



Comparing the Effectiveness of Complementary Medicine (Ayurveda), Cognitive-Behavioral Therapy and Combining These Two Treatments with Each Other on Anxiety in Depressed Women

1074

Mahshid Ganjouri, Ph.D., student, Islamic Azad University, Tehran Central Branch, Tehran, Iran

Fatemeh Golshani, Ph.D., Assistant Professor, Faculty of Psychology, Islamic Azad University, Tehran Branch, Iran

Anita Baghdasarians, Ph.D.(corresponding author), Assistant Professor, Faculty of Psychology, Islamic Azad University, Tehran Branch, Center, Iran

Ebrahim Vahed, Ph.D., Assistant Professor, Faculty of Psychology, Islamic Azad University, North Tehran Branch, Iran

Abstract

Objectives: Depression is one of the most common psychiatric disorders. A high percentage (two-thirds) of patients with depression have prominent anxiety symptoms. Hence, the existence of a natural, simple, accessible, and affordable treatment method is required by people suffering from depression. This study aims to compare the effectiveness of Ayurveda knowledge as a complementary medicine with Cognitive-Behavioral Therapy (CBT) and their combination in reducing anxiety in depressed women.

Methodology: This semi-experimental pre-test-post-test research with a control group was conducted on a statistical population of 40 women aged 45-25 years who were diagnosed with moderate depression by a psychiatrist and underwent the Beck depression test. They voluntarily participated in this research by filling and signing an informed consent form. Subjects were placed in four groups of 10 people with a simple random allocation method and underwent CBT, Ayurveda, and combination therapy based on the protocols for 10 weeks. Data collection tools were Beck's depression inventory (BDI-II)(1996) and Spielberger's State-Trait Anxiety Inventory (STAI) (1983). The data were analyzed using two-way repeated measures ANOVA.

Findings: The effect size of time was significant for both state and trait anxiety variables ($p < 0.001$). There was a significant difference between the test groups and the control group in the scores of state and trait anxiety variables, respectively ($p = 0.003$ and $p < 0.001$). A significant difference was observed between pre-test, post-test, and follow-up scores in the variables of anxiety and state traits in Ayurveda and CBT groups ($p < 0.001$). In the combined treatment group, this difference was significant in state anxiety ($p = 0.003$) and trait anxiety ($p = 0.015$). There was no significant difference between the post-test and follow-up scores in the CBT and integrated therapy groups. However, the Ayurveda group at the time of follow-up was significantly different from the post-test ($P = 0.019$). better scores were obtained in integrative therapy than in CBT, but no significant difference was observed between the effectiveness of Ayurveda and integrative therapy.

Conclusion: The combination of these two treatment methods could be beneficial in enhancing the mood



and reducing the anxiety of depressed women as depression leads to irreparable effects throughout life.

Keywords: Ayurveda, CBT, mood, anxiety, depression

DOI Number: 10.48047/nq.2023.21.7.nq23095

NeuroQuantology 2023;21(7):1074-1087

Introduction

Depression is one of the most prevalent psychiatric disorders characterized by symptoms such as depressed and sad mood, low self-confidence, and disinterest in any kind of daily activities and pleasures. By 2023, more than 300 million people, 4.4% of the world's population, have suffered from this disorder (WHO, 2017). The prevalence of depression indicates that one out of every 15 adults (6.7%) suffers from depression, and women are prone to suffer more from depression than men (Torres, 2010). The findings indicated that experiencing anxiety is common in patients with depression. A high percentage (two-thirds) of patients with depression have prominent anxiety symptoms (Muramatsu et al., 2021). Furthermore, the coexistence of anxiety depression as an independent disorder shows the high similarity of these two disorders with each other (Sadock et al., 2015). In patients with depression, the higher the intensity of anxiety, the higher the probability of suicide, the longer the period of depression, and the higher the probability of not responding to appropriate treatment will be (Diagnostic and Statistical Manual of Mental Disorders, 2013).

Cognitive-Behavioral Therapy (CBT) is one of the most common psychological approaches to treating depression. Many studies indicate that CBT is effective in enhancing depression and anxiety symptoms (Groka et al., 2019; Kladnitski et al., 2020). However, some other studies indicate that only half of patients undergoing this treatment recover, and relapse is common among patients responding to CBT (Ali et al., 2017; Wojnarowski, Firth, Finegan, and Delgadillo, 2019). The results of Ali et al. (2017) indicate that 53% of patients with depression and anxiety experienced a recurrence of symptoms after one year - most of these people (79%) had relapsed symptoms in the first 6 months. In a review study, Wynarowski et al. (2019) reported

relapses in about 33% of recovered patients. The findings of these studies show the need for relapse prevention, particularly in the case of those who have symptoms of residual depression.

