

# World Journal of *Clinical Cases*

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Case Control Study

# Cognitive behavioral therapy on personality characteristics of cancer patients

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## Abstract

### BACKGROUND

The main treatment methods for cancer include surgery, radiotherapy, chemotherapy, targeted drug therapy and so on. Patients often feel anger, anxiety, depression, and other negative psychological reactions in the process of treatment.

### AIM

To explore the effects of cognitive behavioral therapy on the personality characteristics of cancer patients.

### METHODS

According to the matching design requirements, 150 cancer patients were divided into 3 groups based on sex, age, condition, and cultural background. Patients in the control group received conventional treatment. Patients in experimental group 1 received an intervention based on conventional treatment combined with cognitive behavioral therapy. Patients in experimental group 2 received family members' participation in addition to the treatment given in experimental group 1. An Eysenck personality questionnaire was used to investigate all the patients before and after the intervention, and the scores for psychosis, introversion, neuroticism, and concealment degree were analyzed.

### RESULTS

Compared with the control group, for experimental group 1 and experimental group 2 before and after the intervention, the four dimensions of mental quality, neuroticism, introversion and concealment degree all decreased, and the

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difference was statistically significant ( $P < 0.05$ ). After the intervention, there were no obvious or statistically significant differences ( $P > 0.05$ ) among the control group, experimental group 1, and experimental group 2 for two personality traits, psychoticism and neuroticism, both inside and outside degree and all four dimensions.

## CONCLUSION

Simple cognitive behavioral therapy could not change the personality characteristics of cancer patients quickly, but the patients' personality characteristics were significantly improved after treatment.

**Key Words:** Cognitive behavioral therapy; Cancer patients; Personality characteristics; Psychosis; Introversion; Neuroticism; Degree of validity

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**Core Tip:** The cognitive behavioral therapy procedure alleviated anxiety and depression in cancer patients, which was reflected in four dimensions: psychoticism, introversion and extroversion, neuroticism (emotional), and degree of validity.

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## INTRODUCTION

Due to the aging of the population, the deteriorating environment and the emergence of some negative behaviors, the global cancer burden has increased sharply. Global forecasts in 2018 show that 1/5 of men and 1/6 of women will suffer from cancer, and 1/8 of men and 1/10 of women will die of cancer before the age of 75[1].

At present, various diagnostic and treatment methods for cancer, including surgical treatment, radiotherapy, chemotherapy, and targeted drug treatment, subject the patient to considerable trauma. In the process of traditional treatment, patients are prone to exhibit negative psychological reactions such as anger, anxiety, and depression, including anxiety about cancer, fear of death, pain of loss of dignity, and thoughts of suicide. This kind of psychology in turn has a negative impact on the patient's physical condition, which forms a vicious circle and affects the patient's treatment effect[2]. Most studies have shown that a person's personality traits will directly or indirectly affect their physical and mental health status and influence the treatment effect of interventions for diseases.

At the same time, individuals with different personality traits face risks induced by different diseases. For example, a "C"-type personality (that is, a cancer-prone personality) has a clear correlation with cancer, and cancer patients with this type of personality often show an excessive stress response when encountering negative life conditions, leading to changes in the body environment that can induce the growth of cancer cells[3,4].

A study in the United States once screened the cancer prevalence among various groups of people based on personality characteristics. By analyzing 14394 survey samples, a significant internal link between personality characteristics and cancer prevalence was determined[5]. In addition, some studies have also found that negative emotions hinder the treatment and recovery of cancer patients and seriously affect their quality of life[6]. Therefore, during the process of modern cancer treatment, increasing attention has been given to positive and effective interventions for patients' psychological state to reduce their negative emotions and promote their recovery[7].

