

An Integrative Approach to Patients with Chronic Back Pain: A Cross-Sectional Study

Kronik Sırt Ağrısı Olan Hastaların Tedavisinde Bütüncül Bir Yaklaşım: Kesitsel Bir Araştırma

^{1b} Mustafa SÜREN^a, ^{1b} Serkan DOĞRU^b, ^{1b} Tuğba KARAMAN^c, ^{1b} Mehtap BALTA^c,
^{1b} Serkan KARAMAN^c, ^{1b} Tuğba AÇIKGÖZ^c, ^{1b} Cihat AYAZ^c, ^{1b} İsmail OKAN^d

^aDepartment of Anesthesiology and Reanimation, Samsun University Faculty of Medicine, Samsun, Türkiye

^bDepartment of Anesthesiology and Reanimation, University of Health Sciences Mersin City Training and Research Hospital, Mersin, Türkiye

^cDepartment of Anesthesiology and Reanimation, Tokat Gaziosmanpaşa University Faculty of Medicine, Tokat, Türkiye

^dDepartment of General Surgery, İstanbul Medeniyet University Göztepe Prof. Dr. Süleyman Yalçın City Hospital, İstanbul, Türkiye

ABSTRACT Objective: Chronic back pain is a complex, debilitating condition necessitating a vast amount of resources. In the present study, we aimed to evaluate the efficacy of an integrative pain approach for treating patients with chronic back pain in a setting where integrative medicine is still largely unknown. **Material and Methods:** The program included patients with chronic back pain who were admitted to the algology outpatient unit and treated with an integrative approach. The patients' demographic and clinical data and their assessment scores, such as Numerical Rating Scale (NRS), Pain Catastrophizing Scale (PCS), and Beck Anxiety Inventory (BAI) scores, during the first and last visits, were collected during the program. After two months, the data were retrieved from the files and retrospectively evaluated. **Results:** In total, 96 patients were recruited to the study. Their mean age was 46.52±13 years; 82.3% of the patients were female. The patients' commitment to the integrative pain treatment approach gradually declined over time. Only 10.4% of them completed the whole treatment program. The NRS and PCS scores significantly decreased after the program (NRS: 7.75±2.21 vs. 5.75±3.3, p=0.027; PCS: 40.22±5.56 vs. 32.22±8.8, p=0.024). **Conclusion:** The patients' commitment to the integrative pain treatment approach was low in a setting where integrative medicine is still largely unknown. However, we noted significantly lesser pain and catastrophizing in patients who were fully committed to the program.

Keywords: Integrative medicine; phytotherapy; breathing excercises; chronic pain; catastrophizing

ÖZET Amaç: Kronik sırt ağrısı, çok miktarda kaynak gerektiren karmaşık, güçten düşürücü bir durumdur. Bu çalışmada, bütüncüleştirici tıbbın hâlâ büyük ölçüde bilinmediği bir ortamda kronik sırt ağrısı olan hastaları tedavi etmek için bütüncüleştirici bir ağrı yaklaşımının etkinliğini değerlendirmeyi amaçladık. **Gereç ve Yöntemler:** Ağrı polikliniğine başvuran ve bütüncül yaklaşımla tedavi edilen kronik bel ağrısı olan hastalar programa dâhil edildi. Program sırasında hastaların demografik ve klinik verileri ile Sayısal Derecelendirme Ölçeği [Numerical Rating Scale (NRS)], Ağrı Felaketleştirme Puanı [Pain Catastrophizing Scale (PCS)] ve Beck Anksiyete Envanteri [Beck Anxiety Inventory (BAI)] puanları gibi değerlendirme puanları program sırasında toplandı. İki ay sonra veriler dosyalardan alınarak retrospektif olarak değerlendirildi. **Bulgular:** Toplamda 96 hasta çalışmaya alındı. Yaş ortalamaları 46,52±13 yıldır; hastaların %82,3'ü kadındır. Hastaların bütüncüleştirici ağrı tedavisi yaklaşımına bağlılığı zamanla kademeli olarak azaldı. Hastaların sadece %10,4'ü tüm tedavi programını tamamladı. Program sonrasında NRS ve PCS skorları anlamlı olarak azaldı (NRS: 7,75±2,21'e karşı 5,75±3,3; p=0,027; PCS: 40,22±5,56'ya karşı 32,22±8,8; p=0,024). **Sonuç:** Bütüncüleştirici tıbbın hâlâ büyük ölçüde bilinmediği bir ortamda, hastaların bütüncüleştirici ağrı tedavisi programına bağlılığı düşüktü. Bununla birlikte, programa tamamen bağlı olan hastalarda önemli ölçüde daha az ağrı ve ağrı felaketleştirme olduğunu gözlemledik.