The studies reveal that the levels of daily activities are effective in the experience of depression and anxiety. Doing sports has proven effective both as a preventive factor and as a treatment factor among people with mild and moderate depression (Martinsen, 2008; Kandola, Ashdown-Franks, Hendrikse, Sabiston, Stubbs, 2019). Sports activities are effective in reducing anxiety symptoms and could be used as a complementary method alongside common treatments for depression and anxiety such as CBT (Martinsen, 2008). Furthermore, by studying the effectiveness of yoga and meditation on the clinical group, Bressington et al. (2019) indicated that these exercises were effective in bettering the symptoms of depression, anxiety, and stress (Saeed, Cunningham, and Bloch, 2019).

Based on the above, adjusting daily activities and using non-psychological methods as an independent or complementary treatment could prove useful in a stable and more stable effect of improving depression symptoms. Accordingly, one of the treatment methods that has been addressed in a study is the use of ayurvedic complementary medicine, the knowledge that has been accepted by the American Center for Complementary and Alternative Medicine as complementary medicine in the treatment of psychological diseases (Sadock et al., 2015).

Ayurvedic knowledge is one of the oldest holistic healing systems in the world, with more than 3000 years old and developed in India. The Sanskrit word "Ayu" means life and "Veda" means knowledge. Therefore, Ayurveda means knowledge or the science of life.

Nowadays, ayurvedic medicine is used as a scientific method in many medical and

1075



therapeutic centers (Van Morsy, Ranjkar, Ramasamy, and Deshpande 2010). Ayurvedic medicine is involved in all branches of medicine. Based on this medicine, maintaining the natural balance of the body is the base of health, and disease is the natural result of imbalance. Living in balance is the key to health and longevity. An unhealthy lifestyle, poor diet, bad environmental factors, negative emotions, and stress are among the major elements that lead to imbalance (Mishra, 2003).

It is believed that every person is born with a unique basic balance in Ayurveda, which is called Prakriti. Prakriti in Ayurveda is the equivalent of genes in Western medicine (Godek, Joshi, and Patwardhan, 2011). The biological structure of a person is affected by the external environment or epigenetics after birth. The main elements that lead to epigenetic changes are lifestyle, diet, stress, and other environmental factors (Sharma and Case Wallace, 2020). These factors could result in imbalance and deviation from Prakriti known as Vikriti. If we consider Prakriti to be equivalent to a gene, Vikriti is associated with the phenotype (Chatterjee and Pancholi, 2011). Vikriti, translated as "after birth" in Sanskrit, refers to a person's imbalanced state.

Heidel, Sunega, and Drisko (2017) designed and validated a questionnaire to evaluate Prakriti. Significant correlation results were obtained between Prakriti characteristics evaluated in this questionnaire and 17 symptoms of disease in medical science. These signs can predict diseases associated with mental health, such as anxiety, depression, sleep disorders, and panic attacks. Mills et al. (2019) used a rating system to specify scores according to the frequency of occurrence of classical Ayurvedic symptoms; Vikriti (the current body composition) is determined based on this questionnaire. In this study, significant correlations between psychological problems, such as anxiety, stress, rumination, low mindfulness, and so on, determined according to valid psychological questionnaires, were confirmed by Vikriti.

Ayurveda has a preventive approach to health care rather than treatment, and as its goal is basically to restore balance to the individual, it uses two methods, one non-specific for prevention and the other specific for treatment.

Non-specific approaches help a person protect his/her mind and body in the face of various environmental elements. Furthermore, the underlying conditions of the patient's occurrence are prevented as much as possible with the help of these methods, the most important of which includes the modification of lifestyle, nutritional habits, and methods and principles of mind management (Alang, 2018). The use of different herbal medicines could be stated among the specific approaches.

Ayurveda is based on the belief that health and wellness rely on a delicate balance between body, mind, and consciousness (cognition). If nutrition, physical activities, and general lifestyle are not appropriate for someone, their vital balance will be disturbed and physical and mental diseases will appear (Lee, 2013/1999). Ayurveda pays special attention to the following to reach a dynamic balance in a person:

- Methods of balancing the body, mind, and consciousness
- Accurate scientific attitude at the basic cellular and molecular level and belief in the psychosomatic nature of most diseases
- Emphasis on causes, not signs
- Using foods that act as energizing or rejuvenating and at the same time are natural, simple, and affordable
- Emphasis on diet and food compatibility
- Concentration on enhancing the immune system
- Orientation toward rehabilitation and palliative care (Sancllemente, 2020)

There are few research findings of this intervention because Ayurveda as a scientific method has recently entered research with a scientific structure. This study aims to compare the effectiveness of this traditional knowledge of



several thousand years with modern methods. In the meantime, CBT has been seen as a widely used and common method in the treatment of depression to answer the question, does Ayurveda, as it is claimed, have a significant effect on improving both the symptoms of depression and the quality of life? Can this treatment act as a complementary treatment in improving the effectiveness of CBT as a basic treatment for depression?