Cognitive behavioral therapy (CBT) affects patients' cognition by changing their thinking, beliefs and behaviors to eliminate their bad emotions and behaviors. It is a simple and effective short-term psychological therapy. CBT can change a patient's mood and behavioral disorders by correcting dysfunctional and incorrect thinking[8]



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and then has a positive impact on the patient's personality characteristics. This study aimed to combine CBT with cancer treatment. According to the requirements of paired experiments and the methods of controlled trials, CBT was used to intervene in the personality characteristics of cancer patients to observe whether CBT can have a positive impact on patients during the process of cancer treatment to provide a reference basis for the physical and mental treatment of cancer.

## MATERIALS AND METHODS

### Patients

A total of 150 cancer patients at the Affiliated Hospital of Zunyi Medical University were selected for investigation. Using the controlled experimental method, the patients were divided into a control group, experimental group 1, and experimental group 2. Inclusion criteria: (1) Clinically and pathologically diagnosed with cancer; (2) No history of mental illness or failing to meet the diagnostic criteria for a mental illness; (3) Not receiving psychotherapy, antipsychotic medication, *etc.*, and not taking sleep aids, undergoing anesthesia, or receiving sedative drugs for at least 4 wk; (4) Clear consciousness, no mental impairment; and (5) The patients and their families provided informed consent.

During the process of psychological evaluation and cognitive behavioral treatment of patients, a total of 23 cases were excluded for various reasons, and the effective experimental data came from 127 patients. The  $\chi^2$  test revealed that the general data of the three groups of cancer patients were not statistically significant ( $P > 0.05$ ) (Table 1).

### Clinical examination

Intervention methods: The control group received conventional biological treatment (radiotherapy, chemotherapy, and surgical treatment); in addition to the above treatments, experimental group 1 also received CBT psychotherapy during the trial implementation phase; experimental group 2 received the same treatment as experimental group 1 except for participation of family members in the CBT.

### Indicator detection

The Eysenck Personality Questionnaire (EPQ) was used in this trial[9]. The EPQ was developed by a British psychologist, Eysenck, as a self-report scale and is based on the "Eysenck Personality Inventory". The scale mainly reflects the following four aspects of the patient: psychoticism (P), introversion and extroversion (E), neuroticism (emotional) (N), and degree of validity (L). A high P score is often manifested as loneliness, indifference to others, and difficulty adapting to the external environment; a person with a high E score tends to be extroverted, and one with a low score tends to be introverted; a person with a high N score may be anxious, worried, and have strong emotional responses; the L score reflects situations such as concealment by the tester, false entrustment, or self-concealment.

### Statistical analysis

SPSS 22.0 statistical software was used to organize the data and perform statistical analysis. The collected data were statistically analyzed by *t*-tests,  $\chi^2$  tests and analysis of variance, and  $P < 0.05$  was considered statistically significant.

## RESULTS

### Self-comparison of personality characteristics of the three groups of cancer patients before and after the intervention

The results showed that the factors of psychoticism, introversion, neuroticism, and degree of validity after intervention in the control group were lower than those before the intervention, and the difference was statistically significant ( $P < 0.05$ ) (Table 2).

### Comparison of personality characteristics of experimental group 1 cancer patients before and after the intervention

The results showed that the four personality factors of experimental group 1 after the intervention were lower than those before the intervention, and the difference was statistically significant ( $P < 0.05$ ) (Table 3).

**Table 1 General information of the cancer patients**

Category	Control group	Experimental group 1	Experimental group 2	Proportion (%)	$\chi^2$	P value
Age					3.24	0.52
Youth	13	19	13	35.43		
Middle	20	16	22	45.67		
Aged	8	10	6	18.90		
Sex					0.56	0.76
Male	14	13	11	29.92		
Female	27	32	30	70.08		
Marital status					4.32	0.12
Married	34	43	38	90.55		
Unmarried	7	2	3	9.45		
Schooling					4.99	0.55
Elementary	10	15	16	32.28		
Junior	15	15	11	32.28		
Senior	11	6	7	18.90		
Graduate	5	9	7	16.54		
Residence					2.06	0.36
Rural	21	22	26	54.33		
Urban	20	23	15	45.67		
Family income (CNY)					11.71	0.31
< 1000	14	11	18	33.86		
1000-3000	10	11	7	29.92		
3000-5000	4	2	3	7.09		
> 5000	13	21	13	29.13		

During the process of psychological evaluation and cognitive behavioral treatment of patients, a total of 23 cases were excluded for various reasons, and the effective experimental data came from 127 patients. By using the  $\chi^2$  test, the general data of the three groups of cancer patients were not statistically significant ( $P > 0.05$ ). CNY: Chinese yuan.

