scores for the psychological well-being and

life expectancy of patients in experimental and control groups is not significant at 95% level (α = 0.05). A non-significant Kolmogorov-Smirnov test means the confirmation of the null hypothesis i.e. "the normal distribution of scores in experimental and control groups for patients' psychological well-being and life expectancy"; therefore, it can be concluded with 95% confidence that the distribution of the patients' psychological well-being and life expectancy scores in the experimental and control groups is normal.

Table 11: Analysis of slope of regression line for life expectancy scores

Sources of changes	Sum of squares	Degree of freedom	Mean squares	F-Ratio	Significance level
Group	51.74	1	51.74	3.041	0.095
Pre-test	272.65	1	272.65	16.026	0.095
Group *life expectancy	29.23	1	29.23	1.718	0.203
Error	374.28	22	17.01	-	-
Total	24359	26	-	-	-

Based on the results, the significance level of the interaction effect (group* life expectancy) is greater than (α = 0.05), so the homogeneity hypothesis of the regression line slope is acceptable.

Table 12: Analysis of slope of regression line for psychological well-being scores

Sources of changes	Sum of squares	Degree of freedom	Mean squares	F-Ratio	Significance level
Group	4205.02	1	4205.02	1090.20	0.001
Pre-test	2.02	1	2.02	0.525	0.476
Group *well-being	10.20	1	10.20	2.645	0.118
Error	84.85	22	3.85	-	-
Total	63919	26	-	-	-

Based on the results, the significance level of the interaction effect (group* well-being) is greater than (α = 0.05), so the homogeneity hypothesis of the regression line slope is acceptable.

4. Discussion

The results showed that positivism group psychotherapy was effective in increasing life expectancy and promoting psychological well-being of cancer patients. Scientific evidence suggests that psychotherapy could be even more effective than medication especially when patients themselves pursue this course of treatment. It does not mean the discredit of medicines, an emphasis on the power of proper psychotherapy [44]. In all research studies, the average effect of psychotherapy is 80% which is significant in behavioral sciences [45].

The results of studies conducted by Groopman, Schneider, and Rand on patients with chronic physical illnesses revealed that positive beliefs and expectations could have positive effects on the central system. For this reason the optimistic patients have improved more quickly due to their positive belief and expectations [46]. Schneider and Lopez in a study found out that Hope therapy can lead to positive changes in human physiology [47].

In recent years, many studies have focused on the effectiveness of positivism psychotherapy in promoting psychological well-being and increasing the experience of positive emotions. Casellas, Font, and Vives (2014), found that positive changes in breast cancer patients occurred through the pathways in positivism group psychotherapy. In this research positive interventions applied to patients and survivors of breast cancer were found to be able to promote positive aspects. Bolier et. al (2013) in their meta-analysis showed that positive psychology interventions can be effective in the enhancement of subjective well-being and psychological well-being, as well as in helping to reduce depressive symptoms [48].

In short, positive psychologists set up and focus on positive emotions and memories in their discussions with clients. Positive psychologists also address issues related to clients with the goal of integrating positive and negative emotions. The findings of the present study show that positive psychotherapy can be used as a structured and targeted method for cancer patients who are affected by the stressful conditions of the disease. Considering that research findings in behavioral sciences are subject to some limitations, the current research was also subject to some limitations that could be related to small ample size, using a few number of questionnaires and meeting sessions, and the lack of patients follow up treatment due to the specific circumstances of the sample group. In order to generalize the results, the age range and even a specific type of cancer should be taken into consideration; therefore, it is recommended that the present study be carried out on other groups and samples.

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