Methodology

This Semi-experimental study was conducted with a pre-test-post-test design and a control group (a waiting list). The statistical population consisted of women suffering from moderate depressive disorder admitted to psychiatric centers for treatment in Tehran in 2022. Forty people were selected as participants (10 people in each group) who were diagnosed with depression based on the Beck Depression Questionnaire and a psychiatrist's diagnosis. These individuals were willing to participate in the study and were selected using the purposive sampling method. Inclusion criteria were being 25-45 years of age, a Beck's questionnaire score in the middle range (17-30), and using drug therapy. Exclusion criteria were bipolar disorder, personality disorder, psychotic disorders, attempted suicide, using treatment methods other than drug therapy, and diabetes. All participants in all four groups were under medication supervised by their psychiatrist. Subjects were placed in four groups consisting of 10 participants in experimental groups and one waiting list group. Experimental groups were Group 1: Ayurveda, Group 2: CBT, Group 3:

received a combination of Ayurveda and CBT, and the waiting list group did not receive psychological therapy by simple random assignment. The sampling process was carried out from the beginning of February to the end of March 2022. The research process was carried out offline using video communication and individually from April 5, 2022, for 10 weeks according to the specified protocols for each treatment approach. At the end of the treatment period, the participants were subjected to a post-test. After 2 months of treatment, the questionnaires were provided to the subjects and the control group for the third and last times for follow-up. During the implementation and follow-up, there was no dropout among the subjects, and none of them met the criteria for leaving the test. The Ayurvedic treatment protocol was based on Ayurveda and Mind: Healing Consciousness (19) and Ayurveda for Depression (17). The comprehensive CBT was extracted based on the practical manual of cognitive-behavioral treatment of depression clinical training for therapists (Rostami, Bidadian, and Bahramizadeh). It is the first comprehensive step-by-step program for depression in Iran compiled by the Atiyeh Center using reliable and known Persian and non-Persian sources, and its effectiveness has been confirmed by experts (20). The content validity of both treatment protocols was reported by several professors and specialists of Azad University and Ayurvedic medicine, and both treatments were performed by the first author. A summary of treatment protocols is given separately in Tables 1 and 2.

1077

Table 1- The Ayurvedic treatment protocol

Meeting	Headline
1	Clinical interviews, introduction of Ayurveda, and presentation of treatment rationale
2	Interpreting worksheets and pictures sent, diagnosing the body type, and determining the type of stress and type of depression based on the mental structure, providing a meal plan to cleanse the digestive system if needed, the initial setting of daily activities
3	Providing diets and teaching corrective movements according to yoga based on the body type and the created imbalance



4	Examining social interactions and interpersonal relationships and their impacts on the created imbalance
5	Training breathing exercises
6	Individual massage training with therapeutic oils
7	Training to calm and relax the body in the face of stress
8	Training mindfulness exercises
9	Meditation training
10	Reviews and review changes

Table 2- The cognitive behavioral therapy protocol

Meeting	Headline
1	Acquaintance and communication, an introduction to depression, introduction of the treatment method
2	Acquaintance with negative, inflexible, destructive, necessary, and unnecessary thoughts and their relationships with mood
3	Familiarity with depressed thoughts and strategies to increase positive thoughts and decrease negative thoughts
4	Dealing with negative thoughts in the ABCDE ¹ way
5	Identifying enjoyable activities
6	The interaction of thinking, feeling, and behavior
7	Identifying goals and ways to achieve them and self-rewarding
8	Identification of the world inside and outside the mind
9	Examining relationships and their effect on mood
10	Reviewing and providing techniques to continue and maintain the process

¹Activating event, Beliefs, Consequences, Disputation of the beliefs, and Effective new approach



Research tools

The data collection tools were two standard questionnaires, each of which is briefly introduced below.

Beck's depression questionnaire, second edition:

This questionnaire is a type of self-assessment test. Beck et al. (1996) undertook a major revision of the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV) to cover a wider range of symptoms and to better align with the diagnostic criteria for depressive disorders. They provided evidence of sufficient validity and reliability of BDI-II for clinical purposes. The reliability of this test was 92% for outpatients, and its validity (71%) was reported to be positively correlated with the modified Hamilton Psychiatric Rating Scale for depression (22). The test consists of 21 items in total, emotion (2 items), cognition (11 items), overt behaviors (2 items), physical signs (5 items), and interpersonal semiotics (1 item). A four-point scale is given to each answer with a value between 0 and 3, thus the range of scores will vary between 0 and 63. Rajabi and Karjo Kasmai (2013) studied all students of Chamran University of Ahvaz to compare the validity and reliability of the Iranian form using the internal consistency method. They reported Cronbach's alpha coefficients for the whole questionnaire (0.86), the first factors (0.84), and the second (0.78). Therefore, the findings indicated the satisfactory validity of the Iran-Beck depression questionnaire-Persian edition (23).