**Table 2 Self-comparison of the personality characteristics in the control group (mean  $\pm$  SD)**

	Control group		t	P value
	Before intervention (n = 41)	After intervention (n = 41)		
P	72.34 $\pm$ 10.13	35.51 $\pm$ 29.07	7.66	0.00
E	55.85 $\pm$ 9.94	28.39 $\pm$ 31.16	7.93	0.00
N	52.07 $\pm$ 7.66	28.15 $\pm$ 20.62	6.97	0.00
L	42.20 $\pm$ 10.37	22.24 $\pm$ 15.48	6.86	0.00

The results showed that the factors of psychoticism, introversion, neuroticism, and degree of validity after intervention in the control group were lower than those before the intervention, and the difference was statistically significant ( $P < 0.05$ ). P: Psychoticism; E: Introversion and extroversion; N: Neuroticism (Emotional); L: Degree of validity.

### **Comparison of personality characteristics of experimental group 2 cancer patients before and after the intervention**

The analysis showed that the P, E, N, and L factors in experimental group 2 after the intervention were lower than those before the intervention, and the difference was

**Table 3 Self-comparison of the personality characteristics in experimental group 1 (mean  $\pm$  SD)**

	Experimental group 1		<i>t</i>	<i>P</i> value
	Before intervention ( <i>n</i> = 45)	After intervention ( <i>n</i> = 45)		
P	70.91 $\pm$ 10.73	30.60 $\pm$ 25.54	9.76	0.00
E	56.22 $\pm$ 7.16	28.57 $\pm$ 23.95	7.42	0.00
N	52.67 $\pm$ 6.62	23.71 $\pm$ 20.94	8.84	0.00
L	43.00 $\pm$ 8.08	20.24 $\pm$ 12.61	10.20	0.00

The results showed that four personality factors of experimental group 1 after the intervention were lower than those before the intervention, and the difference was statistically significant ( $P < 0.05$ ). P: Psychoticism; E: Introversion and extroversion; N: Neuroticism (Emotional); L: Degree of validity.

statistically significant ( $P < 0.05$ ) (Table 4).

### **Comparison of personality characteristics among the three groups of cancer patients after the intervention**

According to the statistical analysis, the scores for P, E, N, and L in the control group, experimental group 1 and experimental group 2 did not change much after the intervention, and there was no statistically significant difference among the groups ( $P > 0.05$ ) (Table 5).

## **DISCUSSION**

Clinical studies have found that personality characteristics are closely related to the occurrence and development of cancer, and the incidence of cancer recurrence and mortality after treatment are often significantly correlated with negative emotions such as depression and anxiety. This study found through statistical analysis that after routine treatment intervention and psychotherapy intervention in the control group and experimental group, the neuroticism, psychoticism, introversion, extroversion, and masking scores of the patients decreased (Table 2, Table 3, and Table 4).

The above results may be due to conventional treatment methods such as radiotherapy, chemotherapy, and surgery having improved the patients' health and reduced their adverse reactions; during the treatment, cancer patients' tolerance to pain is improved so that their mood is stabilized. Patients' trust in medical institutions, medical staff, technology and equipment also improves their mental state.