Anahtar Kelimeler: Bütüncüleştirici tıp; fitoterapi; nefes egzersizleri; kronik ağrı; felaketleştirme

The World Health Organization (WHO) defines health as “a complete physical, mental and social well-being and not merely the absence of disease or

infirmity.”¹ Integrative medicine aims to change the view of medicine toward complete healing and recovery. Therefore, it mandates their view and con-

Correspondence: Mustafa SÜREN

Department of Anesthesiology and Reanimation, Samsun University Faculty of Medicine, Samsun, Türkiye

E-mail: mustafa.suren@samsun.edu.tr



Peer review under responsibility of Journal of Traditional Medical Complementary Therapies.

Received: 23 Sep 2022 **Received in revised form:** 13 Jun 2023 **Accepted:** 09 Jul 2023 **Available online:** 17 Jul 2023

2630-6425 / Copyright © 2023 by Türkiye Klinikleri. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

sideration of a patient's mentality, spiritual characteristics, beliefs, and lifestyle, in addition to the effects of societal and cultural characteristics on the patient during the treatment process. Moreover, integrative medicine focuses on minimally invasive, non-toxic, and low-cost methods to help treat a patient's disease by combining conventional (modern and mainstream) and complementary treatment approaches. It activates mental, spiritual, and social dynamics to facilitate healing. Thus, integrative medicine serves a purpose that centers on doctor-patient confidentiality.¹ In integrative medicine, patients are perceived as actively contributing to their healing processes. Hence, integrative medicine is particularly effective when patients' health-related cognitions and coping skills change during treatment. Consequently, motivating patients to adopt a healthier lifestyle during treatment and maintain it after discharge is an essential indicator of treatment success.² Recently, many integrative medicine treatment centers have started to function worldwide.^{1,3} However, as in most parts of the world, the integrative medicine approach is still in its infancy, even in Türkiye. Recent initiatives by the Ministry of Health to incorporate integrative medicine into the mainstream medical approach were welcomed by many physicians. However, the public acceptance of integrative medicine in Türkiye remains to be determined.⁴

Globally, chronic back pain is the leading cause of disability.⁵⁻⁸ Worldwide, while one in five adults suffers from chronic or recurrent pain, 10% of adults are newly diagnosed with chronic pain each year. Back pain is considered the most common type of chronic pain. Its incidence is quite common worldwide (24%-79%), resulting in significant labor loss.⁹⁻¹¹ Patients with back pain repeatedly visit healthcare professionals to alleviate their pain and regain their physical functions.⁵ In a study conducted in Türkiye, the lifetime prevalence of neck, upper back, and low back pain was found to be 79.3%, 59.5%, and 86.3%, respectively, while the point prevalence of neck, upper back, and low back pain was found to be 12.0%, 3.0%, and 18.3%, respectively.¹² Although back pain has a high prevalence and substantial global impact, its underlying mechanism remains poorly understood. Multiple evidence-based guide-

lines for the management of chronic back pain are readily available. A conservative approach involving a personalized combination of evidence-based conservative and traditional and complementary medicine (TCM) is consistent with the current guidelines and is cost-effective and safe. The use of these therapies after considering the patient's psychological and social characteristics, preferences, and values is also beneficial; these aspects are often overlooked when devising effective treatment plans.¹⁰

In the present study, we aimed to discuss implementing an integrative approach instead of conventional treatment for patients with back pain at a pain center in a university hospital. We also analyzed the efficiency of the integrative approach in treating back pain.