Spielberger's state-trait anxiety inventory (STAI):

Designed in 1983, the STAI evaluates state and trait anxiety and has been widely used in research and clinical activities. The questionnaire includes separate self-assessment scales to measure trait and state anxiety. The concepts of state and trait anxiety were first proposed by Kettle and then more fully by Spielberger (1983). The reliability coefficient of this test has been

reported up to 0.89 (25) The state anxiety scale includes 20 sentences that describe the feelings of a person at the present time, and the trait anxiety scale also includes 20 sentences that evaluate people's general feelings. Thus, the scores of each of the state and trait anxiety scales can be in the range of 20-80 (26). Gholami et al. (2016) investigated all graduate students (1031 women and 843 men) at Ferdowsi University of Mashhad. They calculated the reliability of this scale by the internal consistency coefficient of the questions and the retest reliability coefficient. Cronbach's alpha coefficient for the whole scale and retest coefficients for the whole scale were 0.87 and 0.76, respectively. Its validity and reliability were respectively obtained through construct validity and Cronbach's alpha (0.89), which are also aligned with the research anxiety scale (27).

According to the pre-test-post-test design and follow-up in three experimental groups and the control group, data were analyzed using descriptive statistics indicators (prevalence, frequency percentage, mean, and standard deviation) and inferential statistics, including the mixed two-factor analysis of variance (ANOVA). Its defaults include Shapiro-Wilk, LUNE, Pillai, Wilks's Lambda, Embox and Bonferroni, and Tukey's post hoc tests using SPSS 21 software. A significance level of 0.05 was considered in the tests.

Results

Table 3 shows the statistics determined by examining the demographic indicators of the most common people in the age group of 40-45 years with 12 people, the largest number in terms of the marital status of married people with 42 people, and the largest number of related education surveys. There were 18 students in the bachelor's degree.

Table 3- Demographic indicators by groups (n = 40)

Variable	Components	CBT	Ayurveda	Combination	Control	Total
	25-29	2(22.2%)	3(33.3%)	1(11.2%)	3(33.3%)	9(100%)



Age	30-34	1(50.0%)	1(50.0%)	0(0.0%)	0(0.0%)	2(100%)
	35-39	3(33.3%)	1(11.2%)	2(22.2%)	3(33.3%)	9(100%)
	40-44	4(33.3%)	3(25.0%)	3(25.0%)	2(16.7%)	12(100%)
	45 years and above	0(0.0%)	2(25.0%)	4(50.0%)	2(25.0%)	8(100%)
Marital status	Single	5(26.3%)	5(26.3%)	5(26.3%)	4(21.1%)	19(100%)
	Married	5(26.3%)	5(26.3%)	4(21.1%)	5(26.3%)	42(100%)
	Divorced	0(00.0%)	0(00.0%)	1(50.0%)	1(50.0%)	2(100.0%)
Grade	Diploma	1(9.1%)	4(36.4%)	3(27.3%)	3(27.3%)	11(100%)
	B.S.	6(33.3%)	5(27.8%)	3(16.7%)	4(22.2%)	18(100%)
	M.S.	3(37.5%)	1(12.5%)	2(25.0%)	2(25.0%)	8(100%)
	Ph.D.	0(0.0%)	0(0.0%)	2(66.7%)	1(33.3%)	3(100%)

1080

Table 4 and Figure 1 show the descriptive indices of the dependent variables (state and trait anxiety) by measurement time and experimental and control groups. The average scores of the subjects of the experimental groups have changed in the research variables in the post-test

and follow-up stages compared to the pre-test. These changes are more noticeable in the Ayurveda and integrated treatment groups than in the CBT group. During the follow-up period, the integrated treatment group was more stable than the other groups.

Table 4. Descriptive indices of state and trait anxiety variables by time and groups

Groups	Dependent variable	Pre-test		Post-test		Follow-up	
		Average	Standard deviation	Average	Standard deviation	Average	Standard deviation
CBT	State anxiety	56.300	4.217	51.200	3.735	51.800	3.521
	Trait anxiety	52.900	4.508	49.100	4.886	49.300	4.083
Ayurveda	State anxiety	57.200	5.349	41.800	4.491	44.000	5.185
	Trait anxiety	50.300	4.243	38.100	2.233	40.700	3.198
Combination	State anxiety	53.900	6.261	43.300	5.926	40.700	4.110
	Trait anxiety	49.700	6.549	40.600	3.657	38.700	2.710
Control	State anxiety	50.100	7.651	49.700	5.478	50.900	4.228
	Trait anxiety	45.900	5.300	44.900	8.143	46.100	6.226