CBT allows patients to understand their depressed and pessimistic cognitions and then alleviate bad states at the psychological level[10]. According to previous research [11], the following three points in CBT can somewhat alleviate patients' sensitive and nervous state: (1) Gradual and orderly relaxation training (training cancer patients to relax the muscles of the whole body, starting with various parts and then gradually relaxing the whole body in an orderly manner, guiding them to mentally relax, self-hypnotize, imagine beautiful scenes, and become peaceful physically and mentally[12]); (2) Based on cancer patients' different mental states, family conditions, coping styles, and cultural backgrounds, medical staff need to formulate nursing plans with the patients and their families and provide psychological care in an acceptable and nonconfrontational way[13]; and (3) Communication between medical staff and cancer patients can provide patients with psychological counseling and encouragement, help them adjust their mental state, and improve their confidence in their treatment[14]. In addition, previous studies have shown that family comfort and support can greatly reduce the physical symptoms, improve the anxiety-sensitive personality, and improve the quality of life and living conditions of cancer patients[15]. The participation of family members in experimental group 2 allowed the families to understand the patients' state more systematically and take better care of the patients from both the physical and mental aspects.

Second, after conventional treatment intervention and psychological treatment intervention, through comparisons between groups, it was found that there was no significant difference in the scores for neuroticism, psychoticism, introversion, or degree of validity among the control group and the two experimental groups. This shows that CBT does not play a decisive role in changing a patient's personality characteristics and that using conventional therapy combined with CBT to treat cancer

**Table 4 Self-comparison of the personality characteristics in experimental group 2 (mean  $\pm$  SD)**

	Experimental group 2		<i>t</i>	<i>P</i> value
	Before intervention ( <i>n</i> = 41)	After intervention ( <i>n</i> = 41)		
P	73.66 $\pm$ 9.29	38.12 $\pm$ 28.27	7.65	0.00
E	56.83 $\pm$ 6.78	31.85 $\pm$ 22.34	6.85	0.00
N	53.54 $\pm$ 7.72	27.17 $\pm$ 20.52	7.72	0.00
L	40.00 $\pm$ 9.29	23.51 $\pm$ 13.82	6.34	0.00

The analysis showed that the four personality factors in experimental group 2 after the intervention were lower than those before the intervention, and the difference was statistically significant ( $P < 0.05$ ). P: Psychoticism; E: Introversion and extroversion; N: Neuroticism (Emotional); L: Degree of validity.

**Table 5 Comparison of personality characteristics among the three groups after the intervention (mean  $\pm$  SD)**

Dimensionality	Control group	Experimental group 1	Experimental group 2	<i>F</i>	<i>P</i> value
P	35.51 $\pm$ 29.07	30.60 $\pm$ 25.54	38.12 $\pm$ 28.28	1.933	0.33
E	28.39 $\pm$ 21.16	28.58 $\pm$ 23.95	31.85 $\pm$ 22.34	1.204	0.57
N	28.15 $\pm$ 20.62	23.71 $\pm$ 20.94	27.17 $\pm$ 20.52	1.317	0.49
L	22.24 $\pm$ 15.48	20.24 $\pm$ 12.610	23.51 $\pm$ 13.82	1.782	0.31

According to the statistical analysis, the scores for the four personality factors in the control group, experimental group 1 and experimental group 2 did not change much after the intervention, and there was no statistically significant difference among the groups ( $P > 0.05$ ). P: Psychoticism; E: Introversion and extroversion; N: Neuroticism (Emotional); L: Degree of validity.

patients with the participation of the patients' family members also cannot affect the results (Table 5). The reasons for the above findings may be the following: (1) Personality is a relatively stable state comprising multiple characteristics. The maintenance of this state is consistent and long term. Once the personality is formed, it is difficult to change in the short term[16]; and (2) CBT may have a positive effect on the patient's mental health in the short term[17], but due to the longevity and stability of the personality characteristics, it is unable to substantially change the patient's personality characteristics quickly.