MATERIAL AND METHODS

PATIENTS AND STUDY DESIGN

The present study included patients with complaints of chronic back pain who were admitted to the pain outpatient unit of the department of anesthesiology and reanimation in our tertiary university hospital between November 2019 and February 2020. Ethics committee approval was obtained from Tokat Gaziosmanpaşa University Clinical Research Ethics Committee (date: September 17, 2020, no: 20-KAEK-228). The study was retrospectively cross-sectional observational, designed and conducted by the Principles of the Declaration of Helsinki. Our pain unit serves as an outpatient department that provides pharmacological treatment, trigger point injection, dry needling treatment, and central and peripheral block treatments as conventional pain therapies. Some complementary therapies (chiropractic, phytotherapy, cupping, and hirudotherapy) are performed by certified specialists in the pain unit. We have implemented an integrative approach for patients with chronic pain since January 2020. The present study included patients with chronic back pain who were offered an integrative approach instead of conventional treatment for alleviating their pain. The inclusion criteria were as follows: age between 18 and 70 years and chronic back (lower and upper back) pain lasting over six months. Pregnant patients

or those with central or peripheral neurological disease, chronic inflammatory disease, or a history of spinal surgery were excluded from the study. The patients were recruited to a two-month TCM treatment program after informing them about the program and obtaining their verbal consent. The patients' pain response and treatment adherence were assessed at 15-day intervals for two months. The patient's demographic data, weight, height, Numerical Rating Scale (NRS) scores, Pain Catastrophizing Scale (PCS) scores, Beck Anxiety Inventory (BAI) scores, and breathing patterns (thoracic breathing or abdominal breathing) were evaluated and routinely recorded in registration files. After the first examination, the patients were examined every 15 days for two months (the first examination was performed on the first day of the visit, the second examination on the 15th day, the third examination on the 30th day, the fourth examination on the 45th day, and the fifth examination on the 60th day). When the patients visited for these examinations, their pain scores were re-evaluated and recorded (0=No pain at all, and 10=The worst pain imaginable). Their adherence to the integrative pain treatment program was recorded by the doctor as a percentage depending on each patient's statement (0=The integrative pain treatment program was never followed, and 100=The integrative pain treatment program was followed entirely). In addition, the PCS and BAI scores were re-evaluated in the last examination (at the end of the second month), as done in the first. Daily, the data were prospectively recorded on a computer from the registration forms by two senior residents. Following this, the data were retrospectively evaluated.

INTEGRATIVE APPROACH FOR TREATING CHRONIC PAIN

Abdominal breathing exercise: During the outpatient examination of the patients, the type of breathing was determined (abdominal or thoracic breathing) and recorded. The patients who had thoracic breathing were provided 5 minutes (min) of abdominal breathing training. The patients were recommended to make an effort to perform abdominal breathing exercises for 5 min a total of six times a day.

Walking exercise: The patients were recommended to walk outdoors on flat ground for at least 1 hour daily at a medium speed (at a speed at which they could comfortably chat with a person next to them).

Sleep pattern rehabilitation: The patients were advised to fall asleep at 22:00 and wake up at 06:00.

Use of probiotics: The patients were recommended to drink a mixture of a tablespoon of vinegar and a teaspoon of honey together with a glass of water each morning. In addition, the patients were recommended to drink a cup of kefir at least twice a week, to consume whole wheat flour and two crushed garlic cloves per day, and to avoid any refined and industrialized foods.

Phytotherapy: The patients were recommended to use a mixture of herb infusion consisting of 1 gram each of linden, lemon balm herb, lavender, sage, and hops.

Postural awareness: The patients were recommended to pay attention to their posture daily. For example, they were asked not to look at the mobile phone screen for a long time or use a computer for a long time and to pay attention to their body position in case they used these devices.

All these recommendations were explained verbally and distributed as a brochure. Moreover, a training session was provided for 10 min by a senior resident or consultant. During later visits, the patient's adherence to the integrative pain treatment program was recorded through their self-evaluation.

ASSESSMENT OF PCS AND BAI SCORES

PCS, created by Sullivan et al., measures the degree of a person's thought of pain and consists of three subgroups: helplessness, magnification, and rumination.¹³ Suren et al. established the reliability and validity of the Turkish version of PCS.¹⁴ PCS and BAI scores were assessed during the first and last visits. Moreover, the relationship among PCS scores, BAI scores, and pain scores was assessed.