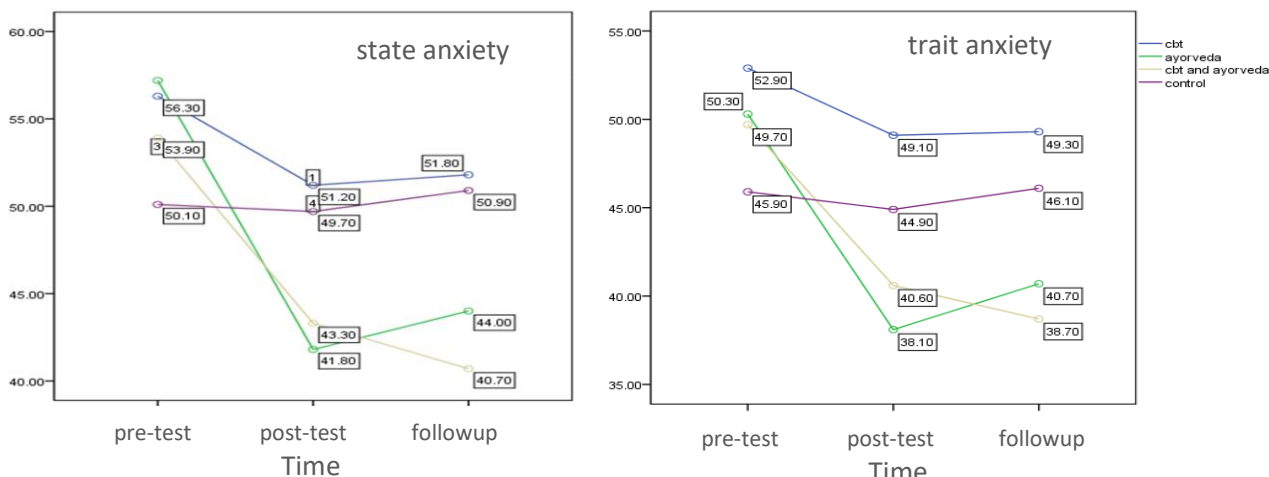


Figure 1. Comparison of mean state and trait anxiety variables in pre-test, post-test, and follow-up in the studied groups

The presuppositions of the mixed two-factor ANOVA were examined in the next step. The results of the pre-test of normality by the Shapiro-Wilk test showed the normal distribution of state and trait anxiety variables in all four groups and all three stages of pre-test, post-test, and follow-up.

Levene's test statistic was not significant for all the research variables ($p > 0.05$). Thus, the condition of homogeneity of variance was maintained for state and trait anxiety variables in all three periods. The assumption of homogeneity of variance-covariance matrices between groups, evaluated with the Mbox index, was significant ($p < 0.05$). Hence, the condition of homogeneity of

variance-covariance matrices was not established for state and trait anxiety variables; therefore, the Pillai test was used here. The results of Pillai's test indicated a significant difference in the state and trait anxiety variable among times (pre-test, post-test, and follow-up) ($p < 0.001$) and in the interaction of time and group ($p < 0.05$). The results of Mauchly's sphericity test showed that the assumption of the equality of variances within the subjects was not established for state and trait anxiety variables, which rejected the assumption of sphericity, and for this reason, the "Greenhouse-Geisser" correction was used to test the intragroup effects of time (before, after, and follow-up).

Table 5. The results of mixed two-factor ANOVA for state and trait anxiety variables

Variable	Source	F	P	Effect size
State anxiety	Time	60.401	0.001	0.627
	Time × Group	12.011	0.001	0.500
	Group	5.470	0.003	0.313
Trait anxiety	Time	28.126	0.001	0.439
	Time × Group	5.044	0.004	0.296
	Group	10.378	0.001	0.464

In Table 5, the results of the mixed two-factor ANOVA are presented to investigate the intra-test and inter-test effects. As can be seen, the effect size of time was significant on state and trait

anxiety scores ($p < 0.001$). The same intragroup interaction effect between time and three experimental and control groups was significant for state anxiety ($p < 0.001$) and for trait anxiety



(p = 0.004). Hence, there is a difference between the pre-test, post-test, and follow-up stages between the treatment groups and the control group for the dependent variables.

The inter-group effect was significant on the scores of state anxiety [F(3,36) = 5,470, p = 0.003] and trait anxiety [F(3,36) = 10,378, p < 0.001].

Thus, approximately 31% and about 46% of the changes in the state and trait anxiety scores can respectively be explained by the treatment groups.

Next, the Bonferroni test was performed to compare the mean measurement times of the research variables.