Many studies have shown that CBT is very useful in helping patients build confidence in treatment, change their negative perceptions, reduce their anxiety and depression, correct their unhealthy lifestyles, improve their social adaptation and coping skills, and improve their quality of life[18]. Lai *et al*[19] found that personality characteristics are correlated with positive and negative coping styles. Matthew *et al* [20] showed that CBT has a positive effect on the postoperative rehabilitation of women with breast cancer, which can reduce their anxiety and depression and improve their quality of life. Tsimopoulou *et al*[21] confirmed that although psychological interventions will not affect the surgical results of cancer patients (such as hospital stay, complications, use of analgesics, or mortality), they will have a positive impact on their immune function. In addition, psychological intervention has a positive impact on patients' quality of life, including their psychological status, overall quality of life and physical symptoms. Cancer is in some ways a psychosomatic disease. When treating it, we should not only consider conventional clinical treatment but also pay attention to the patient's psychological state. A combination of the two is more helpful to the recovery of cancer patients. CBT can prolong their life span; reduce their anxiety, depression, and other negative emotions; and improve their psychological and physical health. In addition, the application of CBT can help cancer patients undergo psychological reconstruction; curb their rigid thinking, distorted cognition, and irrational behavior; and to a certain extent also improve their quality of life[22].

## CONCLUSION

CBT alone had no obvious impact on the personality characteristics of cancer patients in the short term, and there was no significant difference in the patients' personality characteristics after conventional treatment. The shortcomings of this study are as follows: (1) All the research data are in the form of subjective evaluation scales, and the lack of measurement of objective evaluation indicators may have a certain impact on the reliability of the research results; and (2) The experiment has achieved obvious results in the short term, but the patients have not been followed up for a long time. It is suggested that future research can address these problems to provide more reliable evidence for clinical support.

## ARTICLE HIGHLIGHTS

### **Research background**

Cancer is a disease that poses a significant threat to human health. With the improvement of science and technology, the medical model has gradually changed from the traditional biomedical model to the "physiological-psychological-social model". Regarding the cause of cancer, physical and chemical stimuli, viruses, chronic infections, drugs, genetics and other factors have been emphasized in the past. An increasing number of people have realized that psychological factors have an important influence on the occurrence, development and outcome of malignant tumors and paid increasing attention to the relationship between social psychology and cancer.

### **Research motivation**

Psychological interventions for cancer patients are receiving increasing attention, helping patients establish treatment confidence, change their negative perceptions, reduce their anxiety and depression, correct unhealthy lifestyles, improve their social adaptation and coping skills, and improve their quality of life. However, psychological intervention measures are relatively limited and not targeted, and most of them stay at the level of psychological support. Psychotherapy needs to be further developed in a broad and in-depth manner for cancer patients.

### **Research objectives**

To investigate the mental health of cancer patients and analyze the factors related to their mental disorders, the second goal was to explore the effect of cognitive behavioral therapy (CBT) on depression and anxiety in cancer patients and determine whether it results in improvements in their personality characteristics.

### **Research methods**

According to the matching design requirements, 150 cancer patients were divided into 3 groups according to their sex, age, condition, and cultural background. Patients in the control group received conventional treatment. Patients in experimental group 1 received an intervention based on conventional treatment combined with CBT. Patients in experimental group 2 received the same treatment as experimental group 1 with family members' participation. An Eysenck personality questionnaire was used to examine all the patients before and after the intervention, and the scores for psychosis, introversion, neuroticism, and concealment degree of cancer patients were analyzed.

### **Research results**

Compared with the control group, experimental group 1 and experimental group 2 had decreases in the four dimensions of mental quality, neuroticism, introversion and concealment degree after the intervention, and the difference was statistically significant. After the intervention, there were no differences among the groups for the personality traits psychoticism and neuroticism, both inside and outside, for all four dimensions.

### **Research conclusions**

Simple CBT could not change the personality characteristics of cancer patients quickly, but the personality characteristics of patients in the three groups were significantly improved after treatment.



### Research perspectives

CBT can prolong the life span of cancer patients; reduce their anxiety, depression and other negative emotions; and improve their psychological and physical health. In addition, the application of CBT can help cancer patients undergo psychological reconstruction; reduce their rigid thinking, distorted cognition and irrational behaviors; and to a certain extent also improve their quality of life.