STATISTICAL ANALYSIS

The distribution of the data was analyzed using the Kolmogorov-Smirnov test. Categorical data are

shown as numbers and percentages, while numerical data are shown as means and standard deviations. The chi-square test was used to compare the categorical data of the patients. Intragroup comparisons were performed using the Wilcoxon test. All analyses were performed using Statistical Package for the Social Sciences (SPSS Inc., Chicago, IL), version 20. Statistical significance was considered at $p < 0.05$.

RESULTS

Ninety-six patients were included in the present study; the recruitment details are displayed in a flow chart in Figure 1. The mean age of the patients was 46.52 ± 13 years, and 82.3% were female ($n=79$). The patients' demographic characteristics are shown in Table 1. Only 10.4% of the patients ($n=10$) completed the entire program (Figure 2). The mean adherence rate to the program was $76.99 \pm 21.39\%$, where the lowest followed recommendation was sleep regulation ($56.48 \pm 30.44\%$), while the most followed one was postural awareness ($86.75 \pm 17.48\%$; Table 2).

The NRS scores (indicative of the pain severity) of the patients who completed the entire program decreased at the end of the program (NRS: 7.75 ± 2.21 at the beginning vs. 5.75 ± 3.3 at the end, $p=0.027$). Similarly, the PCS scores (indicative of catastrophizing) of the patients who completed the entire program decreased at the end of the program (PCS: 40.22 ± 5.56 at the beginning vs. 32.22 ± 8.8 at the end, $p=0.024$). In contrast, the BAI scores revealed that the patient's anxiety did not decrease (Table 3). A low positive correlation was noted between the PCS and pain scores and the PCS scores and anxiety ($r=0.394$, $p \leq 0.01$). However, no relationship was noted between the pain scores and anxiety (Table 4). A comparison of the patient's pain scores is provided in Table 5; the patient's pain scores gradually decreased over time and correlated well with their adherence to the program (Wilcoxon test).

DISCUSSION

Despite the low adherence rate to the integrative pain treatment program present study's, the patients who

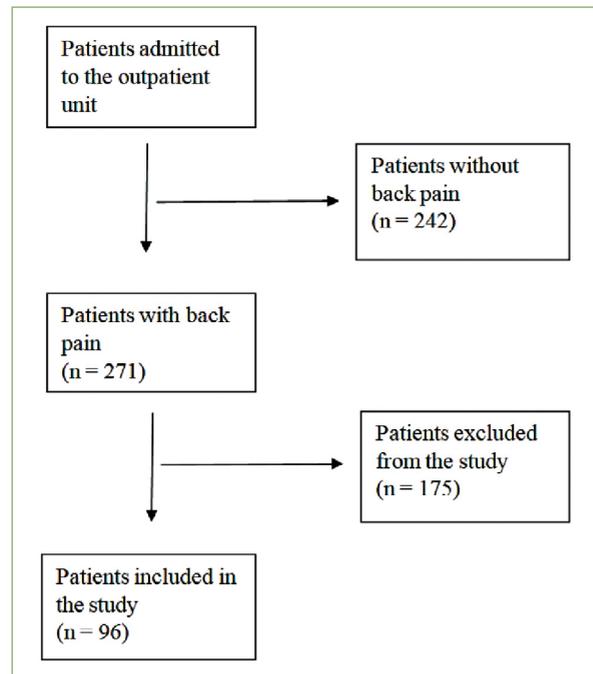


FIGURE 1: Flow diagram depicting patient recruitment.

TABLE 1: Demographic characteristics of the patients.

		n	%
Gender	Female	79	82.3
	Male	17	17.7
		$\bar{X} \pm SD$	
Age		46.52 ± 13	
Height		163.7 ± 8.18	
Weight (kg)		76.32 ± 14.83	
BMI (kg/m ²)		28.4 ± 5.35	
From urban areas		73	76.0
From rural areas		17	17.7
From outside the province		6	6.2

BMI: Body mass index; SD: Standard deviation.