Table 6. Bonferroni's test results for the pairwise comparison of average measurement times of research variables

Variable s	Group s	Time (I)	Time (J)	Mean difference (I-J)	Standard deviation	Sig.
State anxiety	CBT	Pretest	Posttest	5.1*	0.348	0.1
			Follow up	4.5*	0.428	0.1
		Posttest	Follow up	-0.6	0.340	0.334
	Ayurveda	Pretest	Posttest	15.4*	1.899	0.1
			Follow up	13.2*	1.298	0.1
		Posttest	Follow up	-2.2	0.929	0.126
	Combination	Pretest	Posttest	10.6*	2.202	0.3
			Follow up	13.2*	1.731	0.1
	Control	Posttest	Follow up	2.6	1.2	0.087
			Pretest	Posttest	0.4	3.063
	Control	Posttest	Follow up	-0.8	2.449	0.751
			Follow up	-1.2	0.814	0.174
Trait anxiety	CBT	Pretest	Posttest	3.8*	0.467	0.1
			Follow up	3.6*	0.670	0.1
		Posttest	Follow up	-0.2	0.442	1.0
	Ayurv	Pretest	Posttest	12.2*	1.533	0.1



	eda	t	Follow up	9.6*	1.536	0.1
		Posttest	Follow up	-2.6*	0.733	0.019
	Combination	Pretest	Posttest	9.1*	2.474	0.015
			Follow up	11.0*	2.044	0.1
	Control	Posttest	Follow up	1.9	0.690	0.067
			Posttest	1.0	3.958	1.0
	Control	Posttest	Follow up	-0.2	3.405	1.0
			Follow up	-1.200	0.841	0.562

The results in Table 6 show a significant difference between the pre-test, post-test, and follow-up scores in the Ayurvedic and CBT groups in the state anxiety variable ($p < 0.001$). This difference was significant in the combined treatment group, ($P = 0.003$). The trait anxiety was also significantly different between the pre-test and post-test scores in the Ayurveda and CBT groups ($p < 0.001$). In the combined group, there was a significant difference between the pre-test and post-test scores ($P = 0.015$). There was no significant difference between the post-test and

follow-up scores in CBT and integrated therapy groups. In other words, the results indicate that the effectiveness of this treatment method in the follow-up phase was permanent for both state and trait anxiety variables. In the Ayurveda group, an increase of about 3 points occurred during the follow-up compared to the post-test, with a significant difference ($P = 0.019$).

In the following, Tukey's post hoc test was used to compare state and trait anxiety scores among groups.

Table 7. Tukey's test to compare the average state and trait anxiety variables in the studied groups

Variables	Group I	Group J	Mean difference (I-J)	Sig.
State anxiety	CBT	Ayurveda	5.433*	0.031
		Combination	7.133*	0.003
		Control	-4.867*	0.037
	Ayurveda	CBT	-5.433*	0.031
		Combination	1.700	1.000
		Control	-4.567*	.034
	Combination	CBT	-7.133*	0.003
		Ayurveda	-1.700	1.000



	Control	Control	-5.267*	0.031
		CBT	4.867*	0.037
		Ayurveda	4.567*	0.034
		Combination	5.267*	0.031
Trait anxiety	CBT	Ayurveda	7.400*	0.001
		Combination	7.433*	0.001
		Control	-4.800*	0.021
	Ayurveda	CBT	-7.400*	0.001
		Combination	0.033	1.000
		Control	-4.600*	0.023
	combination	CBT	-7.433*	0.001
		Ayurveda	-0.033	1.000
		Control	-4.633*	0.027
	Control	CBT	4.800*	0.021
		Ayurveda	4.600*	0.023
		Combination	4.633*	0.027

As shown in Table 7, the state anxiety score in the Ayurveda test group is 5 points lower than the CBT test group, and the combined test group is 7 points lower than the CBT test group, with significant differences ($p < 0.05$). There was no significant difference between the Ayurveda and combined experimental groups and the control group.

Discussion and conclusion

This research aimed to compare the effectiveness of Ayurvedic treatment, CBT, and the combination of these two treatments on anxiety in depressed women. The results obtained from the data analysis showed a significant difference between the control group and the Ayurvedic treatment experimental group in state and trait anxiety. These results are in line with those of Noel and Pencey (2017), who reported anxiety reduction in patients with Ayurvedic treatment. In other words, the intervention of diet, exercise, lifestyle, and behavior modification provides significant benefits for moderate to severe

depression and anxiety (11).

This part of the research also agrees with that of Klaravich (2015), indicating the effectiveness of Ayurvedic treatment and psychiatric drug therapy in patients with depression, who were treated with the Ayurvedic method and showed increased self-confidence and less anxiety (12)

Therefore, it can be concluded that people's actions in the direction of improving their lifestyle according to Ayurveda, i.e. regulating the circadian rhythm of sleeping and waking, nutrition, physical activities, and improving interpersonal and social relationships, using relaxation and cleansing methods can effectively control and reduce anxiety symptoms in patients with mild to moderate depression.