## REFERENCES

- 1 **Wu C**, Li M, Meng H, Liu Y, Niu W, Zhou Y, Zhao R, Duan Y, Zeng Z, Li X, Li G, Xiong W, Zhou M. Analysis of status and countermeasures of cancer incidence and mortality in China. *Sci China Life Sci* 2019; **62**: 640-647 [PMID: 30900169 DOI: 10.1007/s11427-018-9461-5]
- 2 **Vehling S**, Kissane DW. Existential distress in cancer: Alleviating suffering from fundamental loss and change. *Psychooncology* 2018; **27**: 2525-2530 [PMID: 30307088 DOI: 10.1002/pon.4872]
- 3 **Flaherty RL**, Owen M, Fagan-Murphy A, Intabli H, Healy D, Patel A, Allen MC, Patel BA, Flint MS. Glucocorticoids induce production of reactive oxygen species/reactive nitrogen species and DNA damage through an iNOS mediated pathway in breast cancer. *Breast Cancer Res* 2017; **19**: 35 [PMID: 28340615 DOI: 10.1186/s13058-017-0823-8]
- 4 **Wei M**, Guo L, Zhu Y, Guo Y, Yv S, Namassevayam G, Xue W, Li J, Li L, Shen Z, Yv J, Zhu Z, Wang W, Liu Y, Zhao J, Chen F. Type C Personality and Depression Among Newly Diagnosed Breast Cancer Patients: The Mediating Role of Sense of Coherence. *Neuropsychiatr Dis Treat* 2019; **15**: 3519-3529 [PMID: 31920312 DOI: 10.2147/NDT.S230278]
- 5 **Aschwanden D**, Gerend MA, Luchetti M, Stephan Y, Sutin AR, Terracciano A. Personality traits and preventive cancer screenings in the Health Retirement Study. *Prev Med* 2019; **126**: 105763 [PMID: 31260725 DOI: 10.1016/j.ypmed.2019.105763]
- 6 **Ousey K**, Edward KL. Exploring Resilience When Living with a Wound - An Integrative Literature Review. *Healthcare (Basel)* 2014; **2**: 346-355 [PMID: 27429282 DOI: 10.3390/healthcare2030346]
- 7 **Bradt J**, Dileo C, Magill L, Teague A. Music interventions for improving psychological and physical outcomes in cancer patients. *Cochrane Database Syst Rev* 2016; CD006911 [PMID: 27524661 DOI: 10.1002/14651858.CD006911.pub3]
- 8 **Oud M**, de Winter L, Vermeulen-Smit E, Bodden D, Nauta M, Stone L, van den Heuvel M, Taher RA, de Graaf I, Kendall T, Engels R, Stikkelbroek Y. Effectiveness of CBT for children and adolescents with depression: A systematic review and meta-regression analysis. *Eur Psychiatry* 2019; **57**: 33-45 [PMID: 30658278 DOI: 10.1016/j.eurpsy.2018.12.008]
- 9 **Wei Y**, Li H, Wang H, Zhang S, Sun Y. Psychological Status of Volunteers in a Phase I Clinical Trial Assessed by Symptom Checklist 90 (SCL-90) and Eysenck Personality Questionnaire (EPQ). *Med Sci Monit* 2018; **24**: 4968-4973 [PMID: 30015333 DOI: 10.12659/MSM.909524]
- 10 **Hetrick SE**, Cox GR, Witt KG, Bir JJ, Merry SN. Cognitive behavioural therapy (CBT), third-wave CBT and interpersonal therapy (IPT) based interventions for preventing depression in children and adolescents. *Cochrane Database Syst Rev* 2016; CD003380 [PMID: 27501438 DOI: 10.1002/14651858.CD003380.pub4]
- 11 **Holmes EA**, Ghaderi A, Harmer CJ, Ramchandani PG, Cuijpers P, Morrison AP, Roiser JP, Bockting CLH, O'Connor RC, Shafran R, Moulds ML, Craske MG. The Lancet Psychiatry Commission on psychological treatments research in tomorrow's science. *Lancet Psychiatry* 2018; **5**: 237-286 [PMID: 29482764 DOI: 10.1016/S2215-0366(17)30513-8]
- 12 **Hulbert-Williams NJ**, Beatty L, Dhillon HM. Psychological support for patients with cancer: evidence review and suggestions for future directions. *Curr Opin Support Palliat Care* 2018; **12**: 276-292 [PMID: 30074924 DOI: 10.1097/SPC.0000000000000360]
- 13 **Duncan M**, Moschopoulou E, Herrington E, Deane J, Roylance R, Jones L, Bourke L, Morgan A, Chalder T, Thaha MA, Taylor SC, Korszun A, White PD, Bhui K; SURECAN Investigators. Review of systematic reviews of non-pharmacological interventions to improve quality of life in cancer survivors. *BMJ Open* 2017; **7**: e015860 [PMID: 29187408 DOI: 10.1136/bmjopen-2017-015860]
- 14 **Mewes JC**, Steuten LM, Ijzerman MJ, van Harten WH. Effectiveness of multidimensional cancer survivor rehabilitation and cost-effectiveness of cancer rehabilitation in general: a systematic review. *Oncologist* 2012; **17**: 1581-1593 [PMID: 22982580 DOI: 10.1634/theoncologist.2012-0151]
- 15 **Warth M**, Zöller J, Köhler F, Aguilar-Raab C, Kessler J, Ditzgen B. Psychosocial Interventions for Pain Management in Advanced Cancer Patients: a Systematic Review and Meta-analysis. *Curr Oncol Rep* 2020; **22**: 3 [PMID: 31965361 DOI: 10.1007/s11912-020-0870-7]
- 16 **Roberts BW**, Luo J, Briley DA, Chow PI, Su R, Hill PL. A systematic review of personality trait change through intervention. *Psychol Bull* 2017; **143**: 117-141 [PMID: 28054797 DOI: 10.1037/bul0000088]
- 17 **Vittengl JR**, Clark LA, Thase ME, Jarrett RB. Predictors of longitudinal outcomes after unstable response to acute-phase cognitive therapy for major depressive disorder. *Psychotherapy (Chic)* 2015; **52**: 268-277 [PMID: 25985046 DOI: 10.1037/pst0000021]
- 18 **Addison S**, Shirima D, Aboagye-Mensah EB, Dunovan SG, Pascal EY, Lustberg MB, Arthur EK, Nolan TS. Effects of tandem cognitive behavioral therapy and healthy lifestyle interventions on