completed the program showed a significant decrease in their pain scores and catastrophizing. Chronic pain is a common, complex, and distressing health problem that causes severe adverse effects on individuals and society.^{7,8} In general, pain occurs due to tissue injury or disease. Pain that persists after the healing of the injury or disease in the expected time is called chronic pain. Chronic pain is considered a public health problem in many Western countries because it restricts the physical work that can be performed by an individual and poses a tremendous economic bur-

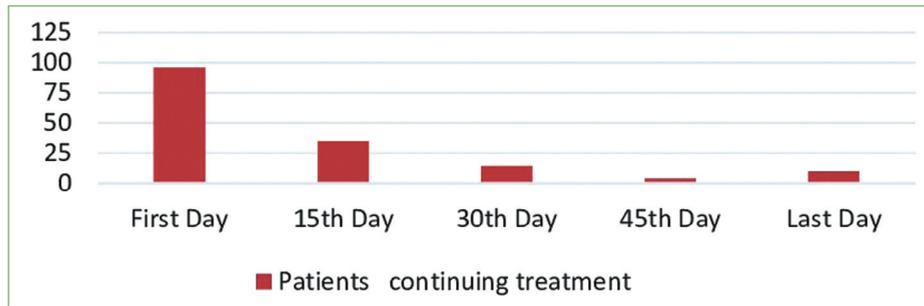


FIGURE 2: Number of patients continuing the treatment.

TABLE 2: Adherence to the recommendations of the treatment program.

Adherence (%)	$\bar{X} \pm SD$
Abdominal breathing exercise	78.75±24.23
Walking exercise	75.95±18.03
Sleep pattern rehabilitation	56.48±30.44
Use of probiotics	81.78±19.73
Phytotherapy	82.28±18.45
Postural awareness	86.75±17.48
Total mean	76.99±21.39

SD: Standard deviation.

TABLE 3: Comparison of the first and last examinations.

	First examination $\bar{X} \pm SD$	Last examination $\bar{X} \pm SD$	p value
PCS scores	40.22±5.56	32.22±8.8	0.024*
NRS scores	7.75±2.21	5.75±3.3	0.027*
BAI scores	21.42±13.77	19.85±8.72	0.917

*p<0.05; PCS: Pain Catastrophizing Scale; NRS: Numerical Rating Scale; BAI: Beck Anxiety Inventory; SD: Standard deviation.

TABLE 4: Correlation analysis among BAI, PCS, and NRS scores.

		PCS scores	BAI scores
NRS scores	r value	0.239	0.121
	p value	0.02*	0.246
BAI scores	r value	0.394	
	p value	<0.01*	

*p<0.05; BAI: Beck Anxiety Inventory; PCS: Pain Catastrophizing Scale; NRS: Numerical Rating Scale.

TABLE 5: Comparison of patients' NRS scores.

	1 st day	15 th day	30 th day	45 th day	Last day
NRS scores	7.75±2.21	7.25±2.62	6±2.94	5.25±1.7	5.75±3.3
Number of patients (%)	96 (100)	33 (34.3)	13 (13.5)	5 (5.2)	10 (10.4)

Wilcoxon test; NRS: Numerical Rating Scale.

den on the health system.⁷ Patients with chronic pain cannot be fully productive at work and experience psychological problems, such as depression, anxiety, and insomnia, because of their pain.^{6,9,10} The treatment of chronic pain is more difficult and complicated than that of acute pain. Patients with back pain account for a significant proportion of patients with chronic pain (24%-79%).^{9,11} Back pain has increasingly become one of the leading causes of disability in societies worldwide. According to the WHO, back pain is the most important cause of morbidity worldwide. Chronic low back pain is the leading cause of noncancerous pain-related opioid prescriptions; it has become a societal problem, given the increasing opioid use among patients. Although it is a prevalent and significant global health problem, the mechanism underlying chronic back pain is still not fully understood.¹⁰ The prevalence of back pain also varies due to methodological differences in the timing and the absence of a standard definition.^{7,8} In a study conducted in the Turkish population, the annual incidence of low back pain was found to be 5%, while the lifetime prevalence of low back pain was found to be as high as 79.4%.¹¹ That study was a prevalence study of healthy individuals. In the present study, 53.99% of the patients presented to our outpatient clinic with chronic back pain (Figure 1). More studies assessing the etiology, incidence, and prevalence of back pain need to be conducted in our society.