The results of the effectiveness of CBT on the anxiety of depressed women showed a significant difference between the control and the intervention groups in state and trait anxiety, which confirmed the research hypothesis. This result is in line with a meta-analysis by Shahriari



(2016) who showed that cognitive-behavioral interventions were effective in the treatment of generalized anxiety disorder. It was also found that the CBT group could be used as the first line of therapy in the generalized anxiety disorder of middle-aged people (28). The cognitive-behavioral approach focuses on the behavior and thoughts related to the problems in the depressed person. Beck et al. believe that depressed people suffer from a negative attitude about themselves, the future, and the environment because they are surrounded by biases and negative thoughts. From the behavioral aspect, depression is related to the person's relationship with the environment and is not an endogenous phenomenon. The goal of this treatment approach is to reduce the intensity, duration, and repetition of symptoms. Limbic decreases during emotion perception in CBT and predicts improvement in anxiety and depression symptoms (7).

Our results revealed a significant difference between the effectiveness of Ayurveda, CBT, and the combination of these two treatments in depressed women's state and trait anxiety. Among these methods, the combined treatment had the most impact on improving the average state anxiety of depressed women. As such, a better average was recorded in the group that was trained these two methods in a combined manner than the other two groups. Due to the lack of relevant internal and external research in this field, it was not possible to compare the results with other studies. Since the goal of Ayurvedic treatment is to restore balance to the individual, and the Ayurvedic understanding of the human being is holistic, each person is viewed as a psychological continuum that includes both their overt physical parts and their subtle psychic abilities. Attention is paid to the whole lifestyle of a client so that everything that disrupts the vital and psychological balance of a person is intervened. Rao (2008) investigated the effectiveness of Ayurveda treatment on reducing anxiety in patients treated with Ayurveda

treatment, including changes in diet, lifestyle, exercise, meditation, herbal medicines, cleansing methods, and breathing exercises. The results showed that anxiety was significantly reduced in all subjects. The researcher claimed to be the first to investigate the effectiveness of Ayurveda in diseases, especially anxiety in America (30).

Based on the results of the research, the simultaneous use of Ayurveda and CBT can strengthen the advantages of both methods and practically cover the possible weaknesses of each one alone. On the one hand, with the holistic approach of Ayurveda and lifestyle modification, the person restores balance to his/her body and mind, and on the other hand, he/she activates his/her behavior and becomes aware of his/her cognitive distortions using the CBT.

Despite the important findings of this research, it suffers from some limitations. First, this research was conducted during the COVID-19 epidemic, which might have caused changes in the conclusions compared to normal conditions, hence it is better to conduct similar research in normal conditions as well to draw a more accurate conclusion. Another limitation is the use of women suffering from moderate depression with an age range of 25-45 years in Tehran, which makes the results generalizable only for the same age group and in the same city. Therefore, it is suggested to conduct the research in other age groups and in other cities and statistical societies with different cultural, social, and economic characteristics and compare the results with the results of the present research. Researchers are suggested to design studies in the future to compare the relationship of other variables with the therapeutic effect of Ayurvedic medicine with a larger number of people and between men and women. Moreover, finding the similarities and differences between Ayurvedic medicine and Iranian traditional medicine, as the two complementary and ancient medicines, can greatly contribute to their scientificization and bring traditional medicine and modern medicine specialists to cooperation and intellectual



convergence.

Acknowledgments

The authors would like to express appreciation for the unreserved help of the Center for Body and Mind Development and Mr. Hossam Al-Zhakrin, who guided us in all stages of research in the field of Ayurvedic medicine.

References

1. Sadock BJ, Sadock VA, Ruiz P. Synopsis of psychiatry: behavioral sciences, clinical psychiatry: Arjamand Publications; 2022.
2. WHO. division of mental health & prevention of substance abuse, programme on mental health. 2013. [Link](#)
3. Prisie JC, Sajobi TT, Wang M, Patten SB, Fiest KM, Bulloch AG, Jette N. Effects depression and anxiety on quality of life in five common neurological disorders. *General hospital psychiatry*. 2018; 52: 58-63. [Doi](#)
4. Muramatsu K, Miyaoka H, Kamijima K, Muramatsu Y, Fuse K, Yoshimine F, et al. Prevalence and comorbidity of anxiety and depressive disorders in studies of PRIME-MD and PHQ (Patient Health Questionnaire) in Japan. *Anxiety Disorders: The New Achievements*. 2021:93. [Doi](#)
5. American Psychiatric Association. Diagnostic and statistical manual of mental disorders. Rezaei F, Fakhraei A, Femand A, Nilufri Ali, Jeanette Hashemi A, Shamlou F (Persian translator). 5th edition. Arajmand Publications; 2021.
6. Gorka SM, Young CB, Klumpp H, Kennedy AE, Francis J, Ajilore O, et al. Emotion-based brain mechanisms and predictors for SSRI and CBT treatment of anxiety and depression: a randomized trial. *Neuropsychopharmacology*. 2019;44(9):1639-48. [Doi](#)
7. Ali S, Rhodes L, Moreea O, McMillan D, Gilbody S, Leach C, et al. How durable is the effect of low intensity CBT for depression and anxiety? Remission and relapse in a longitudinal cohort study. *Behav Res Ther*. 2017;94:1-8. [Doi](#)
8. Martinsen EW. Physical activity in the

prevention and treatment of anxiety and depression. *Nordic journal of psychiatry*. 2008;62(sup47):25-9. [Doi](#)

9. Bressington D, Mui J, Yu C, Leung SF, Cheung K, Wu CST, et al. Feasibility of a group-based laughter yoga intervention as an adjunctive treatment for residual symptoms of depression, anxiety and stress in people with depression. *Journal of affective disorders*. 2019;248:42-51.