- health-related outcomes in cancer survivors: a systematic review. *J Cancer Surviv* 2021 [PMID: 34357555 DOI: 10.1007/s11764-021-01094-8]
- 19 **Lai HL**, Chen CI, Lu CY, Yao YC, Huang CY. Relationships among personality, coping, and concurrent health-related quality of life in women with breast cancer. *Breast Cancer* 2019; **26**: 544-551 [PMID: 30747373 DOI: 10.1007/s12282-019-00954-7]
- 20 **Matthews H**, Grunfeld EA, Turner A. The efficacy of interventions to improve psychosocial outcomes following surgical treatment for breast cancer: a systematic review and meta-analysis. *Psychooncology* 2017; **26**: 593-607 [PMID: 27333194 DOI: 10.1002/pon.4199]
- 21 **Tsimopoulou I**, Pasquali S, Howard R, Desai A, Gourevitch D, Tolosa I, Vohra R. Psychological Prehabilitation Before Cancer Surgery: A Systematic Review. *Ann Surg Oncol* 2015; **22**: 4117-4123 [PMID: 25869228 DOI: 10.1245/s10434-015-4550-z]
- 22 **Sun H**, Huang H, Ji S, Chen X, Xu Y, Zhu F, Wu J. The Efficacy of Cognitive Behavioral Therapy to Treat Depression and Anxiety and Improve Quality of Life Among Early-Stage Breast Cancer Patients. *Integr Cancer Ther* 2019; **18**: 1534735419829573 [PMID: 30791739 DOI: 10.1177/1534735419829573]



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