According to the Ministry of Health, in Türkiye, the Department of Traditional, Complementary, and Alternative Medicine was first established in 2012. Its name was changed to the Department of Traditional and Complementary Medicine (TCM/GETAT), and the TCM/GETAT regulation was published in 2014. At present, 56 TCM application centers have been opened in universities and teaching hospitals in Türkiye.¹²

The city where the present study was conducted has no TCM center. Therefore, we implemented the integrative treatment approach in our pain unit. However, the adherence to the program gradually declined over the weeks, resulting in a 10% adherence rate at the end of the program. Most patients (n=76) were in the vicinity of the hospital (10 km radius); hence, issues related to transportation could be excluded. Good treatment adherence is defined as following at least 80% or more of the recommendations (e.g., using a prescription drug). Nonadherence to drug treatments is a common problem in patients with chronic conditions. Similarly, in patients with chronic (nonmalignant) pain, incompatibility with drug treatments is a common problem (8%-53%).¹⁵ Patients with chronic back pain are less satisfied with the healthcare services provided to them.^{9,10} These patients are dissatisfied with the effort put into their treatment and complain that their pain is not adequately treated. All these patients have their own history, experience, and perception of pain, and they think that their pain is unique.⁹ Such patients are often disappointed with their treatment options and results.^{4,9,10} Failure to adhere to the program could be due to different reasons: First, long-run programs are difficult to adhere to as they require commitment. Second, the program and initiatives may not have been sufficiently explained to the patients. The implementation of a new program that is not well known may not be fully understood by the doctor, patient, and clinic staff. Third, the patients were not familiar with or even had opposing views regarding the integrative approach. However, adherence to the program was high among the patients who completed the entire program. This could be due to the fact that the patients who were eager to pursue the program were equally persistent in following all elements of the

program (Table 2). Fourth, although we have no data about the adherence of patients with chronic pain to conventional treatment in our society, many studies have shown that patients with chronic pain are “difficult patients” with regard to their treatment plan.¹⁶⁻¹⁸ Finally, the enrollment rate into this program was lower than that expected, possibly because the last days coincided with the early stages of the coronavirus disease-2019 pandemic. We would like to address the reasons for not attending the program with the intention of improving the program and fully establishing it in the future.

PCS, consisting of 13 items grouped into three subscales, reflects a person’s focus on pain sensations and exaggeration and their tendency to feel helpless. Individuals with a high catastrophizing tendency have an irrational and pessimistic view of future events. PCS, whose internal consistency and validity have been firmly established, has also been used to predict poor prognosis and chronic pain.¹⁹ Individuals with high catastrophic thoughts exhibit a greater stress response to the state of pain (particularly chronic pain) than would normally be expected. Moreover, an exaggerated state of cognition to pain accompanies psychological disorders. High PCS scores correspond to a decreased response to medical treatments in patients with chronic pain, while low PCS scores correspond to a good response to pain and medical interventions.²⁰ In the present study, a significant decrease (from 40.22 ± 5.56 to 32.22 ± 8.8) was noted in the mean PCS scores of patients with chronic back pain after the integrative pain treatment program.

In a previous study conducted in our region, the mean PCS score of patients with chronic pain during preoperative anesthesia examination was found to be 23.10 ± 10.99 and their mean pain severity was found to be 3.79 ± 2.33 .²¹ In the present study, the mean PCS score of patients with chronic pain was 40.22 ± 5.56 and their mean pain severity was 7.75 ± 2.21 . The pain severity of the patients in the present study was higher than that of the patients in the previous study. Hence, it is expected that their PCS scores would also be high, given the positive relationship between pain severity and PCS scores.²⁰

When treating patients with chronic pain who have high PCS scores, cognitive behavioral therapy, acceptance and commitment therapy, exercise-based rehabilitation, and multidisciplinary treatment are used to lower psychological discomfort and alleviate pain.²⁰ A unique aspect of the present study is that PCS scores, used as a cognitive indicator of pain severity, decreased after integrative treatment in patients with chronic back pain. As our study included a small number of patients, it will be beneficial to conduct larger studies assessing the relationship between integrative or TCM treatment and PCS scores in patients with chronic pain.²² We also noted a positive correlation between PCS scores and pain severity and anxiety in patients with chronic back pain. A positive correlation has been reported between pain severity and psychological disorders, such as depression and anxiety, in patients with chronic pain, such as PCS.^{19,23}

A limitation of the present study is that it is a single-center, retrospective study involving a small number of patients. We consider our study a pilot one. The fact that there was no sufficient training time before introducing our program to the patients and hospital staff is another limitation of the present study.