[Doi](#)

10. Fazeli M, Ehteshamzadeh P, Hashemi SE. The effectiveness of cognitive behavior therapy on cognitive flexibility of depressed people. *Thoughts and Behavior in Clinical Psychology*. 2015 Mar 21;9(34):27-36. [Link](#)

11. Null G, Pennesi L. Diet and lifestyle intervention on chronic moderate to severe depression and anxiety and other chronic conditions. *Complementary therapies in clinical practice*. 2017;29:189-93. [Doi](#)

12. Kolarević M. Depression between biomedicine and Ayurvedic medicine: a case of patient experiences in Slovenia (Doctoral dissertation, Univerza v Novi Gorici, Fakulteta za podiplomski študij). [Link](#)

13. Mishra LC. Scientific basis for Ayurvedic therapies: CRC press; 2004. [Link](#)

14. Ghodke Y, Joshi K, Patwardhan B. Traditional medicine to modern pharmacogenomics: Ayurveda Prakriti type and CYP2C19 gene polymorphism associated with the metabolic variability. *Evid-based Complement Altern Med*. 2011. [Doi](#)

15. Chatterjee B, Pancholi J. Prakriti-based medicine: A step towards personalized medicine. *Ayu*. 2011;32(2):141. [Doi](#)

16. Bell C, Heidel RE, Sunega J, Drisko J. Ancient Wisdom: Can Ayurvedic Prakriti Provide Invaluable Insights into Integrative Medicine? *Ayu J Health*. 2017;15(3):27-34. [Link](#)

17. Mills PJ, Peterson CT, Wilson KL, Pung MA, Patel S, Weiss L, et al. Relationships among classifications of ayurvedic medicine diagnostics

1086



for imbalances and western measures of psychological states: An exploratory study. *Journal of Ayurveda and integrative medicine*. 2019;10(3):198-202. [Doi](#)

18. Cardona Sanclemente LE. *Ayurveda for Depression An Integrative Approach to Restoring Balance and Reclaiming Your Health*. Berkeley, California: North Atlantic Books; 2020

19. VanVoorhis CW, Morgan BL. Understanding power and rules of thumb for determining sample sizes. *Tutorials in quantitative methods for psychology*. 2007 Sep 1;3(2):43-50.

20. Frawley D. *Ayurveda and the Mind: The Healing of Consciousness*: Lotus Press (WI); 1997.

21. Rostami R, Bidadian M, Bahramizadeh H. *Cognitive-behavioral therapy for depression, a practical guide for therapists*. Tehran: Arjmand; 2019. [Link](#)

22. Beck, A. T., Steer, R. A., & Brown, G. (1996). *Beck Depression Inventory-II (BDI-II)* [Database record]. APA PsycTests. <https://doi.org/10.1037/t00742-000>.

23. Rajabi G, Karjuksmai S. Psychometric properties of a Persian language version of the beck depression inventory second edition (BDI-II). *Educational Measurement Quarterly*. 2011;3(10):139-57. [Link](#)

24. Andras NZ, Szidalisz AT, Krisztina C, Sandor R, Szabolcs AB. Development of the short version of the spielberger state—trait anxiety inventory. *Psychia-try Research*. 2020;291. [Doi](#)

25. Spielberger CD, Gorsuch RL. State- trait anxiety inventory for adults. [Link](#)

26. Mehram B. Normization of Spielberger anxiety test in Mashhad city. Master's thesis, Ministry of Science, Research and Technology, Allameh Tabatabai University, 1373.

<https://dl.isca.ac.ir/site/catalogue/573001>

27. Gholami Booreng F, Mahram B, Kareshki H. Construction and Validation of a Scale of Research Anxiety for Students. *IJPCP* 2017; 23 (1) :78-93 [Link](#)

28. Shahriari H, Zare H, Aliakbari M, G. D,

Sarami Froushani R. Effectiveness of Cognitive-Behavioral Interventions in the Treatment of Generalized Anxiety Disorder: A Systematic Review and Meta-analysis. *J Rafsanjan Univ Med Sci Health Serv*. 2018. [Link](#)

29. Beck, A. T., Freeman, A., & Davis, D. D. (2004). *Cognitive therapy of personality disorders* (2nd ed.). Guilford Press. [Link](#)

30. Rao PR. A multiple case study of practitioners and patients in the ayurvedic treatment of anxiety disorder (Doctoral dissertation, Saybrook University). [Link](#)