CONCLUSION

Adherence to the integrative pain treatment approach was low among patients with chronic back pain in a city where the integrative approach is unfamiliar to both the patients and healthcare staff. However, integrative treatment was successful among the patients

who strongly adhered to the program. Moreover, the integrative approach for treating chronic back pain decreased the PCS scores, in addition to alleviating the pain scores. An integrative treatment approach is needed for patients with chronic back pain. In this regard, studies involving a wide range of prospective patients are needed. In these patients, it will be useful to diversify integrative treatment options and provide the most appropriate treatment depending on the patient's preferences.

Acknowledgement

Many thanks to the linguist Melek ÇETİN and Betül SÜREN for their contributions at every stage of this study.

Source of Finance

During this study, no financial or spiritual support was received neither from any pharmaceutical company that has a direct connection with the research subject, nor from a company that provides or produces medical instruments and materials which may negatively affect the evaluation process of this study.

Conflict of Interest

No conflicts of interest between the authors and / or family members of the scientific and medical committee members or members of the potential conflicts of interest, counseling, expertise, working conditions, share holding and similar situations in any firm.

Authorship Contributions

Idea/Concept: İsmail Okan; **Design:** Mustafa Süren; **Control/Supervision:** İsmail Okan; **Data Collection and/or Processing:** Cihat Ayaz, Tuğba Açıköz; **Analysis and/or Interpretation:** Serkan Karaman; **Literature Review:** Mustafa Süren; **Writing the Article:** Mustafa Süren, Serkan Doğru; **Critical Review:** Mehtap Balta; **References and Fundings:** Tuğba Karaman.

REFERENCES

1. Raket DP, Weil A. Philosophy of integrative medicine. In: Raket DP, ed. Integrative Medicine. 4th ed. Philadelphia, PA USA: Elsevier; 2018. p.1-11. [[Crossref](#)]
2. Saha FJ, Brüning A, Barcelona C, Büssing A, Langhorst J, Dobos G, et al. Integrative medicine for chronic pain: a cohort study using a process-outcome design in the context of a department for internal and integrative medicine. *Medicine (Baltimore)*. 2016;95(27):e4152. [[Crossref](#)] [[PubMed](#)] [[PMC](#)]
3. Petri RP Jr. Integrative health and healing as the new health care paradigm for the military. *Med Acupunct*. 2015;27(5):301-8. [[Crossref](#)] [[PubMed](#)] [[PMC](#)]
4. Orhan FO, Elmas B, Altındış S, Karagöz R, Altındış M. Aile hekimi ve pediatristlerin geleneksel ve tamamlayıcı tıbbı (GETAT) bakışı [Traditional and complementary medicine view of family physician and pediatricians]. *Journal of BSHR*. 2019;3:161-7. [[Crossref](#)]
5. American Association of Neurological Surgeons [Internet]. © 2023 American Association of Neurological Surgeons [Cited: December 12, 2020]. Spinal Pain. Available from: [[Link](#)]
6. Husky MM, Ferdous Farin F, Compagnone P, Feranian C, Kovess-Masfety V. Chronic back pain and its association with quality of life in a large French population survey. *Health Qual Life Outcomes*. 2018;16(1):195. [[Crossref](#)] [[PubMed](#)] [[PMC](#)]

7. Mills SEE, Nicolson KP, Smith BH. Chronic pain: a review of its epidemiology and associated factors in population-based studies. *Br J Anaesth*. 2019;123(2):e273-e83. [[Crossref](#)] [[PubMed](#)] [[PMC](#)]
8. Andersson HI. The course of non-malignant chronic pain: a 12-year follow-up of a cohort from the general population. *Eur J Pain*. 2004;8(1):47-53. [[Crossref](#)] [[PubMed](#)]
9. Parkin-Smith GF, Davies SJ, Amarin-Woods LG. Looking ahead: chronic spinal pain management. *J Pain Res*. 2017;10:2089-95. [[Crossref](#)] [[PubMed](#)] [[PMC](#)]
10. Lemmon R, Roseen EJ. Chronic low back pain. In: Rakel DP, ed. *Integrative Medicine*. 4th ed. Philadelphia, PA USA: Elsevier; 2018. p.662-75. [[Crossref](#)]
11. İlhan MN, Aksakal FN, Kaptan H, Ceyhan MN, Durukan E, İlhan F, et al. Birinci basamakta yaşam boyu bel ağrısı sıklığı ve ilişkili sosyal ve mesleki risk etmenleri [Social and occupational factors associated with lifetime prevalence of low back pain in primary care]. *Gazi Medical Journal*. 2010;21(3):107-10. [[Link](#)]
12. Ministry of Health [Internet]. [Cited: December 12, 2020]. Launch Meeting of GETAT 2019 in Istanbul. Available from: [[Link](#)]
13. Sullivan M, Bishop SR, Pivik J. The Pain Catastrophizing Scale: Development and validation. *Psychological Assessment*. 1995;7(4):524-32. [[Crossref](#)]
14. Özsoy-Unubol T, Unal-Ulutatar C. Cross-cultural adaptation and validation of the Turkish version of Centrality of Pain Scale in patients with fibromyalgia syndrome. *Int J Rheum Dis*. 2020;23(6):772-7. Epub 2020 Mar 23. [[Crossref](#)] [[PubMed](#)]
15. Markotic F, Cerni Obrdaj E, Zalihic A, Pehar R, Hadziosmanovic Z, Pivic G, et al. Adherence to pharmacological treatment of chronic nonmalignant pain in individuals aged 65 and older. *Pain Med*. 2013;14(2):247-56. [[Crossref](#)] [[PubMed](#)]
16. Sandıkcı KB, Üstü Y, Sandıkcı MM, Kayhan Tetik B, Işık D, Uğurlu M. Attitudes and behaviors of physicians in dealing with difficult patients and relatives: a cross-sectional study in two training and research hospitals. *Turk J Med Sci*. 2017;47(1):222-33. [[Crossref](#)] [[PubMed](#)]
17. Elder N, Ricer R, Tobias B. How respected family physicians manage difficult patient encounters. *J Am Board Fam Med*. 2006;19(6):533-41. [[Crossref](#)] [[PubMed](#)]
18. Jackson JL, Kroenke K. Difficult patient encounters in the ambulatory clinic: clinical predictors and outcomes. *Arch Intern Med*. 1999;159(10):1069-75. [[Crossref](#)] [[PubMed](#)]
19. Leung L. Pain catastrophizing: an updated review. *Indian J Psychol Med*. 2012;34(3):204-17. [[Crossref](#)] [[PubMed](#)] [[PMC](#)]
20. Schütze R, Rees C, Smith A, Slater H, Campbell JM, O'Sullivan P. How can we best reduce pain catastrophizing in adults with chronic noncancer pain? A systematic review and meta-analysis. *J Pain*. 2018;19(3):233-56. [[Crossref](#)] [[PubMed](#)]
21. Suren M, Kaya Z, Gokbakan M, Okan I, Arici S, Karaman S, et al. The role of pain catastrophizing score in the prediction of venipuncture pain severity. *Pain Pract*. 2014;14(3):245-51. [[Crossref](#)] [[PubMed](#)]
22. Di Carlo M, Beci G, Salaffi F. Acupuncture for fibromyalgia: an open-label pragmatic study on effects on disease severity, neuropathic pain features, and pain catastrophizing. *Evid Based Complement Alternat Med*. 2020;2020:9869250. [[Crossref](#)] [[PubMed](#)] [[PMC](#)]
23. Van Eijsden-Besseling MD, van Attekum A, de Bie RA, Staal JB. Pain catastrophizing and lower physical fitness in a sample of computer screen workers with early non-specific upper limb disorders: a case-control study. *Ind Health*. 2010;48(6):818-23. [[Crossref](#)] [[PubMed](#)]